APPENDIX C

Natural Heritage Impact Assessment

CITY OF VAUGHAN

BARTLEY SMITH GREENWAY TRAIL ENVIRONMENTAL ASSESSMENT AND PRELIMINARY DESIGN

NATURAL HERITAGE REPORT

JULY 2022

DRAFT

BARTLEY SMITH GREENWAY TRAIL ENVIRONMENTAL ASSESSMENT AND PRELIMINARY DESIGN

NATURAL HERITAGE REPORT

CITY OF VAUGHAN

DRAFT

PROJECT NO.: 211-07301-00
DATE: JULY 27, 2022

WSP
582 LANCASTER STREET WEST
KITCHENER, ON
CANADA N2K 1M3

T: +1 519 743-8778
WSP.COM

SIGNATURES

PREPARED BY

DRAFT

Steven Leslie, B.Sc.
Wildlife Ecologist

Date

DRAFT

Kim Mitchell, M.Sc.
Fisheries Ecologist

Date

DRAFT

Joseph Mentlik, M.Sc.
Vegetation Ecologist

Date

APPROVED[1] BY

DRAFT

Margaret Pugh, M.Sc.
Senior Ecologist

Date

[1] Approval of this document is an administrative function indicating readiness for release and does not impart legal liability on to the Approver for any technical content contained herein. Technical accuracy and fit-for-purpose of this content is obtained through the review process. The Approver shall ensure the applicable review process has occurred prior to signing the document.

TABLE OF CONTENTS

TABLES

APPENDICES

1 INTRODUCTION

1.1 SITE & STUDY OVERVIEW

WSP Canada Inc. (WSP) was retained by the City of Vaughan (the client) to complete a Trail Gap Feasibility Study to connect critical gaps along the Bartley Smith Greenway ("BSG") Trail in Vaughan, Ontario. The BSG Trail is a 3-km section of the city-wide Vaughan Super Trail (100-km) between McNaughton Road and Keele Street, along the Don Valley Corridor. The location of the study area is depicted on the Natural Heritage Features and Designations Overview as well as on **Maps 1-8**, **Appendix A**.

This Natural Heritage Existing Conditions and Impact Assessment Report has been completed in support of the Environment Assessment and 30% Preliminary Design of the BSG Trail extension areas. This report documents the existing natural heritage features throughout the study area, including a review of available background information, a botanical inventory, confirmation / updates to existing data regarding vegetation communities, wildlife observations such as presence of amphibians, reptiles, insects, and mammals, a screening for records of Species at Risk (SAR) and a field assessment of potential for their habitat, and identification/ confirmation of natural heritage features outlined in the City of Vaughan Natural Heritage Network mapping and York Region Greenlands features. A preliminary assessment of impacts was completed for the 30% design of the trail alignment, as shown on **Maps 1-8, Appendix A**, along with constraints and opportunities for consideration at the detailed design stage. Specific regulations and policy addressed include the *Fisheries Act* (2019), the *Endangered Species Act* (ESA; 2007), the Toronto and Region Conservation Authority (TRCA) Ontario Regulation 166/06, the York Region Official Plan (2010), and the City of Vaughan Official Plan (2010).

2 APPROACH

2.1 BACKGROUND INFORMATION REVIEW

Natural environment features and functions within the vicinity of the study area have been characterized and evaluated using a combination of background information and field surveys, as discussed below. The review of secondary source background information included the following sources:

- eBird website (Cornell Lab of Ornithology 2021)
- Toronto and Region Conservation Authority ELC Mapping (March 2021)
- iNaturalist website – Observation Maps (California Academy of Science 2021)
- Ontario Breeding Bird Atlas
- Ontario Reptile and Amphibian Atlas
- Ontario Butterfly Atlas
- Atlas of the Mammals of Ontario
- Ministry of Natural Resources and Forestry (MNRF) Land Information Ontario (LIO) database (Government of Ontario 2021)
- MNRF Natural Heritage Information Centre (NHIC) mapping website (Government of Ontario 2021)
- Fisheries and Oceans Canada (DFO) – Aquatic SAR mapping (DFO 2021)
- City of Vaughan Official Plan (2010)
- York Region Official Plan (2010)
- Aerial Photography

2.1.1 AGENCY CONSULTATION

The Ontario Ministry of Environment, Conservation, and Parks (MECP) was contacted on October 28, 2021to request available SAR records within or adjacent to project limits. Jeff Anderson, Management Biologist, replied on the same day and indicated that MECP staff has nothing further to add to the lists provided but that surveys to determine presence/ absence should be completed during the appropriate seasons. Relevant correspondence is provided in **Appendix J**.

The Aurora District Ministry Natural Resources and Forestry (MNRF) was contacted on October 28, 2021to request information concerning significant species and designated natural features within or adjacent to the project limits. A response was received on November 8, 2021, which directed the proponent to complete a preliminary screening through utilization of the LIO database.

Toronto and Region Conservation Authority (TRCA) was contacted and provided natural heritage information pertinent to the project limits such as regulated areas or features of significance, including wetlands, woodlands, ELC units for the Don River Valley area etc.).

2.2 FIELD SURVEYS

2.2.1 FISH AND FISH HABITAT

A review of background information from publicly available resources and information provided by reviewing agencies was completed to inform the work program. Data analysis and evaluation included preparation of species inventories, desktop review of potential for SAR and field assessment for significant wildlife habitat (SWH) through evaluations of significance and sensitivity using relevant guidelines and policy, as described in respective areas of this report

All potential watercourse crossings and drainage features in the study area were assessed for direct and indirect fish habitat. Where direct fish habitat was identified, specific habitat information was collected to conduct a fisheries impact assessment with the known proposed works. Detailed habitat assessments were completed at potential bridge crossing locations (**Appendix H**), and habitat was assessed 50 m upstream and downstream of each crossing option. The remaining areas were assessed at a general level. The collection of fish habitat information associated with the field surveys encompassed the following parameters:

- Stream channel dimensions, general gradient and profile,
- Bank/shoreline character (e.g., height and erosion),
- Flow characteristics, including evidence of groundwater discharge,
- Morphology and substrates,
- Instream/in-water cover opportunities (e.g., woody debris, undercut banks, boulders, vegetation),
- Riparian vegetation,
- Presence of physical barriers to fish movement,
- Presence of potential critical or specialized habitat areas including potential spawning areas, good nursery cover, holding habitat (deeper refuge pools),
- Disturbances and past habitat alterations (e.g., channelization, potential pollutant point sources), and
- Potential habitat enhancement opportunities.
- Fish community sampling was completed with a backpack electrofisher and spot shocking.

All habitat data sheets, mapping and other field notes have been included in **Appendix G**.

Where possible, WSP collected general water quality parameters to support the fish community sampling results. Dissolved Oxygen, water pH, conductivity and water temperature were recorded at the time of the sampling.

2.2.2 VEGETATION AND BOTANICAL INVENTORY

Vegetation surveys were conducted by WSP ecologists on August 30 and September 10, 2021, to document the characteristics of the natural and culturally influenced vegetation communities, with a focus on the natural features along potential new trail alignment. Vegetation field work and associated data assessment involved:

- TRCA ELC Units (TRCA, May 21, 2021) identified in the study area were confirmed and boundaries/ community information updated according to the ELC System for Southern Ontario (Lee et. al., 1998). All natural and cultural vegetation communities in the study area were examined.
- Vegetation community significance was evaluated using Natural Heritage Resources of Ontario: Vegetation Communities of Southern Ontario (NHIC website, 2021).
- Completion of botanical inventory and analysis, including preparation of a vascular plant species list (**Appendix B**).
- Evaluating the sensitivity and significance of vegetation species and vegetation communities using the MNRF's NHIC website for provincial rarity ranks (i.e., S-Ranks); the MNRF's SAR in Ontario (SARO) list (updated periodically) for provincial status designations; and the Committee on the Status of Endangered Wildlife in

Canada (COSEWIC) and the federal Species at Risk Act (SARA) Public Registry websites for national status designations (updated periodically), the *Distribution and Status of the Vascular Plants of the Greater Toronto Area* (Varga, et. al. 2000), and the *Annual Local Occurrence Score and Local Rank Update* (TRCA, 2018).

- Evaluating habitat potential for vegetation Species of Conservation Concern (SCC), and in particular, SAR known or thought to exist in the general vicinity of the project limits.
- Compiling a photographic record to document terrestrial habitat condition during the field visit (**Appendix E**).

2.2.3 WILDLIFE AND WILDLIFE HABTIAT

An assessment of available wildlife habitat in the study area was completed, with all incidental wildlife observations recorded, and an assessment of wildlife habitat undertaken during all field surveys, as follows:

- Recording all direct wildlife observations and wildlife signs (including browse, track / trails, animal scat, bird nesting activity, tree cavities, burrows and vocalizations) and identifying potential wildlife usage and habitat functions associated with vegetation communities,
- Assessing potential for SWH features within the subject property, and
- Assessing potential for SAR Habitat, including identification of potential habitat for SAR bats.

Breeding Bird Surveys

Breeding bird surveys were conducted according to standard protocols established in the Ontario Breeding Bird Atlas (Cadman et al. 2007). Two survey visits were completed during appropriate timing (early morning surveys; June 22 and July 5, 2021) and suitable weather conditions (low wind and no precipitation). Breeding bird surveys were conducted by qualified, experienced staff via 10 point-count locations spaced approximately 300 m apart along the study area, through and adjacent to natural areas. Species recorded while travelling between point count locations were included at the nearest point count location. Species, abundance, and level of breeding evidence were recorded for all avifauna observations.

Anuran Calling Surveys

Anuran calling activity was assessed using the Marsh Monitoring Program (MMP) protocol (Bird Studies Canada 2008). Due to the timing of project award only two of the typical three rounds of surveys were completed, the first on June 2, 2021 and the second on June 24, 2021. Following guidelines of the MMP, surveys were conducted during a suitable time of the year and under appropriate weather conditions: low wind and nighttime air temperatures were greater than 10°C for the June 2 survey, and 17°C for the June 24 survey (second and third surveys per the MMP protocol). Calling activity from the station was assessed using 3 minutes of passive listening. Surveys started one half hour after sunset and were completed before midnight. Based on these conditions, the survey effort was considered adequate to inform the assessment of impacts.

- Surveys were completed at 10 stations within the study area; station locations were selected to cover representative areas with potential amphibian breeding habitat throughout the study area.
- Using the MMP, calling activity was rated using three levels: Level 1 (individual calls can be counted with no overlap), Level 2 (some calls can be counted or estimated, some overlap) or Level 3 (calls continuous and overlapping, individuals not distinguishable).

Species at Risk Habitat Assessment

An assessment of available habitat for SAR known to occur in the study area was completed, including a visual assessment of potential roosting habitat for SAR bats.

- Targeted surveys for breeding birds, calling anurans, wildlife habitat, and SAR habitat.
- General wildlife habitat surveys including direct wildlife observations and wildlife signs (including animal browse, track/trails, scat, nests, tree cavities, burrows, excavated holes and vocalizations) with a focus on potential SAR habitat (in conjunction with all other surveys).
- Review of background information from publicly available resources and information provided by reviewing agencies.

3 EXISTING CONDITIONS

3.1 PHYSIOGRAPHY, DRAINAGE, HYDROLOGY & SOILS

The study area falls within the bevelled till plains of the Peel Plain physiographic region and is characterized by undulating clay soils of a stoneless heavy texture; the underlying glacial material is till containing shale and limestone (Chapman and Putnam, 1984).

The general topography of the study area is of a gradual slope south toward Lake Ontario. The study area is within the Upper West Don sub-watershed and follows the valley and floodplain of the Don River West Branch tributary. Areas A and B are mostly characterized by gentle tableland slopes that drain into the tributary. Several marshes associated with the tributary exist where excess flooding occurs. The southern portion of the trail located adjacent to the Vaughan Sports Village and Rutherford Road is more deeply incised and contains treed tablelands, slopes, and bottomlands.

Due to the urban location, there is some human influence altering the drainage path. The tributary is directed through culverts in several locations but is almost entirely daylit. Three ponds exist in the study area. The two north of Major Mackenzie Drive have established marshes associated with them. The pond within the private landowner lands in the central portion near Maple Airport Park is a constructed pond with minimal associated vegetation.

3.2 NATURAL HERITAGE FEATURES & DESIGNATIONS

The following designated natural areas were identified through review of applicable Provincial Policy, Regional and Municipal Official Plans, as well as searches of the Land Information Ontario and Natural Heritage Information Centre Databases. Relevant policy areas are shown on the **Natural Heritage Features and Designations Overview, Appendix A**.

3.2.1.1 *URABN RIVER VALLEY OF THE GREENBELT PLAN*

The Greenbelt Plan (2017) was established under the Greenbelt Act (2005) and builds on the policies of the Provincial Policy Statement (2020). The Greenbelt Plan area consists of Protected Countryside (including the Natural Heritage System and Towns / Villages), Urban River Valleys, Niagara Escarpment Plan Area and the Oak Ridges Moraine Plan Area. The Natural Heritage System of the Greenbelt Plan includes core areas and linkage areas of the Protected Countryside with the highest concentration of the most sensitive and/or significant natural features and functions.

The study area is Urban River Valley under the Greenbelt Plan. Urban River Valleys are designated where the main corridors of river valleys connect areas of the Greenbelt to the Great Lakes and inland lakes. The lands in this designation comprise river valleys and associated lands and are generally characterized as lands containing natural and hydrologic features, and lands designated in official plans for uses such as parks, open space, recreation, conservation and environmental protection (Greenbelt, 2017). Development within the Urban River Valley designation is subject to applicable Official Plan policies.

3.2.1.2 *YORK REGIONAL GREENLANDS*

The York Region Official Plan (2010) identifies a Regional Greenlands System consisting of key natural heritage features and hydrological features to be protected and managed, environmentally significant areas, species at risk and their habitats.

The study area is designated Regional Greenlands System on Map 2 of the York Region Official Plan.

3.2.1.3 *CORE FEATURES OF THE VAUGHAN NATURAL HERITAGE NETWORK*

The in-force Vaughan Official Plan was adopted by City Council on September 7, 2010 and is currently undergoing a statutory review to conform with new Provincial policies and plans and 2051 growth targets for people and jobs, to

conform with the York Regional Official Plan. The in-force Vaughan Official Plan identifies a Natural Heritage Network that protects Core Features, including valley and stream corridors; woodlands; wetlands; fish and wildlife habitat; significant habitat of endangered and threatened species; Environmentally Significant Areas, and Areas of Natural and Scientific Interest.

Land Use Schedule (13) identifies the study area as Natural Area, with a small area south of Major Mackenzie Drive designated Parks. Schedule 2, which identifies components of the Natural Heritage Network, identifies the study area as primarily Core Features, with minor unapproved areas.

3.2.1.4 *TORONTO REGION CONSERVATION AUTHORITY REGULATED LANDS*

The Don River and associated floodplains, which make up the bulk of the study area, are regulated under Ontario Regulation 166/06 Toronto and Region Conservation Authority: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses.

3.2.1.5 *DON RIVER WEST BRANCH HEADWATER PROVINCIALLY SIGNIFICANT WETLANDS*

There are two areas of the Don River West Branch Headwater Provincially Significant Wetland (PSW) Complex located in the northern end of the study area, on either side of Major Mackenzie Road. There are several unevaluated wetlands along the Don River and within the study area; these additional wetlands may complex with the Don River West Branch Headwater PSW, if evaluated. Under Section 2.1.4 of the Provincial Policy Statement (2020), development and site alteration are not permitted in Provincially Significant Wetlands in Eco Region 7E.

3.3 FISH AND FISH HABITAT

3.3.1 RESULTS

Fish and Fish habitat assessment results are discussed with respect to the proposed trail alignments options as shown in **Appendix H**, dated October 2021.The Impact Assessment (**Section 5**) considers the Preferred Route shown in **Maps 1-8, Appendix A**, dated July 2022. It should be noted that the Preferred Route does not cross the Don River West Branch, however the need/feasibility for a bridge crossing will be reassessed in the future after the main trail is operational.

3.3.1.1 FISH HABITAT ASSESSMENT

The Don River West Branch is a permanent, medium-sized watercourse that originates as agricultural drainage northeast of Keele Street and Kirby Road. The watercourse meanders north to south through agricultural and residential areas for approximately 6.5 km before entering the northern limit of the study area. At the north limit, the watercourse crosses McNaughton Road via a concrete twin box culvert and flows around a stormwater management pond (SWMP). The watercourse continues for approximately 3.3 km through the study area, meandering through residential areas and woodland. A weir and a culvert located between Bridge Crossing Option 3 and 4 are as barriers to fish migration. At Rutherford Road, the watercourse crosses the road via a large CSP culvert. Downstream of the study area, the watercourse flows for approximately 27 km through primarily urban areas before outletting into the Don River.

Trail Alignment Option A

The “Trail Alignment Option A” is proposed to cross the southeast section of the SWMP south of McNaughton Road. The SWMP is approximately 60 m in length by 60 m in width. The proposed bridge crossing has a width of 17 m, and a wetted depth greater than 1 m. The substrate consists of silt (40%), sand (40%), muck (10%) and clay (10%). The riparian vegetation around the SWMP consists of cattails, grasses and shrubs. The instream cover in the SWMP consists of moderate instream vegetation and sparse overhanging vegetation.

Bridge Crossing Option 1

The aquatic habitat consists of a mix of flats (60%) and pools (40%). Flat sections have a mean wetted depth of 0.5 m, a mean wetted width of 3.2 m, a mean bankfull depth of 1.0 m and a mean bankfull width of 3.4 m. Substrate consists of sand (90%) and gravel (10%). Pool sections have a mean wetted depth of 0.8 m, a mean wetted width of 3.1 m, a mean bankfull depth of 1.3 m and a mean bankfull width of 3.5 m. Substrate consists of sand (80%), silt (10%) and gravel (10%). The banks are natural and have a steep/vertical slope with moderate erosion. The height of the left upstream bank is 1.6 m, and the right upstream bank is 1.8 m. The instream cover consists of sparse undercut banks, sparse overhanging vegetation and moderate woody / organic debris. Riparian vegetation consists of woodland (mixed deciduous) and shrubs. The forest canopy has 70% cover. Approximately 20 m downstream of the proposed crossing location, there is a debris jam creating a 0.5 m drop acting as a barrier to fish.

Bridge Crossing Option 2

The aquatic habitat consists of a mix of runs (80%) and pools (20%). Run sections have a mean wetted depth of 0.3 m, a mean wetted width of 3.3 m, a mean bankfull depth of 1.0 m and a mean bankfull width of 5.6 m. Substrate consists of sand (50%) and gravel (50%). Pool sections have a mean wetted depth of 0.4 m, a mean wetted width of 3.3 m, a mean bankfull depth of 0.8 m and a mean bankfull width of 3.6 m. Substrate consists of sand (40%), gravel (40%), cobble (10%) and boulder (10%). The banks are natural and have a steep/vertical slope with high levels of erosion. The height of the left upstream bank and right upstream bank is 1.7 m. The instream cover consists of sparse undercut banks, sparse overhanging vegetation and moderate woody / organic debris. Riparian vegetation consists of grasses and shrubs. The forest canopy has 20% cover.

Bridge Crossing Option 3

The aquatic habitat consists of flats (100%). Flat sections have a mean wetted depth of 1.2 m, a mean wetted width of 6.0 m, a mean bankfull depth of 1.7 m and a mean bankfull width of 9.0 m. Substrate consists of sand (50%) and silt (50%). The banks are natural and have a steep/vertical slope with moderate erosion. The height of the left upstream bank and right upstream bank is 2.0 m. The instream cover consists of moderate undercut banks, sparse overhanging vegetation, sparse instream vegetation and moderate woody / organic debris. Riparian vegetation consists of grasses and shrubs. The forest canopy has 70% cover.

Bridge Crossing Option 4

The aquatic habitat consists of a mix of flats (90%) and pools (10%). Flat sections have a mean wetted depth of 0.3 m, a mean wetted width of 3.3 m, a mean bankfull depth of 0.7 m and a mean bankfull width of 5.2 m. Substrate consists of sand (30%), silt (30%), gravel (20%) and cobble (20%). Pool sections have a mean wetted depth of 0.7 m, a mean wetted width of 4.3 m, a mean bankfull depth of 1.2 m and a mean bankfull width of 5.9 m. Substrate consists of sand (50%), cobble (40%) and silt (10%). The banks are natural and have a steep/vertical slope with moderate erosion. The height of the left upstream bank is 1.6 m, and the height of the right upstream bank is 1.8 m. The instream cover consists of sparse undercut banks, sparse overhanging vegetation, and moderate woody / organic debris. Riparian vegetation consists of woodland (mixed deciduous trees) and shrubs. The forest canopy has 90% cover.

3.3.1.2 *FISH COMMUNITY*

Fish community data for the Don River West Branch was obtained from Land Information Ontario, as well as fish community collections completed by WSP Ecologists using a backpack electrofisher. Two sampling locations within the study area were selected to complete the fish community collections: 450 m downstream of the north study limit and 1.2 km upstream of the south study limit. The fish community documented consisted primarily of warmwater/coolwater forage fish and panfish species that are generalists and tolerant, with the potential for sensitive, coldwater fish (i.e., Northern Brook Lamprey, Brook Trout) (**Table 1**).

Table 1. Fish Community of Don River West Branch

COMMON NAME	*SCIENTIFIC NAME*	*ESA / SARA STATUS*
American Brook Lamprey	*Lethenteron appendix*	*None*
Blacknose Dace*	***Rhinichthys atratulus***	***None***
Blacknose Shiner	*Notropis heterolepis*	*None*
Bluntnose Minnow*	***Pimephales notatus***	***None***
Brassy Minnow	*Hybognathus hankinsoni*	*None*
Brook Stickleback	*Culaea inconstans*	*None*
Brook Trout	*Salvelinus fontinalis*	*None*
Brown Bullhead	*Ameiurus nebulosus*	*None*
Brown Trout	*Salmo trutta*	*None*
Common Carp	*Cyprinus carpio*	*None*
Common Shiner*	***Luxilus cornutus***	***None***
Creek Chub*	***Semotilus atromaculatus***	***None***
Fantail Darter	*Etheostoma flabellare*	*None*
Fathead Minnow*	***Pimephales promelas***	***None***
Iowa Darter	*Etheostoma exile*	*None*
Johnny Darter*	***Etheostoma nigrum***	***None***

COMMON NAME	SCIENTIFIC NAME	ESA / SARA STATUS
Largemouth Bass	*Micropterus salmoides*	*None*
Longnose Dace	*Rhinichthys cataractae*	*None*
Mottled Sculpin	*Cottus bairdii*	*None*
Northern Brook Lamprey	*Ichthyomyzon fossor*	*Special Concern*
Northern Hog Sucker	*Hypentelium nigricans*	*None*
Northern Redbelly Dace	*Chrosomus eos*	*None*
Pumpkinseed*	***Lepomis gibbosus***	***None***
Rainbow Darter	*Etheostoma caeruleum*	*None*
Rainbow Trout	*Oncorhynchus mykiss*	*None*
Redside Dace	*Clinostomus elongatus*	*Endangered*
River Chub	*Nocomis micropogon*	*None*
Rock Bass	*Ambloplites rupestris*	*None*
Sea Lamprey	*Petromyzon marinus*	*None*
Spottail Shiner	*Notropis hudsonius*	*None*
Stonecat	*Noturus flavus*	*None*
White Sucker*	***Catostomus commersonii***	***None***

*Collected by WSP on October 5, 2021

3.4 VEGETATION & FLORA

3.4.1 FLORISTICS

Nearly all areas north of Rutherford Road in the study area are typified by cultural influence (**Maps 1-8, Appendix A**). Most communities are undergoing succession and have a high degree of disturbance from introduced species. Garbage and debris (from dumping) were occasionally present especially adjacent to the plaza on 256 Major Mackenzie Drive. A large residential property located in the central area has planted trees and lawn as well as a conifer plantation. The southern portion, South of Rutherford Road, is a patch of somewhat intact remnant forest observable in the 1954 aerial imagery.

A total of 154 vascular plants were identified during the field surveys, of which 13 were identified to genus only. 84 (54%) are native and 56 (36%) are non-native. All the observed species are listed as G5 - G4 (secure to apparently secure nationally), and S5 – S4 (secure to apparently secure provincially) excepting one species. Several Kentucky Coffee-trees (*Gymnocladus dioicus*) were observed; the trees were determined as likely to have been planted, as they are outside the normal range for natural occurrence of the species, but their origin is unconfirmed. If spontaneous, Kentucky Coffee-tree is S2 and listed as Threatened under the Endangered Species Act. The following species are naturally occurring and regionally rare in York Region (Varga et al. 2000): Silky Dogwood (*Cornus obliqua*), Grey Dogwood (*Cornus racemosa*), Black Walnut (*Juglans nigra*), Eastern Red Cedar (*Juniperus virginiana*), False Waterpepper (*Persicaria hydropiperoides*), and White Oak (*Quercus alba*). The following species are locally rare in the TRCA jurisdiction: Fragrant Water-lily (*Nymphaea odorata*) and White Oak. White Spruce (*Picea glauca*) and Red Pine (*Pinus resinosa*) were also observed, and when occurring naturally on the landscape, these species considered locally rare. However, all Red Pine trees observed in the study area appear to be part of plantations and thus not considered rare. White Spruce occur sporadically in cultural units and it is unclear if they have been planted and the area around them naturalized, or if they are truly spontaneous occurrences. Specific transplanting or other

active mitigation measures are not considered critical for any of the rare species noted above. All vascular plants observed during field investigations are listed in the Vascular Plant List (**Appendix B**).

3.4.2 VEGETATION COMMUNITIES

The study area follows the Don River and is surrounded by residential neighbourhoods. Utilizing TRCA ELC mapping (March 2021) for the area, fourteen distinct vegetation community types were updated and refined; updated vegetation units are show on **Maps 1-8, Appendix A**. All vegetation communities observed are common in Ontario (NHIC, 2021); ELC field notes are provided in **Appendix I**.

3.4.2.1 CULTURAL UNITS

Dry – Moist Old Field Cultural Meadow Type CUM1-1

Old Field Cultural Meadows are present throughout the study area. There is some variation in species composition across the entire study area, but typically this vegetation community consisted of Tall Goldenrod (*Solidago altissima*), non-native cold season grasses including Kentucky Bluegrass (*Poa pratensis*) and Smooth Brome (*Bromus inermis*), asters including New-England Aster (*Symphyotrichum novae-angliae*) and Panicled Aster (*Symphyotrichum lanceolatum*), and Field Thistle (*Cirsium arvense*). More sporadically frequent species included Clover (*Trifolium* spp.), Tufted Cow Vetch (*Vicia cracca*), and Wild Carrot (*Daucus carota*). Trees and shrubs were found sparsely throughout the meadows, often in clumps and include Willows (Salix spp.) Common Apple (*Malus pumila*), Common Pear (*Pyrus communis*), Common Buckthorn (*Rhamnus cathartica*), and Honeysuckle (*Lonicera* sp.).

Mineral Cultural Woodland Type CUW1 (Unit 4)

Unit 4 is a Mineral Cultural Woodland located in Area A South of Major Mackenzie Drive. Canopy cover within this area ranges between 35-65% cover and is between 10-25m in height. Dominant species in the canopy include Manitoba Maple (*Acer negundo*), Trembling Aspen (*Populus tremuloides*), and White Spruce. Dominant species in the subcanopy and understorey include Staghorn Sumac (*Rhus Typhina*), Manitoba Maple, Trembling Aspen, Nannyberry (*Viburnum lentago*), and Honeysuckle species. Dominant groundcover species present are Wood Avens (*Geum urbanum*), Tall Goldenrod, Dame's Rocket (*Hesperis matronalis*), and Thicket Creeper (*Parthenocissus vitacea*).

Exotic Successional Woodland Type CUW1-b (Units 6, 10, 21)

Unit 6 is an Exotic Successional Woodland located in Area A South of Major Mackenzie Drive. The canopy is dominated by Black Locust (*Robinia pseudoacacia*), Manitoba Maple, Trembling Aspen, and Little-leaf Linden (*Tilia cordata*). The subcanopy and understorey primarily include Manitoba Maple, Black Locust, White Ash (*Fraxinus americana*), and Common Buckthorn (*Rhamnus cathartica*). Groundcover includes Kentucky Bluegrass, Garlic Mustard (*Alliaria petiolata*), Wood Avens, and Tall Goldenrod.

Unit 10 is located in Area B and extends to Area C South of Major Mackenzie Drive. This community's canopy is dominated by White Willow (*Salix alba*), with the subcanopy and understorey dominated by Riverbank Grape (*Vitis riparia*), Manitoba Maple, Oriental Bittersweet (*Celastrus orbiculatus*), and Dogwood species (*Cornus* spp.). The ground layer includes Dog-Strangling Vine (*Vincetoxicum rossicum*), Tall Goldenrod, Smooth Brome, and Wood Avens. There is evidence of recreational use within this community, as evidenced by the dumping of garbage in some areas. Emerald Ash Borer presence was also noted.

Unit 21 is the same community type as Units 6 and 10 and located in the central portion South of Major Mackenzie Drive. The canopy within this community is over 25m tall in height and is dominated by White Willow. The subcanopy primarily contains White Willow and Manitoba Maple, while the understorey contains Chokecherry (*Prunus virginiana*), Common Buckthorn, Manitoba Maple, and Riverbank Grape. The ground layer includes Smooth Brome, Wood Avens, Thicket Creeper, and Tall Goldenrod.

Exotic Successional Woodland Type CUW1-b and Exotic Successional Savanna Type CUS1-b (Units 7a, 7b)

Unit 7a and 7b are Exotic Successional Woodland Exotic Successional Savanna They are located between the Elementary school and Maple Airport Park. Both communities represent similar successional areas, but canopy cover is sparser in the savanna and has denser shrub cover. Canopy species common in these areas include Manitoba Maple, Trembling Aspen, Black Walnut (*Juglans nigra*), and American Elm (*Ulmus americana*). Subcanopy species include Riverbank Grape, Honeysuckle species, and Manitoba Maple, and understorey species include Dogwood species, Honeysuckle species, White Ash, and Common Buckthorn. Dominant groundcover species were Violet species, Wood Avens, Thicket Creeper, and Dame's Rocket.

Mineral Cultural Savanna Type CUS1 (Unit 13) with Sumac Deciduous Shrub Thicket Type (CUT1-1) inclusion

Unit 13 is a Mineral Cultural Savanna community to the North of Major Mackenzie Drive. The canopy in this community is dominated by White Ash, Manitoba Maple, White Spruce, and Freeman's Maple (*Acer x freemanii*). The subcanopy and understorey consist of Staghorn Sumac, Common Buckthorn, and Willow species (*Salix* spp.), as well as Common Privet (*Ligustrum vulgare*) to a lesser degree. The ground layer primarily includes Smooth Brome, Tall Goldenrod, and Kentucky Bluegrass. This community includes a Sumac Deciduous Shrub Thicket (CUT1-1) inclusion dominated by a pure stand of Staghorn Sumac.

Coniferous Plantation Type CUP3 (Unit 14)

Unit 14 is a Cultural Conifer Plantation located in the central portion, South of Major Mackenzie Drive. This community is dominated by planted White Pine (*Pinus strobus*), Red Pine (*Pinus resinosa*), and White Spruce. The shrub and ground layer vegetation includes Common Buckthorn, Honeysuckle species, Red Elderberry (*Sambucus racemosa*), Red Raspberry (*Rubus idaeus* subsp. *strigosus*), Orange Daylily (*Hemerocallis fulva*), and Tall Goldenrod. Several cleared informal trails are present running north/south in this community.

3.4.2.2 *WETLANDS*

Mixed Mineral Meadow Marsh Type MAMM3-1 (Units 2, 20)

Unit 2 is a Mixed Mineral Meadow Marsh Type located in the northern portion, South of Major Mackenzie Drive. Dominant species include Reed Canary grass (*Phalaris arundinacea*) and Broadleaf Cattail (*Typha latifolia*) in the understorey, and Panicled Aster, Field Thistle, Coltsfoot (*Tussilago farfara*), and Beggarticks species (*Bidens* sp.) on the ground layer. There was no canopy or subcanopy present in this community. A woodchip mesh berm is present adjacent to the watercourse from recent culvert works. A stand of invasive European Reed (*Phragmites australis*) dominated a portion of the marsh at the south end. A Monarch butterfly (*Danaus plexippus*) was also observed in the area.

Unit 20 is a large marsh of the same type as Unit 2 located in the central portion, South of Major Mackenzie Drive. Its groundcover is dominated by Reed Canary Grass, Tall Goldenrod, various Sedge species (*Carex* spp.) including Fox Sedge (*Carex vulpinoidea*), and Aster species New England Aster and Panicled Aster. Occasional woody plants including Red-Osier Dogwood (*Cornus sericea*) and Riverbank Grape are present. This unit was previously identified by TRCA as being two separate shallow marshes. As observable in the aerial imagery and in the field, these areas are connected by a narrow strip of similar vegetation and therefore the wetland boundary has been extended. Shallow marsh flooding conditions were not apparent during the September visit and therefore the community description diverges from TRCA's initial shallow marsh description. The native wetland species present are typical of meadow marsh, but there is abundant introduced species from the adjacent cultural meadows. Overall, the average coefficient of wetness of native species is -2.42.

Meadow Marsh Type MAM (Unit 17)

Unit 17 is a narrow strip of Meadow Marsh South of Major Mackenzie Drive and north of Bevan Road on the banks of a man-made pond. Species distribution is patchy and typical marsh species are present with garden escapes and generally weedy species. The dominant taller species include Broadleaf Cattail, Tall Goldenrod, Panicled Aster, and Staghorn Sumac. Groundcover included Coltsfoot, Thicket Creeper, Orange Daylily, and Field Thistle.

Cattail Mineral Shallow Marsh Type MAS2-1 (Unit 9)

Unit 9 is a Cattail Mineral Shallow Marsh community surrounding two ponds located North of Major Mackenzie Drive. There are sparse shrub sized Meadow Willow (*Salix petiolaris*) and several Crack Willow (*Salix euxina*)

around the south pond. The marsh is dominated by Narrow-Leaved Cattail (*Typha angustifolia*) with occasional Reed Canary Grass, and rare Field Thistle, Tall Goldenrod, and Spotted Jewelweed (*Impatiens capensis*).

Mineral Thicket Swamp Type SWT2 (Unit 11)

Unit 11 is a small Mineral Thicket Swamp Community adjacent to the Don River West Branch located to the North of Major Mackenzie Drive. The subcanopy in this community is sparse and dominated by Manitoba Maple and Green Ash (*Fraxinus pennsylvanica*). The understorey includes Dogwood species, Willow species, Common Elderberry (*Sambucus canadensis*), and Common Buckthorn. Dominant ground layer species include Tall Goldenrod and American Hog-peanut (*Amphicarpaea bracteata*).

3.4.2.3 *FORESTS*

Fresh – Moist Willow Lowland Deciduous Forest Type FOD7-3 (Unit 5)

Unit 5 is a large Fresh – Moist Willow Lowland Deciduous Forest located South of Major Mackenzie Drive. The canopy was over 25m tall in height and was dominated by White Willow (*Salix alba*), Manitoba Maple, and Balsam Poplar (*Populus balsamifera*). The subcanopy primarily consisted of Manitoba Maple, Green Ash, and Riverbank Grape (*Vitis riparia*). The understorey was dominated by Chokecherry (*Prunus virginiana*), Common Buckthorn (*Rhamnus cathartica*), Honeysuckle species, and Round-leaved Dogwood (*Cornus rugosa*). The ground layer was dominated by Violet species (*Viola* sp.), Thicket Creeper (*Parthenocissus vitacea*), Common Buckthorn, and Ground-ivy (*Glechoma hederacea*). All vegetation layers were very dense, at over 60% cover. There were noted openings in the canopy layer however, caused by dying or dead Ash species (*Fraxinus* sp.).

Dry – Fresh White Pine-Sugar Maple Mixed Forest Type FOM2-2 (Unit 18)

Unit 18 is a Dry – Fresh White Pine-Sugar Maple Mixed Forest located in the southern portion North of Rutherford Road. This polygon is a remnant of a small woodlot observable in 1954 aerial imagery. The canopy in this area is dense, over 25m tall in height, and is dominated by White Pine, Sugar Maple (*Acer saccharum*), and Black Cherry (*Prunus serotina*). The subcanopy primarily includes Sugar Maple, Riverbank Grape, White Ash, and Hop-Hornbeam (*Ostrya virginiana*). The understorey contains Chokecherry and White Ash, and the ground layer contains Chokecherry, Herb-Robert (*Geranium robertianum*), Thicket Creeper, and Wood Avens. The topography of this polygon includes a slope down into the adjacent unit 19, Fresh-Moist Manitoba Maple Lowland Deciduous Forest. The tableland portion on the west side of this unit is narrow such that installation of a path through this polygon is likely to require significant mature tree removals.

Fresh-Moist Manitoba Maple Lowland Deciduous Forest Type FOD7a (Unit 19)

Unit 19 is a Fresh-Moist Manitoba Maple Lowland Deciduous Forest community located in the southern portion North of Rutherford Road. No canopy vegetation layer is present within this community. Dominant subcanopy species consist of Manitoba Maple and Riverbank Grape, and the understorey includes the additional species Green Ash and Thicket Creeper. The ground layer primarily includes Violet species, Thicket Creeper, Spotted Jewelweed, and Panicled Aster.

Dry – Fresh Sugar Maple Deciduous Forest Type FOD5-1 (Unit 22)

Unit 22 is a mature Dry – Fresh Sugar Maple Deciduous Forest located South of Rutherford Road. This section is one of the only remnant forests in the area besides the Frank Robson Woodlot to the north and has high quality intact vegetation communities with minimal urban disturbance. The canopy in this community is dense and above 25m tall in height. This vegetation layer primarily contains Sugar Maple, Red Oak (*Quercus rubra*), and Basswood (*Tilia americana*). Dominant species in the subcanopy and understorey include Sugar Maple, White Ash, Common Buckthorn, and Chokecherry. The ground layer primarily includes Sugar Maple, Zigzag Goldenrod (*Solidago flexicaulis*), Thicket Creeper, and White Ash. Disturbance to this community is not recommended due to its local uncommonness in the urban landscape of the Maple community in Vaughan.

3.4.2.4 *RESIDENTIAL*

Low Density Residential Type CVR_1 (Unit 16)

Unit 16 a residential property located in the central portion, South of Major Mackenzie Drive. The property has planted trees and landscaped areas as well as paths for recreation. Planted trees include Norway Maple (*Acer platanoides*), Apple species (*Malus* sp.), Thornless Honey Locust (*Gleditsia triacanthos* var. *inermis*), Paper Birch (*Betula papyrifera*), White Ash, Horse Chestnut (*Aesculus hippocastanum*), Eastern Redcedar, Sugar Maple, and Willow species.

3.5 WILDLIFE

Habitat features present in the study area and broader landscape include urban environments, semi-natural features (e.g., cultural meadows, planted trees, thickets and hedgerows) and natural vegetation features (e.g., riparian corridor, forests). Habitats within the study area show varying levels of anthropogenic disturbance. The suite of wildlife species found was expected and typical of urban environments, riparian areas and small forests. The southern portion of the study area contains more forested habitat, while the northern portion is primarily cultural meadow and thicket habitats.

3.5.1 BREEDING BIRDS

During the 2021 field investigations, 41 avifauna were recorded in the study area; of these, 34 species were recorded with breeding evidence (possible, probable, or confirmed per OBBA protocol) (**Appendix F**). Species with no breeding evidence include: Belted Kingfisher (*Megaceryle alcyon*), Double-crested Cormorant (*Phalacrocorax auritus*), Great Blue Heron (*Ardea herodias*), Ring-billed Gull (*Larus delawarensis*), Rock Pigeon (*Columba livia*), Turkey Vulture (*Cathartes aura*) and Wild Turkey (*Meleagris gallopavo*). Most of the bird species recorded in the study area are common throughout Southern Ontario and expected given the types of habitat available (forest and forest edge, cultural meadow and urban/semi-urban environments). High numbers of urban tolerant bird species were recorded, such as American Robin (*Turdus migratorius*), Black-capped Chickadee (*Poecile atricapillus*), Blue Jay (*Cyanocitta cristata*), American Goldfinch (*Spinus tristis*), European Starling (*Sturnus vulgaris*) and Song Sparrow (*Melospiza melodia*). Species associated with deciduous and mixed forest and forest edge habitats were recorded, including American Redstart (*Setophaga ruticilla*), Great Crested Flycatcher (*Myiarchus crinitus*), Red-breasted Nuthatch (*Sitta canadensis*), and Downy Woodpecker (*Picoides pubescens*) as well as species associated with wetland and riparian habitats, including Mallard (*Anas platyrhynchos*), Red-winged Blackbird (*Agelaius phoeniceus*) and Yellow Warbler (*Setophaga petechia*).

Two of the birds recorded in the broader study area with breeding evidence are considered "Area Sensitive in Ecoregion 7E" according to SWH criteria schedules (MNRF 2015): Cooper's Hawk (*Accipiter cooperii*), which was observed in a cultural woodland, just north of BB8, and Red-breasted Nuthatch, observed in Vegetation Unit 7, between BB3 and BB4. One SAR bird was recorded in the study area during field investigations: Eastern Wood-pewee (*Contopus virens*). Additional discussion regarding SAR are included in **Section 2.6**.

3.5.2 AMPHIBIANS AND REPTILES

Suitable amphibian breeding habitat in the study area is primarily associated with the Don River West Branch, and wetland riparian habitat along its length. In total, three amphibian species were observed during targeted field investigations: American Toad (*Anaxyrus americanus*), Green Frog (*Lithobates clamitans*) and Gray Treefrog (*Hyla versicolor*) were recorded in low numbers at two locations along the Don River West Branch, and in low numbers at a stormwater management pond between Major Mackenzie Drive and McNaughton Road. The Don River West Branch provides suitable habitat for turtle basking and/or foraging, however overwintering habitat potential is low due to the dominant rocky/gravelly substrates and small size of the watercourse.

Habitat conditions observed in the study area, combined with available background data (ORAA), suggest that there is potential for other common amphibian species to occur in the study area, including: Chorus Frog, Eastern Red-backed Salamander (*Plethodon cinereus*), Northern Leopard Frog (*Rana pipiens*), Spotted Salamander (*Ambystoma maculatum*), Spring Peeper (*Pseudacris crucifer*) and Wood Frog (*Lithobates sylvaticus*). In addition, there is potential for common reptile species, including Eastern Gartersnake (*Thamnophis sirtalis sirtalis*), Dekay's Brownsnake (*Storeria dekayi*), Milksnake (*Lampropeltis triangulum*), Snapping Turtle (*Chelydra serpentina*), Midland Painted Turtle (*Chrysemys picta marginata*) and Red-bellied Snake (*Storeria occipitomaculata*).

No herptile SCC were confirmed in the study area; however, there is some potential for Snapping Turtle, as discussed further in **Section 2.6.2**.

3.5.3 MAMMALS

During the 2021 field investigations, evidence of three mammal species was recorded in the study area: Gray Squirrel (*Sciurus carolinensis*), Eastern Chipmunk (*Tamias striatus*) and Eastern Cottontail (*Sylvilagus floridanus*).

In addition, the above noted observations, several other mammal species commonly found in this region are likely to be present, although undetected, including: Coyote (*Canis latrans*), White-tailed Deer (*Odocoileus virginianus*), Virginia Opossum (*Didelphis virginiana*), Muskrat (*Ondatra zibethicus*), Red Fox (*Vulpes vulpes*) Striped Skunk (*Mephitis mephitis*), and small mammals such as Meadow Vole (*Microtus pennsylvanicus*), Deer Mouse (*Peromyscus maniculatus*), and White-footed Mouse (*Peromyscus leucopus*). Note that suitable habitat for SAR bats is present throughout much of the study area. SAR bats and potential for habitat are discussed further in **Section** 3.6.

3.5.4 INSECTS

Monarch was observed foraging in the northern portion of the study area. Milkweed for breeding and wildflowers for foraging are present throughout much of the study area. This species is listed as Special Concern and is discussed further in **Section 3.6** below.

3.6 SPECIES AT RISK

A SAR screening assessment reviews habitat potential and identifies sensitivities and constraints that may be present as input to land management. The SAR screening table incorporates background information collected, as well as the results of the in-field habitat assessment. The table lists potential SAR, habitat preferences for each species, an assessment of habitat within the project area and provides recommendations with respect to potential for the proposed works to impact the species.

The review of available background source information generated a list of 15 potential SAR for the general project vicinity. This list includes SAR known to occur in the City of Vaughan generally, as well as those with records specifically in the vicinity of the study area. specifically. Those species that were considered to have ‘moderate’ to ‘high’ potential to occur in the vicinity of the study area were surveyed for during the field investigations, and habitat conditions were assessed in terms of potential suitability for the various SAR. For the full SAR screening table see **Appendix C**.

3.6.1 CONFIRMED SPECIES AT RISK

The following species was confirmed within the study area during the field investigations. Refer to **Appendix A: Maps 1-8** for locations of SAR observations.

- **Eastern Wood-pewee** (Special Concern, COSEWIC and COSSARO) was recorded in Vegetation Units 12 and 22. A total of two individuals were recorded with ‘Possible’ breeding evidence.
- **Monarch** (Endangered, COSEWIC; Special Concern, COSSARO) was recorded in Vegetation Units 2, 12 and in cultural meadow south of Vegetation Unit 10. Milkweed for breeding and wildflowers for foraging are present throughout much of the study area.
- **Kentucky Coffee-tree** (Threatened, SARA and SARO) was recorded in Vegetation Unit 12. Several mature individuals and natural regeneration saplings. This recording is well outside the known range of spontaneous natural occurrence in southwest Ontario (west of Brantford) where it has been documented at only 20 locations in 2000 (MECP, 2021). It is most likely that these specimens have been planted and as such are not protected under the ESA.

3.6.2 POTENTIAL SPECIES AT RISK

An additional four SAR have 'moderate' to 'high' potential to occur in the study area (based on the presence of suitable habitat features), however were not observed during field investigations. These potential SAR include the following:

- **Little Brown Bat** (*Myotis lucifugus*) and **Northern Long-eared Bat** (*Myotis septentrionalis*). These species have moderate potential to occur in forested areas, and isolated trees / tree clusters throughout the study area. Foraging habitat is present over all open areas. Acoustic surveys were not undertaken to confirm presence.
- **Barn Swallow** – Threatened, COSEWIC and COSSARO): Suitable foraging habitat is present in open areas throughout the study area. Potentially suitable nesting habitat is present on bridges and culvert in the study area, though nesting was not confirmed nor was this species recorded during targeted field investigations.
- **Snapping Turtle** – Special Concern, COSEWIC, COSSARO; SARA Schedule 1): There is potential for this species to be present, however no individuals were recorded during field investigations. Due to the fast flowing and gravelly nature of the Don River West Branch, overwintering habitat is not likely present in the study area.
- **Butternut** (Endangered, COSEWIC, COSSARO): While suitable habitat for this species is present, there were no Butternut observed in the study area.

3.7 SIGNIFICANT WILDLIFE HABITAT

An assessment of candidate and confirmed Significant Wildlife Habitat was completed based on the Significant Wildlife Habitat Ecoregion Criteria Schedules for Ecoregion 7E (MNRF January 2015). SWH is broadly categorized as: Seasonal concentration areas (i.e., conifer forests for deer wintering), Rare vegetation communities or specialized habitats for wildlife, habitats of species of conservation concern, excluding the habitats of endangered and threatened species, and animal movement corridors. Two types of SWH were identified in the study area during field investigations: Candidate (unconfirmed) Bat Maternity Colony, Confirmed Special Concern and Rare Wildlife Species (Eastern Wood-Pewee), and confirmed Other Rare Vegetation Communities. See **Appendix D** for the detailed assessment with a summary of results provided below.

3.7.1 CANDIDATE (UNCONFIRMED) SIGNIFICANT WILDLIFE HABITAT

Bat maternity colonies are typically located in mature deciduous or mixed forest stands of >10/ha, where trees with large diameter (>25cm DBH) are present. Bat Maternity Colony SWH may be present in Vegetation Unit 22, as it is mature, moderately large (~8ha), forested and connected to the forested area south of Rutherford Road. Additionally, isolated, suitable maternity colony trees are likely present in non-forested Vegetation Units (refer to **Appendix E** for representative photographs). Tree removals are anticipated to be confirmed through Arborist works at the detailed design/ construction stage. A permit under the *ESA* is not anticipated to be required for minor tree removals associated with train construction, however consultation with MECP to determine *ESA* compliance should be undertaken.

3.7.2 CONFIRMED SIGNIFICANT WILDLIFE HABITAT

Two Special Concern and Rare Wildlife Species have been confirmed in the study area, Eastern Wood-pewee in Vegetation Units 12 and 22, and Monarch in Vegetation Units 2, 12 and in cultural meadow south of Vegetation Unit 10. The SWH includes the entire ELC Vegetation Units in which the Special Concern Species was recorded. Details concerning habitat requirements and abundance of these species are provided in **Section 3.6**.

No rare vegetation communities were observed in the study area.

4 PREFERRED ROUTE

The Preferred Route is shown on the **Natural Heritage Features and Designations Overview** and **Maps 1-8** in Appendix A. The Preferred Route between McNaughton Rd. to Major Mackenzie Dr. includes (1) signalized pedestrian road crossing and (1) pedestrian bridge. Beginning at the proposed crossing infrastructure on McNaughton Rd, this trail will travel south along the valley land adjacent to the rear yards of the properties on Matthewson St. The trail alignment is proposed to turn west and cross the existing SWM pond with a new pedestrian bridge structure to connect to the existing servicing route.

Between Major Mackenzie to Plaza access point starts form the existing pathway leading to the pedestrian culvert crossing under Major Mackenzie Dr. W and continues south-west of the St. David Parish Church property until it meets the existing pathway. There is a connection point proposed traveling east-west connecting the existing parking lot to the preferred trail alignment. From Mother of Carmel Childcare Centre to Naylon Parkette, the existing trail south of the Mother of Carmel Childcare Centre (located outside of the TRCA regional flood line) is proposed for resurfacing. The extent of resurfacing proposed will extend south until meeting the existing trail running east west of Naylon Parkette. From Naylon Parkette to Bevhan Rd. the trail begins at the existing east to west trail on Naylon St., it travels south-west along the western edge of the existing SWM pond through sparce vegetation to Bevan Rd. There is a east to west trail alignment proposed creating a connection from Bevan Rd to the main trail route. Between Bevan Rd. and Merrick Dr. the trail will travel south from Bevan Rd. and meander south-east of the 7 Bevan property through open space with sparce vegetation. It continues south hugging the 10m property offset behind lots on Lancer Dr. and continues south-west through open valley land. Once the trail reaches Waterside Crest, it travels south until it meets Merrick Dr. From Merrick Dr. to Rutherford Rd. the trail will follow the existing alignment. The Bartley Smith Greenway Gap Trail Part 2: 30% Design Development scope will end at Rutherford Rd. due to inconclusive results through public and stakeholder consultations.

5 IMPACT ASSESSENT

The Preferred Route will have direct and indirect impacts on the natural heritage features within the study area. A preliminary assessment of these impacts is provided in Sections 5.1 to 5.5. Impact assessment and considerations for Detailed Design provided in this report are based on the Preferred Route and Preliminary (30%) Design as available in July 2022. Should the Preferred Route be modified at the Detailed Design stage, additional impacts and mitigation may need to be considered and addressed. The impact assessment herein considers sensitive terrestrial and aquatic features and associated constraints such as timing windows or other mitigation measures to avoid impacts.

5.1 DESIGNATED NATURAL AREAS

Direct impacts are anticipated within TRCA regulation limits and as such a permit under Ontario Regulation 166/06 is expected to be required.

Provincially Significant Wetlands

No development or site alteration is permitted within PSWs. Unevaluated wetlands that may be impacted should be assessed for significance, in accordance with provincial criteria and to determine their importance, functions and means of protection to the satisfaction of the City. Development and site alteration on lands adjacent to wetlands (i.e., within 120 m) must demonstrate that there will be no loss of wetland features and function (including hydroperiod), no loss of contiguous wetland area and that development will not cause increased pressure on the wetland in the future. No impacts are anticipated within 30m of the PSW, however the Preferred Route will include minor vegetation removals within 120 m of the PSW. These minor removals are not anticipated to result in a loss of wetland feature or function, and a restoration planting plan will be developed during Detailed Design to enhance vegetation in the area. Encroachment into PSW adjacent lands should be avoided to the extent possible.

City of Vaughan Core Features

The entire Don River West Branch valley corridor through the study area is considered a Core Feature in the City of Vaughan Official Plan (2010). Features that make up the Core Feature through the study area include: valley and stream corridors, wetlands, woodlands and fish habitat. In addition, based on the results of this study, the Don River West Branch valley may also provide SWH and habitat of endangered and threatened species. Development and site alteration in Core Features are prohibited except for low-intensity and passive recreational activities where such activities will not result in a negative impact on the Core Features and will not have a negative impact on the ecosystem function. The trail works are limited in scope and trail placement avoids sensitive areas to the extent possible. While direct impacts to the Don River West Branch valley are anticipated, no negative impact to the Ecosystem Function is anticipated.

Significant Wildlife Habitat

Development and site alteration within 120 m of significant wildlife habitat is prohibited unless it has been demonstrated that there will be no negative impacts on the features. One candidate SWH type (Bat Maternity Colonies) and one confirmed SWH type (Special Concern and Rare Wildlife Species – Eastern Wood-pewee) were identified through field investigations.

5.2 FISH AND FISH HABITAT

The 30% Preliminary Design does not include any watercourse crossings. Should the Preferred Route be updated to include a watercourse crossing at the Detailed Design stage, an impact assessment of the proposed crossing would be required as the Don River West Branch is classified as permanent direct fish habitat; any in-water works would need to be reviewed under the *Federal Fisheries Act* (1985).

During the construction process there is potential for temporary impacts to fish and fish habitat. These impacts may include:

- Release of construction-generated sediment into the associated watercourses and into Lake Ontario.

- Spills of contaminants, fuels and other materials that may reach natural areas
- Unpermitted / authorized crossings of the Don River West Branch by construction equipment
- localized disturbance of immediately adjacent habitat, and local disturbance of riparian vegetation for construction access.

These potential impacts to fish and fish habitat features can generally be managed through the implementation of standard mitigation measures outlined in **Section 6.**

5.3 VEGETATION

5.3.1 DIRECT IMPACTS

In areas of the project area where the works are expected to be limited to existing trail rehabilitation, impacts will include the negligible removal of vegetation composed Cultural Meadow or turf-grass or low impacts to the edges of vegetation communities already subject to disturbance from pedestrian usage. In areas where new trail will be created, direct impacts to vegetation have potential to be more significant and are discussed by trail section below in reference to Preliminary Trail Route options (**Appendix H**). A Tree Inventory and Preservation Plan is recommended for any planned removals to precisely document tree removals and ensure tree compensation requirements are met where tree preservation is not possible.

Northern Portion (McNaughton Road to Naylon Street / Maple Airport Park)

North of Major Mackenzie Drive, the Preferred Route will be constructed through Cultural Meadow, Cultural Savana and Cultural Woodlot. The Cultural Meadow and Cultural Savana communities are successional and highly resistant to disturbance; tree removals would not occur with enough frequency to alter the community structure and should be considered on an individual basis. Through these areas, the Preferred Route has a moderate slope with a wetland at the bottom. Standard ESC measures would be required to reduce or eliminate indirect impacts to the nearby wetlands. Any construction disturbance or removals can easily be remediated with a standard seed mix or tree replacement planting. A number of tree removals will be required in the Cultural Woodland; however, these units are botanically poor with abundant weedy native and non-native species. There would be opportunity for restoration/ invasive removals along the new trail to enhance the existing woodland area.

Central Portion (Naylon Street / Maple Airport Park to the existing crossing off Merrick Drive)

The Preferred Route continues south of Naylon Street through low-density residential Cultural Meadow, Cultural Savana and skirts the Meadow Marsh areas associated with the current OAO pond area; the pond has been identified for removal as part of private development in the area. The land adjacent to the OAO pond, where the trail will be located, is flat and is currently maintained as a sewage easement, however it is close to the creek and within the flood limit.

The Preferred Route continues south primarily within Cultural Meadow until it reaches the Wheatley Road area, where it will cross Unit 20 marsh wetland. The area is subject to spring flooding and is less disturbance tolerant. Introduction of species such as Common Reed or European Swallowwort (Dog-strangling Vine) with increased pedestrian traffic becomes highly likely for this community. Appropriate compensation or remediation for these effects is unlikely to be achievable. The trail route should remain within the adjacent Cultural Meadow or at minimum, be constructed on the east edge of the marsh to reduce impacts.

The Preferred Route continues south and passes through the corner of Cultural Thicket and through Cultural Woodland as it connects to the existing trail at Merrick Drive. A number of tree removals will be required in the Cultural Woodland. This unit is botanically poor with abundant weedy native and non-native species. There would be opportunity for restoration/ invasive removals along the new trail to enhance the existing woodland area.

Southern Portion (Existing crossing off Merrick Drive to Rotational Drive in the South)

The Preferred Route through this section is existing trail which will be upgraded to 3mm asphalt. The existing trail passes through Dry-Fresh White Pine - Sugar Maple Mixed Forest and adjacent Fresh-Moist Manitoba Maple Lowland

Deciduous Forest. The White Pine and Sugar Maple Forest has mature remnant trees present in the 1954 aerial imagery. Tree removals in this area would have a high degree of impact on a relatively small vegetation community in one of the few sections of remnant forest, which is locally uncommon. No tree removals are anticipated in this area.

Regionally Rare Species Impacts

No flora SAR were recorded within these areas. However, the following is a list of naturally occurring and regionally rare woody species in York Region (Varga *et al.* 2000) that should be avoided for removals if possible: Silky Dogwood, Grey Dogwood, Black Walnut, Eastern Red Cedar, and White Oak. Likewise, locally rare in the TRCA jurisdiction is White Oak, White Spruce and Red Pine. Observed Spruce and Pine in non-Cultural Plantation areas may or may not have been planted. Overall, removals are unlikely to alter the conservation status of these species in York Region. Transplantation or other specific efforts to salvage these species if they are not able to be conserved through standard mitigation measures is not considered warranted.

5.3.2 INDIRECT IMPACTS

As with any construction activities, there is potential for indirect impacts to adjacent retained vegetation features during and following construction, including, but not limited to:

- Release of construction-generated sediment to adjacent habitats,
- Vegetation clearing/damage beyond the working area/trail alignment,
- Damage from excessive or improper application of herbicides and pesticides for maintenance requirements,
- Increased potential for introduction of non-native species,
- Spills of contaminants, fuels and other materials that may reach natural or semi-natural areas, and
- Changes in drainage patterns (groundwater and/or surface runoff flow) that can impact dependent vegetation/wetland areas located either upgradient or downgradient of the trail. Blocking of existing surface/subsurface drainage patterns can result in upstream and downstream vegetation dieback/condition changes. An increase in downstream runoff can result in erosion impacts on receiving vegetation.

5.4 WILDLIFE AND WILDLIFE HABITAT

Wildlife habitat impacts are generally similar to those described for vegetation. Consistent with the urban landscape context and extent, the vegetation supports local habitat and associated wildlife use, however in general, the habitat edges that are likely to be impacted are already disturbed by the surrounding land uses.

There will be a minor loss of wildlife habitat associated with the tree and vegetation removals along the chosen trail alignment, as well as potential temporary disturbances due to construction. These areas provide habitat that generally supports common, disturbance-tolerant wildlife species; there is potential for various wildlife (e.g., turtles, snakes, small mammals, etc.) to wander through the proposed work areas during construction.

Although no nests were found during the field surveys, migratory birds are likely to nest in trees or other vegetation in the impact zones during the year of construction. Therefore, potential impacts to birds include disturbance to nesting birds or possibly loss of nests or young, if nests are present in the year of construction (depending on timing). Most birds and their nests are protected under the federal Migratory Birds Convention Act (MBCA, 1994). Removal of mature trees has the potential to impact roosting bats.

Although no evidence of turtle nesting was observed during field investigations, there is potential for turtles to nest along gravel road shoulders in the vicinity of the Don River West Branch.

The anticipated impacts to wildlife and wildlife habitat as a result of the proposed work can be managed through implementation of standard mitigation measures outlined in the Considerations for Detailed Design. An updated Impact Assessment should be completed as part of Detailed Design if there are changes to the Preferred Route.

5.5 SPECIES AT RISK

Two SAR were confirmed in the study area, and an additional four SAR have 'moderate' to 'high' potential to occur within the study area. Potential impacts on these species are outlined below:

Barn Swallow – *Threatened** under the ESA

- No direct impacts to this species are anticipated. Barn Swallow are unlikely to be impacted as foraging visitants and impacts to foraging habitat will be minimal and temporary. Suitable nesting habitat is limited to culverts and other watercourse crossing structures; however, no nests were observed in the study area. *Note that the status of Barn Swallow was recently assessed by COSSARO as Special Concern. This change in status is anticipated to be adopted by the ESA in the fall of 2022.

Eastern Wood-pewee – *Special Concern* under the ESA

- No direct impacts to this species are anticipated. This species is associated with forest communities, and impacts related to the trail alignment and construction are not expected to include removal of forest areas.

Monarch – *Special Concern* under the ESA

- No direct impacts to this species are anticipated as monarch were identified as foraging visitants to the area. Impacts to Monarch habitat (i.e., Cultural Thicket, Cultural Meadow and mowed areas with wildflowers) will be minor and temporary as these areas will be restored to a similar condition following construction. Abundant habitat of similar character is available in the broader landscape.

Myotis and Perimyotis Bats - *Endangered* under the ESA

- These species typically use mature trees in forested habitats for maternity roost habitat. Trees with features such as cavities, crevices, knots, cracks, loose bark or leaf clusters could provide suitable bat maternity roosting habitat. Given that tree removals may be required, there is some potential for impacts to bats or bat habitat generally throughout the study area. While maternity roosts are unlikely to occur in the edge of a forest habitat, or in isolated trees / tree clusters, this cannot be conclusively eliminated without acoustic surveys. There is potential for breeding activity to be directly impacted if these are removed, or if construction occurs within the sensitive period for bats. Trees requiring removal should be evaluated once a preferred route for BSG Trail extensions have been determined, and again at preliminary and detailed design in case alignment modifications occur.

Butternut *Endangered* under the ESA

- Although this species was assessed has having moderate potential to occur, no individuals were observed in areas of proposed trail routing during 2021 field investigations; direct and indirect impacts are unlikely.

Snapping Turtle *Special Concern* under the ESA

- Impacts to Snapping Turtles are not anticipated as the Don River West Branch in the immediate vicinity of the study area does not contain turtle overwintering habitat. Overwinter habitat is potentially present in a stormwater management pond in the north portion of the study area, however, direct impacts to this pond are not anticipated.

Mitigation recommendations to address potential Impact to aquatic and terrestrial resources as well as Species at Risk are provided in **Section 6**. An update to the Impact Assessment is recommended for the Detailed Design stage to address any variation between the Preferred Route and the final route, and to update the mitigation recommendations made at this Preliminary Design stage.

6 MITIGATION RECOMMENDATIONS

The mitigation and recommendations provided in this report are based on the Preferred Route and Preliminary (30%) Design as available in July 2022. An updated Impact Assessment should be undertaken at Detailed Design to address any design modifications or policy changes, such as Specie at Risk designations under the *ESA*, which may apply.

6.1 FISH AND FISH HABITAT

The mitigation measures outlined below encompass a series of general measures to minimize impacts to fish and fish habitat associated with working near watercourses. The standard mitigation measures have been adapted from DFO's "Measures to protect fish and fish habitat" listed under their Projects Near Water website. These measures will be reviewed and refined at detail design. There are no watercourse crossing anticipated for the Preferred Route.

Fish Protection

- Fish species are protected under the Federal Fisheries Act (FA, 1985). Proponents are responsible for planning and implementing works, undertakings or activities in a manner that avoids harmful impacts, specifically the death of fish and HADD (harmful alteration, disruption or destruction of fish habitat) of fish habitat. Works must respect timing windows to protect fish, including their eggs, juveniles, spawning adults and/or the organisms upon which they feed. As the Don River West Branch has a warmwater thermal regime, it is subject to the permissible in-water timing window of July 1st to March 31st.

Erosion and Sediment Control

- An erosion and sediment control plan will be developed and implemented for the site to minimize risk of sedimentation from works adjacent to the watercourse during all phases of construction.
- Heed weather advisories and scheduling work to avoid wet, windy, and rainy periods that may result in high flow volumes and/ or increase erosion and sedimentation
- Erosion and sediment control measures should be monitored regularly, and any issues addressed immediately. All non-biodegradable materials will be removed at the completion of construction. The need for extended retention of biodegradable materials until full vegetation establishment will be reviewed at the detail design stage to avoid impacts to natural features.

Watercourses

- Under Ontario Regulation 166/06, any proposed development, interference, or alteration within a Regulated Area requires a permit from TRCA. Encroachment into the floodplain should be avoided.

Habitat of endangered and threatened species

- Redside Dace (RSD) is not expected to be impacted by the works. This reach of the Don River West Branch is not confirmed RSD habitat, and individuals are unlikely to be present within the study area. The presence of RSD habitat within the study Area requires confirmation from agencies (MECP, TRCA). Northern Brook Lamprey is classified as Special Concern; under the ESA and SARA, the habitat of special concern species does not receive protection.

Contamination and Spill Management

- All works will be isolated from the watercourse to avoid the introduction of potential contaminants into the watercourse.
- All construction related materials, debris and soil will be stored at least 30 m from the watercourses and contained properly (e.g., within sediment and erosion control barriers) to minimize risk of release to waterbodies.

- An emergency response plan (including response materials and notification procedures) will be developed, reviewed with construction staff and kept on site, to be implemented immediately in the event of a sediment release or spill of deleterious substance.

Operation of Machinery

- All construction machinery will arrive on site in a clean condition and working order, and will be maintained free of fluid leaks, invasive species and noxious weeds.
- No equipment shall ford the watercourses except as specified in the Contract package.
- Conduct equipment maintenance and refueling at a designated and properly contained maintenance area in a works yard or at commercial garages.
- Reporting any spills of sewage, oil, fuel or other deleterious material whether near or directly into a water body.
- Developing a response plan to be implemented immediately in the event of a spill of a deleterious substance.

Fish Habitat Enhancement Opportunities

The following opportunities for fish and general aquatic habitat creation should be considered during Detailed Design:

- Remove weir and debris jams that are creating barriers to fish migration,
- Stabilization of sections of the bank that are highly eroded, and
- Plant riparian vegetation that increases instream cover.

6.2 WILDLIFE AND WILDLIFE HABITAT

The mitigation measures outlined above are designed to minimize effects to vegetation and protect adjacent vegetation areas, which in turn protect the associated wildlife habitat functions, however, it is also necessary to ensure the protection of breeding birds, as well as other wildlife that may nest or otherwise use areas where construction is proposed. Wildlife-specific mitigation measures are outlined below, as well as specific measures to address potential for incidental SAR encounters.

Migratory Birds

Nesting migratory birds and their nests, eggs and young are protected under the Migratory Bird Convention Act (MBCA 1994) and Regulations (2014) under that Act. No work is permitted to proceed that would result in the destruction of active nests (i.e., nests with eggs or young birds), or the wounding or killing of bird species protected under the MBCA.

To ensure compliance with the MBCA, a due diligence approach is recommended, as follows:

Awareness of the potential for nesting activity within the project limits during the Regional Nesting Period.

Avoidance of activities that may disturb or harm nesting migratory birds.

- Vegetation clearing (including grubbing and tree/shrub/grass removal) and any construction activities, in areas where migratory birds might nest (e.g., in culverts) should be scheduled to avoid the Regional Nesting Period (approximately April 1 to August 31). The Contractor will be made aware that occasionally bird species will precede or exceed the approximate breeding bird window.

Prevention and Mitigation of potential impacts on migratory birds:

- No active nests will be removed, or birds or nests disturbed in accordance with the MBCA.
- The Contractor will be advised that all temporary brush and lose soil piles should be tarped or otherwise inspected regularly to prevent nesting as they provide potentially suitable nesting sites for some species.
- If a nesting migratory bird is identified within or adjacent to the construction site and the construction activities are such that continuing construction in that area might result in a contravention of the MBCA (i.e., potential harm or stress to nests, birds, eggs or young), all activities must cease, and the Contractor Administrator immediately notified.

Other Wildlife

There is potential for turtles to nest along gravel road shoulders in the vicinity of the Don River West Branch. Exclusion fencing is recommended to isolate the work area from the Don River where potential turtle nesting habitat occurs. Exclusion fencing should be installed between September 1st and March 31st to prevent nesting in the work area.

For the protection of wildlife in general, the contractor will ensure that:

- Any wildlife incidentally encountered during construction will not be knowingly harmed or harassed and will be allowed to move away on its own.
- In the event that an animal encountered during construction does not move from the construction zone and construction activities are such that continuing construction in the area would result in harm to the animal, all activities that could potentially harm the animal will cease immediately and the Contract Administrator and / or Environmental Inspector will be notified.

6.3 SPECIES AT RISK

Several confirmed and potential SAR are not expected to be impacted by the project. This is due to lack of breeding evidence or breeding habitat, low likelihood of nesting in edge habitat adjacent to urban areas or ability to leave the area of impact. However, SAR bats may pose constraints on the project:

- All mature forested units may support endangered bat habitat. Additionally, albeit to a lesser degree, mature isolated trees / tree clusters may also provide bat habitat. Where tree removals cannot be avoided, impacts are anticipated to be confined to forest edges along existing trails, or to isolated trees / tree clusters and are anticipated to be minimal. Where tree removals are unavoidable, consultation with MECP is recommended to determine whether targeted bat maternity roost habitat assessments, conducted during the appropriate season (i.e., late fall to early spring after leaf-off / prior to leaf-on) are required to identify whether suitable trees will be impacted by the chosen alignment. Ongoing consultation with MECP should be undertaken once the preferred route has been identified and a comprehensive impact assessment completed, to determine whether a permit under the ESA is required, or whether a timing window restriction for tree clearing is sufficient; to avoid impacts to potential bat maternity colonies in treed habitats, no tree removals are permitted within the during the bat active season (i.e., April 1 to September 30).

6.4 VEGETATION

Many of the general best practices outlined in the fish and fish habitat mitigation section (**Section 6.1**) are also relevant to vegetation and habitat protection. Additional recommended mitigation measures to minimize effects to the local vegetation communities and their associated habitat functions are provided below. These measures will be reviewed and refined at detail design.

- Vegetation clearing and retention zones will be delineated clearly on contract documents.
- Limit vegetation removals to the extent required for construction, and as delineated on contract drawings.
- Trees shall not be removed from beyond the grading limits.
- Compensation plantings for tree removals should be considered.
- Seed mixes used for meadow habitat restoration or enhancement adjacent to the new trail should include milkweed seeds and other nectar plant seeds for improved Monarch habitat.
- Cut tree stems should be retained on the ground and in staked piles, where possible, for improved wildlife habitat opportunities
- Employ appropriate vegetation clearing techniques (e.g., trees to be felled away from retained natural areas and watercourses, trimming of damaged branches and roots).
- Install and maintain temporary erosion and sediment control measures as noted above, in Section 0.

- Re-stabilize and re-vegetate exposed surfaces as soon as possible following disturbance, specifically within 15 days near watercourses and within 45 days in other graded areas. It is recommended that all disturbed habitats be re-vegetated with a native seed mix.
- Planting plans for rehabilitation areas (to be developed at detail design) will utilize plant species that are native to this region of Ontario.
- Implement dust control using water, not chemical suppressants.
- The Clean Equipment Protocol for Industry, as prepared by the Peterborough Stewardship Council and Ontario Invasive Plant Council (May 2016) will be adhered to.
- Implement environmental inspection during construction to ensure that all mitigation measures are implemented properly, maintained, and repaired, and remedial measures are initiated in a timely manner where warranted.

7 RECOMMENDATIONS

The Preferred Route does not include watercourse crossings; however options may be explored during Detailed Design. Detailed habitat assessment of crossing areas should be undertaken and works assessed under the Fisheries Act. It should also be noted that the detailed design process is likely to occur in stages and over several years, requiring a review and update of the existing conditions documented herein, including a review of SAR and their respective status under the ESA.

Recommendations for future work include:

- Tree Inventory and Arborist Report
- Bat roost tree assessments (leaf-off) to assess potential for impacts to SAR bat habitat and inform further consultation with MECP regarding ESA approvals for the project.
- Turtle nesting surveys to determine habitat use along the Don River West Branch and inform need and placement of exclusion fencing during construction.
- Aquatic habitat assessments at proposed new watercourse crossings, if identified
- Development of a restoration and enhancement planting plan
- Direct impacts will occur within the TRCA regulation limits and as such a permit under Ontario Regulation 166/06 is anticipated to be required

8 CONCLUSIONS

Terrestrial and aquatic surveys have been conducted within the Don River Valley study area. These surveys, in addition to a background review of online mapping resources, online species observation databases, and agency correspondence provide information on known terrestrial and aquatic conditions. A preliminary SAR screening and SWH assessment was also completed. This review informed the evaluation of alternatives (documented in the ESR) and the preliminary impact assessment of the preferred alternatives, outlined herein.

WSP has identified information gaps and has recommended future surveys (**Section 7**) to address those gaps and potential permitting and approval requirements have been provided. Those surveys, combined with more detailed information about the proposed works (as plans are developed through the detailed design process), will inform a more through assessment of impacts. Preliminary mitigation recommendations to address the anticipated impacts are provided in **Section 5**. These measures will be reviewed, revised and/or refined at detailed design.

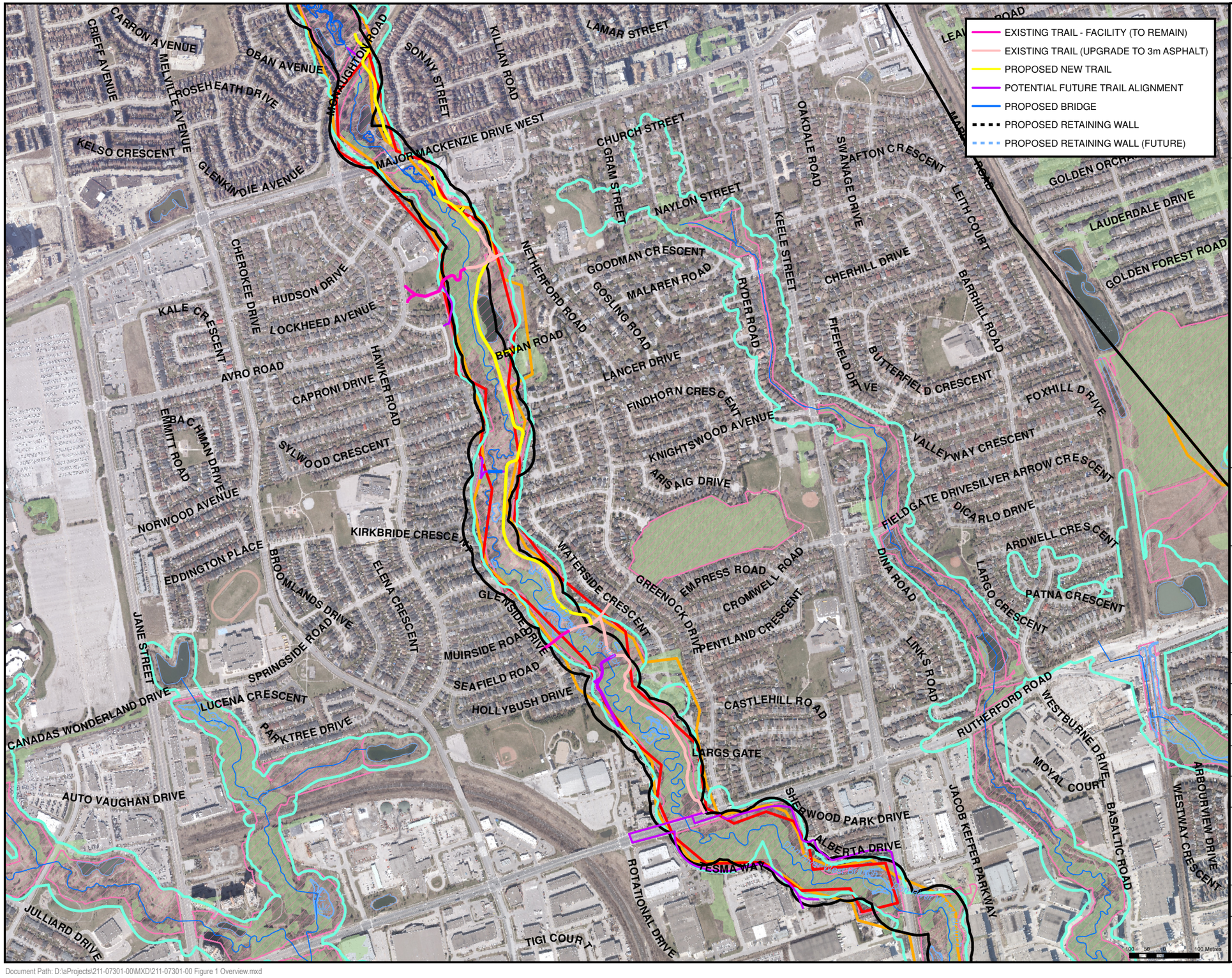
9 BIBLIOGRAPHY

- Bird Studies Canada. 2003. The Marsh Monitoring Program – Training Kit and Instructions for Surveying Marsh Birds, Amphibians and Their Habitats 2008 Edition. Birds Studies Canada, Environment Canada and the U.S. Environmental Protection Agency.
- Chapman, L.J. and Putnam, D.F., 1984. The Physiography of Southern Ontario, Ontario Geological Survey Special. Queen's Printer, Toronto, Ontario, 270.
- City of Vaughan Official Plan, 2010 Office Consolidation.
- Cornell Lab of Ornithology. 2019. Ebird species' range maps website: https://ebird.org/map/
- COSEWIC. 2021. Committee on the Status of Endangered Wildlife in Canada website: https://www.canada.ca/en/environment-climate-change/services/committee-status-endangered-wildlife.html
- Fisheries and Oceans Canada – Aquatic Species at Risk Map. Information obtained online at: http://www.dfo-mpo.gc.ca/species-especes/sara-lep/map-carte/index-eng.html – Accessed June 2021.
- Government of Canada. 2002. Species at Risk Act, 2002 (S.C. 2002, c. 29): https://laws-lois.justice.gc.ca/eng/acts/s-15.3/
- Government of Canada. 2011. Migratory Birds Convention Act, 1994 (S.C. 1994, c. 22): http://laws-lois.justice.gc.ca/eng/acts/M-7.01/
- Government of Canada. Species at Risk Public Registry website: https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html
- Government of Ontario. 2007. Ontario Endangered Species Act. Service Ontario e-Laws S.O. 2007, Chapter 6: https://www.ontario.ca/laws/statute/07e06
- Government of Ontario. 2008. Ontario Regulation 242/08. Endangered Species Act. Service Ontario e-Laws https://www.ontario.ca/laws/regulation/080242%20-%20BK33
- Hanna, R. 1984. Life Science Areas of Natural and Scientific Interest in Site District 7-6: A Review and Assessment of Significant Natural Areas in Site District 7-6. OMNR, Central Region, Richmond Hill.
- iNaturalist. 2021. Species' observations maps website: https://inaturalist.ca/observations
- Land Information Ontario, 2020. Aquatic Resource Area Survey Point. Information obtained online at: https://geohub.lio.gov.on.ca/datasets/aquatic-resource-area-survey-point - Accessed June 2021.
- Lee, H.T, W.D. Bakowsky, J.L. Riley, J. Bowles, M. Puddister, P. Uhlig, and S. McMurray, 1998. Ecological Land Classification for Southern Ontario: First Approximation and its Application. Ontario Ministry of Natural Resources, Southcentral Region, Science Development and Transfer Branch. Technical Manual ELC-005.
- Ministry of Forests. (1996). Community Watershed Guidebook. Retrieved December 4, 2013, from Community Watershed Guidebook: http://www.for.gov.bc.ca/TASB/LEGSREGS/FPC/FPCGUIDE/WATRSHED/Watertoc.htm
- Ministry of Municipal Affairs and Housing. 2020. Provincial Policy Statement. Queen's Printer for Ontario.
- Ministry of Northern Development, Mines, Natural Resources and Forestry (MNDMNRF). 2021. Natural Heritage Information Centre (NHIC). https://www.ontario.ca/page/get-natural-heritage-information. Accessed October 2021.
- Oldham, M. J., Bakowsky, W. D., & Sutherland, D. A. (1995). Floristic Quality Assessment System for Southern Ontario. Peterborough: Ontario Ministry of Natural Resources, Natural Heritage Information Centre.
- Ontario Breeding Bird Atlas. 2001. Guide for Participants. Atlas Management Board, Federation of Ontario Naturalists, Don Mills.
- Ontario Freshwater Fisheries Life History Database. Information obtained online at: http://www.ontariofishes.ca/ - Accessed June 2021.
- Ontario Ministry of Environment, Conservation and Parks (MECP). 2021. Species at Risk in Ontario website: https://www.ontario.ca/page/species-risk
- Ontario Ministry of Natural Resources (MNR). 2000. Significant Wildlife Habitat Technical Guide. Fish and Wildlife Branch, Wildlife Section. Science Development and Transfer Branch, Southcentral Sciences Section.

- Ontario Ministry of Natural Resources and Forestry (MNRF). 2015. Significant Wildlife Habitat Ecoregion Criteria Schedules – Ecoregion 6E. Addendum to Significant Wildlife Habitat Technical Guide.
- Ontario Ministry of Natural Resources and Forestry (MNRF). Make a Map: Natural Heritage Areas website: http://www.gisapplication.lrc.gov.on.ca/mamnh/Index.html?site=MNR_NHLUPS_NaturalHeritage&viewer=NaturalHeritage&locale=en-US
- Toronto and Region Conservation Authority (TRCA). 2018. Annual Local Occurrence Score and Local Rank Update: Terrestrial Species and Vegetation Communities.
- Varga, S., et. al. 2000. The Distribution and Status of the Vascular Plants of the Greater Toronto Area. Ontario Ministry of Natural Resources, Aurora, ON. 103 pp.
- VASCAN (Database of Vascular Plants of Canada): http://data.canadensys.net/vascan/search?lang=en
- York Region Official Plan, 2010 (Office Consolidation).

APPENDIX A

Maps



wsp

126 DON HILLOCK DRIVE, UNIT 2
AURORA, ONTARIO CANADA L4G 0G9
TEL.: 905-750-3080 | FAX: 905-727-0463 | WWW.WSP.COM

LEGEND

N W E S

- STUDY AREA
- WATERCOURSE (MNRF)
- WATERBODIES (MNRF)
- WOODLAND (MNRF)
- UNEVALUATED WETLAND (MNRF)
- EVALUATED WETLAND (OTHER)
- PROVINCIALLY SIGNIFICANT WETLAND
- GREENBELT URBAN RIVER VALLEY
- REGION OF YORK GREENLANDS
- VAUGHAN NATURAL HERITAGE CORE FEATURES
- TRCA REGULATION LIMIT

CLIENT:

CIT OF VAUGHAN

PROJECT:

BARTLEY SMITH TRAIL PRELIMINARY DESIGN
CITY OF VAUGHAN

PROJECT NO:	DATE:
211-07301-00	JULY 2022

DESIGNED BY: -

DRAWN BY: TP

CHECKED BY: -

FIGURE NO:	SCALE:
1	1:11,000

TITLE:

NATURAL HERITAGE FEATURES AND DESIGNATIONS OVERVIEW

DISCIPLINE:

ENVIRONMENT

ISSUE:	REV.:
-	-

Document Path: D:\aProjects\211-07301-00\MXD\211-07301-00 Figure 1 Overview.mxd

CUM1-1, DRY-MOIST OLD FIELD MEADOW
CUS1, MINERAL CULTURAL SAVANNAH ECOSITE
CUT1-1, SUMAC DECIDUOUS THICKET
CUW1-B, EXOTIC SUCCESSIONAL WOODLAND
MAMM3-1, MIXED MINERAL MEADOW MARSH TYPE
MAS2-1, CATTAIL MINERAL SHALLOW MARSH TYPE
OAO1-T, TURBID OPEN AQUATIC (UNVEGETATED)
SWT2, WILLOW MINERAL THICKET SWAMP

126 DON HILLOCK DRIVE, UNIT 2
AURORA, ONTARIO CANADA L4G 0G9
TEL.: 905-750-3080 | FAX: 905-727-0463 | WWW.WSP.COM

LEGEND

- WATERCOURSE (MNRF)
- WATERBODIES (MNRF)
- UNEVALUATED WETLAND (MNRF)
- EVALUATED WETLAND (OTHER)
- PROVINCIALLY SIGNIFICANT WETLAND
- ECOLOGICAL LAND CLASSIFICATION
- AMPHIBIAN CALLING STATION
- BREEDING BIRD POINT COUNT LOCATION
- FISH SAMPLING LOCATION
- AQUATIC HABITAT MAPPING LOCATION

SPECIES AT RISK

- EASTERN WOOD-PEWEE
- KENTUCKY COFFEETREE
- MONARCH

CLIENT:
CIT OF VAUGHAN

PROJECT:
BARTLEY SMITH TRAIL PRELIMINARY DESIGN
CITY OF VAUGHAN

PROJECT NO:	DATE:
211-07301-00	JULY 2022

DESIGNED BY: -
DRAWN BY: TP
CHECKED BY: -

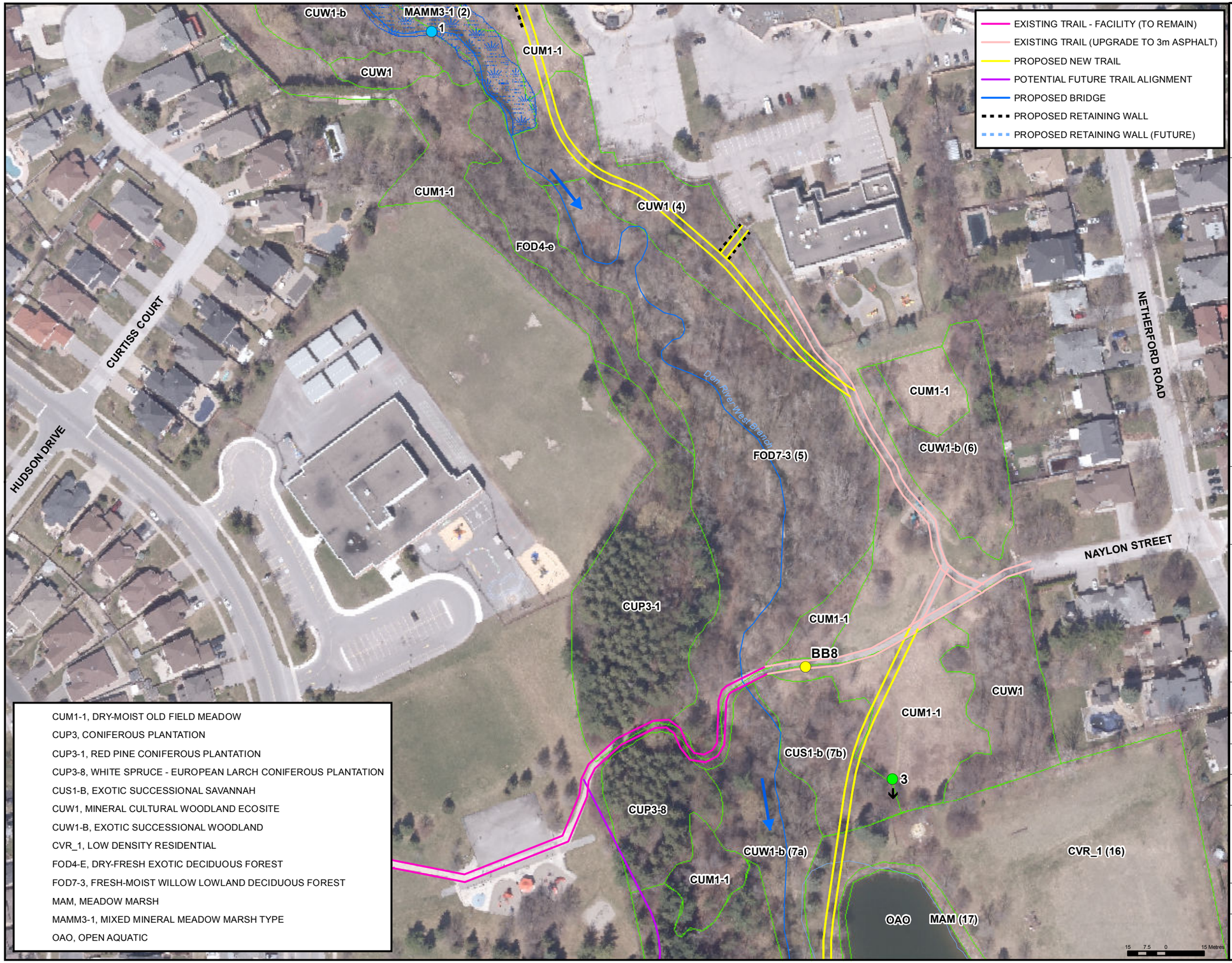
FIGURE NO:	SCALE:
1	1:1,500

TITLE:
EXISTING CONDITIONS AND SURVEY LOCATIONS
MAP 1

DISCIPLINE:
ENVIRONMENT

ISSUE:	REV.:
-	-

Document Path: D:\aProjects\211-07301-00\2022\MXD\211-07301-00 Figure 1.mxd



wsp

126 DON HILLOCK DRIVE, UNIT 2
AURORA, ONTARIO CANADA L4G 0G9
TEL.: 905-750-3080 | FAX: 905-727-0463 | WWW.WSP.COM

LEGEND

N W E S

- WATERCOURSE (MNRF)
- WATERBODIES (MNRF)
- UNEVALUATED WETLAND (MNRF)
- EVALUATED WETLAND (OTHER)
- PROVINCIALLY SIGNIFICANT WETLAND
- ECOLOGICAL LAND CLASSIFICATION
- AMPHIBIAN CALLING STATION
- BREEDING BIRD POINT COUNT LOCATION
- FISH SAMPLING LOCATION
- AQUATIC HABITAT MAPPING LOCATION

SPECIES AT RISK

- EASTERN WOOD-PEWEE
- KENTUCKY COFFEETREE
- MONARCH

CLIENT:

CIT OF VAUGHAN

PROJECT:

BARTLEY SMITH TRAIL PRELIMINARY DESIGN
CITY OF VAUGHAN

PROJECT NO:	DATE:
211-07301-00	JULY 2022

DESIGNED BY: -

DRAWN BY: TP

CHECKED BY: -

FIGURE NO:	SCALE:
2	1:1,500

TITLE:

EXISTING CONDITIONS AND SURVEY LOCATIONS
MAP 2

DISCIPLINE:

ENVIRONMENT

ISSUE:	REV.:
-	-

Document Path: D:\aProjects\211-07301-00\2022\MXD\211-07301-00 Figure 1.mxd

126 DON HILLOCK DRIVE, UNIT 2
AURORA, ONTARIO CANADA L4G 0G9
TEL.: 905-750-3080 | FAX: 905-727-0463 | WWW.WSP.COM

LEGEND

N W E S

- WATERCOURSE (MNRF)
- WATERBODIES (MNRF)
- UNEVALUATED WETLAND (MNRF)
- EVALUATED WETLAND (OTHER)
- PROVINCIALLY SIGNIFICANT WETLAND
- ECOLOGICAL LAND CLASSIFICATION
- AMPHIBIAN CALLING STATION
- BREEDING BIRD POINT COUNT LOCATION
- FISH SAMPLING LOCATION
- AQUATIC HABITAT MAPPING LOCATION

SPECIES AT RISK

- EASTERN WOOD-PEWEE
- KENTUCKY COFFEETREE
- MONARCH

CLIENT:

CIT OF VAUGHAN

PROJECT:

BARTLEY SMITH TRAIL PRELIMINARY DESIGN
CITY OF VAUGHAN

PROJECT NO:	DATE:
211-07301-00	JULY 2022

DESIGNED BY: -

DRAWN BY: TP

CHECKED BY: -

FIGURE NO:	SCALE:
3	1:1,500

TITLE:

EXISTING CONDITIONS AND SURVEY LOCATIONS
MAP 3

DISCIPLINE: ENVIRONMENT

ISSUE:	REV.:
-	-

Document Path: D:\aProjects\211-07301-00\2022\MXD\211-07301-00 Figure 1.mxd

wsp
126 DON HILLOCK DRIVE, UNIT 2
AURORA, ONTARIO CANADA L4G 0G9
TEL.: 905-750-3080 | FAX: 905-727-0463 | WWW.WSP.COM

LEGEND

N W E S

- WATERCOURSE (MNRF)
- WATERBODIES (MNRF)
- UNEVALUATED WETLAND (MNRF)
- EVALUATED WETLAND (OTHER)
- PROVINCIALLY SIGNIFICANT WETLAND
- ECOLOGICAL LAND CLASSIFICATION
- AMPHIBIAN CALLING STATION
- BREEDING BIRD POINT COUNT LOCATION
- FISH SAMPLING LOCATION
- AQUATIC HABITAT MAPPING LOCATION

SPECIES AT RISK

- EASTERN WOOD-PEWEE
- KENTUCKY COFFEETREE
- MONARCH

CLIENT:
CIT OF VAUGHAN

PROJECT:
BARTLEY SMITH TRAIL PRELIMINARY DESIGN
CITY OF VAUGHAN

PROJECT NO:	DATE:
211-07301-00	JULY 2022

DESIGNED BY: -

DRAWN BY: TP

CHECKED BY: -

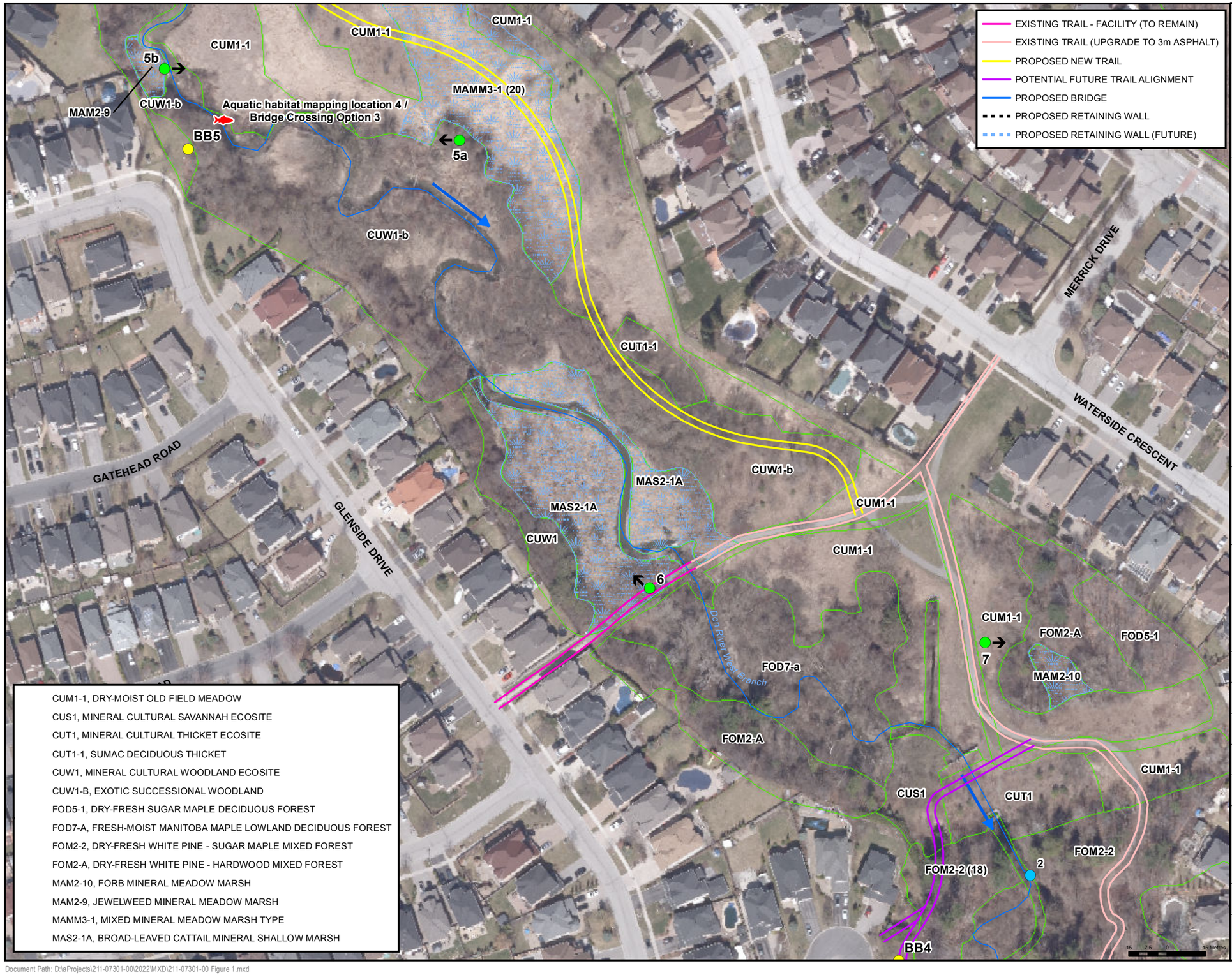
FIGURE NO:	SCALE:
4	1:1,500

TITLE:
EXISTING CONDITIONS AND SURVEY LOCATIONS
MAP 4

DISCIPLINE:
ENVIRONMENT

ISSUE:	REV.:
-	-

Document Path: D:\aProjects\211-07301-00\2022\MXD\211-07301-00 Figure 1.mxd



126 DON HILLOCK DRIVE, UNIT 2
AURORA, ONTARIO CANADA L4G 0G9
TEL.: 905-750-3080 | FAX: 905-727-0463 | WWW.WSP.COM

LEGEND

N W E S

- WATERCOURSE (MNRF)
- WATERBODIES (MNRF)
- UNEVALUATED WETLAND (MNRF)
- EVALUATED WETLAND (OTHER)
- PROVINCIALLY SIGNIFICANT WETLAND
- ECOLOGICAL LAND CLASSIFICATION
- AMPHIBIAN CALLING STATION
- BREEDING BIRD POINT COUNT LOCATION
- FISH SAMPLING LOCATION
- AQUATIC HABITAT MAPPING LOCATION

SPECIES AT RISK

- EASTERN WOOD-PEWEE
- KENTUCKY COFFEETREE
- MONARCH

CLIENT:

CIT OF VAUGHAN

PROJECT:

BARTLEY SMITH TRAIL PRELIMINARY DESIGN
CITY OF VAUGHAN

PROJECT NO:	DATE:
211-07301-00	JULY 2022

DESIGNED BY: -

DRAWN BY: TP

CHECKED BY: -

FIGURE NO:	SCALE:
5	1:1,500

TITLE:

EXISTING CONDITIONS AND SURVEY LOCATIONS
MAP 5

DISCIPLINE: ENVIRONMENT

ISSUE:	REV.:
-	-

Document Path: D:\aProjects\211-07301-00\2022\MXD\211-07301-00 Figure 1.mxd

wsp
126 DON HILLOCK DRIVE, UNIT 2
AURORA, ONTARIO CANADA L4G 0G9
TEL.: 905-750-3080 | FAX: 905-727-0463 | WWW.WSP.COM

LEGEND

N W E S

- WATERCOURSE (MNRF)
- WATERBODIES (MNRF)
- UNEVALUATED WETLAND (MNRF)
- EVALUATED WETLAND (OTHER)
- PROVINCIALLY SIGNIFICANT WETLAND
- ECOLOGICAL LAND CLASSIFICATION
- AMPHIBIAN CALLING STATION
- BREEDING BIRD POINT COUNT LOCATION
- FISH SAMPLING LOCATION
- AQUATIC HABITAT MAPPING LOCATION

SPECIES AT RISK

- EASTERN WOOD-PEWEE
- KENTUCKY COFFEETREE
- MONARCH

CLIENT:
CIT OF VAUGHAN

PROJECT:
BARTLEY SMITH TRAIL PRELIMINARY DESIGN
CITY OF VAUGHAN

PROJECT NO:	DATE:
211-07301-00	JULY 2022

DESIGNED BY: -

DRAWN BY: TP

CHECKED BY: -

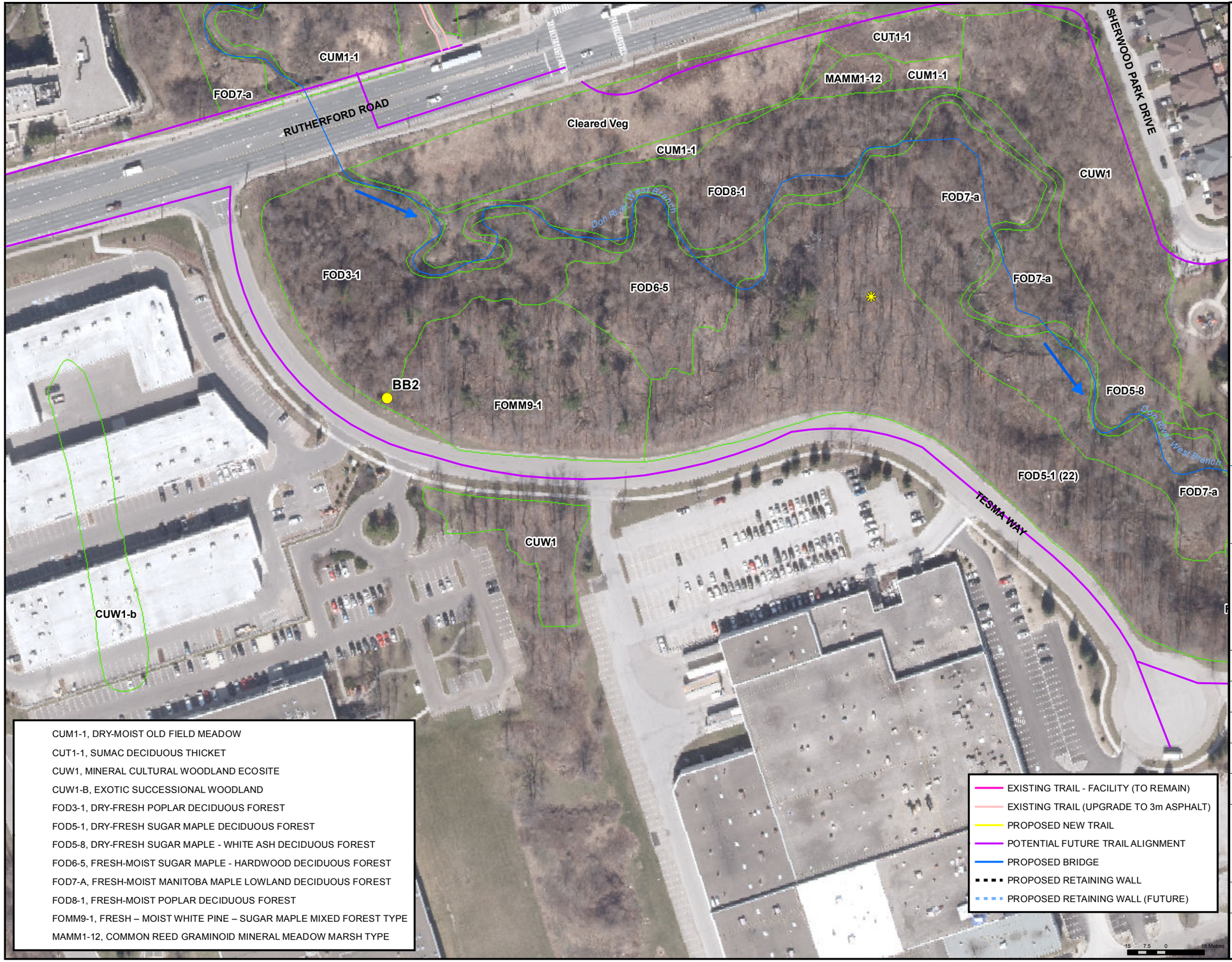
FIGURE NO:	SCALE:
6	1:1,500

TITLE:
EXISTING CONDITIONS AND SURVEY LOCATIONS
MAP 6

DISCIPLINE:
ENVIRONMENT

ISSUE:	REV.:
-	-

Document Path: D:\aProjects\211-07301-00\2022\MXD\211-07301-00 Figure 1.mxd



126 DON HILLOCK DRIVE, UNIT 2
AURORA, ONTARIO CANADA L4G 0G9
TEL.: 905-750-3080 | FAX: 905-727-0463 | WWW.WSP.COM

LEGEND

N W E S

- WATERCOURSE (MNRF)
- WATERBODIES (MNRF)
- UNEVALUATED WETLAND (MNRF)
- EVALUATED WETLAND (OTHER)
- PROVINCIALLY SIGNIFICANT WETLAND
- ECOLOGICAL LAND CLASSIFICATION
- AMPHIBIAN CALLING STATION
- BREEDING BIRD POINT COUNT LOCATION
- FISH SAMPLING LOCATION
- AQUATIC HABITAT MAPPING LOCATION

SPECIES AT RISK

- EASTERN WOOD-PEWEE
- KENTUCKY COFFEETREE
- MONARCH

CLIENT:

CIT OF VAUGHAN

PROJECT:

BARTLEY SMITH TRAIL PRELIMINARY DESIGN
CITY OF VAUGHAN

PROJECT NO:	DATE:
211-07301-00	JULY 2022

DESIGNED BY: -

DRAWN BY: TP

CHECKED BY: -

FIGURE NO:	SCALE:
7	1:1,500

TITLE:

EXISTING CONDITIONS AND SURVEY LOCATIONS
MAP 7

DISCIPLINE:

ENVIRONMENT

ISSUE:	REV.:
-	-

Document Path: D:\aProjects\211-07301-00\2022\MXD\211-07301-00 Figure 1.mxd

126 DON HILLOCK DRIVE, UNIT 2
AURORA, ONTARIO CANADA L4G 0G9
TEL.: 905-750-3080 | FAX: 905-727-0463 | WWW.WSP.COM

LEGEND

- WATERCOURSE (MNRF)
- WATERBODIES (MNRF)
- UNEVALUATED WETLAND (MNRF)
- EVALUATED WETLAND (OTHER)
- PROVINCIALLY SIGNIFICANT WETLAND
- ECOLOGICAL LAND CLASSIFICATION
- AMPHIBIAN CALLING STATION
- BREEDING BIRD POINT COUNT LOCATION
- FISH SAMPLING LOCATION
- AQUATIC HABITAT MAPPING LOCATION

SPECIES AT RISK

- EASTERN WOOD-PEWEE
- KENTUCKY COFFEETREE
- MONARCH

N W E S

CLIENT:
CIT OF VAUGHAN

PROJECT:
BARTLEY SMITH TRAIL PRELIMINARY DESIGN
CITY OF VAUGHAN

PROJECT NO:	DATE:
211-07301-00	JULY 2022

DESIGNED BY: -

DRAWN BY: TP

CHECKED BY: -

FIGURE NO:	SCALE:
8	1:1,500

TITLE:
EXISTING CONDITIONS AND SURVEY LOCATIONS
MAP 8

DISCIPLINE:
ENVIRONMENT

ISSUE:	REV.:
-	-

Document Path: D:\aProjects\211-07301-00\2022\MXD\211-07301-00 Figure 1.mxd

APPENDIX B

Vascular Plant Species List

SCIENTIFIC NAME	COMMON NAME	CC [1]	CW[1]	WEEDINESS[1]	OWES WETLAND PLANT LIST[2]	G_RANK[3]	N_RANK	S_RANK[4]	COSEWIC[5]	SARA[6]	SARO[7]	PHYSIOLOGY/HABIT[8]	NATIVE STATUS[9]	Unit 1 (CUM1-1)	Unit 2 (MAMM3-1)	Unit 4 (CUW1)	Unit 5 (FOD7-3)	Unit 6 (CUW1-b)	Unit 7 (CUW1-b / CUS1-b)	Unit 9 (MAS2-1)	Unit 10 (CUW1-b)	Unit 11 (SWT2)	Unit 12 (CUW1-b)	Unit 13 (CUS1)	Unit 14 (CUP)	Unit 16 (CVR_1)	Unit 17 (MAM)	Unit 18 (FOM2-2)	Unit 19 (FOD7a)	Unit 20 (MAMM3-1)	Unit 21 (CUW1-b)	Unit 22 (FOD5-1)	Totals
Acer negundo	Manitoba Maple	0	0		X	G5	N5	S5				Tree	N	x		x	x	x	x		x	x	x	x	x				x		x	x	X
Acer platanoides	Norway Maple		5	-3		GNR	NNA	SNA				Tree	I				x									x					x		X
Acer saccharum	Sugar Maple	4	3			G5	N5	S5				Tree	N				x	x							x	x		x			x	x	X
Acer x freemanii	Freeman's Maple	6	-5		X	GNA	NNA	SNA				Tree	N								x			x									X
Aesculus hippocastanum	Horse Chestnut		5	-1		GNR	NNA	SNA				Tree	I													x							X
Alliaria petiolata	Garlic Mustard		0	-3		GNR	NNA	SNA				Forb	I					x															X
Ambrosia trifida	Great Ragweed	0	0			G5	N5	S5				Forb	N	x																			X
Amelanchier sp.	Serviceberry sp.											Tree									x												X
Amphicarpaea bracteata	American Hog-peanut	4	0		X	G5	N5	S5				Forb	N						x		x	x											X
Apocynum androsaemifolium	Spreading Dogbane	3	5			G5	N5	S5				Forb	N	x																			X
Arctium lappa	Great Burdock		3	-2		GNR	NNA	SNA				Forb	I		x								x	x									X
Arctium minus	Common Burdock		3	-2		GNR	NNA	SNA				Forb	I								x												X
Asclepias incarnata	Swamp Milkweed	6	-5		X	G5	N5	S5				Forb	N																	x			X
Asclepias syriaca	Common Milkweed	0	5			G5	N5	S5				Forb	N								x		x								x		X
Betula alleghaniensis	Yellow Birch	6	0		X	G5	N5	S5				Tree	N															x					X
Betula papyrifera	Paper Birch	2	3		X	G5	N5	S5				Tree	N													x							X
Bidens connata	Purple-stemmed Beggarticks	5	-3		X	G5	N4N5	S4?				Forb	N		x																		X
Bidens frondosa	Devil's Beggarticks	3	-3		X	G5	N5	S5				Forb	N		x															x			X
Bromus inermis	Smooth Brome		5	-3		G5	NNA	SNA				Grass	I	x				x			x		x	x						x	x		X
Carex sp.	Sedge sp.											Sedge																		x			X
Carex vulpinoidea	Fox Sedge	3	-5		X	G5	N5	S5				Sedge	N																	x			X
Carpinus caroliniana	Blue-beech	6	0		X	G5	N5	S5				Tree	N																			x	X
Celastrus orbiculatus	Oriental Bittersweet		5	-1		GNR	NNA	SNA				Vine	I								x												X
Chenopodium album	Common Lamb's-quarters		3	-1		G5	NNA	SNA				Forb	I		x																		X
Cicuta maculata var. maculata	Spotted Water-hemlock	6	-5		X	G5T5	N5	S5				Forb	N						x														X
Circaea canadensis	Broad-leaved Enchanter's Nightsha	2	3			G5	N5	S5				Forb	N			x														x		x	x	X
Cirsium arvense	Canada Thistle		3	-1		G5	NNA	SNA				Forb	I	x	x					x							x						X
Cirsium vulgare	Bull Thistle		3	-1		GNR	NNA	SNA				Forb	I	x																			X
Cornus obliqua	Silky Dogwood	2	-3		X	G5	N5	S5				Shrub	N						x		x	x											X
Cornus racemosa	Grey Dogwood	2	0		X	G5	N5	S5				Shrub	N						x		x												X
Cornus rugosa	Round-leaved Dogwood	6	5			G5	N5	S5				Shrub	N			x	x		x		x												X
Cornus sericea	Red-osier Dogwood	2	-3		X	G5	N5	S5				Shrub	N																		x	x		X
Cornus sp.	Dogwood sp.											Shrub										x	x											X
Daucus carota	Wild Carrot		5	-2		GNR	NNA	SNA				Forb	I	x																				X
Dipsacus fullonum	Common Teasel		3	-1		GNR	NNA	SNA				Forb	I											x									X
Dryopteris intermedia	Evergreen Wood Fern	5	0			G5	N5	S5				Fern	N																			x	X
Echinochloa sp.	Barnyard Grass											Grass								x													X
Echinocystis lobata	Wild Cucumber	3	-3		X	G5	N5	S5				Vine	N		x																x		X
Equisetum arvense	Field Horsetail	0	0		X	G5	N5	S5				Fern	N						x														X
Erigeron annuus	Annual Fleabane	0	3			G5	N5	S5				Forb	N						x		x		x										X
Erigeron canadensis	Canada Horseweed	0	3			G5	N5	S5				Forb	N	x																				X
Euonymus alatus	Winged Euonymus		5	-1		GNR	NNA	SNA				Shrub	I								x												X
Euonymus europaeus	European Euonymus		5	-1		GNR	NNA	SNA				Shrub	I																		x		X
Euonymus fortunei	Climbing Euonymus		5	-1		GNR	NNA	SNA				Vine	I						x												x		X
Euthamia graminifolia	Grass-leaved Goldenrod	2	0			G5	N5	S5				Forb	N	x																x			X
Eutrochium maculatum var. mac	Spotted Joe Pye Weed	3	-5		X	G5T5	N5	S5				Forb	N		x															x			X
Fagus grandifolia	American Beech	6	3			G5	N5	S4				Tree	N																x				X
Fragaria virginiana	Wild Strawberry	2	3			G5	N5	S5				Forb	N			x																	X
Fraxinus americana	White Ash	4	3			G5	N5	S4				Tree	N				x	x						x		x		x				x	X
Fraxinus pennsylvanica	Red Ash	3	-3		X	G5	N5	S4				Tree	N	x		x	x				x	x								x				X
Galium sp.	Bedstraw sp.											Forb					x																X
Geranium robertianum	Herb-Robert	2	3	-2		G5	N5	S5				Forb	I				x												x				X
Geum urbanum	Wood Avens		5	-1		G5	NNA	SNA				Forb	I					x	x		x		x						x		x		X
Glechoma hederacea	Ground-ivy		3	-2		GNR	NNA	SNA				Forb	I		x		x														x		X
Gleditsia triacanthos var. inermi	Thornless Honey Locust		0			G5						Tree	N													x							X
Gymnocladus dioicus	Kentucky Coffee-tree	6	3			G5	N2	S2	THR	THR	THR	Tree	N										x											X
Hemerocallis fulva	Orange Daylily		5	-3		GNA	NNA	SNA				Forb	I												x		x						X
Hesperis matronalis	Dame's Rocket		3	-3		G4G5	NNA	SNA				Forb	I			x			x														X
Hypericum perforatum	Common St. John's-wort		5	-3		GNR	NNA	SNA				Forb	I																		x		X
Impatiens capensis	Spotted Jewelweed	4	-3		X	G5	N5	S5				Forb	N		x					x			x							x			X
Juglans nigra	Black Walnut	5	3			G5	N4?	S4?				Tree	N			x			x													x	X
Juncus sp.	Rush sp.											Rush																		x			X
Juniperus virginiana	Eastern Red Cedar	4	3			G5	N5	S5				Tree	N													x							X
Leonurus cardiaca	Common Motherwort		5	-2		GNR	NNA	SNA				Forb	I		x		x																X
Ligustrum vulgare	European Privet		3	-2		GNR	NNA	SNA				Shrub	I											x									X
Lolium perenne	Perennial Ryegrass		3	-1		GNR	NNA	SNA				Grass	I	x																			X
Lolium pratense	Meadow Ryegrass		3	-1		G5	NNA	SNA				Grass	I		x						x												X
Lonicera sp.	Honeysuckle sp.											Shrub				x	x		x		x		x		x								X
Lonicera tatarica	Tatarian Honeysuckle		3	-3		GNR	NNA	SNA				Shrub	I	x																			X
Lotus corniculatus	Garden Bird's-foot Trefoil		3	-2		GNR	NNA	SNA				Forb	I	x																			X
Lycopus americanus	American Water-horehound	4	-5		X	G5	N5	S5				Forb	N																		x		X
Lythrum salicaria	Purple Loosestrife		-5	-3	X	G5	NNA	SNA				Forb	I		x																x		X
Malus sp.	Apple sp.											Tree												x		x							X
Melilotus albus	White Sweet-clover		3	-3		G5	NNA	SNA				Forb	I	x																			X
Myriophyllum sp.	Water-milfoil sp.											Forb								x													X
Nymphaea odorata	Fragrant Water-lily	5	-5		X	G5	N5	S5				Forb	N							x													X
Ostrya virginiana	Eastern Hop-hornbeam	4	3			G5	N5	S5				Tree	N																x				X
Oxalis stricta	Upright Yellow Wood-sorrel		3			G5	N5	S5				Forb	I				x																X
Parthenocissus vitacea	Thicket Creeper	4	3			G5	N5	S5				Vine	N	x		x	x		x		x						x	x	x		x	x	X
Persicaria hydropiperoides	False Waterpepper	4	-5		X	G5	N5	S5				Forb	N		x																		X
Persicaria maculosa	Spotted Lady's-thumb		-3	-1	X	G3G5	NNA	SNA				Forb	I							x													X
Phalaris arundinacea var. arundi	Reed Canarygrass	0	-3		X	G5TNR	NNR	S5				Grass	N	x	x					x				x							x	x		X
Phragmites australis	Common Reed	0	-3		X	G5	N5	S4?				Grass	N		x																			X
Picea glauca	White Spruce	6	3	-1	X	G5	N5	S5				Tree	N	x		x		x			x		x	x	x								X
Picea sp.	Spruce sp.											Tree														x							X
Pinus resinosa	Red Pine	8	3	-1		G5	N5	S5				Tree	N												x								X
Pinus strobus	Eastern White Pine	4	3		X	G5	N5	S5				Tree	N											x	x				x				X
Plantago major	Common Plantain		3	-1		G5	NNA	SNA				Forb	I						x														X
Poa pratensis	Kentucky Bluegrass		3			G5	N5	S5				Grass	I	x				x			x			x						x			X
Populus balsamifera	Balsam Poplar	4	-3		X	G5	NNR	S5				Tree	N				x																X
Populus deltoides	Eastern Cottonwood	4	0			G5	N5	S5				Tree	N	x																			X

SCIENTIFIC NAME	COMMON NAME	CC [1]	CW[1]	WEEDINESS[1]	OWES WETLAND PLANT LIST[2]	G_RANK[3]	N_RANK	S_RANK[4]	COSEWIC[5]	SARA[6]	SARO[7]	PHYSIOLOGY/HABIT[8]	NATIVE STATUS[9]	Unit 1 (CUM1-1)	Unit 2 (MAMM3-1)	Unit 4 (CUW1)	Unit 5 (FOD7-3)	Unit 6 (CUW1-b)	Unit 7 (CUW1-b / CUS1-b)	Unit 9 (MAS2-1)	Unit 10 (CUW1-b)	Unit 11 (SWT2)	Unit 12 (CUW1-b)	Unit 13 (CUS1)	Unit 14 (CUP)	Unit 16 (CVR_1)	Unit 17 (MAM)	Unit 18 (FOM2-2)	Unit 19 (FOD7a)	Unit 20 (MAMM3-1)	Unit 21 (CUW1-b)	Unit 22 (FOD5-1)	Totals
Populus tremuloides	Trembling Aspen	2	0			G5	N5	S5				Tree	N			x		x	x					x									X
Prunus serotina	Black Cherry	3	3			G5	N5	S5				Tree	N															x						X
Prunus virginiana	Chokecherry	2	3			G5	N5	S5				Shrub	N				x				x		x					x			x	x	X
Pyrus communis	Common Pear		5	-1		G5	NNA	SNA				Tree	I	x		x																	X
Quercus alba	White Oak	6	3			G5	N5	S5				Tree	N								x												X
Quercus macrocarpa	Bur Oak	5	3		X	G5	N5	S5				Tree	N								x											x	X
Quercus rubra	Northern Red Oak	6	3			G5	N5	S5				Tree	N																			x	X
Ranunculus acris	Common Buttercup		0	-2	X	G5	NNA	SNA				Forb	I								x		x										X
Ranunculus sceleratus	Cursed Buttercup	2	-5		X	G5	N5	S5				Forb	N		x																		X
Rhamnus cathartica	European Buckthorn		0	-3	X	GNR	NNA	SNA				Tree	I	x		x	x	x	x		x	x		x	x						x	x	X
Rhus typhina	Staghorn Sumac	1	3			G5	N5	S5				Shrub	N	x					x					x			x					x	X
Ribes cynosbati	Eastern Prickly Gooseberry	4	3			G5	N5	S5				Shrub	N																	x			X
Ribes rubrum	European Red Currant		5	-2	X	G4G5	NNA	SNA				Shrub	I				x											x			x		X
Robinia pseudoacacia	Black Locust		3	-3		G5	NNA	SNA				Tree	I			x		x														x	X
Rubus idaeus ssp. strigosus	North American Red Raspberry	2	3			G5T5	N5	S5				Shrub	N				x		x							x							X
Rumex crispus	Curled Dock		0	-2	X	GNR	NNA	SNA				Forb	I	x																			X
Salix alba	White Willow		-3	-2	X	G5	NNA	SNA				Tree	I																			x	X
Salix bebbiana	Bebb's Willow	4	-3		X	G5	N5	S5				Shrub	N								x	x											X
Salix cinerea	Ashy Willow		-3	-1		G5	NNA	SNA				Shrub	I												x								X
Salix eriocephala	Cottony Willow	4	-3		X	G5	N5	S5				Shrub	N									x											X
Salix euxina	Crack Willow		0			GNR	NNA	SNA				Tree	I	x			x			x													X
Salix petiolaris	Meadow Willow	3	-3		X	G5	N5	S5				Shrub	N	x						x					x								X
Salix sp.	Willow sp.																x				x	x	x	x		x							X
Sambucus canadensis	Common Elderberry	5	-3		X	G5	N5	S5				Shrub	N				x					x											X
Sambucus racemosa	Red Elderberry	5	3			G5	N5	S5				Shrub	N													x							X
Sanguinaria canadensis	Bloodroot	5	3			G5	N5	S5				Forb	N																			x	X
Schoenoplectus tabernaemontani	Soft-stemmed Bulrush	5	-5		X	G5	N5	S5				Sedge	N		x																		X
Scirpus atrovirens	Dark-green Bulrush	3	-5		X	G5	N5	S5				Sedge	N																		x		X
Securigera varia	Purple Crown-vetch		5	-2		GNR	NNA	SNA				Forb	I	x										x									X
Solidago altissima	Tall Goldenrod	1	3			G5	N5	S5				Forb	N	x																			X
Solidago altissima var. altissima	Eastern Tall Goldenrod	1	3			G--T5	N5	S5				Forb	N		x	x		x	x	x	x	x	x	x	x		x		x	x	x		X
Solidago canadensis var. canade	Canada Goldenrod	1	3			G5T5	N5	S5				Forb	N				x																X
Solidago flexicaulis	Zigzag Goldenrod	6	3			G5	N5	S5				Forb	N																x	x			x	X
Solidago nemoralis	Grey-stemmed Goldenrod	2	5			G5	N5	S5				Forb	N	x																				X
Sonchus arvensis	Field Sow-thistle		3	-1		GNR	NNA	SNA				Forb	I	x																	x		X
Sonchus oleraceus	Common Sow-thistle		3	-1		GNR	NNA	SNA				Forb	I		x																		X
Sorbus aucuparia	European Mountain-ash		5	-2		G5	NNA	SNA				Tree	I				x																X
Symphyotrichum ericoides	White Heath Aster	4	3			G5	N5	S5				Forb	N																		x		X
Symphyotrichum lanceolatum	Panicled Aster	3	-3		X	G5	N5	S5				Forb	N	x	x		x		x								x				x	x	X
Symphyotrichum lateriflorum	Calico Aster	3	0			G5	N5	S5				Forb	N																	x			X
Symphyotrichum novae-angliae	New England Aster	2	-3			G5	N5	S5				Forb	N	x							x			x							x		X
Symphyotrichum sp.	Aster sp.											Forb																			x		X
Thalictrum dioicum	Early Meadow-rue	6	3			G5	N5	S5				Forb	N				x																X
Thuja occidentalis	Eastern White Cedar	4	-3		X	G5	N5	S5				Tree	N			x					x			x	x								X
Tilia americana	Basswood	4	3			G5	N5	S5				Tree	N															x				x	X
Tilia cordata	Little-leaved Linden		5			GNR	NNA	SNA				Tree	I					x															X
Torilis japonica	Erect Hedge-parsley		3	-3		GNR	NNA	SNA				Forb	I			x																	X
Trifolium sp.	Clover sp.											Forb		x																			X
Tsuga canadensis	Eastern Hemlock	7	3		X	G5	N5	S5				Tree	N												x								X
Tussilago farfara	Coltsfoot		3	-2	X	GNR	NNA	SNA				Forb	I		x		x										x						X
Typha angustifolia	Narrow-leaved Cattail		-5		X	G5	N5	SNA				Forb	I							x													X
Typha latifolia	Broad-leaved Cattail	1	-5		X	G5	N5	S5				Forb	N		x					x							x						X
Ulmus americana	White Elm	3	-3		X	G4	N5	S5				Tree	N	x					x															X
Ulmus pumila	Siberian Elm		3	-1		GNR	NNA	SNA				Tree	I	x							x												X
Urtica dioica ssp. gracilis	Slender Stinging Nettle	2	0		X	G5T5	N5	S5				Forb	N																			x	X
Verbascum thapsus	Common Mullein		5	-2		GNR	NNA	SNA				Forb	I	x																			X
Viburnum lantana	Wayfaring Viburnum		5	-1		GNR	NNA	SNA				Shrub	I									x											X
Viburnum lentago	Nannyberry	4	0		X	G5	N5	S5				Shrub	N			x					x												X
Viburnum opulus ssp. opulus	Cranberry Viburnum		-3	-1	X	G5TNR	NNA	SNA				Shrub	I				x		x		x								x				X
Vicia cracca	Tufted Vetch		5	-1		GNR	NNA	SNA				Forb	I	x							x									x			X
Vincetoxicum rossicum	European Swallowwort		5	-3		GNR	NNA	SNA				Forb	I				x				x										x		X
Viola sp.	Violet sp.											Forb					x		x												x		X
Vitis riparia	Riverbank Grape	0	0			G5	N5	S5				Vine	N	x	x	x	x		x		x		x					x	x	x	x		X
Total Species:														37	23	19	30	13	25	12	36	12	16	22	13	10	8	16	11	24	24	18	154
Total Genus Only:														0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	13
Native Species:														18	14	13	14	6	17	6	20	8	9	12	10	5	5	12	10	14	12	15	84
% Native Species														48.64864865	60.86956522	68.42105263	46.66666667	46.15384615	68	50	55.55555556	66.66666667	56.25	54.54545455	76.92307692	50	62.5	75	90.90909091	58.33333333	50	83.33333333	54.54545455
Exotic Species														18	9	5	12	7	6	4	13	2	4	8	2	2	3	4	0	7	11	2	56
% Exotic Species														48.64864865	39.13043478	26.31578947	40	53.84615385	24	33.33333333	36.11111111	16.66666667	25	36.36363636	15.38461538	20	37.5	25	0	29.16666667	45.83333333	11.11111111	36.36363636
S1 Species														0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S1S2														0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S2 Species														0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
S2S3														0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S3 Species														0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S3S4														0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S4 Species														1	0	1	2	1	0	0	1	1	0	1	0	1	0	2	1	0	0	1	3
S4S5														0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S5 Species														18	12	11	14	6	16	6	19	7	8	11	10	3	5	11	9	15	12	13	78
SU														0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SNR														0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SNA														1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
SH														0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SR														0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total COSEWIC Designated Speci														0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Total COSEWIC SC														0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total ESA Listed Species (E														0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Total ESA SC														0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total SARA Listed Species (E														0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Total SARA SC														0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
mean CC														2.055555556	2.428571429	3	3.066666667	2.833333333	2.411764706	2.333333333	3.05	2.875	2.111111111	2.75	4.1	3.5	2	3.769230769	2.7	2.571428571	1.583333333	3.933333333	161.3333333
CC 0 to 3														15	10	7	8	3	12	4	10	4	6	7	3	1	4	4	6	11	11	4	41

SCIENTIFIC NAME	COMMON NAME	CC [1]	CW[1]	WEEDINESS[1]	OWES WETLAND PLANT LIST[2]	G_RANK[3]	N_RANK	S_RANK[4]	COSEWIC[5]	SARA[6]	SARO[7]	PHYSIOLOGY/HABIT[8]	NATIVE STATUS[9]	Unit 1 (CUM1-1)	Unit 2 (MAMM3-1)	Unit 4 (CUW1)	Unit 5 (FOD7-3)	Unit 6 (CUW1-b)	Unit 7 (CUW1-b / CUS1-b)	Unit 9 (MAS2-1)	Unit 10 (CUW1-b)	Unit 11 (SWT2)	Unit 12 (CUW1-b)	Unit 13 (CUS1)	Unit 14 (CUP)	Unit 16 (CVR_1)	Unit 17 (MAM)	Unit 18 (FOM2-2)	Unit 19 (FOD7a)	Unit 20 (MAMM3-1)	Unit 21 (CUW1-b)	Unit 22 (FOD5-1)	Totals
													% species with CC 0 t	83.33333333	71.42857143	53.84615385	53.33333333	50	70.58823529	66.66666667	50	50	66.66666667	58.33333333	30	25	80	30.76923077	60	78.57142857	91.66666667	26.66666667	2.053079619
													CC 4 to 6	3	4	6	7	3	5	2	10	4	3	5	5	3	1	9	4	3	1	11	41
													% species with CC 4 t	16.66666667	28.57142857	46.15384615	46.66666667	50	29.41176471	33.33333333	50	50	33.33333333	41.66666667	50	75	20	69.23076923	40	21.42857143	8.333333333	73.33333333	48.80952381
													CC 7 to 8	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
													% species with CC 7 t	0	0	0	0	0	0	0	0	0	0	0	20	0	0	0	0	0	0	0	2.380952381	
													CC 9 to 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
													% species with CC 9 to	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
													FQI	8.720983635	9.086882225	10.81665383	12.29401713	6.940220938	9.943960626	5.715476066	13.64001466	8.131727984	6.333333333	9.526279442	12.96533841	6.260990337	4.472135955	14.1450816	8.538149682	9.621404709	5.484827557	15.2337345	31.09604936
													average wetness valu	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
													CW of 5	8	1	2	6	3	3	0	8	1	3	2	1	2	1	2	0	3	8	0	25	
													% species with CW of	22.22222222	4.347826087	11.11111111	23.07692308	23.07692308	13.04347826	0	24.24242424	10	23.07692308	10	8.333333333	28.57142857	12.5	12.5	0	14.28571429	34.7826087	0	17.85714286	
													CW of 4, 3 or 2	14	8	9	11	6	8	2	11	1	6	9	8	4	5	11	5	5	5	13	58	
													% species with CW of 4, 3	38.88888889	34.7826087	50	42.30769231	46.15384615	34.7826087	20	33.33333333	10	46.15384615	45	66.66666667	57.14285714	62.5	68.75	50	23.80952381	21.73913043	76.47058824	41.42857143	
													CW of 1, 0 or -1	8	1	5	4	4	7	1	7	3	3	3	2	1	0	2	3	2	4	4	21	
													% species with CW of 1, 0	22.22222222	4.347826087	27.77777778	15.38461538	30.76923077	30.43478261	10	21.21212121	30	23.07692308	15	16.66666667	14.28571429	0	12.5	30	9.523809524	17.39130435	23.52941176	15	
													CW of -2, -3 or -4	6	7	2	5	0	4	4	6	5	1	5	1	0	1	1	2	5	6	0	22	
													% species with CW of -2, -	16.66666667	30.43478261	11.11111111	19.23076923	0	17.39130435	40	18.18181818	50	7.692307692	25	8.333333333	0	12.5	6.25	20	23.80952381	26.08695652	0	15.71428571	
													CW of -5	0	6	0	0	0	1	3	1	0	0	1	0	0	1	0	0	6	0	0	14	
													% species with CW of	0	26.08695652	0	0	0	4.347826087	30	3.03030303	0	0	5	0	0	12.5	0	0	28.57142857	0	0	10	
													OWES Wetland Plants (2013	9	14	6	9	3	10	7	14	8	4	8	6	1	3	4	3	10	10	4	52	
													% OWES Wetland Plants (201	24.32432432	60.86956522	31.57894737	30	23.07692308	40	58.33333333	38.88888889	66.66666667	25	36.36363636	46.15384615	10	37.5	25	27.27272727	41.66666667	41.66666667	22.22222222	33.76623377	

APPENDIX C

SAR Screening

Species At Risk Designations
ENDANGERED
THREATENED
SPECIAL CONCERN
EXTIRPATED

Species	ESA Status[1] and Regional Occurrence	ESA Protection[2]	Source of Record (Date)	Key Habitats Used by Species in Ontario	Reasonable Likelihood of Presence on the Subject Property	Surveys Undertaken	Results of Field Surveys	Likelihood and Magnitude of Impacts to Species or Habitat
Birds								
Bank Swallow (Riparia riparia)	THR	Species and General Habitat Protection	OBBA Square 17TPJ15 (2021)	It nests in a wide variety of naturally and anthropogenically created vertical banks, which often erode and change over time including aggregate pits and the shores of large lakes and rivers (MNRF Guelph - Waterloo List, 2014)	**Minimal**. No suitable nesting habitat is present. May occur as a foraging visitant.	Targeted breeding bird survey (June 22 and July 5, 2021); general wildlife habitat assessment conducted during all field surveys.	No observations	**Minimal**. No nesting habitat impacted. Suitable foraging habitat to be retained. Additional foraging habitat is abundant in the local landscape
Barn Swallow (Hirundo rustica)	THR	Species and General Habitat Protection	OBBA Square 17TPJ15 (2021)	prefers farmland; lake/river shorelines; wooded clearings; urban populated areas; rocky cliffs; and wetlands. They nest inside or outside buildings; under bridges and in road culverts; on rock faces and in caves etc. (MNRF Guelph - Waterloo List, 2014)	**Moderate**. May occur as a foraging visitant, and suitable buildings for nesting are present in the local landscape.	Targeted breeding bird survey (June 22 and July 5, 2021); general wildlife habitat assessment conducted during all field surveys.	No observations	**Minimal**. No potential nesting habitat impacted. Suitable foraging habitat to be retained. Additional foraging habitat is abundant in the local landscape
Bobolink (Dolichonyx oryzivorus)	THR	Species and General Habitat Protection	OBBA Square 17TPJ15 (2021); NHIC database (2021)	Generally prefers open grasslands and hay fields. In migration and in winter uses freshwater marshes and grasslands (MNRF Guelph - Waterloo List, 2014)	**Minimal.** No grassland habitat is present. Potentially suitable open habitat areas (e.g., CUM) are small and marginal.	Targeted breeding bird survey (June 22 and July 5, 2021); general wildlife habitat assessment conducted during all field surveys.	No observations	**None**. Potentially suitable habitat is limited within the study area, no impact to individuals with vegetation removals outside of the nesting season.
Eastern Meadowlark (Sturnella magna)	THR	Species and General Habitat Protection	NHIC database (2021)	Generally prefers grassy pastures, meadows and hay fields. Nests are always on the ground and usually hidden in or under grass clumps (MNRF Guelph - Waterloo List, 2014)	**Minimal.** No grassland habitat is present. Potentially suitable open habitat areas (e.g., CUM) are small and marginal.	Targeted breeding bird survey (June 22 and July 5, 2021); general wildlife habitat assessment conducted during all field surveys.	No observations	**None**. Potentially suitable habitat is limited within the study area, no impact to individuals with vegetation removals outside of the nesting season.
Eastern Wood-pewee (Contopus virens)	SC	N/A	OBBA Square 17TPJ15 (2021); NHIC database (2021)	Associated with deciduous and mixed forests. Within mature and intermediate age stands it prefers areas with little understory vegetation as well as forest clearings and edges (MNRF Guelph - Waterloo List, 2014)	**Confirmed**. Two individuals recorded, each with 'Possible' breeding evidence in Vegetation Units XX and XX. Suitable habitat is present within the mature forest habitat throughout the study area.	Targeted breeding bird survey (June 22 and July 5, 2021); general wildlife habitat assessment conducted during all field surveys.	No observations	**Minimal**. Limited impact to potentially suitable forest habitat in the study area. Preliminary trail alignment avoids forested habitat, or uses existing trails through forested habitat.
Wood Thrush (Hylocichla mustelina)	SC	N/A	OBBA Square 17TPJ15 (2021)	Nests mainly in second-growth and mature deciduous and mixed forests, with saplings and well-developed understory layers. Prefers large forest mosaics, but may also nest in small forest fragments (MNRF Guelph - Waterloo List, 2014)	**Minimal**. Suitable habitat is present in the mature forests throughout the study area; however Wood Thush prefers larger forest areas	Targeted breeding bird survey (June 22 and July 5, 2021); general wildlife habitat assessment conducted during all field surveys.	No observations	**Minimal**. Limited impact to potentially suitable forest habitat in the study area. Preliminary trail alignment avoids forested habitat, or uses existing trails through forested habitat.
Fish								
Redside Dace (Clinostomus elongatus)	END	Species Protection and Habitat Regulation	NHIC database (2021)	Generally found in pools and slow-moving areas of small headwater streams with a moderate to high gradient (MNRF Guelph - Hamilton List, 2013).	**Minimal**. Suitable habitat may be present in the Don River West Branch in areas of open meadow with scattered trees and shrubs. However, the watercourse has several permanent barriers throughout the study area RSD cannot pass.	Fish community sampling on October 5, 2021.	No observations	**Minimal**. No known / confirmed habitat. No direct impacts to potential habitat for this species are anticipated and potential indirect impacts can be mitigated with mitigation measures and best management practices. ESA / SARA compliance requirements to be determined at detailed design.
Insects								
Monarch (Danaus plexippus)	SC	N/A	Previous WSP surveys in GTA	Exist primarily wherever milkweed and wildflowers exist; abandoned farmland, along roadsides, and other open spaces (MNRF Guelph - Waterloo List, 2014)	**Confirmed**. Two foraging individuals recorded in the north portion of the study area. The host plant (Milkweed) is present throughout the study area.	General Wildlife Surveys / SAR habitat assessment	No observations	**Minimal**. Most suitable habitat will be retained (only a small amount of CUM removal likely to be required). Limited impact to high quality habitat (e.g., Milkweed). Both milkweed and nectaring plants for adults are present within the broader landscape.

Species	ESA Status[1] and Regional Occurrence	ESA Protection[2]	Source of Record (Date)	Key Habitats Used by Species in Ontario	Reasonable Likelihood of Presence on the Subject Property	Surveys Undertaken	Results of Field Surveys	Likelihood and Magnitude of Impacts to Species or Habitat
Mammals								
Little Brown Bat (Little Brown Myotis) (Myotis lucifugus)	END	Species and General Habitat Protection	Bat Conservation International distribution maps	Overwintering habitat: Caves and mines that remain above 0 degrees Celsius. Maternal Roosts: Often associated with buildings (attics, barns etc.). Occasionally found in trees (25-44 cm dbh) (MNRF Guelph - Waterloo List, 2014)	**Moderate**. May occur as a foraging visitant. Potential for maternity roosting in forest habitat with cavity trees / loose bark.	General Wildlife Surveys / SAR habitat assessment. No targeted surveys undertaken (acoustic monitoring / exit surveys)	No observations	**Minimal**. No known / confirmed habitat. Minimal impact to potentially suitable habitat in the forested areas (preliminary trail alignment either avoids most suitable habitat or utilizes existing trails through forested areas). No impact to individuals anticipated with removal of trees outside of the active bat period (i.e., between October 1 and March 31) .
Northern Long-eared Bat (Northern Myotis) (Myotis septentrionalis)	END	Species and General Habitat Protection	Bat Conservation International distribution maps	Overwintering habitat: Caves and mines that remain above 0 degrees Celsius. Maternal Roosts: Often associated with cavities of large diameter trees (25-44 cm dbh). Occasionally found in structures (attics, barns etc.)(MNRF Guelph - Waterloo List, 2014)	**Moderate**. May occur as a foraging visitant. Potential for maternity roosting in forest habitat with cavity trees.	General Wildlife Surveys / SAR habitat assessment. No targeted surveys undertaken (acoustic monitoring / exit surveys)	No observations	**Minimal**. No known / confirmed habitat. Minimal impact to potentially suitable habitat in the forested areas (preliminary trail alignment either avoids most suitable habitat or utilizes existing trails through forested areas). No impact to individuals anticipated with removal of trees outside of the active bat period (i.e., between October 1 and March 31) .
Small-footed Bat (Myotis leibii)	END	Species and General Habitat Protection	Bat Conservation International distribution maps	Overwintering habitat: Caves and mines that remain above 0 degrees Celsius. Maternal Roosts: primarily under loose rocks on exposed rock outcrops, crevices and cliffs, and occasionally in buildings, under bridges and highway overpasses and under tree bark (MNRF Guelph - Waterloo List, 2014)	**Minimal**. Low potential to occur in the study area as a foraging visitant (generally less common than other bat species in Southern Ontario). Low potential for maternity roost habitat in forested areas (preferred habitat in cliff faces or exposed rock outcrops).	General Wildlife Surveys / SAR habitat assessment. No targeted surveys undertaken (acoustic monitoring / exit surveys)	No observations	**Minimal**. No known / confirmed habitat. Minimal impact to potentially suitable habitat in the forested areas (preliminary trail alignment either avoids most suitable habitat or utilizes existing trails through forested areas). No impact to individuals anticipated with removal of trees outside of the active bat period (i.e., between October 1 and March 31) .
Tri-colored Bat (Perimyotis subflavus)	END	Species and General Habitat Protection	Bat Conservation International distribution maps	Overwintering habitat: Caves and mines that remain above 0 degrees Celsius. Maternal Roosts: Manmade structures or tree cavities. Foraging over still water, rivers, or in forest gaps (COSEWIC 2013f)	**Minimal**. Low potential to occur as foraging visitant and low potential for maternity roost habitat in forest (uncommon and localized distribution in Ontario, COSEWIC, 2013).	General Wildlife Surveys / SAR habitat assessment. No targeted surveys undertaken (acoustic monitoring / exit surveys)	No observations	**Minimal**. No known / confirmed habitat. Minimal impact to potentially suitable habitat in the forested areas (preliminary trail alignment either avoids most suitable habitat or utilizes existing trails through forested areas). No impact to individuals anticipated with removal of trees outside of the active bat period (i.e., between October 1 and March 31) .
Plants								
Butternut (Juglans cinerea)	END	Species and General Habitat Protection	NHIC Database (2021)	Generally grows in rich, moist, and well-drained soils often found along streams. It may also be found on well-drained gravel sites, especially those made up of limestone. It is also found, though seldomly, on dry, rocky and sterile soils. In Ontario, the Butternut generally grows alone or in small groups in deciduous forests as well as in hedgerows (MNRF Guelph - Waterloo List, 2014).	**Moderate**. Potential habitat on woodland edges and along tributaries.	Botanical Inventory on August 30 and September 25, 2021	No observations	**Minimal**. Not recorded during field investigations and no known records on the subject property, but known from areas within 1km of the subject property and suitable conditions present.
Reptiles								
Blanding's Turtle (Emydoidea blandingii)	THR	Species and General Habitat Protection	NHIC database (2021)	Generally occur in freshwater lakes, permanent or temporary pools, slow-flowing streams, marshes and swamps. They prefer shallow water that is rich in nutrients, organic soil and dense vegetation. Adults are generally found in open or partially vegetated sites, and juveniles prefer areas that contain thick aquatic vegetation including sphagnum, water lilies and algae. They dig their nest in a variety of loose substrates, including sand, organic soil, gravel and cobblestone. Overwintering occurs in permanent pools that average about one metre in depth, or in slow-flowing streams (MNRF Guelph - Waterloo List, 2014)	**None**. No suitable habitat is present within the study area.	General Wildlife Surveys / SAR habitat assessment	No observations	**None.** None suitable habitat is present within the study area.
Snapping Turtle (Chelydra serpentina)	SC	N/A	Ontario Reptile and Amphibian Atlas (2019)	Generally inhabit shallow waters where they can hide under the soft mud and leaf litter. Nesting sites usually occur on gravely or sandy areas along streams. Snapping Turtles often take advantage of man-made structures for nest sites, including roads (especially gravel shoulders), dams and aggregate pits (MNRF Guelph - Waterloo List, 2014)	**Moderate**. Suitable habitat may be present in the Don River West Branch and in a stormwater management pond in the north portion of the study area.	General Wildlife Surveys / SAR habitat assessment	No observations	**Minimal** - Potential habitat may be present in the Don River West Branch, however, any suitable habitat is marginal quality (due to coarse substrates, absence of refuge habitat). No direct impacts to potential habitat for this species are anticipated and potential indirect impacts can be mitigated with mitigation measures and best management practices. May be present in the stormwater management pond in the north portion of the study area, however, direct impacts are unlikely.

APPENDIX D

Significant Wildlife Habitat Assessment

This evaluation is based on the Significant Wildlife Habitat Ecoregion Criteria Schedules for Ecoregion 7E (MNRF January 2015). The following text and tables are from that document, but include an additional 'evaluation' column, with discussion of site-specific attributes within the Bartley Smith Greenway Trail study area.

Table of Contents

Significant Wildlife Habitat Assessment for the Bartley Smith Greenway Trail Study Area: Criteria For Significant Wildlife Habitat in Ecoregion 7E

1. 1 SEASONAL CONCENTRATION AREAS OF ANIMALS

Seasonal concentration areas are areas where wildlife species occur annually in aggregations at certain times of the year. Such areas are sometimes highly concentrated with members of a given species, or several species, within relatively small areas. In spring and autumn, migratory wildlife species will concentrate where they can rest and feed. Other wildlife species require habitats where they can survive winter. Examples of seasonal concentration areas include deer wintering areas, breeding bird colonies and hibernation sites for reptiles, amphibians and some mammals

cxlviii. Table 1.1 outlines what wildlife habitats and defining criteria that are considered for seasonal concentration areas within Ecoregion 7E.

Table 1.1 Seasonal Concentration Areas of Animals.

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
1. Waterfowl Stopover and Staging Areas (Terrestrial) **Rationale;** Habitat important to migrating waterfowl.	American Black Duck American Wigeon Blue-winged Teal Gadwall Green-winged Teal Northern Pintail Northern Shoveler Tundra Swan	CUM1 CUT1 Plus evidence of annual spring flooding from melt water or run-off within these Ecosites. - Fields with seasonal flooding and waste grains in the Long Point, Rondeau, Lk. St. Clair, Grand Bend and Pt. Pelee areas may be important to Tundra Swans.	Fields with sheet water during Spring (mid-March to May). • Fields flooding during spring melt and run-off provide important invertebrate foraging habitat for migrating waterfowl. • Agricultural fields with waste grains are commonly used by waterfowl, these are not considered SWH unless they have spring sheet water available [cxlviii]. Information Sources • Anecdotal information from the landowner, adjacent landowners or local naturalist clubs may be good information in determining occurrence. • Reports and other information available from Conservation Authorities • Sites documented through waterfowl planning processes (eg. EHJV implementation plan) • Field Naturalist Clubs • Ducks Unlimited Canada • Natural Heritage Information Centre (NHIC)Waterfowl Concentration Area	Studies carried out and verified presence of an annual concentration of any listed species, evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”[ccxi] • Any mixed species aggregations of 100Ⓔ or more individuals required. • The flooded field ecosite habitat plus a 100-300m radius, dependant on local site conditions and adjacent land use is the significant wildlife habitat . • Annual use of habitat is documented from information sources or field studies (annual use can be based on studies or determined by past surveys with species numbers and dates). • SWH MISTIndex #7 provides development effects and mitigation measures.	No candidate habitat is present. CUM / CUT habitats in the study area are small and anthropogenically disturbed. Targeted breeding bird surveys were undertaken on two dates in 2021, with supplemental observations during other fieldwork. None of the listed species were recorded. **Conclusion: no candidate or confirmed SWH is present.**

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
2. Waterfowl Stopover and Staging Areas (Aquatic) **<u>Rationale;</u>** Important for local and migrant waterfowl populations during the spring or fall migration or both periods combined. Sites identified are usually only one of a few in the eco-district.	American Black Duck American Wigeon Black Scoter Blue-winged Teal Brant Bufflehead Cackling Goose Canada Goose Canvasback Common Goldeneye Common Merganser Gadwall Greater Scaup Green-winged Teal Hooded Merganser Lesser Scaup Long-tailed Duck Northern Pintail Northern Shoveler Red-breasted Merganser Redhead Ring-necked duck Ruddy Duck Ruddy Duck Snow Goose Surf Scoter White-winged Scoter	MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7	• Ponds, marshes, lakes, bays, coastal inlets, and watercourses used during migration. Sewage treatment ponds and storm water ponds do not qualify as a SWH, however a reservoir managed as a large wetland or pond/lake does qualify. • These habitats have an abundant food supply (mostly aquatic invertebrates and vegetation in shallow water) <u>Information Sources</u> • Environment Canada • Naturalist clubs often are aware of staging/stopover areas. • OMNRF Wetland Evaluations indicate presence of locally and regionally significant waterfowl staging. • Sites documented through waterfowl planning processes (eg. EHJV implementation plan) • Ducks Unlimited projects • Element occurrence specification by Nature Serve: http://www.natureserve.org • Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area	Studies carried out and verified presence of: • Aggregations of 100Ⓔ or more of listed species for 7 daysⒺ, results in > 700 waterfowl use days. • Areas with annual staging of ruddy ducks, canvasbacks, and redheads are SWH[cxlix] • The combined area of the ELC ecosites and a 100m radius area is the SWH[cxlviii] • Wetland area and shorelines associated with sites identified within the SWHTG[cxlviii] Appendix Kcxlix are significant wildlife habitat. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”[ccxi] • Annual Use of Habitat is Documented from Information Sources or Field Studies (Annual can be based on completed studies or determined from past surveys with species numbers and dates recorded). • SWH MIST[cxlix] Index #7 provides development effects and mitigation measures.	Although some candidate habitat ELC types are present (MAS, SWD), they occupy small areas, are anthropogenically influenced and have limited potential for significant waterfowl use. Targeted breeding bird surveys were undertaken on two dates in 2021, with supplemental observations during other fieldwork. None of the listed species were recorded. **Conclusion: SWH is not present.**

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
3. Shorebird Migratory Stopover Area **<u>Rationale;</u>** High quality shorebird stopover habitat is extremely rare and typically has a long history of use.	American Golden-Plover Baird's Sandpiper Black-bellied Plover Dunlin Greater Yellowlegs Hudsonian Godwit Least Sandpiper Lesser Yellowlegs Marbled Godwit Pectoral Sandpiper Purple Sandpiper Red-necked Phalarope Whimbrel Ruddy Turnstone Sanderling Semipalmated Plover Semipalmated Sandpiper Short-billed Dowitcher Solitary Sandpiper Spotted Sandpiper Stilt Sandpiper White-rumped Sandpiper	BBO1 BBO2 BBS1 BBS2 BBT1 BBT2 SDO1 SDS2 SDT1 MAM1 MAM2 MAM3 MAM4 MAM5	• Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats. • Great Lakes coastal shorelines, including groynes and other forms of armour rock lakeshores, are extremely important for migratory shorebirds in May to mid-June and early July to October. • Sewage treatment ponds and storm water ponds do not qualify as a SWH. <u>Information Sources</u> • Western hemisphere shorebird reserve network. • Canadian Wildlife Service (CWS) Ontario Shorebird Survey. • Bird Studies Canada • Ontario Nature • Local birders and naturalist clubs • NHIC Shorebird Migratory Concentration Area	Studies confirming: • Presence of 3 or more of listed species and > 1000[í] shorebird use days during spring or fall migration period. (shorebird use days are the accumulated number of shorebirds counted per day over the course of the fall or spring migration period) • Whimbrel stop briefly (<24hrs) during spring migration, any site with >100[í] Whimbrel used for 3 years or more is significant. • The area of significant shorebird habitat includes the mapped ELC shoreline ecosites plus a 100m radius area [cxlviii] • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWH MIST[cxlix] Index #8 provides development effects and mitigation measures.	No candidate habitat is present and there are no known areas of regularly used shorebird migratory stopover habitat in the study area. Targeted breeding bird surveys were undertaken on two dates in 2021, with supplemental observations during other fieldwork. None of the listed species were recorded. **Conclusion: no candidate or confirmed SWH is present.**
4. Raptor Wintering Area **<u>Rationale;</u>** Sites used by multiple species, a high number of individuals and used annually are most significant	American Kestrel Northern Harrier Red-tailed Hawk Rough-legged Hawk Snowy Owl **<u>Special Concern:</u>** Bald Eagle Short-eared Owl	<u>Hawks/Owls:</u> Combination of ELC Community Series; need to have present one Community Series from each land class; Forest: FOD, FOM, FOC. Upland: CUM; CUT; CUS; CUW. <u>Bald Eagle:</u> Forest community Series: FOD, FOM, FOC, SWD, SWM or SWC on shoreline areas adjacent to large rivers or adjacent to lakes with open water (hunting area).	• The habitat provides a combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors. • Raptor wintering (hawk/owl)sites need to be > 20 ha [cxlviii, cxlix] with a combination of forest and upland.[xvi, xvii, xviii, xix, xx, xxi]. • Least disturbed sites, idle/fallow or lightly grazed field/meadow (>15ha) with adjacent woodlands [cxlix] • Field area of the habitat is to be wind swept with limited snow depth or accumulation. • Eagle sites have open water and large trees and snags available for roosting[cxlix] <u>Information Sources</u>: • OMNR Ecologist or Biologist • Naturalist clubs • Natural Heritage Information Centre (NHIC) Raptor Winter Concentration Area • Data from Bird Studies Canada • Results of Christmas Bird Counts • Reports and other information available from Conservation Authorities.	Studies confirm the use of these habitats by: • One or more Short-eared Owls or; One of more Bald Eagles or; At least10 individuals and two of the listed hawk/owl species[Ê] • To be significant a site must be used regularly (3 in 5 years)[cxlix] for a minimum of 20 days by the above number of birds[Ê]. • The habitat area for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area[Ê] • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWH MIST[cxlix] Index #10 and #11 provides development effects and mitigation measures.	No candidate habitat is present. There are woodland areas that partially meet the ELC criteria (FOD); however, there are no upland areas (CUM/CUT/CUS/CUW) of sufficient size to qualify as candidate habitat. Targeted breeding bird surveys were undertaken on two dates in 2021, with supplemental observations during other fieldwork. One of the listed species, Red-tailed Hawk was recorded in low numbers. None of the listed species were recorded. **Conclusion: no candidate or confirmed SWH is present.**

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
5. Bat Hibernacula **<u>Rationale;</u>** Bat hibernacula are rare habitats in all Ontario landscapes.	Big Brown Bat Tri-coloured Bat	Bat Hibernacula may be found in these ecosites: CCR1 CCR2 CCA1 CCA2 (Note: buildings are not considered to be SWH)	• Hibernacula may be found in caves, mine shafts, underground foundations and Karsts. • Active mine sites should not be considered as SWH • The locations of bat hibernacula are relatively poorly known. <u>Information Sources</u> • OMNRF for possible locations and contact for local experts • Natural Heritage Information Centre (NHIC) Bat Hibernaculum • Ministry of Northern Development and Mines for location of mine shafts. • Clubs that explore caves (eg. Sierra Club) • University Biology Departments with bat experts.	• All sites with confirmed hibernating bats are SWH Ⓔ. • The area includes 200m radius around the entrance of the hibernaculum , , Ⓔ for most development types and 1000m for wind farms[ccv]. • Studies are to be conducted during the peak swarming period (Aug. – Sept.). Surveys should be conducted following methods outlined in the "Bats and Bat Habitats: Guidelines for Wind Power Projects"[ccv]. • SWH MIST[cxlix] Index #1 provides development effects and mitigation measures.	No candidate habitat types are present and no potential hibernacula features (e.g., caves, mines) are known in the study area. **Conclusion: no candidate or confirmed SWH is present.**
6. Bat Maternity Colonies **<u>Rationale;</u>** Known locations of forested bat maternity colonies are extremely rare in all Ontario landscapes.	Big Brown Bat Silver-haired Bat	Maternity colonies considered SWH are found in forested Ecosites. All ELC Ecosites in ELC Community Series: FOD FOM SWD SWM	• Maternity colonies can be found in tree cavities, vegetation and often in buildings[xxii, xxv, xxvi, xxvii, xxxi] (buildings are not considered to be SWH). • Maternity roosts are not found in caves and mines in Ontario[xxii]. • Maternity colonies located in Mature deciduous or mixed forest stands[ccix, ccx] with >10/ha large diameter (>25cm dbh) wildlife trees[ccvii] • Female Bats prefer wildlife tree (snags) in early stages of decay, class 1-3 [ccxiv] or class 1 or 2 [ccxii]. • Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest areas with at least 21 snags/ha are preferred[ccx] <u>Information Sources</u> • OMNRF for possible locations and contact for local experts • University Biology Departments with bat experts.	• Maternity Colonies with confirmed use by; >10 Big Brown Bats Ⓔ >5 Adult Female Silver-haired Bats Ⓔ • The area of the habitat includes the entire woodland or a forest stand ELC Ecosite or an Ecoelement containing the maternity colonies Ⓔ. • Evaluation methods for maternity colonies should be conducted following methods outlined in the "Bats and Bat Habitats: Guidelines for Wind Power Projects"[ccv]. • SWH MIST[cxlix] Index #12 provides development effects and mitigation measures.	Candidate habitat is present within the woodlands in the study area. **Conclusion: Candidate habitat is present in Vegetation Units 5, 18 and 20 and other FOD units within Area C south of Rutherford Road; maternity colony presence has not been confirmed through this study.**

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
7. Turtle Wintering Areas **<u>Rationale;</u>** Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant.	Midland Painted Turtle **<u>Special Concern:</u>** Northern Map Turtle Snapping Turtle	Snapping and Midland Painted turtles, ELC Community Classes; SW, MA, OA and SA, ELC Community Series; FEO and BOO Northern Map Turtle - Open Water areas such as deeper rivers or streams and lakes with current can also be used as over-wintering habitat.	For most turtles, wintering areas are in the same general area as their core habitat. Water has to be deep enough not to freeze and have soft mud substrates. • Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate Dissolved Oxygen. [cix, cx, cxi, cxviii] • Man-made ponds such as sewage lagoons or storm water ponds should not be considered SWH. <u>Information Sources</u> • EIS studies carried out by Conservation Authorities. • Field Naturalists Clubs • OMNRF ecologist or biologist • Natural Heritage Information Centre (NHIC)	• Presence of 5 over-wintering Midland Painted Turtles is significant[Í]. • One or more Northern Map Turtle or Snapping Turtle over-wintering within a wetland is significant[Í]. • The mapped ELC ecosite area with the over wintering turtles is the SWH. If the hibernation site is within a stream or river, the deep-water pool where the turtles are over wintering is the SWH. • Over wintering areas may be identified by searching for congregations (Basking Areas) of turtles on warm, sunny days during the fall (Sept. – Oct.) or spring (Mar. – May) [cvii]. Congregation of turtles is more common where wintering areas are limited and therefore significant [cix, cx, cxi, cxii]. • SWH MIST[cxlix] Index #28 provides development effects and mitigation measures for turtle wintering habitat.	No candidate habitat types are present in the study area. **Conclusion: no candidate or confirmed SWH is present.**
8. Reptile Hibernaculum **<u>Rationale;</u>** Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant.	**<u>Snakes:</u>** Eastern Gartersnake Northern Brownsnake Northern Red-bellied Snake Northern Ring-necked Snake Northern Watersnake Smooth Green Snake **<u>Special Concern:</u>** Eastern Ribbonsnake Milksnake	For all snakes, habitat may be found in any ecosite in central Ontario other than very wet ones. Talus, Rock Barren, Crevice, Cave, and Alvar sites may be directly related to these habitats. Observations of congregations of snakes on sunny warm days in the spring or fall is a good indicator.	For snakes, hibernation takes place in sites located below frost lines in burrows, rock crevices and other natural locations. Areas of broken and fissured rock are particularly valuable since they provide access to subterranean sites below the frost line[xliv, l, li, lii, cxii] . Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover. <u>Information Sources</u> • In spring, local residents or landowners may have observed the emergence of snakes on their property (e.g.old dug wells). • Reports and other information available from Conservation Authorities. • Field Naturalist Clubs • University herpetologists • Natural Heritage Information Centre (NHIC)	Studies confirming: • Presence of snake hibernacula used by a minimum of five individuals of a snake sp. <u>or</u>; individuals of two or more snake spp. • Congregations of a minimum of five individuals of a snake sp. <u>or</u>; individuals of two or more snake spp. near potential hibernacula (eg. foundation or rocky slope) on sunny warm days in Spring (Apr/May) and Fall (Sept/Oct)[Í] . • <u>Note</u>: If there are Special Concern Species present, then site is SWH • <u>Note</u>: Sites for hibernation possess specific habitat parameters (e.g. temperature, humidity, etc.) and consequently are used annually, often by many of the same individuals of a local population [i.e. strong hibernation site fidelity.]. Other critical life processes (e.g. mating) often take place in close proximity to hibernacula. The the feature in which the hibernacula is located plus a 30 m buffer is the SWH[Í] • SWH MIST[cxlix] Index #13 provides development effects and mitigation measures for snake hibernacula.	None of the noted candidate habitat types (talus, rock barren, crevice, cave or alvar) is present in the study area. Habitat types with relatively greater potential for hibernacula use may be present within the woodlands. **Conclusion: no candidate or confirmed SWH is present.**

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
9. Colonially -Nesting Bird Breeding Habitat (Bank and Cliff) **<u>Rationale;</u>** Historical use and number of nests in a colony make this habitat significant. An identified colony can be very important to local populations. All swallow population are declining in Ontario [cxcix].	Cliff Swallow Northern Rough-winged Swallow (this species is not colonial but can be found in Cliff Swallow colonies)	Eroding banks, sandy hills, borrow pits, steep slopes, and sand piles Cliff faces, bridge abutments, silos, barns. Habitat found in the following ecosites: CUM1 CUT1 CUS1 BLO1 BLS1 BLT1 CLO1 CLS1 CLT1	• Any site or areas with exposed soil banks, undisturbed or naturally eroding that is not a licensed/permitted aggregate area. • Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles. • Does not include a licensed/permitted Mineral Aggregate Operation. <u>Information Sources</u> • Reports and other information available from Conservation Authorities. • Ontario Breeding Bird Atlas • Bird Studies Canada; NatureCounts http://www.birdscanada.org/birdmon/ • Field Naturalist Clubs.	Studies confirming: • Presence of 1 or more nesting sites with 8or more cliff swallow pairs and/or rough-winged swallow pairs during the breeding season. • A colony identified as SWH will include a 50m radius habitat area from the peripheral nests • Field surveys to observe and count swallow nests are to be completed during the breeding season. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”[ccxi] • SWH MIST[cxlix] Index #4 provides development effects and mitigation measures	No candidate habitat is present within the study area. Targeted breeding bird surveys were undertaken on two dates in 2021, with supplemental observations during other fieldwork. None of the listed species were recorded. **Conclusion: no candidate or confirmed SWH is present.**
10. Colonially -Nesting Bird Breeding Habitat (Tree/Shrubs) **<u>Rationale;</u>** Large colonies are important to local bird population, typically sites are only known colony in area and are used annually.	Black-crowned Night-Heron Great Blue Heron Great Egret Green Heron	SWM2 SWM3 SWM5 SWM6 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7 FET1	• Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used. • Most nests in trees are 11 to 15 m from ground, near the top of the tree. <u>Information Sources</u> • Ontario Breeding Bird Atlas [ccv], colonial nest records. • Ontario Heronry Inventory 1991 available from Bird Studies Canada or NHIC (OMNRF). • Natural Heritage Information Centre (NHIC) Mixed Wader Nesting Colony • Aerial photographs can help identify large heronries. • Reports and other information available from Conservation Authorities. • MNRF District Offices. • Field Naturalist Clubs	Studies confirming: • Presence of 2[1] or more active nests of Great Blue Heron. • The edge of the colony and a minimum 300m radius or extent of the Forest Ecosite containing the colony or any island <15.0ha with a colony is the SWH [cc, ccvii] • Confirmation of active heronries are to be achieved through site visits conducted during the nesting season (April to August) or by evidence such as the presence of fresh guano, dead young and/or eggshells • SWH MIST[cxlix] Index #5 provides development effects and mitigation measures.	There is no known, regularly used colonially-nesting bird breeding habitat present and none was observed during field surveys. Targeted breeding bird surveys were undertaken on two dates in 2021, with supplemental observations during other fieldwork. One of the listed species, a single Great Blue Heron was recorded, with no breeding evidence. None of the listed species were recorded. **Conclusion: no candidate or confirmed SWH is present.**

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
11. Colonially -Nesting Bird Breeding Habitat (Ground) **<u>Rationale;</u>** Colonies are important to local bird population, typically sites are only known colony in area and are used annually.	Brewer's Blackbird Caspian Tern Common Tern Great Black-backed Gull Herring Gull Little Gull Ring-billed Gull	Any rocky island or peninsula (natural or artificial) within a lake or large river (two-lined on a 1;50,000 NTS map). Close proximity to watercourses in open fields or pastures with scattered trees or shrubs (Brewer's Blackbird) MAM1-6; MAS1-3; CUM CUT CUS	• Nesting colonies of gulls and terns are on islands or peninsulas associated with open water or in marshy areas. • Brewers Blackbird colonies are found loosely on the ground in or in low bushes in close proximity to streams and irrigation ditches within farmlands. <u>Information Sources</u> • Ontario Breeding Bird Atlas, rare/colonial species records. • Canadian Wildlife Service. • Reports and other information available from Conservation Authorities. • Natural Heritage Information Centre (NHIC) Colonial Waterbird Nesting Area • MNRF District Offices. • Field Naturalist Clubs.	Studies confirming: • Presence of > 25 active nests for Herring Gulls or Ring-billed Gulls, >5 active nests for Common Tern or >2 active nests for Caspian TernⒺ. • Presence of 5 or more pairs for Brewer's BlackbirdⒺ. • Any active nesting colony of one or more Little Gull, and Great Black-backed Gull is significant Ⓔ. • The edge of the colony and a minimum 150m radius area of habitat, or the extent of the ELC ecosites containing the colony or any island <3.0ha with a colony is the SWH [cc,cvii] • Studies would be done during May/June when actively nesting. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWH MIST[cxiix]Index #6 provides development effects and mitigation measures.	There is no known, regularly used colonially-nesting bird breeding habitat present and none was observed during field surveys. Targeted breeding bird surveys were undertaken on two dates in 2021, with supplemental observations during other fieldwork. One of the listed species, Ring-billed Gull was recorded, with no breeding evidence. None of the listed species were recorded. **Conclusion: no candidate or confirmed SWH is present.**
12. Migratory Butterfly Stopover Areas **<u>Rationale:</u>** Butterfly stopover areas are extremely rare habitats and are biologically important for butterfly species that migrate south for the winter.	Painted Lady Red Admiral **<u>Special Concern:</u>** Monarch	Combination of ELC Community Series; need to have present one Community Series from each landclass: <u>Field</u>: CUM CUT CUS <u>Forest</u>: FOC FOD FOM CUP Anecdotally, a candidate site for butterfly stopover will have a history of butterflies being observed.	A butterfly stopover area will be a minimum of 10 ha in size with a combination of field and forest habitat present, and will be located within 5 km of Lake Erie or Lake Ontario [cxlix]. • The habitat is typically a combination of field and forest, and provides the butterflies with a location to rest prior to their long migration south [xxxii, xxxiii, xxxiv, xxxv, xxxvi]. • The habitat should not be disturbed, fields/meadows with an abundance of preferred nectar plants and woodland edge providing shelter are requirements for this habitat [cxlviii, cxlix]. • Staging areas usually provide protection from the elements and are often spits of land or areas with the shortest distance to cross the Great Lakes [xxxvii, xxxviii, xxxix, xl, xli]. <u>Information Sources</u> • MNRF District Offices • Natural Heritage Information Centre (NHIC) • Agriculture Canada in Ottawa may have list of butterfly experts. • Field Naturalist Clubs • Toronto Entomologists Association	Studies confirm: • The presence of Monarch Use Days (MUD) during fall migration (Aug/Oct)[xliii]. MUD is based on the number of days a site is used by Monarchs, multiplied by the number of individuals using the site. Numbers of butterflies can range from 100-500/day[xxxvii], significant variation can occur between years and multiple years of sampling should occur [xl, xlii]. • MUD of >5000 **or** >3000 with the presence of Painted Ladies or Red Admiral's is to be considered significant.Í • SWHDSS [cxlix] Index #16 provides development effects and mitigation measures.	No candidate habitat is present. The study area is not within 5 km of Lake Ontario, which is greater than the distance required for candidate SWH to be present. We are aware of no anecdotal / historic evidence of use as a migratory butterfly stopover area. **Conclusion: no candidate or confirmed SWH is present.**

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
13. Landbird Migratory Stopover Areas **<u>Rationale:</u>** Sites with a high diversity of species as well as high numbers are most significant.	All migratory songbirds. Canadian Wildlife Service Ontario website: http://www.on.ec.gc.ca/wildlife_e.html All migrant raptors species: Ontario Ministry of Natural Resources: Fish and Wildlife Conservation Act, 1997. Schedule 7: Specially Protected Birds (Raptors)	All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD	• Woodlots >5 haÍ in size and within 5 km [iv, v, vi, vii, viii, ix, x, xi, xii, xiii, xiv, xv] of Lake Erie and Lake Ontario. If woodlands are rare in an area of shoreline, woodland fragments 2-5ha can be considered for this habitat. • If multiple woodlands are located along the shoreline those Woodlands <2km from Lake Erie and Lake Ontario are more significant[cxlix]. Sites have a variety of habitats; forest, grassland and wetland complexes [cxlix]. • The largest sites are more significant [cxlix] • Woodlots and forest fragments are important habitats to migrating birds[ccxviii], these features located along the shore and located within 5km of Lake Erie and Lake Ontario are Candidate SWH [cxlviii]. <u>Information Sources</u> • Bird Studies Canada • Ontario Nature • Local birders and field naturalist club • Ontario Important Bird Areas (IBA) Program	Studies confirm: • Use of the woodlot by >200 birds/day and with >35 spp with at least 10 bird spp. recorded on at least 5 different survey datesÍ. This abundance and diversity of migrant bird species is considered above average and significant. • Studies should be completed during spring (Apr./May) and fall (Aug/Oct) migration using standardized assessment techniques. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWH MIST [cxlix] Index #9 provides development effects and mitigation measures.	No candidate habitat is present. The study area is not within 5 km of Lake Ontario, which is greater than the distance required for candidate SWH to be present. **Conclusion: no candidate or confirmed SWH is present.**
14. Deer Winter Congregation Areas **<u>Rationale:</u>** Deer movement during winter in the southern areas of Eco-region 7E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands to reduce or avoid the impacts of winter conditions [cxlviii].	White-tailed Deer	All Forested Ecosites with these ELC Community Series; FOC FOM FOD SWC SWM SWD Conifer plantations much smaller than 50 ha may also be used.	• Woodlots >100 ha in size or if large woodlotsare rare in a planning area woodlots>50haⒺ • Deer movement during winter in the southern areas of Ecoregion 7E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands . • Large woodlots > 100ha and up to 1500 ha are known to be used annually by densities of deer that range from 0.1-1.5 deer/ha . • Woodlots with high densities of deer due to artificial feeding are not significantⒺ. <u>Information Sources</u> • MNRF District Offices. • LIO/NRVIS	Studies confirm: • Deer management is an MNRF responsibility, deer winter congregation areas considered significant will be mapped by MNRF [cxlviii]. • Use of the woodlot by white-tailed deer will be determined by MNRF, all woodlots exceeding the area criteria are significant, unless determined not to be significant by MNRF Í.. • Studies should be completed during winter (Jan/Feb) when >20cm of snow is on the ground using aerial survey techniques[ccxxiv] , ground or road surveys. or a pellet count deer density survey[ccxxv]. • SWH MIST [cxlix] Index #2 provides development effects and mitigation measures.	No candidate habitat is present within the study area and there are no known deer winter congregation areas based on the Land Information Ontario database. **Conclusion: no candidate or confirmed SWH is present.**

1.2 RARE VEGETATION COMMUNITIES OR SPECIALIZED HABITAT FOR WILDLIFE

1.2.1 Rare Vegetation Communities

Rare vegetation communities often contain rare species, particularly plants and small invertebrates, which depend on such habitats for their survival and cannot readily move to or find alternative habitats. When assessing rare vegetation communities, one of the most important criteria is the current representation of the community in the planning area based on its area relative to the total landscape or the number of examples within the planning area. There are a number of criterion used to define rare vegetation communities, however the NHIC uses a system that considers the provincial rank of a species or community type as a tool to prioritize protection efforts. These ranks are not legal designations but have been assigned using the best available scientific information, and follow a systematic ranking procedure developed by The Nature Conservancy (U.S.). The ranks are based on three factors: estimated number of occurrences, estimated community aerial extent, and estimated range of the community within the province:

S1 Extremely rare - usually 5 or fewer occurrences in the province, or very few remaining hectares. **S2 Very rare -** usually between 5 and 20 occurrences in the province, or few remaining hectares. **S3 Rare to uncommon -** usually between 20 and 100 occurrences in the province; may have fewer occurrences, but with some extensive examples remaining.

The setting of criteria for significant wildlife habitat (SWH) has incorporated this ranking system into its process of determining rare vegetation communities and as such, a rare vegetation community is defined to include areas that contain a provincially rare vegetation community and/or areas that contain a vegetation community that is rare within the planning area. SWH Table 1.2.1 contains a listing of rare vegetation communities that are considered SWH for the planning area contained within Ecoregion 7E.

Table 1.2.1 Rare Vegetation Communities.

Rare Vegetation Community	CANDIDATE SWH			CONFIRMED SWH	Evaluation
	ELC Ecosite Code	Habitat Description	Detailed Information and Sources	Defining Criteria	
15. Cliffs and Talus Slopes **Rationale;** Cliffs and Talus Slopes are extremely rare habitats in Ontario.	Any ELC Ecosite within Community Series: TAO CLO TAS CLS TAT CLT	A Cliff is vertical to near vertical bedrock >3m in height. A Talus Slope is rock rubble at the base of a cliff made up of coarse rocky debris	Most cliff and talus slopes occur along the Niagara Escarpment. Information Sources • The Niagara Escarpment Commission has detailed information on location of these habitats. • OMNRF Districts • Natural Heritage Information Centre (NHIC) has location information available on their website. • Field Naturalist Clubs • Conservation Authorities	• Confirm any ELC Vegetation Type for Cliffs or Talus Slopes [lxxviii] • SWH MIST[cxlix] Index #21 provides development effects and mitigation measures.	**No candidate or confirmed SHW is present.**
16. Sand Barren **Rationale;** Sand barrens are rare in Ontario and support rare species. Most Sand Barrens have been lost due to cottage development and forestry	ELC Ecosites: SBO1 SBS1 SBT1 Vegetation cover varies from patchy and barren to continuous meadow (SBO1), thicket-like (SBS1), or more closed and treed (SBT1). Tree cover always ≤ 60%.	Sand Barrens typically are exposed sand, generally sparsely vegetated and caused by lack of moisture, periodic fires and erosion. They have little or no soil and the underlying rock protrudes through the surface. Usually located within other types of natural habitat such as forest or savannah. Vegetation can vary from patchy and barren to tree covered but less than 60%.	A sand barren area >0.5ha in sizeⒺ. Information Sources • OMNRF Districts. • Natural Heritage Information Centre (NHIC) has location information available on their website. • Field Naturalist Clubs • Conservation Authorities	• Confirm any ELC Vegetation Type for Sand Barrens [lxxviii] • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics)Í. • SWH MIST[cxlix] Index #20 provides development effects and mitigation measures.	**No candidate or confirmed SHW is present.**

Rare Vegetation Community	CANDIDATE SWH			CONFIRMED SWH	Evaluation
	ELC Ecosite Code	**Habitat Description**	**Detailed Information and Sources**	**Defining Criteria**	
17. Alvar **<u>Rationale;</u>** Alvars are extremely rare habitats in Ecos-region 7E.	ALO1 ALS1 ALT1 CUM2 CUS2 CUT2-1 CUW2 FOC1 FOC2 **<u>Five Alvar Indicator Species:</u>** 1) Carex crawei 2) Panicum philadelphicum 3) Eleocharis compressa 4) Scutellaria parvula 5) Trichostema brachiatum These indicator species are very specific to Alvars within Ecoregion 7EⒺ[cxlix]	An alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. The hydrology of alvars is complex, with alternating periods of inundation and drought. Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plant. Undisturbed alvars can be phyto- and zoogeographically diverse, supporting many uncommon or are relict plant and animals species. Vegetation cover varies from patchy to barren with a less than 60% tree cover [lxxviii].	An Alvar site > 0.5 ha in size [lxxv]. Alvar is particularly rare in Ecoregion 7E where the only known sites are found in the western islands of Lake Erie. [cxcix] <u>Information Sources</u> • Alvars of Ontario (2000), Federation of Ontario Naturalists . • Ontario Nature – Conserving Great Lakes Alvars. • Natural Heritage Information Centre (NHIC) has location information available on their website. • OMNRF Staff. • Field Naturalist Clubs. • Conservation Authorities.	• Field studies that identify four of the fiveⒺ Alvar Indicator Species [lxxv,cxlix] at a Candidate Alvar site is Significant. • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics). • The alvar must be in excellent condition and fit in with surrounding landscape with few conflicting land uses [lxxv] • SWH MIST[cxlix] Index #17 provides development effects and mitigation measures.	**No candidate or confirmed SHW is present.**
18. Old Growth Forest **<u>Rationale;</u>** Due to historic logging practices and land clearance for agriculture, old growth forest is rare in Ecoregion 7E.	Forest Community Series: FOC FOD FOM SWC SWD SWM	Old Growth forests are characterized by heavy mortality or turnover of over-storey trees resulting in a mosaic of gaps that encourage development of a multi-layered canopy and an abundance of snags and downed woody debris.	Woodland area is >0.5ha. <u>Information Sources</u> • OMNRF Forest Resource Inventory mapping • OMNRF Districts. • Field Naturalist Clubs • Conservation Authorities • Sustainable Forestry Licence (SFL) companies will possibly know locations through field operations. • Municipal forestry departments	Field Studies will determine: • If dominant trees species of the ecosite are >140 years old, then stand is Significant Wildlife Habitat [cxlviii] • The stand will have experienced no recognizable forestry activities [cxlviii] (cut stumps will not be present) • The area of forest ecosites combined or an eco-element within an ecosite that contain the old growth characteristics is the SWH. • Determine ELC vegetation types for the forest forest area containing the old growth characteristics [lxxviii] • SWH MIST[cxlix] Index #23 provides development effects and mitigation measures.	**No candidate or confirmed SHW is present.**

Rare Vegetation Community	CANDIDATE SWH			CONFIRMED SWH	Evaluation
	ELC Ecosite Code	**Habitat Description**	**Detailed Information and Sources**	**Defining Criteria**	
19. Savannah **<u>Rationale:</u>** Savannahs are extremely rare habitats in Ontario.	CUS2 TPS1 TPS2 TPW1 TPW2	A Savannah is a tallgrass prairie habitat that has tree cover between 25 – 60%. In ecoregion 7E, known Tallgrass Prairie and savannah remnants are scattered between Lake Huron and Lake Erie, near Lake St. Clair, north of and along the Lake Erie shoreline, in Brantford and in the Toronto area (north of Lake Ontario).	No minimum size to site Í Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. <u>Information Sources</u> • Natural Heritage Information Centre (NHIC) has location data available on their website. • OMNRF Districts. • Field Naturalists Clubs. • Conservation Authorities.	Field studies confirm one or more of the Savannah indicator species listed in [lxxv] Appendix N should be present Í. Note: Savannah plant spp. list from Ecoregion 7E should be used[cxlviii]. • Area of the ELC Ecosite is the SWH. • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics). • SWH MIST[cxlix] Index #18 provides development effects and mitigation measures.	**No candidate or confirmed SHW is present.**
20. Tallgrass Prairie **<u>Rationale:</u>** Tallgrass Prairies are extremely rare habitats in Ontario.	TPO1 TPO2	A Tallgrass Prairie has ground cover dominated by prairie grasses. An open Tallgrass Prairie habitat has < 25% tree cover. In ecoregion 7E, known Tallgrass Prairie and savannah remnants are scattered between Lake Huron and Lake Erie, near Lake St. Clair, north of and along the Lake Erie shoreline, in Brantford and in the Toronto area (north of Lake Ontario).	No minimum size to site Í. Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. <u>Information Sources</u> • OMNRF Districts. • Natural Heritage Information Centre (NHIC) has location information available on their website. • Field Naturalists Clubs. • Conservation Authorities.	Field studies confirm one or more of the Prairie indicator species listed in [lxxv] Appendix N should be present Í. Note: Prairie plant spp. list from Ecoregion 7E should be used[cxlviii] • Area of the ELC Ecosite is the SWH. • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics). • SWHDSS[cxlix] Index #19 provides development effects and mitigation measures.	**No candidate or confirmed SHW is present.**
21. Other Rare Vegetation Communities **<u>Rationale:</u>** Plant communities that often contain rare species which depend on the habitat for survival.	Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of the SWHTG[cxlviii] . Any ELC Ecosite Code that has a possible ELC Vegetation Type that is Provincially Rare is Candidate SWH.	Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.	ELC Ecosite codes that have the potential to be a rare ELC Vegetation Type as outlined in appendix M [cxlviii] The OMNRF/NHIC will have up to date listing for rare vegetation communities. <u>Information Sources</u> • Natural Heritage Information Centre (NHIC) has location information available on their website. • OMNRF Districts. • Field Naturalists Clubs. • Conservation Authorities.	Field studies should confirm if an ELC Vegetation Type is a rare vegetation community based on listing within Appendix M of SWHTG[cxlviii] • Area of the ELC Vegetation Type polygon is the SWH. • SWH MIST [cxlix] Index #37 provides development effects and mitigation measures.	**No candidate or confirmed SHW is present.**

1.2.2 Specialized Habitat for Wildlife

Some wildlife species require large areas of suitable habitat for their long-term survival. Many wildlife species require substantial areas of suitable habitat for successful breeding. Their populations decline when habitat becomes fragmented and reduced in size[cxlviii]. Specialized habitat for wildlife is a community or diversity-based category, therefore, the more wildlife species a habitat contains, the more significant the habitat becomes to the planning area. The largest and least fragmented habitats within a planning area will support the most significant populations of wildlife. The specialized habitats for wildlife that are considered as SWH are outlined in Table 1.2.2.

Table 1.2.2 Specialized Habitats of Wildlife considered SWH.

Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
22. Waterfowl Nesting Area **<u>Rationale;</u>** Important to local waterfowl populations, sites with greatest number of species and highest number of individuals are significant.	American Black Duck Blue-winged Teal Gadwall Green-winged Teal Hooded Merganser Mallard Northern Pintail Northern Shoveler Wood Duck	All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH: MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 SWD1 SWD2 SWD3 SWD4 SWT1 SWT2 **Note: includes adjacency to Provincially Significant Wetlands**	A waterfowl nesting area extends 120 m [cxlix] from a wetland (> 0.5 ha) or a wetland (>0.5ha) and any small wetlands (0.5ha) within 120m or a cluster of 3 or more small (<0.5 ha) wetlands within 120 m of each individual wetland where waterfowl nesting is known to occur [cxlix]. • Upland areas should be at least 120 m wide so that predators such as racoons, skunks, and foxes have difficulty finding nests. • Wood Ducks and Hooded Mergansers utilize large diameter trees (>40cm dbh) in woodlands for cavity nest sites. <u>Information Sources</u> • Ducks Unlimited staff may know the locations of particularly productive nesting sites. • OMNRF Wetland Evaluations for indication of significant waterfowl nesting habitat. • Reports and other information available from Conservation Authorities.	Studies confirmed: • Presence of 3 or more nesting pairs for listed species excluding Mallards[Í], or; • Presence of 10 or more nesting pairs for listed species including Mallards[Í]. • Any active nesting site of an American Black Duck is considered significant. • Nesting studies should be completed during the spring breeding season (April - June). Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • A field study confirming waterfowl nesting habitat will determine the boundary of the waterfowl nesting habitat for the SWH, this may be greater or less than 120 m [cxlviii] from the wetland and will provide enough habitat for waterfowl to successfully nest. • SWH MIST[cxlix] Index #25 provides development effects and mitigation measures.	Candidate habitat is present adjacent to Vegetation Unit 20 and a TRCA mapped and confirmed MAS2-1A in the same area. Targeted breeding bird surveys were undertaken on two dates in 2021, with supplemental observations during other fieldwork. One of the listed species (Mallard) was recorded in low numbers. **Conclusion: SWH is not present.**

Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
23. Bald Eagle and Osprey Nesting, Foraging and Perching Habitat **<u>Rationale;</u>** Nest sites are fairly uncommon in Eco-region 7E and are used annually by these species. Many suitable nesting locations may be lost due to increasing shoreline development pressures and scarcity of habitat.	Osprey **<u>Special Concern:</u>** Bald Eagle	ELC Forest Community Series: FOD, FOM, FOC, SWD, SWM and SWC directly adjacent to riparian areas – rivers, lakes, ponds and wetlands	Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water. Osprey nests are usually at the top a tree whereas Bald Eagle nests are typically in super canopy trees in a notch within the tree's canopy. Nests located on man-made objects are not to be included as SWH (e.g. telephone poles and constructed nesting platforms). <u>Information Sources</u> • Natural Heritage Information Centre (NHIC) compiles all known nesting sites for Bald Eagles in Ontario. • MNRF values information (LIO/NRVIS) will list known nesting locations. Note: data from NRVIS is provided as a point and does not represent all the habitat. • Nature Counts, Ontario Nest Records Scheme data. • OMNRF District. • Check the Ontario Breeding Bird Atlas [ccv] or Rare Breeding Birds in Ontario for species documented • Reports and other information available from Conservation Authorities. • Field Naturalists clubs	Studies confirm the use of these nests by: • One or more active Osprey or Bald Eagle nests in an area[cxlviii] . • Some species have more than one nest in a given area and priority is given to the primary nest with alternate nests included within the area of the SWH. • For an Osprey, the active nest and a 300 m radius around the nest or the contiguous woodland stand is the SWH [ccvii], maintaining undisturbed shorelines with large trees within this area is important [cxlviii]. • For a Bald Eagle the active nest and a 400-800 m radius around the nest is the SWH. [cvi, ccvii] Area of the habitat from 400-800m is dependant on site lines from the nest to the development and inclusion of perching and foraging habitat [cvi] • To be significant a site must be used annually. When found inactive, the site must be known to be inactive for ≥ 3 years or suspected of not being used for >5 years before being considered not significant. [ccvii] • Observational studies to determine nest site use, perching sites and foraging areas need to be done from mid March to mid August. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWH MIST[cxlix] Index #26 provides development effects and mitigation measures	No candidate habitat is present within the study area – there are no lakes or ponds present and wetlands in the study area are small and not suitable for this type of SWH. The Don River West Branch is present, however its small size would not be suitable to support this type of SWH. Targeted breeding bird surveys were undertaken on two dates in 2021, with supplemental observations during other fieldwork. Neither of the listed species was recorded. **Conclusion: no candidate or confirmed SWH is present.**
24. Woodland Raptor Nesting Habitat **<u>Rationale:</u>** Nests sites for these species are rarely identified; these area sensitive habitats are often used annually by these species.	Barred Owl Broad-winged Hawk Cooper's Hawk Northern Goshawk Red-shouldered Hawk Sharp-shinned Hawk	May be found in all forested ELC Ecosites. May also be found in SWC, SWM, SWD and CUP3	All natural or conifer plantation woodland/forest stands >30ha with >4ha of interior habitat [lxxxviiii, lxxxix, xc, xci, xciii, xciv, xcv,xcvi, cxxxiii]. Interior habitat determined with a 200m buffer[cxlviii] • Stick nests found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within tops or crotches of trees. Species such as Coopers hawk nest along forest edges sometimes on peninsulas or small off-shore islands. • In disturbed sites, nests may be used again, or a new nest will be in close proximity to old nest. <u>Information Sources</u> • OMNRF Districts. • Check the Ontario Breeding Bird Atlas or Rare Breeding Birds in Ontario for species documented. • Check data from Bird Studies Canada. • Reports and other information available from Conservation Authorities.	Studies confirm: • Presence of 1 or more active nests from species list is considered significant[cxlviii]. • Red-shouldered Hawk and Northern Goshawk – A 400m radius around the nest or 28 ha of suitable habitat is the SWH [ccvii]. (the 28 ha habitat area would be applied where optimal habitat is irregularly shaped around the nest) • Barred Owl – A 200m radius around the nest is the SWH [ccvii]. • Broad-winged Hawk and Coopers Hawk,– A 100m radius around the nest is the SWH[ccvii]. • Sharp-Shinned Hawk – A 50m radius around the nest is the SWH[ccvii]. • Conduct field investigations from mid-March to end of May. The use of call broadcasts can help in locating territorial (courting/nesting) raptors and facilitate the discovery of nests by narrowing down the search area. • SWH MIST [cxlix] Index #27 provides development effects and mitigation measures.	No candidate habitat is present within the study area (all woodlands are less than 30 ha). Targeted breeding bird surveys were undertaken on two dates in 2021, with supplemental observations during other fieldwork. One of the listed species (Cooper's Hawk) was recorded. **Conclusion: no candidate or confirmed SHW is present.**

Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
25. Turtle Nesting Areas **<u>Rationale;</u>** These habitats are rare and when identified will often be the only breeding site for local populations of turtles.	Midland Painted Turtle **<u>Special Concern Species:</u>** Northern Map Turtle Snapping Turtle	Exposed mineral soil (sand or gravel) areas adjacent (<100m) [cxlviii] or within the following ELC Ecosites: BOO1 FEO1 MAS1 MAS2 MAS3 SAF1 SAM1 SAS1	• Best nesting habitat for turtles are close to water and away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals. • For an area to function as a turtle-nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas. Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH. • Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used. <u>Information Sources</u> • Use Ontario Soil Survey reports and maps to help find suitable substrate for nesting turtles (well-drained sands and fine gravels). • Check the Ontario Herpetofaunal Summary Atlas records or other similar atlases for uncommon turtles; location information may help to find potential nesting habitat for them. • Natural Heritage Information Centre (NHIC) • Field Naturalist Clubs	Studies confirm: • Presence of 5 or more nesting Midland Painted Turtles[Í] • One or more Northern Map Turtle or Snapping Turtle nesting is a SWH[Í]. • The area or collection of sites within an area of exposed mineral soils where the turtles nest, plus a radius of 30-100m around the nesting area dependant on slope, riparian vegetation and adjacent land use is the SWH.[cxlviii] • Travel routes from wetland to nesting area are to be considered within the SWH as part of the 30-100m area of habitat. • Field investigations should be conducted in prime nesting season typically late spring to early summer. Observational studies observing the turtles nesting is a recommended method. • SWH MIST Index #28 provides development effects and mitigation measures for turtle nesting habitat.	No candidate habitat is present within the study area. None of the listed species was recorded during field surveys and no evidence of turtle nesting was observed. **Conclusion: SWH is not present.**
26. Seeps and Springs **<u>Rationale;</u>** Seeps/Springs are typical of headwater areas and are often at the source of coldwater streams.	Ruffed Grouse Salamander spp. Spruce Grouse White-tailed Deer Wild Turkey	Seeps/Springs are areas where ground water comes to the surface. Often they are found within headwater areas within forested habitats. Any forested Ecosite within the headwater areas of a stream could have seeps/springs.	Any forested area (with <25% meadow/field/pasture) within the headwaters of a stream or river system [cxvii, cxlix]. • Seeps and springs are important feeding and drinking areas especially in the winter will typically support a variety of plant and animal species [cxix, cxx, cxxi, cxxii, cxiii, cxiv]. <u>Information Sources</u> • Topographical Map. • Thermography. • Hydrological surveys conducted by Conservation Authorities and MOE. • Field Naturalists Clubs and landowners. • Municipalities and Conservation Authorities may have drainage maps and headwater areas mapped.	Field Studies confirm: • Presence of a site with 2 or more[Í] seeps/springs should be considered SWH. • The area of a ELC forest ecosite or an ecoelement within ecosite containing the seeps/springs is the SWH. The protection of the recharge area considering the slope, vegetation, height of trees and groundwater condition need to be considered in delineation the habitat . • SWH MIST Index #30 provides development effects and mitigation measures	No candidate habitat is present within the study area. **Conclusion: SWH is not present.**

Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
27. Amphibian Breeding Habitat (Woodland) **<u>Rationale:</u>** These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations	Blue-spotted Salamander Eastern Newt Gray Treefrog Spotted Salamander Spring Peeper Western Chorus Frog Wood Frog	All Ecosites associated with these ELC Community Series; FOC FOD FOM SWC SWD SWM Breeding pools within the woodland or the shortest distance from forest habitat are more significant because they are more likely to be used due to reduced risk to migrating amphibians	• Presence of a wetland, pond or woodland pool (including vernal pools) >500m2 (about 25m diameter) within or adjacent (within 120m) to a woodland (no minimum size)., , , , , , , Some small wetlands may not be mapped and may be important breeding pools for amphibians. • Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat[cxlviii] <u>Information Sources</u> • Ontario Herpetofaunal Summary Atlas (or other similar atlases) for records • Local landowners may also provide assistance as they may hear spring-time choruses of amphibians on their property. • OMNRF Districts and wetland evaluations • Field Naturalist clubs • Canadian Wildlife Service Amphibian Road Call Survey • Ontario Vernal Pool Association: http://www.ontariovernalpools.org	Studies confirm; • Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog species with Call Level Codes of 3Ⓔ. • A combination of observational study and call count surveys will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands. • The habitat is the wetland area plus a 230m radius of woodland area [lxiii, lxv, lxvi, lxvii, lxviii, lxix, lxx, lxxi] . If a wetland area is adjacent to a woodland, a travel corridor connecting the wetland to the woodland is to be included in the habitat. • SWH MIST [cxlix] Index #14 provides development effects and mitigation measures.	Candidate habitat is not present. SWH was evaluated using targeted amphibian breeding surveys on two dates in 2021. One of the listed species (Gray Treefrog) was recorded in low numbers. **Conclusion: candidate SWH was evaluated, no confirmed SWH is present.**
28. Amphibian Breeding Habitat (Wetlands) **<u>Rationale;</u>** Wetlands supporting breeding for these amphibian species are extremely important and fairly rare within Central Ontario landscapes.	American Toad Blue-spotted Salamander Bullfrog Eastern Newt Four-toed Salamander Gray Treefrog Green Frog Mink Frog Northern Leopard Frog Pickerel Frog Spotted Salamander Western Chorus Frog	ELC Community Classes SW, MA, FE, BO, OA and SA. Typically these wetland ecosites will be isolated (>120m) from woodland ecosites, however larger wetlands containing predominantly aquatic species (e.g. Bull Frog) may be adjacent to woodlands	• Wetlands>500m2 (about 25m diameter), supporting high species diversity are significant; some small or ephemeral habitats may not be identified on MNRF mapping and could be important amphibian breeding habitats. • Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators. • Bullfrogs require permanent water bodies with abundant emergent vegetation. <u>Information Sources</u> • Ontario Herpetofaunal Summary Atlas (or other similar atlases) • Canadian Wildlife Service Amphibian Road Surveys and Backyard Amphibian Call Count. • OMNRF Districts and wetland evaluations. • Reports and other information available from Conservation Authorities.	Studies confirm: • Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog/toad species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog/toad species with Call Level Codes of 3Ⓔ. or; Wetland with confirmed breeding Bullfrogs are significant. • The ELC ecosite wetland area and the shoreline are the SWH. • A combination of observational study and call count surveys [cviii] will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the wetlands. • If a SWH is determined for Amphibian Breeding Habitat (Wetlands) then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. • SWH MIST [cxlix] Index #15 provides development effects and mitigation measures.	Candidate habitat is present adjacent to Vegetation Units 2, 9 and 20 and a TRCA mapped and confirmed MAS2-1A in the same area as 20. SWH was evaluated using targeted amphibian breeding surveys on two dates in 2021. Two of the listed species (American Toad and Green Frog) were recorded in low numbers. **Conclusion: candidate SWH was evaluated, no confirmed SWH is present.**

Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
29. Woodland Area-Sensitive Bird Breeding Habitat Rationale: Large, natural blocks of mature woodland habitat within the settled areas of Southern Ontario are important habitats for area sensitive interior forest song birds.	Blackburnian Warbler Black-throated Blue Warbler Black-throated Green Warbler Blue-headed Vireo Northern Parula Ovenbird Pileated Woodpecker Red-breasted Nuthatch Veery Scarlet Tanager Winter Wren Yellow-bellied Sapsucker **Special Concern:** Canada Warbler Cerulean Warbler	All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD	• Habitats where interior forest breeding birds are breeding, typically large mature (>60 yrs old) forest stands or woodlots >30 ha. [cv, cxxxi, cxxxii, cxxxiii, cxxxiv, cxxxv, cxxxvi, cxxxvii, cxxxviii, cxxxix, cxl, cxli, cxlii, cxliii, cxliv, cxlv, cxlvi, cl, cli, clii, cliii, cliv, clv, clvi, clvii, clviii, clix] • Interior forest habitat is at least 200 m from forest edge habitat. [clxiv] <u>Information Sources</u> • Local birder clubs. • Canadian Wildlife Service (CWS) for the location of forest bird monitoring. • Bird Studies Canada conducted a 3-year study of 287 woodlands to determine the effects of forest fragmentation on forest birds and to determine what forests were of greatest value to interior species • Reports and other information available from Conservation Authorities.	Studies confirm: • Presence of nesting or breeding pairs of 3 or more of the listed wildlife species. Ⓔ • Note: any site with breeding Cerulean Warblers or Canada Warblers is to be considered SWH.Ⓔ • Conduct field investigations in spring and early summer when birds are singing and defending their territories. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” [ccxi] • SWH MIST [cxlix] Index #34 provides development effects and mitigation measures.	No candidate habitat is present within the study area (all woodlands are less than 30 ha). Targeted breeding bird surveys were undertaken on two dates in 2021, with supplemental observations during other fieldwork. One of the listed species (Red-breasted Nuthatch) was recorded. **Conclusion: no candidate or confirmed SHW is present.**

1.3 HABITAT FOR SPECIES OF CONSERVATION CONCERN (NOT INCLUDING ENDANGERED OR THREATENED SPECIES)

Habitats of Species of Conservation Concern include wildlife species that are listed as Special Concern or rare, that are declining, or are featured species. Habitats of Species of Conservation Concern do not include habitats of Endangered or Threatened species as identified by the Endangered Species Act 2007. Table 1.3 assists with the identification of SWH for Species of Conservation Concern.

Table 1.3. Habitats of Species of Conservation Concern considered SWH.

Wildlife	Species	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Ecosite	Habitat Criteria and Information Sources	Defining Criteria	
30. Marsh Breeding Bird Habitat **<u>Rationale;</u>** Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes.	American Bittern American Coot Common Loon Common Moorhen Green Heron Marsh Wren Pied-billed Grebe Sandhill Crane Sedge Wren Sora Trumpeter Swan Virginia Rail **<u>Special Concern:</u>** Black Tern Yellow Rail	BOO1 FEO1 MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SAF1 SAM1 SAS1 For Green Heron: All SW, MA and CUM1 sites.	• Nesting occurs in wetlands. • All wetland habitat is to be considered as long as there is shallow water with emergent aquatic vegetation present [cxxiv]. • For Green Heron, habitat is at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Less frequently, it may be found in upland shrubs or forest a considerable distance from water. <u>Information Sources</u> • OMNRF District and wetland evaluations. • Field Naturalist clubs • Natural Heritage Information Centre (NHIC) Records. • Reports and other information available from Conservation Authorities. • Ontario Breeding Bird Atlas.	Studies confirm: • Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren or breeding by any combination of 4 or more of the listed species Ⓔ. • Note: any wetland with breeding of 1 or more Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is SWH Ⓔ. • Area of the ELC ecosite is the SWH. • Breeding surveys should be done in May/June when these species are actively nesting in wetland habitats. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” • SWH MIST Index #35 provides development effects and mitigation measures	Candidate habitat is present in riparian wetland areas along the Don River West Branch, although these marsh features are marginal due to their limited size and lack of open aquatic areas. Targeted breeding bird surveys were undertaken on two dates in 2021, with supplemental observations during other fieldwork. None of the listed species was recorded. **Conclusion: SHW is not present.**
31. Open Country Bird Breeding Habitat **<u>Rationale;</u>** This wildlife habitat is declining throughout Ontario and North America. Species such as the Upland Sandpiper have declined significantly the past 40 years based on CWS (2004) trend records.	Grasshopper Sparrow Northern Harrier Savannah Sparrow Upland Sandpiper Vesper Sparrow **<u>Special Concern:</u>** Short-eared Owl	CUM1 CUM2	Large grassland areas (includes natural and cultural fields and meadows) >30 ha [clx, clxi, clxii, clxiii, clxiv, clxv, clxvi, clxvii, clxviii, clxix]. Grasslands not Class 1 or 2 agricultural lands, and not being actively used for farming (i.e. no row cropping or intensive hay or livestock pasturing in the last 5 years) Í. Grassland sites considered significant should have a history of longevity, either abandoned fields, mature hayfields and pasturelands that are at least 5 years or older. The Indicator bird species are area sensitive requiring larger grassland areas than the common grassland species. <u>Information Sources</u> • Agricultural land classification maps, Ministry of Agriculture. • Local bird clubs. • Ontario Breeding Bird Atlas • EIS Reports and other information available from Conservation Authorities.	Field Studies confirm: • Presence of nesting or breeding of 2 or more of the listed species.Í • A field with 1 or more breeding Short-eared Owls is to be considered SWH. • The area of SWH is the contiguous ELC ecosite field areas. • Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”[ccxi] • SWH MIST [cxlix] Index #32 provides development effects and mitigation measures	No candidate habitat is present (all CUM areas less than 30 ha in size). Targeted breeding bird surveys were undertaken on two dates in 2021, with supplemental observations during other fieldwork. None of the listed species was recorded. **Conclusion: no candidate or confirmed SHW is present.**

Wildlife	Species	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Ecosite	Habitat Criteria and Information Sources	Defining Criteria	
32. Shrub/Early Successional Bird Breeding Habitat **Rationale;** This wildlife habitat is declining throughout Ontario and North America. The Brown Thrasher has declined significantly over the past 40 years based on CWS (2004) trend records [cxcix].	**Indicator Spp:** Brown Thrasher Clay-coloured Sparrow **Common Spp.:** Black-billed Cuckoo Eastern Towhee Field Sparrow Willow Flycatcher Golden-winged Warbler **Special Concern:** Yellow-breasted Chat	CUT1 CUT2 CUS1 CUS2 CUW1 CUW2 Patches of shrub ecosites can be complexed into a larger habitat for some bird species	Large field areas succeeding to shrub and thicket habitats>10ha[clxiv] in size. Shrub land or early successional fields, not class 1 or 2 agricultural lands, not being actively used for farming (i.e. no row-cropping, haying or live-stock pasturing in the last 5 years) Í. Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species [clxxiii]. Shrub and thicket habitat sites considered significant should have a history of longevity, either abandoned fields or pasturelands. Information Sources • Agricultural land classification maps, Ministry of Agriculture. • Local bird clubs. • Ontario Breeding Bird Atlas • Reports and other information available from Conservation Authorities.	Field Studies confirm: • Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species.Í • A habitat with breeding Yellow-breasted Chat or Golden-winged Warbler is to be considered as Significant Wildlife Habitat. Í • The area of the SWH is the contiguous ELC ecosite field/thicket area. • Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”[ccxi] • SWH MIST [cxlix] Index #33 provides development effects and mitigation measures.	No candidate habitat is present (all CUT/CUW areas less than 10 ha in size). Targeted breeding bird surveys were undertaken on two dates in 2021, with supplemental observations during other fieldwork. None of the listed species was recorded. **Conclusion: no candidate or confirmed SHW is present.**
33. Terrestrial Crayfish **Rationale:** Terrestrial Crayfish are only found within SW Ontario in Canada and their habitats are very rare. [ccii]	Chimney or Digger Crayfish; (*Fallicambarus fodiens*) Devil Crawfish or Meadow Crayfish; (*Cambarus Diogenes*)	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 MAS1 MAS2 MAS3 SWD SWT SWM CUM1 with inclusions of above meadow marsh ecosites can be used by terrestrial crayfish.	Wet meadow and edges of shallow marshes (no minimum size) should be surveyed for terrestrial crayfish. • Constructs burrows in marshes, mudflats, meadows, the ground can’t be too moist. Can often be found far from water. • Both species are a semi-terrestrial burrower which spends most of its life within burrows consisting of a network of tunnels. Usually the soil is not too moist so that the tunnel is well formed. Information Sources • Information sources from “Conservation Status of Freshwater Crayfishes” by Dr. Premek Hamr for the WWF and CNF March 1998	Studies Confirm: • Presence of 1 or more individuals of species listed or their chimneys (burrows) in suitable meadow marsh, swamp or terrestrial sites [cci] • Area of ELC Ecosite or an ecoelement area of meadow marsh or swamp within the larger ecosite area is the SWH. • Surveys should be done April to August in temporary or permanent water. Note the presence of burrows or chimneys are often the only indicator of presence, observance or collection of individuals is very difficult • SWH MIST [cxlix] Index #36 provides development effects and mitigation measures.	Candidate habitat is present in the suitable ELC types throughout the study area (MAS/MAM/CUM). Searches were undertaken during all field surveys in 2021. No terrestrial crayfish / burrows were recorded. **Conclusion: SWH is not present.**

Wildlife	Species	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Ecosite	Habitat Criteria and Information Sources	Defining Criteria	
34. Special Concern and Rare Wildlife Species **<u>Rationale:</u>** These species are quite rare or have experienced significant population declines in Ontario.	All Special Concern and Provincially Rare (S1-S3, SH) plant and animal species. Lists of these species are tracked by the Natural Heritage Information Centre (NHIC).	All plant and animal element occurrences (EO) within a 1 or 10km grid. Older element occurrences were recorded prior to GPS being available, therefore location information may lack accuracy.	When an element occurrence is identified within a 1 or 10 km grid for a Special Concern or provincially Rare species; linking candidate habitat on the site needs to be completed to ELC Ecosites [lxxviii] <u>Information Sources</u> • Natural Heritage Information Centre (NHIC) will have Special Concern and Provincially Rare (S1-S3, SH) species lists with element occurrences data. • NHIC Website "Get Information" : http://nhic.mnr.gov.on.ca • Ontario Breeding Bird Atlas • Expert advice should be sought as many of the rare spp. have little information available about their requirements.	Studies Confirm: • Assessment/inventory of the site for the identified special concern or rare species needs to be completed during the time of year when the species is present or easily identifiable. • The area of the habitat to the finest ELC scale that protects the habitat form and function is the SWH, this must be delineated through detailed field studies. The habitat needs be easily mapped and cover an important life stage component for a species e.g. specific nesting habitat or foraging habitat. • SWH MIST [cxlix] Index #37 provides development effects and mitigation measures.	The following special concern / provincially rare species were recorded during field surveys: • Eastern Wood-pewee: recorded with 'Possible' breeding evidence in Vegetation Units 12 and 22. • Monarch: Two foraging individuals recorded in Vegetation Units 2, 12 and in cultural meadow south of Vegetation Unit 10. **Conclusion: confirmed SWH is present in Vegetation Units XX.**

1.4 ANIMAL MOVEMENT CORRIDORS

Animal Movement Corridors are elongated areas used by wildlife to move from one habitat to another. They are important to ensure genetic diversity in populations, to allow seasonal migration of animals (e.g. deer moving from summer to winter range) and to allow animals to move throughout their home range from feeding areas to cover areas. Animal movement corridors function at different scales often related to the size and home range of the animal. For example, short, narrow areas of natural habitat may function as a corridor between amphibian breeding areas and their summer range, while wider, longer corridors are needed to allow deer to travel from their winter habitat to their summer habitat.

Identifying the most important corridors that provide connectivity across the landscape is challenging because of a lack of specific information on animal movements. There is also some uncertainty about the optimum width and mortality risks of corridors. Furthermore, a corridor may be beneficial for some species but detrimental to others. For example, narrow linear corridors may allow increased access for racoons, cats, and other predators. Also, narrow corridors dominated by edge habitat may encourage invasion by weedy generalist plants and opportunistic species of birds and mammals. Corridors often consist of naturally vegetated areas that run through more open or developed landscapes. However, sparsely vegetated areas can also function as corridors. For example, many species move freely through agricultural land to reach natural areas. Despite the difficulty of identifying exact movement corridors for all species, these landscape features are important to the long-term viability of certain wildlife populations.

Animal Movement Corridors should only be identified as SWH where:

Where a Confirmed or Candidate SWH has been identified by MNR or the planning authority based on documented evidence of a habitat identified within these Criterion Schedules or the Significant Wildlife Habitat Technical Guide. The identified wildlife habitats Table 1.4.1 will have distinct passageways or rely on well defined natural features for movements between habitats required by the species to complete its life cycle.

Table 1.4.1 Animal Movement Corridors

Habitat	SPECIES	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Eco-sites	Habitat Criteria and Information Sources	Defining Criteria	
35. Amphibian Movement Corridors **<u>Rationale:</u>** Movement corridors for amphibians moving from their terrestrial habitat to breeding habitat can be extremely important for local populations.	American Toad Blue-spotted Salamander Bullfrog Eastern Newt Four-toed Salamander Gray Treefrog Green Frog Mink Frog Northern Leopard Frog Pickeral Frog Spotted Salamander Western Chorus Frog	Corridors may be found in all ecosites associated with water. • Corridors will be determined based on identifying the significant breeding habitat for these species in Table 1.1	Movement corridors between breeding habitat and summer habitat [clxxiv, clxxv, clxxvi, clxxvii, clxxviii, clxxix, clxxx, clxxxi]. Movement corridors must be determined when Amphibian breeding habitat is confirmed as SWH from Table 1.2.2 (**Amphibian Breeding Habitat –Wetland)** of this Schedule Í. <u>Information Sources</u> • MNRF District Office. • Natural Heritage Information Centre (NHIC). • Reports and other information available from Conservation Authorities. • Field Naturalist Clubs.	• Field Studies must be conducted at the time of year when species are expected to be migrating or entering breeding sites. • Corridors should consist of native vegetation, with several layers of vegetation. Corridors unbroken by roads, waterways or bodies, and undeveloped areas are most significant [cxlix] • Corridors should have at least 15m of vegetation on both sides of waterway [cxlix] or be up to 200m wide [cxlix] of woodland habitat and with gaps <20m [cxlix] . • Shorter corridors are more significant than longer corridors, however amphibians must be able to get to and from their summer and breeding habitat [cxlix]. • SWH MIST [cxlix] Index #40 provides development effects and mitigation measures	No amphibian movement corridors are present based on results of surveys and lack of confirmed amphibian breeding SWH.

1.5 EXCEPTIONS FOR ECOREGION 7E

Exceptions are candidate wildlife habitats that will have different criteria than what is proposed in the above schedules for an area within the Eco-region. The Exceptions will be based on Eco-Districts and municipalities can apply the exception for the eco-district within their planning area.

Table 1.5.1 Significant Wildlife Habitat Exceptions for Ecodistricts within EcoRegion 7E

EcoDistrict	Wildlife Habitat and Species	Candidate SWH			Confirmed SWH	Evaluation
		Ecosites	Habitat Description	Habitat Criteria and Information	Defining Criteria	
7E-2	**Bat Migratory Stopover Area** Rationale: Stopover areas for long distance migrant bats are important during fall migration. Eastern Red Bat Hoary Bat Silver-haired Bat	No specific ELC types.		• Long distance migratory bats typically migrate during late summer and early fall from summer breeding habitats throughout Ontario to southern wintering areas. Their annual fall migration may concentrate these species of bats at stopover areas. • This is the only known bat migratory stopover habitats based on current information. <u>Information Sources</u> • OMNRF for possible locations and contact for local experts • University of Waterloo, Biology Department	• Long Point (42°35'N, 80°30'E, to 42°33'N, 80°03'E) has been identified as a significant stop-over habitat for fall migrating Silver-haired Bats, due to significant increases in abundance, activity and feeding that was documented during fall migration [ccxv]. • The confirmation criteria and habitat areas for this SWH are still being determined. • SWH MIST [cxlix] Index #38 provides development effects and mitigation measures.	This SWH was not assessed through this study.

APPENDIX E

Photo Plates

Site: Bartley Smith Greenway Trail, Vaughan ON

Plate 1: McNaughton Rd crossing, facing upstream (north).

Plate 2: Culvert outlet at McNaughton Rd, facing upstream (north).

Plate 3: McNaughton Crossing Options 2 and 3, facing east.

Plate 4: McNaughton Rd north ditchline facing east.

Plate 5: Trail Alignment Option A proposed bridge crossing, facing east.

Plate 6: SWMP outlet into Don River West Branch.

Plate 7: Major Mackenzie Drive culvert inlet, facing down-stream (south).

Plate 8: Major Mackenzie Drive culvert outlet, facing up-stream (north).

wsp	BARTLEY SMITH GREENWAY TRAIL FEASIBILITY STUDY, VAUGHAN ON FISHERIES AND VEGETATION PHOTOS	Date: October 2021 Project No: 211-07301-00 Figure No: 1

Site: Bartley Smith Greenway Trail, Vaughan ON

Plate 1: Bridge Crossing Option 1, facing downstream (south). Debris jam is evident.

Plate 2: Bridge Crossing Option 1, facing upstream (north).

Plate 3: Private pond outlet 20 m north of Bridge Crossing Option 1, facing north.

Plate 4: Bridge Crossing Option 2, facing downstream (south).

Plate 5: Bridge Crossing Option 2, facing upstream (north).

Plate 6: Bridge Crossing Option 3, facing upstream (north).

Plate 7: Bridge Crossing Option 3, facing downstream (south).

Plate 8: Partial debris jam at Bridge Crossing Option 3.

wsp	BARTLEY SMITH GREENWAY TRAIL FEASIBILITY STUDY, VAUGHAN ON FISHERIES AND VEGETATION PHOTOS	Date: October 2021 Project No: 211-07301-00 Figure No: 2

Site: Bartley Smith Greenway Trail, Vaughan ON

Plate 1: Proposed crossing over culvert, inlet.

Plate 2: Proposed crossing over existing culvert, inlet.

Plate 3: Proposed crossing over existing culvert, outlet.

Plate 4: Bridge Crossing Option 4, facing upstream (north).

Plate 5: Bridge Crossing Option 4, facing downstream (south).

Plate 6: Deteriorated weir, 140 m upstream of proposed crossing over existing culvert.

Plate 7: Rutherford Rd crossing, culvert inlet. Active works are occurring.

Plate 8: Rutherford Rd crossing, culvert outlet. Active works are occurring.

wsp	BARTLEY SMITH GREENWAY TRAIL FEASIBILITY STUDY, VAUGHAN ON FISHERIES AND VEGETATION PHOTOS	Date: October 2021 Project No: 211-07301-00 Figure No: 3

Site: Bartley Smith Greenway Trail, Vaughan ON

Mixed Mineral Meadow Marsh Type MAMM3-1 (Unit 2)

Mineral Cultural Woodland Type CUW1 (Unit 4)

Cattail Mineral Shallow Marsh Type MAS2-1 (Unit 9)

Exotic Successional Woodland Type CUW1-b (Unit 6, 7, 10, 21)

Dry – Fresh White Pine-Sugar Maple Mixed Forest Type FOM2 -2 (Unit 18)

Mixed Mineral Meadow Marsh Type MAMM3-1 (Unit 20)

Dry – Fresh Sugar Maple Deciduous Forest Type FOD5-1 (Unit 22)

Rutherford Road recently cleared of vegetation

wsp	BARTLEY SMITH GREENWAY TRAIL FEASIBILITY STUDY, VAUGHAN ON FISHERIES AND VEGETATION PHOTOS	Date: October 2021 Project No: 211-07301-00 Figure No: 4

APPENDIX F

Breeding Bird Observations Table

Common Name	Scientific Name	GRANK1	SRANK2	SARO (ESA) Status3	COSEWIC Status4	SARA Status5	Schedule5	TRCA rank (2008)6	Habitat Use8	Area Sensitive Birds - Ecoregion 7E	Protected Under MBCA	Overall																				Overall Study Area	
												BB1		BB2		BB3		BB4		BB5		BB6		BB7		BB8		BB9		BB10			
												Highest Abundance	Highest Breeding Status	Highest Abundance	Highest Breeding Status	Highest Abundance	Highest Breeding Status	Highest Abundance	Highest Breeding Status	Highest Abundance	Highest Breeding Status	Highest Abundance	Highest Breeding Status	Highest Abundance	Highest Breeding Status	Highest Abundance	Highest Breeding Status	Highest Abundance	Highest Breeding Status	Highest Abundance	Highest Breeding Status	Highest Abundance	Highest Breeding Status
American Crow	*Corvus brachyrhynchos*	G5	S5B					L5	E									1	Possible							1	Possible					1	Possible
American Goldfinch	*Spinus tristis*	G5	S5B					L5	E		✓	4	Probable	2	Probable	3	Probable			3	Probable	5	Probable	3	Probable	2	Probable	3	Probable	5	Probable	5	Probable
American Redstart	*Setophaga ruticilla*	G5	S5B					L4	I		✓	1	Possible	1	Possible	2	Probable	1	Possible													2	Probable
American Robin	*Turdus migratorius*	G5	S5B					L5	E		✓	4	Possible	3	Possible	1	Probable	3	Probable	2	Probable	5	Confirmed	2	Probable	2	Probable	2	Probable	10	Confirmed	10	Confirmed
Baltimore Oriole	*Icterus galbula*	G5	S4B					L5	E		✓									1	Possible	1	Possible									1	Possible
Belted Kingfisher	*Megaceryle alcyon*	G5	S4B					L4												1	Possible									1	Observed	1	Observed
Black-capped Chickadee	*Poecile atricapillus*	G5	S5					L5	I/E		✓	1	Possible			2	Possible	4	Probable							4	Probable					4	Probable
Blue Jay	*Cyanocitta cristata*	G5	S5					L5	I/E					3	Possible	1	Probable	1	Possible									1	Possible	1	Possible	3	Probable
Brown-headed Cowbird	*Molothrus ater*	G5	S4B					L5	E			2	Possible							1	Possible	3	Possible	1	Possible							3	Possible
Cedar Waxwing	*Bombycilla cedrorum*	G5	S5B					L5	E		✓					1	Possible	1	Possible	1	Possible	1	Possible	6	Probable	1	Possible	1	Possible	3	Probable	6	Probable
Chipping Sparrow	*Spizella passerina*	G5	S5B					L5	E		✓															1	Probable					1	Probable
Common Grackle	*Quiscalus quiscula*	G5	S5B					L5	E		✓	6	Possible	3	Possible							3	Confirmed	4	Probable					1	Possible	6	Confirmed
Cooper's Hawk	*Accipiter cooperii*	G5	S4	NAR	NAR			L4	I	X																1	Possible					1	Possible
Double-crested Cormorant	*Phalacrocorax auritus*	G5	S5B	NAR	NAR			L3																						1	Observed	1	Observed
Downy Woodpecker	*Picoides pubescens*	G5	S5					L5	I/E		✓							1	Possible					1	Possible	1	Possible	1	Possible			1	Possible
Eastern Kingbird	*Tyrannus tyrannus*	G5	S4B					L4	E		✓																			2	Probable	2	Probable
Eastern Wood-pewee	*Contopus virens*	G5	S4B	SC	SC	SC	1	L4	I/E		✓			1	Possible															1	Possible	1	Possible
European Starling	*Sturnus vulgaris*	G5	SNA					L+	E			8	Possible	2	Possible	1	Possible			5	Probable	1	Possible	2	Possible			4	Possible	4	Probable	8	Probable
Gray Catbird	*Dumetella carolinensis*	G5	S4B					L4	I/E		✓			2	Possible	1	Possible			3	Possible	1	Possible	1	Probable	1	Possible			1	Possible	3	Probable
Great Blue Heron	*Ardea herodias*	G5	S4					L3	S/B, M/F		✓																			1	Observed	1	Observed
Great Crested Flycatcher	*Myiarchus crinitus*	G5	S4B					L4	I/E		✓			1	Possible			1	Possible			1	Possible							1	Possible	1	Possible
Hairy Woodpecker	*Picoides villosus*	G5	S5					L4	I		✓			1	Possible	2	Probable													1	Possible	2	Probable
House Wren	*Troglodytes aedon*	G5	S5B					L5	E		✓													1	Possible	1	Probable					1	Probable
Mallard	*Anas platyrhynchos*	G5	S5					L5	S/B, M/F		✓									1	Probable											1	Probable
Mourning Dove	*Zenaida macroura*	G5	S5					L5	E		✓									1	Probable	4	Probable			1	Possible	1	Possible	2	Possible	4	Probable
Northern Cardinal	*Cardinalis cardinalis*	G5	S5					L5	I/E		✓			1	Possible	2	Probable	2	Probable	1	Probable	1	Possible	1	Probable	1	Possible			2	Probable	2	Probable
Northern Flicker	*Colaptes auratus*	G5	S4B					L4	I/E		✓			1	Possible																	1	Possible
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	G5	S4B					L4	M/F		✓													1	Possible							1	Possible
Red-breasted Nuthatch	*Sitta canadensis*	G5	S5					L4	I	X	✓							1	Possible													1	Possible
Red-eyed Vireo	*Vireo olivaceus*	G5	S5B					L4	I/E		✓	1	Possible											1	Possible	1	Possible	1	Possible			1	Possible
Red-tailed Hawk	*Buteo jamaicensis*	G5	S5	NAR	NAR			L5	E													1	Possible									1	Possible
Red-winged Blackbird	*Agelaius phoeniceus*	G5	S4					L5	E		✓	2	Possible					1	Possible	4	Probable	3	Probable	1	Possible			4	Probable	8	Probable	8	Probable
Ring-billed Gull	*Larus delawarensis*	G5	S5B,SZN					L4			✓	6	Observed	1	Observed							1	Observed			1	Observed	1	Observed	1	Observed	6	Observed
Rock Pigeon	*Columba livia*	G5	SNA					L+			✓																	1	Observed			1	Observed
Song Sparrow	*Melospiza melodia*	G5	S5B					L5	E		✓	2	Possible			1	Probable	2	Probable	2	Probable	2	Probable	1	Probable	4	Probable	1	Probable	3	Probable	3	Probable
Tree Swallow	*Tachycineta bicolor*	G5	S4B					L4	E		✓																			1	Possible	1	Possible
Turkey Vulture	*Cathartes aura*	G5	S5B					L5																		1	Observed			1	Observed	1	Observed
Warbling Vireo	*Vireo gilvus*	G5	S5B					L4	E		✓									1	Probable	1	Probable			1	Possible			2	Probable	2	Probable
White-breasted Nuthatch	*Sitta carolinensis*	G5	S5					L4	I		✓			1	Possible			1	Possible													1	Possible
Wild Turkey	*Meleagris gallopavo*	G5	S5					L3	I/E																							12	Observed
Yellow Warbler	*Setophaga petechia*	G5	S5B					L5	E		✓	1	Possible	3	Possible	1	Possible			2	Probable	1	Possible									3	Probable
Totals												12		15		12		13		15	17		14		17		12		22		41	

APPENDIX G

Aquatic Field Notes

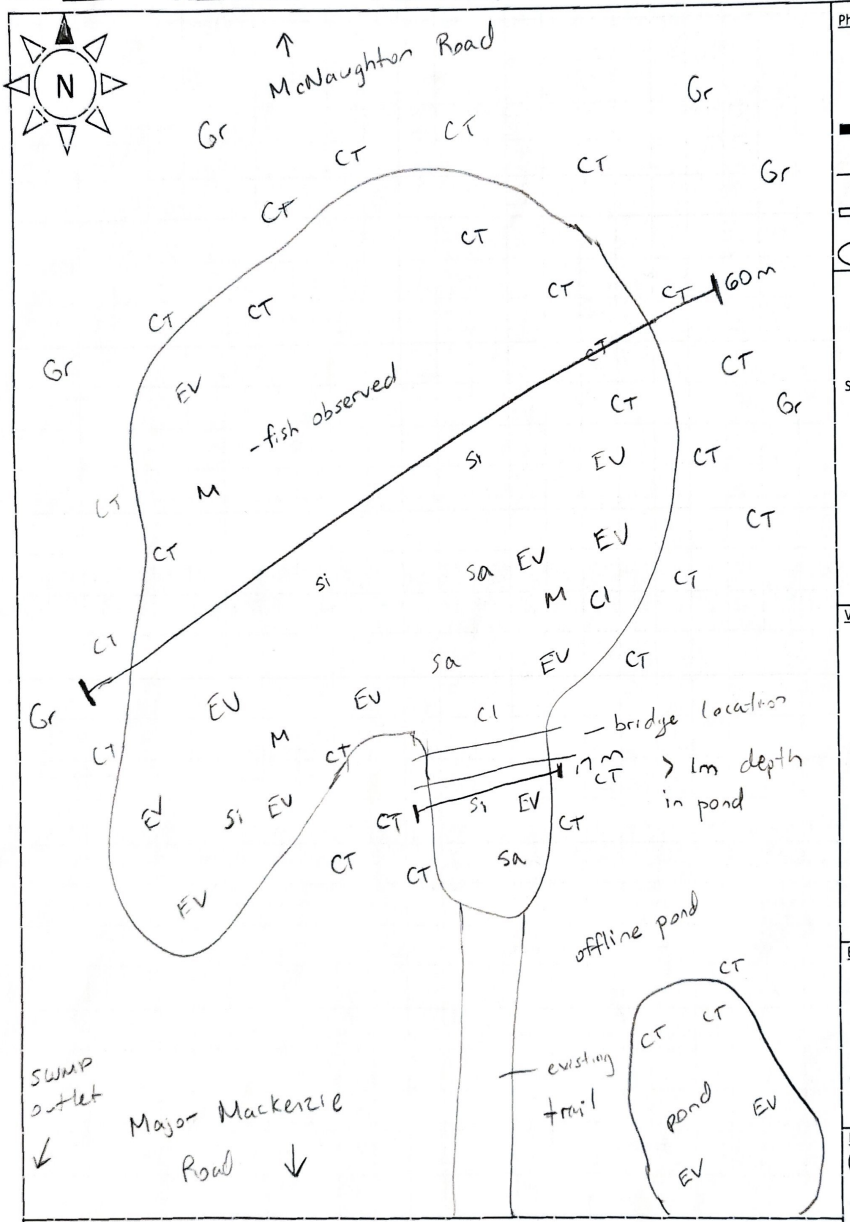
Aquatic Habitat Assessment

Page: ____ of ____

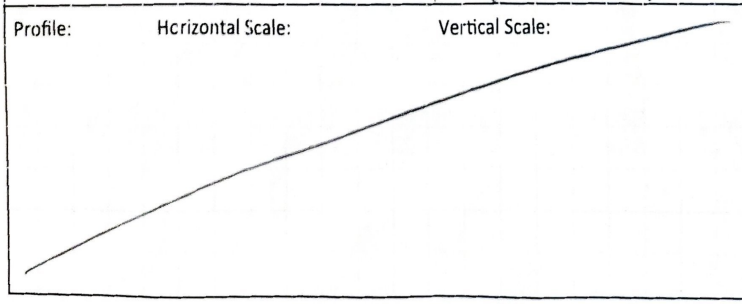
Project Name / #: Bartley Smith Trails **Date:** Oct 5, 2021 **Time:** 09:00 **Photos:** Y

Watercourse Name: SWMP **Location:** Vaughan **Length:** ~100 m **Observers:** KM SL

Zone: 17T **Easting:** 618473 **Northing:** 4856639 **Water Temp:** — **Air Temp:** 17°C **% Overhead Cover:** 10



Profile: Horizontal Scale: Vertical Scale:



Physical Characteristics:
- 10d — Depth (cm)
- 6w — Width (m)
- — Riffle
- — Flat
- — Run/Glide
- — Pool

Substrate:
- — Island/Bar
- — Fine Substrate
- Sa, Si, M — Sand, Silt, Muck
- #### — Gravel Substrate
- — Cobble
- Sh — Shale
- (B) — Boulder
- **** — Debris

Vegetation:
- CT — Cattail
- RC — Reed Canary
- SV — Submergent Vegetation
- FV — Floating Vegetation
- EV — Emergent Vegetation
- Gr — Grasses
- (R) — Riparian Tree
- — Forested Area

Banks:
- /////// — Eroded Bank
- xxxxxxx — Riprap/other Stabilization
- — — — — Undercut Bank
- TH — Thatch

Barriers:
- — Instream Log/Tree
- ^^^^^^ — Dam/Weir/Obstruction
- — Barrier to fish movement
- S — Seasonal Barrier
- -X- - -X- — Fenceline
- — Culvert

Habitat Indicators:
- Fe — Iron Staining
- — Seep/Spring
- (W) — Watercress

Aquatic Habitat Assessment

Page: ____ of ____

Project Name / #: Bartley Smith Trails **Date:** Oct 5, 2021 **Time:** 09:00 **Photos:** Y

Watercourse Name: SWMP **Location:** Vaughan **Length:** ~100m **Observers:** KM SL

Zone: 17T **Easting:** 618473 **Northing:** 4856639 **Water Temp:** — **Air Temp:** 17°C **% Overhead Cover:** 10

Section Type and Morphology

Type: (check all that apply	Stream / River	Channelized	Permanent	Intermittent	Ephemeral	~~Associated Wetland~~:
	☐	☐	☑	☐	☐	Pond

Total Section Length:	Current Velocity & Gradient:	Comments / Description
~100 m	n/a	SWMP Pond

Sub-Section(s)	Run ☐	Pool ☐	Riffle ☐	Flats ☐	Culvert ☑	Other ☑
% Area						100
Mean Depth Wetted (m)						1 m
Mean Width Wetted (m)						60m
Mean Bankfull width (m)						—
Mean Bankfull Depth (m)						—
Substrate (%)						10 Mu 40 Si 10 Cl 40 Sa

Comments:

Banks / Stability

Bank Averages	Stability	Height (m)	Slope (gradual, steep, vertical)	Natural/Manmade/ Stabilized	Erosion?	Riparian Vegetation
Left Upstream Bank	stable	2m	gradual	natural	n/a	cattails, grasses
Right Upstream Bank						

Habitat / Vegetation

Instream Cover	None	Sparse	Moderate	Dense	% Surface Area	Comments:
Undercut Banks	X					
Overhanging Vegetation		X			10	
Instream Vegetation			X		40	
Woody / Organic Debris	X					
Rocks/Boulders	X					

Aquatic Veg Type (%):	Submergent:	Floating:	Emergent: 100	None
Predominant Species:			cattails, grasses	

Migratory Obstructions:	None	Seasonal: SWMP outlet	Permanent: —
Critical Habitat:	Spawning: —	Groundwater: —	Other:

Enhancement Opportunities / Fish Observed / Comments

Fish observed

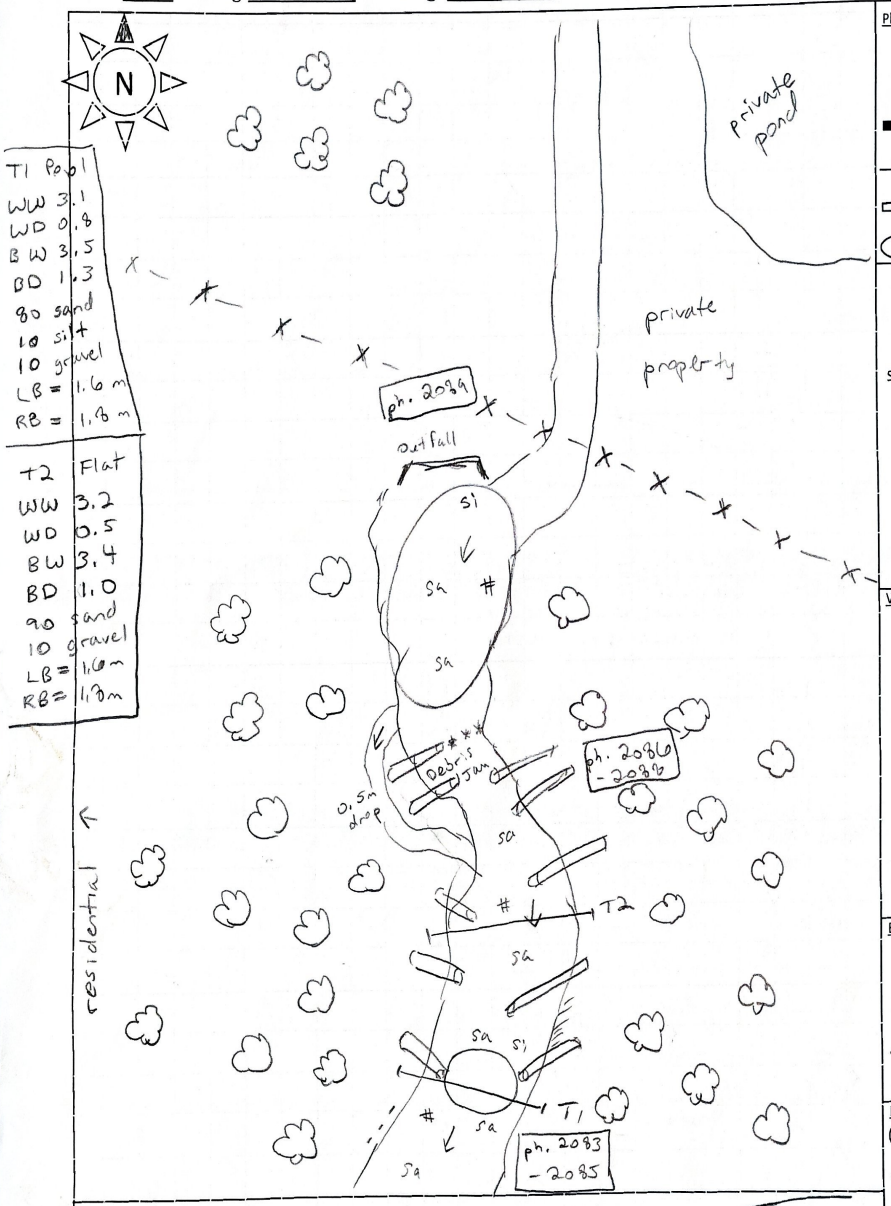
Aquatic Habitat Assessment

Page: ____ of ____

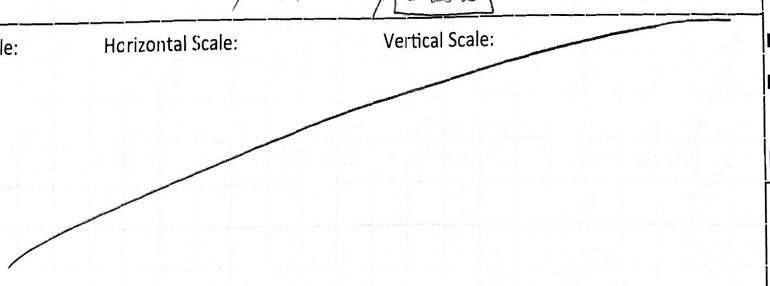
Project Name / #: Bartley Smith Trails **Date:** Oct 5, 2021 **Time:** 11:06 **Photos:** Y

Watercourse Name: Bridge Crossing 1 / Don River West Branch **Location:** Vaughan **Length:** ~100m **Observers:** KM SL

Zone: 17T **Easting:** 618794 **Northing:** 4855946 **Water Temp:** — **Air Temp:** 17°C **% Overhead Cover:** 70



Profile: Horizontal Scale: Vertical Scale:



Physical Characteristics:
- 10d — Depth (cm)
- 6w — Width (m)
- — Riffle
- — Flat
- — Run/Glide
- — Pool

Substrate:
- — Island/Bar
- — Fine Substrate
- Sa, Si, M — Sand, Silt, Muck
- #### — Gravel Substrate
- — Cobble
- Sh — Shale
- (B) — Boulder
- **** — Debris

Vegetation:
- CT — Cattail
- RC — Reed Canary
- SV — Submergent Vegetation
- FV — Floating Vegetation
- EV — Emergent Vegetation
- Gr — Grasses
- (R) — Riparian Tree
- — Forested Area

Banks:
- /////// — Eroded Bank
- xxxxxxx — Riprap/other Stabilization
- — — — — Undercut Bank
- TH — Thatch

Barriers:
- — Instream Log/Tree
- ^^^^^^ — Dam/Weir/Obstruction
- — Barrier to fish movement
- S — Seasonal Barrier
- -X- - -X- — Fenceline
- — Culvert

Habitat Indicators:
- Fe — Iron Staining
- — Seep/Spring
- (W) — Watercress

Aquatic Habitat Assessment

Page: ____ of ____

Project Name / #: Bartley Smith Trails **Date:** Oct 5, 2021 **Time:** 11:00 **Photos:** Y

Watercourse Name: Bridge Crossing 1 / Don River West Branch **Location:** Vaughan **Length:** ~100 m **Observers:** KM SL

Zone: 17T **Easting:** 618794 **Northing:** 4855946 **Water Temp:** — **Air Temp:** 17°C **% Overhead Cover:** 70

Section Type and Morphology

Type: (check all that apply	Stream / River	Channelized	Permanent	Intermittent	Ephemeral	Associated Wetland:
	☑	☐	☑	☐	☐	

Total Section Length:	Current Velocity & Gradient:	Comments / Description
~100 m	moderate & low	

Sub-Section(s)	Run ☐	Pool ☑	Riffle ☐	Flats ☑	Culvert ☐	Other ☐
% Area		40		60		
Mean Depth Wetted (m)		0.8		0.5		
Mean Width Wetted (m)		3.1		3.2		
Mean Bankfull width (m)		3.5		3.4		
Mean Bankfull Depth (m)		1.3		1.0		
Substrate (%)		80 sa 10 si 10 gr		90 sa 10 gr		

Comments:

Banks / Stability

Bank Averages	Stability	Height (m)	Slope (gradual, steep, vertical)	Natural/Manmade/ Stabilized	Erosion?	Riparian Vegetation
Left Upstream Bank	stable	1.6	steep	natural	some	trees, shrubs
Right Upstream Bank	"	1.8	"	"	"	"

Habitat / Vegetation

Instream Cover	None	Sparse	Moderate	Dense	% Surface Area	Comments:
Undercut Banks		X			10	
Overhanging Vegetation		X			10	
Instream Vegetation	X					
Woody / Organic Debris			X		40	
Rocks/Boulders	X					

Aquatic Veg Type (%):	Submergent:	Floating:	Emergent:	None
Predominant Species:				

Migratory Obstructions:	None	Seasonal:	Permanent: debris jam 0.5 drop
Critical Habitat:	Spawning: —	Groundwater: —	Other:

Enhancement Opportunities / Fish Observed / Comments

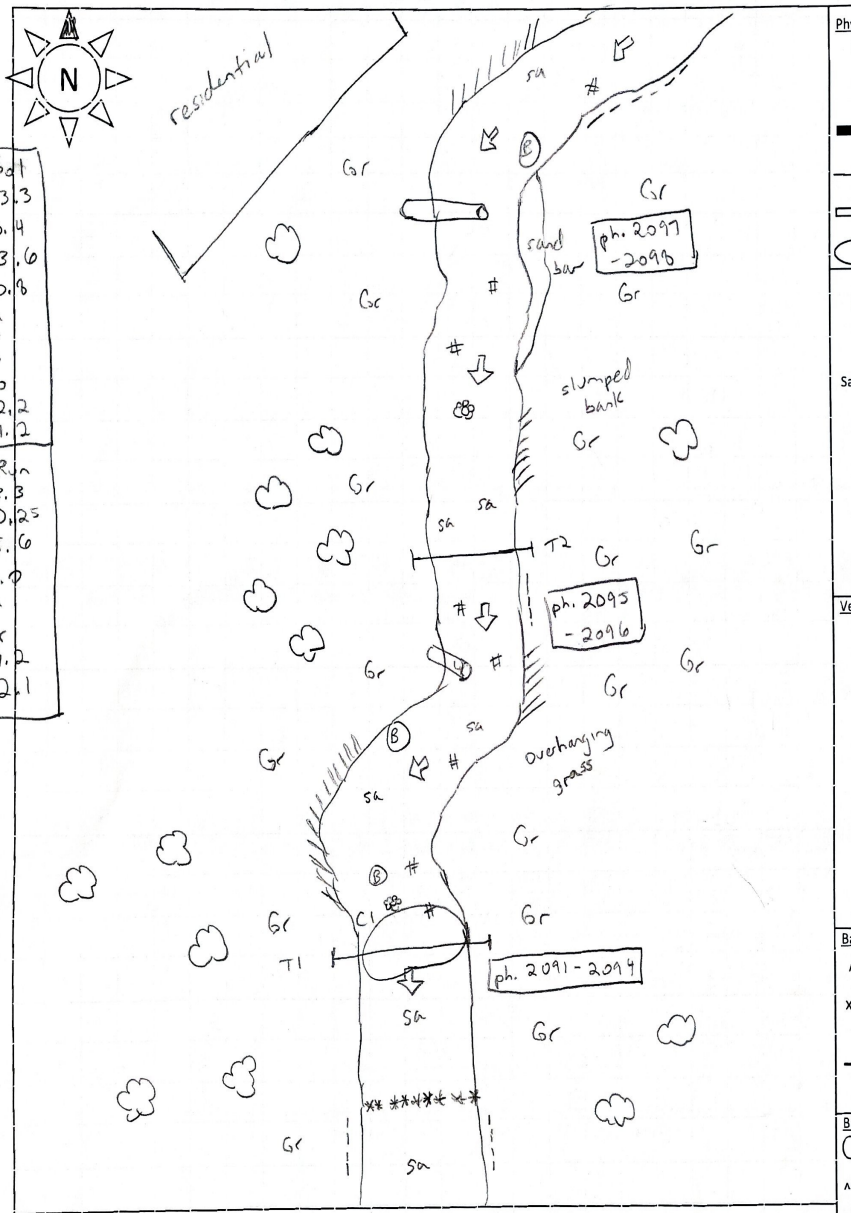
Aquatic Habitat Assessment

Page: ____ of ____

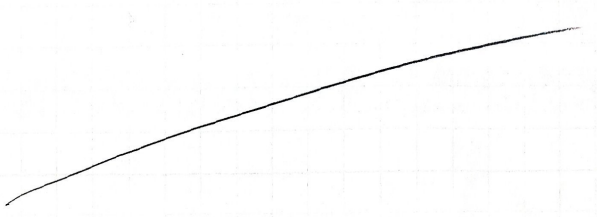
Project Name / #: Bartley Smith Trails **Date:** Oct 5, 2021 **Time:** 12:00 **Photos:** Y

Watercourse Name: Bridge Crossing 2 (Don River West Branch) **Location:** Vaughan **Length:** ~100 m **Observers:** KM SL

Zone: 17T **Easting:** 618794 **Northing:** 4855946 **Water Temp:** — **Air Temp:** 17°C **% Overhead Cover:** 20 (Forest)



Profile: Horizontal Scale: Vertical Scale:



Physical Characteristics:
- 10d — Depth (cm)
- 6w — Width (m)
- — Riffle
- — Flat
- — Run/Glide
- — Pool

Substrate:
- — Island/Bar
- — Fine Substrate
- Sa, Si, M — Sand, Silt, Muck
- #### — Gravel Substrate
- — Cobble
- Sh — Shale
- (B) — Boulder
- **** — Debris

Vegetation:
- CT — Cattail
- RC — Reed Canary
- SV — Submergent Vegetation
- FV — Floating Vegetation
- EV — Emergent Vegetation
- Gr — Grasses
- (R) — Riparian Tree
- — Forested Area

Banks:
- /////// — Eroded Bank
- xxxxxxx — Riprap/other Stabilization
- — — — — Undercut Bank
- TH — Thatch

Barriers:
- — Instream Log/Tree
- ^^^^^^ — Dam/Weir/Obstruction
- — Barrier to fish movement
- S — Seasonal Barrier
- -X- - -X- — Fenceline
- — Culvert

Habitat Indicators:
- Fe — Iron Staining
- — Seep/Spring
- (W) — Watercress

Aquatic Habitat Assessment

Page: ____ of ____

Project Name / #: Bartley Smith Trails **Date:** Oct 5, 2021 **Time:** 12:00 **Photos:** Y

Watercourse Name: Bridge Crossing 2 / Don River West Branch **Location:** Vaughan **Length:** ~100m **Observers:** KM SL

Zone: 17T **Easting:** 618794 **Northing:** 4855946 **Water Temp:** — **Air Temp:** 17°C **% Overhead Cover:** 20

Section Type and Morphology

Type: (check all that apply	Stream / River	Channelized	Permanent	Intermittent	Ephemeral	Associated Wetland:
	☑	☐	☑	☐	☐	

Total Section Length:	Current Velocity & Gradient:	Comments / Description
~100m	moderate & low	

Sub-Section(s)	Run ☑	Pool ☑	Riffle ☐	Flats ☐	Culvert ☐	Other ☐
% Area	80	20				
Mean Depth Wetted (m)	0.3	0.4				
Mean Width Wetted (m)	3.3	3.3				
Mean Bankfull width (m)	5.6	3.6				
Mean Bankfull Depth (m)	1.0	0.8				
Substrate (%)	50 sa 50 gr	40 sa 10 bo 40 gr 10 co				

Comments:

Banks / Stability

Bank Averages	Stability	Height (m)	Slope (gradual, steep, vertical)	Natural/Manmade/ Stabilized	Erosion?	Riparian Vegetation
Left Upstream Bank	moderately stable	1.7	steep	natural	Yes (slumped bank)	grasses, shrubs
Right Upstream Bank	"	1.7	"	"	"	"

Habitat / Vegetation

Instream Cover	None	Sparse	Moderate	Dense	% Surface Area	Comments:
Undercut Banks			X		20	
Overhanging Vegetation			X		20	
Instream Vegetation	X					
Woody / Organic Debris			X		30	
Rocks/Boulders	X					

Aquatic Veg Type (%):	Submergent:	Floating:	Emergent:	None
Predominant Species:				

Migratory Obstructions:	None	Seasonal:	Permanent:
Critical Habitat:	Spawning: —	Groundwater: —	Other:

Enhancement Opportunities / Fish Observed / Comments

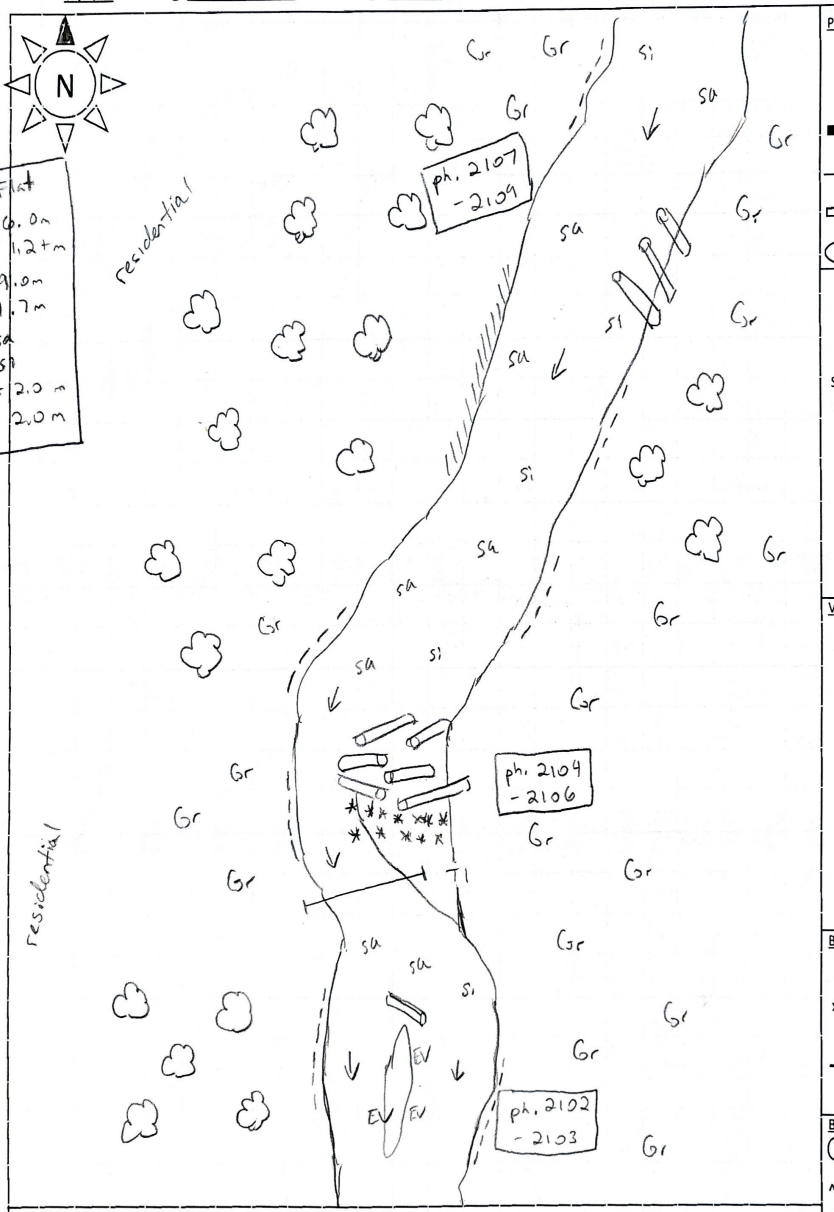
Aquatic Habitat Assessment

Page: ____ of ____

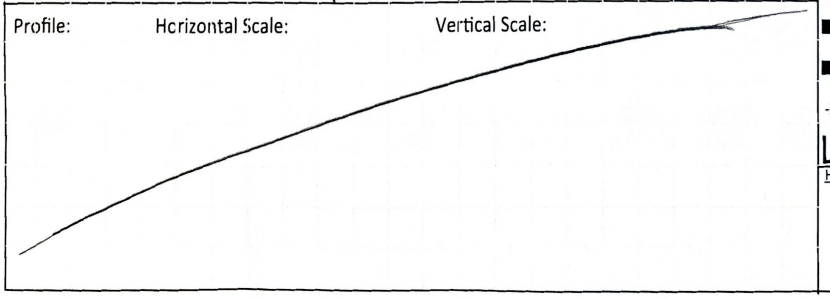
Project Name / #: Bartley Smith Trails **Date:** Oct 5, 2021 **Time:** 13:00 **Photos:** Y

Watercourse Name: Bridge Crossing 3 / Don River West Branch **Location:** Vaughan **Length:** ~100m **Observers:** KM SL

Zone: 17T **Easting:** 618857 **Northing:** 4855343 **Water Temp:** — **Air Temp:** 17°C **% Overhead Cover:** 70



Profile: Horizontal Scale: Vertical Scale:



Physical Characteristics:
- 10d — Depth (cm)
- 6w — Width (m)
- — Riffle
- — Flat
- — Run/Glide
- — Pool

Substrate:
- — Island/Bar
- — Fine Substrate
- Sa, Si, M — Sand, Silt, Muck
- #### — Gravel Substrate
- — Cobble
- Sh — Shale
- (B) — Boulder
- **** — Debris

Vegetation:
- CT — Cattail
- RC — Reed Canary
- SV — Submergent Vegetation
- FV — Floating Vegetation
- EV — Emergent Vegetation
- Gr — Grasses
- (R) — Riparian Tree
- — Forested Area

Banks:
- /////// — Eroded Bank
- xxxxxxx — Riprap/other Stabilization
- — — — — Undercut Bank
- TH — Thatch

Barriers:
- — Instream Log/Tree
- ^^^^^^ — Dam/Weir/Obstruction
- — Barrier to fish movement
- S — Seasonal Barrier
- -X- - -X- — Fenceline
- — Culvert

Habitat Indicators:
- Fe — Iron Staining
- — Seep/Spring
- (W) — Watercress

Aquatic Habitat Assessment

Page: ____ of ____

Project Name / #: Bartley Smith Trails **Date:** Oct 5, 2021 **Time:** 13:00 **Photos:** Y

Watercourse Name: Bridge Crossing 3 / Don River West Branch **Location:** Vaughan **Length:** ~100 m **Observers:** KM SL

Zone: 17T **Easting:** 619857 **Northing:** 4855343 **Water Temp:** — **Air Temp:** 17°C **% Overhead Cover:** 70

Section Type and Morphology

Type: (check all that apply	Stream / River	Channelized	Permanent	Intermittent	Ephemeral	Associated Wetland:
	☑	☐	☑	☐	☐	

Total Section Length:	Current Velocity & Gradient:	Comments / Description
~100 m	moderate & low	

Sub-Section(s)	Run ☐	Pool ☐	Riffle ☐	Flats ☑	Culvert ☐	Other ☐
% Area				100		
Mean Depth Wetted (m)				1.2		
Mean Width Wetted (m)				6.0		
Mean Bankfull width (m)				9.0		
Mean Bankfull Depth (m)				1.7		
Substrate (%)				50 sa 50 si		

Comments:

Banks / Stability

Bank Averages	Stability	Height (m)	Slope (gradual, steep, vertical)	Natural/Manmade/ Stabilized	Erosion?	Riparian Vegetation
Left Upstream Bank	moderately stable	2.0	steep	natural	Yes	grasses, shrubs
Right Upstream Bank	"	"	"	"	"	"

Habitat / Vegetation

Instream Cover	None	Sparse	Moderate	Dense	% Surface Area	Comments:
Undercut Banks			X		30	
Overhanging Vegetation		X			10	
Instream Vegetation		X			10	
Woody / Organic Debris			X		30	
Rocks/Boulders	X				—	

Aquatic Veg Type (%):	Submergent:	Floating:	Emergent: 100	None
Predominant Species:			grasses	

Migratory Obstructions:	None	Seasonal: —	Permanent: —
Critical Habitat:	Spawning: —	Groundwater: —	Other:

Enhancement Opportunities / Fish Observed / Comments

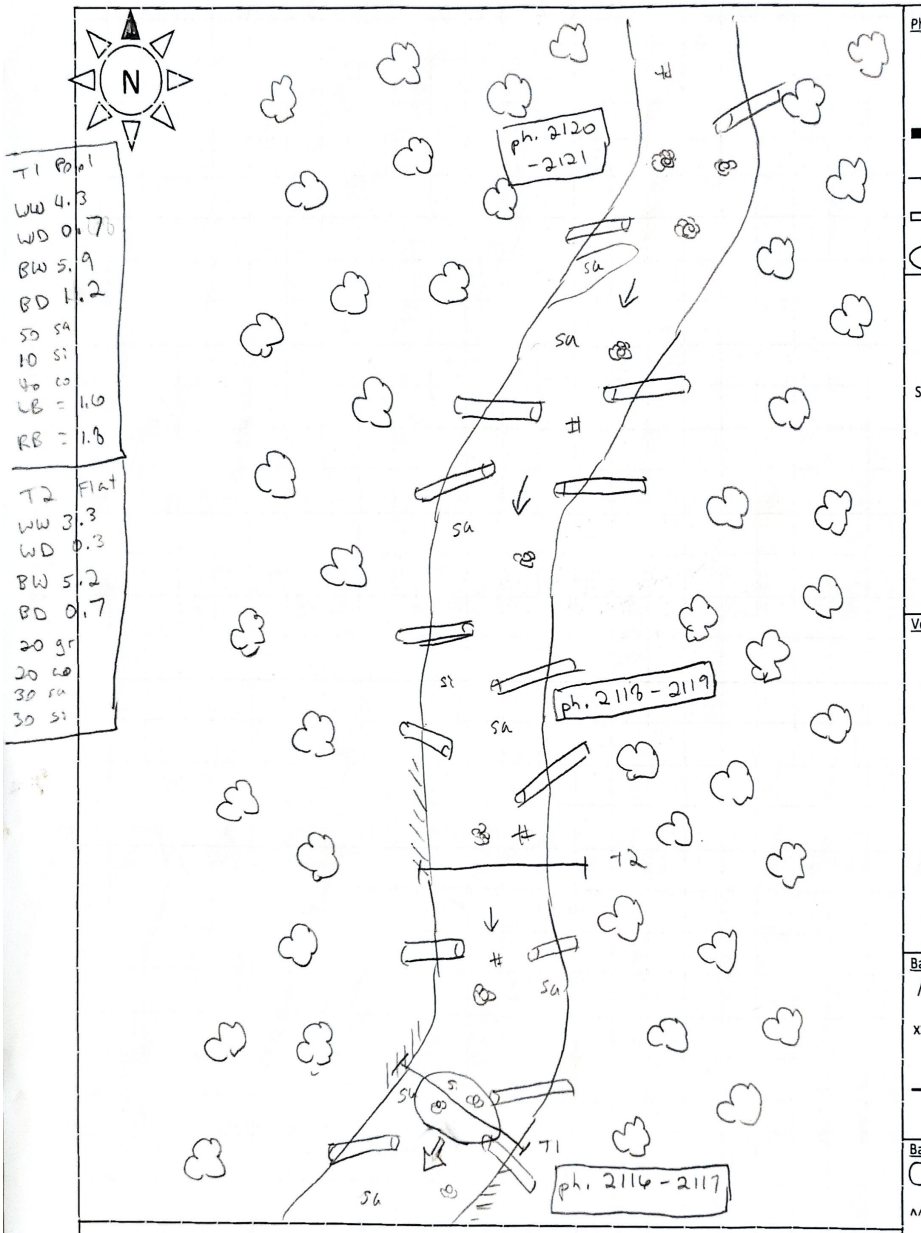
Aquatic Habitat Assessment

Page: ____ of ____

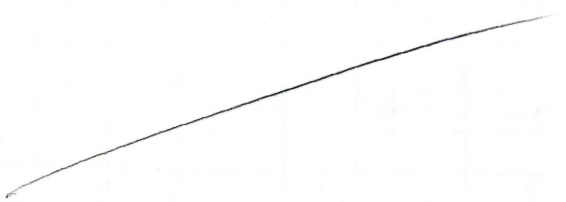
Project Name / #: Bartley Smith Trails **Date:** Oct 5, 2021 **Time:** 14:00 **Photos:** Y

Watercourse Name: Bridge Crossing 4 / Don River West Branch **Location:** Vaughan **Length:** ~100m **Observers:** KM SL

Zone: 17T **Easting:** 619226 **Northing:** 4854914 **Water Temp:** — **Air Temp:** 17°C **% Overhead Cover:** 90



Profile: Horizontal Scale: Vertical Scale:



Physical Characteristics:
- 10d — Depth (cm)
- 6w — Width (m)
- — Riffle
- — Flat
- — Run/Glide
- — Pool

Substrate:
- — Island/Bar
- — Fine Substrate
- Sa, Si, M — Sand, Silt, Muck
- #### — Gravel Substrate
- — Cobble
- Sh — Shale
- (B) — Boulder
- **** — Debris

Vegetation:
- CT — Cattail
- RC — Reed Canary
- SV — Submergent Vegetation
- FV — Floating Vegetation
- EV — Emergent Vegetation
- Gr — Grasses
- (R) — Riparian Tree
- — Forested Area

Banks:
- /////// — Eroded Bank
- xxxxxxx — Riprap/other Stabilization
- — — — — Undercut Bank
- TH — Thatch

Barriers:
- — Instream Log/Tree
- ^^^^^^ — Dam/Weir/Obstruction
- — Barrier to fish movement
- S — Seasonal Barrier
- -X- - -X- — Fenceline
- — Culvert

Habitat Indicators:
- Fe — Iron Staining
- — Seep/Spring
- (W) — Watercress

Aquatic Habitat Assessment

Page: ____ of ____

Project Name / #: Bartley Smith Trails **Date:** Oct 5, 2021 **Time:** 14:00 **Photos:** Y

Watercourse Name: Bridge Crossing 4 / Don River West Branch **Location:** Vaughan **Length:** ~100m **Observers:** KM SL

Zone: 17T **Easting:** 619226 **Northing:** 4854914 **Water Temp:** — **Air Temp:** 17°C **% Overhead Cover:** 90

Section Type and Morphology

Type: (check all that apply	Stream / River	Channelized	Permanent	Intermittent	Ephemeral	Associated Wetland:
	☑	☐	☑	☐	☐	

Total Section Length:	Current Velocity & Gradient:	Comments / Description
~100 m	moderate & low	

Sub-Section(s)	Run ☐	Pool ☑	Riffle ☐	Flats ☑	Culvert ☐	Other ☐
% Area		10		90		
Mean Depth Wetted (m)		0.7		0.3		
Mean Width Wetted (m)		4.3		3.3		
Mean Bankfull width (m)		5.9		5.2		
Mean Bankfull Depth (m)		1.2		0.7		
Substrate (%)		50 sa 10 si 40 co		30 sa 20 co 30 si 20 gr		

Comments:

Banks / Stability

Bank Averages	Stability	Height (m)	Slope (gradual, steep, vertical)	Natural/Manmade/ Stabilized	Erosion?	Riparian Vegetation
Left Upstream Bank	stable	1.6	steep	natural	Yes	Forest, shrubs
Right Upstream Bank	"	1.6	"	"	"	"

Habitat / Vegetation

Instream Cover	None	Sparse	Moderate	Dense	% Surface Area	Comments:
Undercut Banks		X			10	
Overhanging Vegetation		X			10	
Instream Vegetation	X				—	
Woody / Organic Debris			X		50	
Rocks/Boulders	X				—	

Aquatic Veg Type (%):	Submergent:	Floating:	Emergent:	None
Predominant Species:				

Migratory Obstructions:	None	Seasonal: —	Permanent: —
Critical Habitat:	Spawning: —	Groundwater: —	Other:

Enhancement Opportunities / Fish Observed / Comments

APPENDIX H

Preliminary Trail Route Options

BARTLEY SMITH GREENWAY TRAIL FEASIBILITY STUDY

TRAIL ALIGNMENT DISCUSSION

McNaughton Crossing Option #3
Opportunity: Proposed at-grade signalized pedestrian crossing connection at Kinloch Crescent access.
Constraint: Steep slope from river valley to road and location of existing crossing will cause trail to be very indirect.

McNaughton Crossing Option #2
Opportunity: Proposed at-grade signalized pedestrian crossing.
Constraint: Slope from river valley to road will cause crossing to be less direct.

McNaughton Crossing Option #1
Opportunity: Culvert crossing under road will avoid steep slopes and is a direct connection for users.
Constraint: Safety, maintenance, and very steep slopes on north side would create ramp/poor sight lines.

Trail Alignment Option A
Opportunity: Bridge crossing and scenic view of stormwater pond, slopes allow for more space between trail and residential rear lots.
Constraint: Bridge infrastructure needed.

Trail Alignment Option B
Opportunity: Direct connection to Killian-Lamar Parkette.
Constraint: Slope and flood limit will cause trail to be located within close proximity to residential rear yards.

Proposed Alignment C
Opportunity: Outside of floodplain limit, avoids sensitive/wet landscape (Provincially Significant Wetland - PSW)
Constraint: Crosses over private property, some slope challenges.

Potential Trail Alignment (Determined Not-Feasible)
Opportunity: Wood/River valley trail experience.
Constraint: Trail within flood limits, heavily vegetated, flooding and erosion concerns.

Potential Trail Alignment (Determined Not-Feasible)
Opportunity: Minimal environmental impact in valley.
Constraint: Very steep slopes, erosion, less desirable experience for users. Unable to construct trail in most area.

Trail Connection
Constraint: Existing ramp/ stairs. Not AODA Compliant.

Opportunity: Addition of Seating node north of culvert.

Proposed Alignment D
Opportunity: Flat area, no vegetation impacts as area is already disturbed/kept clear as a sewage easement.
Constraint: Within flood limit and close proximity to creek.

Note: Pond being removed through private development

Trail Connection:
Opportunity: Connection to Caproni Drive and Maple Airport Park, possible programmable linear park space along Caproni Drive through development process.
Constraint: Steep slope connection to main trail limits formal trails, however people may create informal paths.

Trail Connection
Opportunity: Connection between Bevhan Road and Caproni Drive accommodated with 9m easement through land development planning.

Bridge Crossing Option #1
Opportunity: Connect Clemson Crescent to Caproni Drive, Villandry Crescent and Maple Airport Park, facilitates trail loop linking residents and destinations.
Constraint: Steep slope on west approach.

Bridge Crossing Option #2
Opportunity: Connect proposed trail to Mountcharles Crescent, facilitates connection to school/park space, good construction feasibility.

Bridge Crossing Option #3
Opportunity: Connect proposed trail to Glenside Drive, facilitates reasonable connection to school/park spaces, good construction feasibility.

Proposed Alignment E
Opportunity: Flat to minor sloped area, minimal vegetation impacts as mostly open field.
Constraint: Flood limit pushes trail close to rear yards - visual buffer may be needed.

Existing Trail
Constraint: Inconsistent trail surfacing. Existing trail changes from asphalt to compacted stone dust from this point to Rutherford.

Trail Connection
Opportunity: Existing culvert could be used to create a trail/creek crossing to connect to Hollybush Drive and Sports Village baseball diamonds.
Constraint: Slopes on west side of connection are steep and wooded.

Bridge Crossing Option #4
Opportunity: Connect existing trail to Sports Village baseball diamonds and Hollybush Drive.
Constraint: Slopes on west side of connection are steep and wooded, high impact for construction and construction access.

Trail Alignment Option F
Opportunity: Flat area that consists of existing lawn, sidewalks, cleared area for Rutherford reconstruction. Connection to Sherwood Park.
Constraint: Users will be directed down roadway with limited space for a formal trail - sidewalk & on-road cycling condition is likely.

Rutherford Crossing Option #2
Opportunity: Utilize existing signalized intersection at Greenock Drive.
Constraint: Existing sidewalk would require upgrade or pair with multi-use path.

Rutherford Crossing Option #1
Opportunity: Culvert crossing will avoid need for users to enter road corridor and cross road.
Constraint: Road is currently being reconstructed and no opportunity to coordinate. Consider installing with future road works only.

Rutherford Crossing (Determined Desirable/Not-Feasible)
Opportunity: Utilize existing signalized intersection at Rotational Drive
Constraint: Existing sidewalk would require upgrade or pair with multi-use path. Alignments that best link to this crossing have been determined not-feasible and would not be desirable for other routes.

Potential Trail Alignment (Determined Not-Feasible)
Opportunity: Road boulevard is flat and would provide many access points.
Constraint: Would require relocation of several utility poles in flat areas. Steep slopes and high quality woodland creates issues with connection at Keele Street.

Potential Trail Alignment (Determined Not-Feasible)
Opportunity: Part of alignment is along manageable slopes with lower quality woodland, connection to Sherwood Park.
Constraint: Part of alignment has steep slopes, high quality woodland and close proximity to residential rear yards.

Opportunity: Connection to existing signalized intersection at Gantner Gate.

Legend

- Proposed Primary Trail
- Proposed Alternative - Determined Not Feasible
- Proposed Secondary Trail Connection
- Proposed On-Road Facility
- Existing Trails
- Existing On-Road Facility
- Proposed Pedestrian Bridge
- Railway
- Study Area
- Parks
- Watercourse
- Stormwater Management Pond
- Waterbody
- Significant Forest
- Parcels
- Minor Wayfinding Opportunity
- Major Wayfinding Opportunity
- Crossing Opportunity
- Steep Slope Constraint

Note: Contour shown at 1.0m intervals

N

0 50 100 200 300 400
Meters

VAUGHAN

wsp

APPENDIX I

Ecological Land Classification Field Sheets

wsp

ELC Summary Sheet Project Name: _____ Project No: _____ Page 1 of ___

UNIT #: 1 Observers: Joseph Mentink Date: _____ Weather / Limitations: 28° Sunny

SYSTEM: Terrestrial Aquatic Wetland	COMMUNITY CLASS: Beach-Bar, Sand Dune, Bluff, Cliff, Talus, Alvar, Rock Barren, Cave, Sand Barren, Prairie-Savannah-Woodland, Forest, Cultural, Swamp, Fen, Bog, Marsh, Open Water, Shallow Water	SERIES: CUM	ECOSITE: CUM1	VEG. TYPE: CUM1-1

STAND DESCRIPTION:	***SOIL ANALYSIS:***	**Community Inclusion:**
COMMUNITY AGE: 1=Pioneer 2=Young 3=Mid-Aged 4=Mature 5=Old Growth	**DRAINAGE:** 1=very well 2=well 3=moderate 4=imperfect 5=poor 6=very poor	
STANDING SNAGS: R=Rare O=Occasional A=Abundant D=Dominant	**SOIL MOISTURE:** 1=wet 2=wet-mesic 3=mesic 4=dry-mesic 5=dry	
DEADFALL LOGS: R=Rare O=Occasional A=Abundant D=Dominant	**TEXTURE:** silt sand clay loam	**Complex/Mosaic:**
BOTANICAL QUALITY: 1=low 2=medium 3=high	**PARENT MATERIAL:** mineral organic	
SLOPE: none gentle moderate steep (simple or complex)	**SUBTRATE DEPTH:** > 15cm < 15cm	

TOPOGRAPHY: lacustrine, riverine, tableland, rolling upland, cliff, talus slope, crevice/cave, alvar, rockland, valley slope, terrace, bottomland, sand dune, bluff, beach/bar

Height code: 1=>25m, 2=10m-25m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7=< 0.5m **Cover codes:** 0=none, 1=0%- 10%, 2=10%- 25%, 3=25%-60%, 4=>60%

VEGETATION LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE
1	Canopy			
2	Sub-Canopy			
3	Understorey			
4	Ground Layer			

SIZE CLASS ANALYSIS (abundance code): R-Rare, O=Occasional, F=Frequent, A=Abundant, D=Dominant

< 10 cm DBH: | 10 - 24 cm DBH: | 25 to 50 cm DBH: | > 50 cm DBH:

SPECIES	LAYER / ABUNDANCE 1	2	3	4
MEL ALBA				
Horsweed				
POA PRAT				
PAR VITA				
VIC CRAC				
SYM LANC				
DAU CARO				
LOT CORN				
RUM CRIS				
SON ARVE				
SEC VARI crown vetch				
AMB TRIF				
SYM NOVA				
CIR VULG				
ULM AMER				
ACE NEGU				

A South

SPECIES	LAYER / ABUNDANCE 1	2	3	4
A North				
APO ANDR				
EUT GRAM				
SOL ALTI				
TRI SP				
VER THAP				
SECTION B				
SOL ALTI > POA PRAT > SYM NOVA > CIR HRVE				
RHA CATH			R	
RHA ARAB				
SYM LANC				

EVIDENCE OF DISTURBANCE:
logging, sugar bush, gaps, livestock, exotic species, plantation, trails, dumping, fill, rec. use, noise, disease/death of trees, wind throw, browse, beaver, flooding, fire, ice

WILDLIFE HABITAT OBSERVATIONS:
vernal pools, hibernacula, snags, fallen logs, tracks, den/nest, scat, carcass, vocalization, feeding

HOWREN (OBS) (VO)

COMMENTS / ADDITIONAL NOTES:

continuation of poly 1 CUM1-1

ELC Summary Sheet Project Name: _____ Project No: _____ Page 3 of ___ wsp

UNIT #: 3 Observers: _____ Date: _____ Weather / Limitations: _____

SYSTEM: Terrestrial Aquatic Wetland	COMMUNITY CLASS: Beach-Bar, Sand Dune, Bluff, Cliff, Talus, Alvar, Rock Barren, Cave, Sand Barren, Prairie-Savannah-Woodland, Forest, Cultural, Swamp, Fen, Bog, Marsh, Open Water, Shallow Water	SERIES:	ECOSITE:	VEG. TYPE: CUM1-1

STAND DESCRIPTION:	***SOIL ANALYSIS***:	**Community Inclusion:**
COMMUNITY AGE: 1=Pioneer 2=Young 3=Mid-Aged 4=Mature 5=Old Growth	**DRAINAGE:** 1=very well 2=well 3=moderate 4=imperfect 5=poor 6=very poor	
STANDING SNAGS : R=Rare O=Occasional A=Abundant D=Dominant	**SOIL MOISTURE:** 1=wet 2=wet-mesic 3=mesic 4=dry-mesic 5=dry	
DEADFALL LOGS: R=Rare O=Occasional A=Abundant D=Dominant	**TEXTURE:** silt sand clay loam	
BOTANICAL QUALITY: 1=low 2=medium 3=high	**PARENT MATERIAL:** mineral organic	**Complex/Mosaic:**
SLOPE: none gentle moderate steep (simple or complex)	**SUBTRATE DEPTH:** > 15cm < 15cm	

TOPOGRAPHY: lacustrine, riverine, tableland, rolling upland, cliff, talus slope, crevice/cave, alvar, rockland, valley slope, terrace, bottomland, sand dune, bluff, beach/bar

Height code: 1=>25m, 2=10m-25m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7=< 0.5m **Cover codes**: 0=none, 1=0%- 10%, 2=10%- 25%, 3=25%-60%, 4=>60%

VEGETATION LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE
1	Canopy			
2	Sub-Canopy			
3	Understorey			
4	Ground Layer			

SIZE CLASS ANALYSIS (abundance code): R-Rare, O=Occasional, F=Frequent, A=Abundant, D=Dominant

< 10 cm DBH:	10 - 24 cm DBH:	25 to 50 cm DBH:	> 50 cm DBH:

SPECIES	LAYER / ABUNDANCE 1	2	3	4
PYR COMM		F		
ULM PUMI		O		O
SAL EUXI	O			
PIC GLAU (planted and	O			
POP DELT natural)	O			
FRA PENN		F		
SAL PETI			O	
PAR VITA				
LON TATA (glaberal)		R	O	
VIT RIPA		O		
RHO TYPA		O	O	

SPECIES	LAYER / ABUNDANCE 1	2	3	4
POA PRAT				A
LOL PERE				
SON ARVE				
DAU CARO				
VIC CRAC				
SOL NEMO				
SOL ALTI				
EUT GRAM				
BRO INER				A
CIR ARVE				

EVIDENCE OF DISTURBANCE:
logging, sugar bush, gaps, livestock, exotic species, plantation, trails, dumping, fill, rec. use, noise, disease/death of trees, wind throw, browse, beaver, flooding, fire, ice

EAB

WILDLIFE HABITAT OBSERVATIONS:
vernal pools, hibernacula, snags, fallen logs, tracks, den/nest, scat, carcass, vocalization, feeding

COMMENTS / ADDITIONAL NOTES:

not more than 25% tree, add to unit 1 CUM

ELC Summary Sheet Project Name: _____ Project No: _____ Page 2 of ___ wsp

UNIT #: 2 Observers: _____ Date: _____ Weather / Limitations: _____

SYSTEM: Terrestrial Aquatic Wetland	COMMUNITY CLASS: Beach-Bar, Sand Dune, Bluff, Cliff, Talus, Alvar, Rock Barren, Cave, Sand Barren, Prairie-Savannah-Woodland, Forest, Cultural, Swamp, Fen, Bog, Marsh, Open Water, Shallow Water	SERIES:	ECOSITE:	VEG. TYPE: MAM mixed

STAND DESCRIPTION:

COMMUNITY AGE: 1=Pioneer	2=Young	3=Mid-Aged	4=Mature	5=Old Growth
STANDING SNAGS: R=Rare	O=Occasional	A=Abundant		D=Dominant
DEADFALL LOGS: R=Rare	O=Occasional	A=Abundant		D=Dominant
BOTANICAL QUALITY: 1=low	2=medium	3=high		
SLOPE: none	gentle	moderate	steep (simple or complex)	

SOIL ANALYSIS:

DRAINAGE: 1=very well	2=well	3=moderate	4=imperfect	5=poor	6=very poor
SOIL MOISTURE: 1=wet	2=wet-mesic	3=mesic	4=dry-mesic	5=dry	
TEXTURE: silt	sand	clay	loam		
PARENT MATERIAL:	mineral	organic			
SUBTRATE DEPTH:	> 15cm	< 15cm			

Community Inclusion:

Complex/Mosaic:

TOPOGRAPHY: lacustrine, riverine, tableland, rolling upland, cliff, talus slope, crevice/cave, alvar, rockland, valley slope, terrace, bottomland, sand dune, bluff, beach/bar

Height code: 1=>25m, 2=10m-25m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7=< 0.5m **Cover codes**: 0=none, 1=0%- 10%, 2=10%- 25%, 3=25%-60%, 4=>60%

VEGETATION LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE
1	Canopy			
2	Sub-Canopy			
3	Understorey	4	3	PHA AUAU > TYP LATI
4	Ground Layer	6	4	SYM LANC > CIR ARVE > TUS FARF > BID SPP

SIZE CLASS ANALYSIS (abundance code): R-Rare, O=Occasional, F=Frequent, A=Abundant, D=Dominant

< 10 cm DBH:	10 - 24 cm DBH:	25 to 50 cm DBH:	> 50 cm DBH:

SPECIES	LAYER / ABUNDANCE 1	2	3	4
VIT RIPA				

SPECIES	LAYER / ABUNDANCE 1	2	3	4
TYPH LATI			A	
BID FRON				
ECH LOBA				
IMP CAPE				
LYT SALI				
RAN SCLE				
PER HYDROPIPEOIDES				
SYM LANC				F
PHA ARAR			A	
RIB CONN				
CHE ALBA				
SON OLER				
SOL ALTI				
ARC LAPP				
PHR AUAU				
SCH TABE				R
EUT MAMA				
CIR ARVE				F
TUS FARF				F
GLE HEDE				
LEO CARD				
LOL PRAT				

EVIDENCE OF DISTURBANCE:
logging, sugar bush, gaps, livestock, exotic species, plantation, trails, dumping, fill, rec. use, noise, disease/death of trees, wind throw, browse, beaver, flooding, fire, ice
road

WILDLIFE HABITAT OBSERVATIONS:
vernal pools, hibernacula, snags, fallen logs, tracks, den/nest, scat, carcass, vocalization, feeding

Monarch adult

COMMENTS / ADDITIONAL NOTES:

Woodchip mesh berm runs through poly 2

Not shallow marsh - phrag dominated, smaller typha areas, some disturbed area, now forb dominated

ELC Summary Sheet Project Name: _____ Project No: _____ Page 4 of ___

UNIT #: 4 Observers: _____ Date: _____ Weather / Limitations: _____

SYSTEM:	COMMUNITY CLASS:	SERIES:	ECOSITE:	VEG. TYPE:
Terrestrial Aquatic Wetland	Beach-Bar, Sand Dune, Bluff, Cliff, Talus, Alvar, Rock Barren, Cave, Sand Barren, Prairie-Savannah-Woodland, Forest, Cultural, Swamp, Fen, Bog, Marsh, Open Water, Shallow Water		CUW1	

STAND DESCRIPTION:	***SOIL ANALYSIS:***	**Community Inclusion:**
COMMUNITY AGE: 1=Pioneer 2=Young 3=Mid-Aged 4=Mature 5=Old Growth	DRAINAGE: 1=very well 2=well 3=moderate 4=imperfect 5=poor 6=very poor	
STANDING SNAGS : R=Rare O=Occasional A=Abundant D=Dominant	SOIL MOISTURE: 1=wet 2=wet-mesic 3=mesic 4=dry-mesic 5=dry	
DEADFALL LOGS: R=Rare O=Occasional A=Abundant D=Dominant	TEXTURE: silt sand clay loam	
BOTANICAL QUALITY: 1=low 2=medium 3=high	PARENT MATERIAL: mineral organic	**Complex/Mosaic:**
SLOPE: none gentle moderate steep (simple or complex)	SUBTRATE DEPTH: > 15cm < 15cm	

TOPOGRAPHY: lacustrine, riverine, tableland, rolling upland, cliff, talus slope, crevice/cave, alvar, rockland, valley slope, terrace, bottomland, sand dune, bluff, beach/bar

Height code: 1=>25m, 2=10m-25m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7=< 0.5m ***Cover codes***: 0=none, 1=0%- 10%, 2=10%- 25%, 3=25%-60%, 4=>60%

	VEGETATION LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE
1	Canopy	2	3	ACE NEGU = POP TREM > PIC GLAU
2	Sub-Canopy	3	3	RHU TYPA > ACE NEGU >> POP TREM > VIB LENT
3	Understorey	4	3	CONI = ACE NEGU
4	Ground Layer	6	4	GEU URBA >> SOL ALTI > HES MATR > PAR VITA

SIZE CLASS ANALYSIS (abundance code): R-Rare, O=Occasional, F=Frequent, A=Abundant, D=Dominant

< 10 cm DBH:	10 - 24 cm DBH:	25 to 50 cm DBH:	> 50 cm DBH:

SPECIES	LAYER / ABUNDANCE 1	2	3	4
THU OCCI				
PIC GLAU				
ACE NEGU				
POP TREM				
PYR COMM				
FRA PENN				
ROB PSEU				
JUG NIGR				
VIT RIPA				
RHA CATH			F	
CONI SP			F	
COR RUGO			R	
PAR VITA				
VIB LENT				

SPECIES	LAYER / ABUNDANCE 1	2	3	4
HES MATR			D	
SOL ALTI			F	
TOR JAPO				
FRA VIRG				
CIR CANA				

EVIDENCE OF DISTURBANCE:
logging, sugar bush, gaps, livestock, exotic species, plantation, trails, dumping, fill, rec. use, noise, disease/death of trees, wind throw, browse, beaver, flooding, fire, ice

WILDLIFE HABITAT OBSERVATIONS:
vernal pools, hibernacula, snags, fallen logs, tracks, den/nest, scat, carcass, vocalization, feeding

COMMENTS / ADDITIONAL NOTES:

ELC Summary Sheet Project Name: _____ Project No: _____ Page 5 of ___ wsp

UNIT #: 5 Observers: _____ Date: _____ Weather / Limitations: _____

SYSTEM:	COMMUNITY CLASS:	SERIES:	ECOSITE:	VEG. TYPE:
Terrestrial Aquatic Wetland	Beach-Bar, Sand Dune, Bluff, Cliff, Talus, Alvar, Rock Barren, Cave, Sand Barren, Prairie-Savannah-Woodland, Forest, Cultural, Swamp, Fen, Bog, Marsh, Open Water, Shallow Water			FOD7-3

STAND DESCRIPTION:	SOIL ANALYSIS:	Community Inclusion:
COMMUNITY AGE: 1=Pioneer 2=Young 3=Mid-Aged 4=Mature 5=Old Growth	DRAINAGE: 1=very well 2=well 3=moderate 4=imperfect 5=poor 6=very poor	
STANDING SNAGS: R=Rare O=Occasional A=Abundant D=Dominant	SOIL MOISTURE: 1=wet 2=wet-mesic 3=mesic 4=dry-mesic 5=dry	
DEADFALL LOGS: R=Rare O=Occasional A=Abundant D=Dominant	TEXTURE: silt sand clay loam	
BOTANICAL QUALITY: 1=low 2=medium 3=high	PARENT MATERIAL: mineral organic	Complex/Mosaic:
SLOPE: none gentle moderate steep (simple or complex)	SUBTRATE DEPTH: > 15cm < 15cm	

TOPOGRAPHY: lacustrine, riverine, tableland, rolling upland, cliff, talus slope, crevice/cave, alvar, rockland, valley slope, terrace, bottomland, sand dune, bluff, beach/bar

Height code: 1=>25m, 2=10m-25m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7=< 0.5m **Cover codes**: 0=none, 1=0%- 10%, 2=10%- 25%, 3=25%-60%, 4=>60%

	VEGETATION LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE
1	Canopy	1	4	SAL ALBA > ACE NEGU > POP BALS
2	Sub-Canopy	2	4	ACE NEGU > FRA PENN > VIT RIPA
3	Understorey	4	4	PRU VIRG > RHA CATH > LONI > CORN RUGO
4	Ground Layer	6	4	VIO SP > PAR VITA > RHA CATH > GLE HEDE

SIZE CLASS ANALYSIS (abundance code): R-Rare, O=Occasional, F=Frequent, A=Abundant, D=Dominant

< 10 cm DBH:	10 - 24 cm DBH:	25 to 50 cm DBH:	> 50 cm DBH:
D	A	A	R

SPECIES	LAYER / ABUNDANCE 1	2	3	4
FRA PENN				
ULM RUBR				
POP BALS				
ACE NEGU				
FRA AMER				
SAL SP				
ACE SACH				
QUR ALBU				
RIB RUBR				
CORN RUGO				
LONI SP				
VIT RIPA				
RUB IDST				
RHA CATH				
PAR VITA				
VIB OPOP				
PRU VIRG				
SAM CANA				

SPECIES	LAYER / ABUNDANCE 1	2	3	4
VIO SP				
ONA SPRI				
GLE HEDE				
SYM LAN C				
TUS FARF				
SOL CAN A				
LEO CARI				
THA DIO				
VIN ROSS				
CHER ROBE				

EVIDENCE OF DISTURBANCE:
logging, sugar bush, gaps, livestock, exotic species, plantation, trails, dumping, fill, rec. use, noise, disease/death of trees, wind throw, browse, beaver, flooding, fire, ice

foot path Black knot BAB anthracnose

WILDLIFE HABITAT OBSERVATIONS:
vernal pools, hibernacula, snags, fallen logs, tracks, den/nest, scat, carcass, vocalization, feeding

REVI calling, BLJA call

COMMENTS / ADDITIONAL NOTES:

soils sandy by stream

dense shrub layer, open-ish canopy (dying ash)

ELC Summary Sheet Project Name: _____ Project No: _____ Page 6 of ___

UNIT #: 6 Observers: _____ Date: _____ Weather / Limitations: _____

SYSTEM: Terrestrial Aquatic Wetland	COMMUNITY CLASS: Beach-Bar, Sand Dune, Bluff, Cliff, Talus, Alvar, Rock Barren, Cave, Sand Barren, Prairie-Savannah-Woodland, Forest, Cultural, Swamp, Fen, Bog, Marsh, Open Water, Shallow Water	SERIES: FOD	ECOSITE: exotic?	VEG. TYPE:

STAND DESCRIPTION:	***SOIL ANALYSIS:***	**Community Inclusion:**
COMMUNITY AGE: 1=Pioneer 2=Young 3=Mid-Aged 4=Mature 5=Old Growth	**DRAINAGE:** 1=very well 2=well 3=moderate 4=imperfect 5=poor 6=very poor	
STANDING SNAGS: R=Rare O=Occasional A=Abundant D=Dominant	**SOIL MOISTURE:** 1=wet 2=wet-mesic 3=mesic 4=dry-mesic 5=dry	
DEADFALL LOGS: R=Rare O=Occasional A=Abundant D=Dominant	**TEXTURE:** silt sand clay loam	
BOTANICAL QUALITY: 1=low 2=medium 3=high	**PARENT MATERIAL:** mineral organic	**Complex/Mosaic:**
SLOPE: none gentle moderate steep (simple or complex)	**SUBTRATE DEPTH:** > 15cm < 15cm	

TOPOGRAPHY: lacustrine, riverine, tableland, rolling upland, cliff, talus slope, crevice/cave, alvar, rockland, valley slope, terrace, bottomland, sand dune, bluff, beach/bar

Height code: 1=>25m, 2=10m-25m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7=< 0.5m **Cover codes:** 0=none, 1=0%- 10%, 2=10%- 25%, 3=25%-60%, 4=>60%

	VEGETATION LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE
1	Canopy	2	4	ROB PSEU > ACE NEGU = POP TREM > TIL CORD
2	Sub-Canopy	3	4	ACE NEGU > ROB PSEU > FRA AMER = RHA CATH
3	Understorey	4	2	FRA AMER >> ACE NEGU > POP TREM > RHA CATH
4	Ground Layer	7	4	POA PRAT > ALL PETI > GEU URBA > SOL ALTI

SIZE CLASS ANALYSIS (abundance code): R-Rare, O=Occasional, F=Frequent, A=Abundant, D=Dominant

< 10 cm DBH: D	10 - 24 cm DBH: A	25 to 50 cm DBH: R	> 50 cm DBH: N

SPECIES	LAYER / ABUNDANCE 1	2	3	4
POP TREM	.	.	.	.
PIC GLAU	-			
ACE SACC	R			
FRA AMER				
RHA CATH		.		

SPECIES	LAYER / ABUNDANCE 1	2	3	4
BRO INER				

EVIDENCE OF DISTURBANCE:
logging, sugar bush, gaps, livestock, exotic species, plantation, trails, dumping, fill, rec. use, noise, disease/death of trees, wind throw, browse, beaver, flooding, fire, ice

WILDLIFE HABITAT OBSERVATIONS:
vernal pools, hibernacula, snags, fallen logs, tracks, den/nest, scat, carcass, vocalization, feeding

EAST COTTONTAIL (OB)

COMMENTS / ADDITIONAL NOTES:

Young weedy CUW with > 60% cover

More POP TREM in Southern half of poly

→ 50% exotic 50% native check codes

ELC Summary Sheet Project Name: _____ Project No: _____ Page 7 of ___

UNIT #: 7 Observers: _____ Date: _____ Weather / Limitations: _____

SYSTEM:	COMMUNITY CLASS:	SERIES:	ECOSITE:	VEG. TYPE:
Terrestrial Aquatic Wetland	Beach-Bar, Sand Dune, Bluff, Cliff, Talus, Alvar, Rock Barren, Cave, Sand Barren, Prairie-Savannah-Woodland, Forest, Cultural, Swamp, Fen, Bog, Marsh, Open Water, Shallow Water			CUVI

STAND DESCRIPTION:	***SOIL ANALYSIS:***	**Community Inclusion:**
COMMUNITY AGE: 1=Pioneer 2=Young 3=Mid-Aged 4=Mature 5=Old Growth	**DRAINAGE:** 1=very well 2=well 3=moderate 4=imperfect 5=poor 6=very poor	
STANDING SNAGS: R=Rare O=Occasional A=Abundant D=Dominant	**SOIL MOISTURE:** 1=wet 2=wet-mesic 3=mesic 4=dry-mesic 5=dry	
DEADFALL LOGS: R=Rare O=Occasional A=Abundant D=Dominant	**TEXTURE:** silt sand clay loam	
BOTANICAL QUALITY: 1=low 2=medium 3=high	**PARENT MATERIAL:** mineral organic	**Complex/Mosaic:**
SLOPE: none gentle moderate steep (simple or complex)	**SUBTRATE DEPTH:** > 15cm < 15cm	

TOPOGRAPHY: lacustrine, riverine, tableland, rolling upland, cliff, talus slope, crevice/cave, alvar, rockland, valley slope, terrace, bottomland, sand dune, bluff, beach/bar

Height code: 1=>25m, 2=10m-25m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7=< 0.5m **Cover codes:** 0=none, 1=0%- 10%, 2=10%- 25%, 3=25%-60%, 4=>60%

VEGETATION LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE
1	Canopy	2	2	ACE NEGU > POP TREM = JUG NIGR = ULM AMER
2	Sub-Canopy	3	3	VIT RIPA > LONI > ACE NEGU
3	Understorey	4		COR SPP = LONI > PRA AMER > RHA CATH
4	Ground Layer	7		VIO SP > GEU URBA > PAR VIT A > HES MATR

SIZE CLASS ANALYSIS (abundance code): R-Rare, O=Occasional, F=Frequent, A=Abundant, D=Dominant

< 10 cm DBH:	10 - 24 cm DBH:	25 to 50 cm DBH:	> 50 cm DBH:

SPECIES	LAYER / ABUNDANCE 1	2	3	4
ULM AMER				
EUO FORT				
VIB OPUL				
RHA CATH				
RUB IDST				
COR RUGO				
COR OBLI				
RHU TYPH				
SAM CANA				
COR RACE				
VIT RIPA				

SPECIES	LAYER / ABUNDANCE 1	2	3	4
SOL ALTI				
ERI ANNU				
EQU ARVE				
PLA MAJO				
CIC MACU				
SYM LANC				
AMP BRAC				

EVIDENCE OF DISTURBANCE:
logging, sugar bush, gaps, livestock, exotic species, plantation, trails, dumping, fill, rec. use, noise, disease/death of trees, wind throw, browse, beaver, flooding, fire, ice

WILDLIFE HABITAT OBSERVATIONS:
vernal pools, hibernacula, snags, fallen logs, tracks, den/nest, scat, carcass, vocalization, feeding

GRCA call, AMGO call, EACO (06), AMRO (06)

COMMENTS / ADDITIONAL NOTES:

add species to (9)

ELC Summary Sheet Project Name: _____ Project No: _____ Page ___ of ___

UNIT #: 8 Observers: _____ Date: _____ Weather / Limitations: _____

SYSTEM:	COMMUNITY CLASS:	SERIES:	ECOSITE:	VEG. TYPE:
Terrestrial Aquatic Wetland	Beach-Bar, Sand Dune, Bluff, Cliff, Talus, Alvar, Rock Barren, Cave, Sand Barren, Prairie-Savannah-Woodland, Forest, Cultural, Swamp, Fen, Bog, Marsh, Open Water, Shallow Water			

STAND DESCRIPTION:	SOIL ANALYSIS:	Community Inclusion:
COMMUNITY AGE: 1=Pioneer 2=Young 3=Mid-Aged 4=Mature 5=Old Growth	DRAINAGE: 1=very well 2=well 3=moderate 4=imperfect 5=poor 6=very poor	
STANDING SNAGS: R=Rare O=Occasional A=Abundant D=Dominant	SOIL MOISTURE: 1=wet 2=wet-mesic 3=mesic 4=dry-mesic 5=dry	
DEADFALL LOGS: R=Rare O=Occasional A=Abundant D=Dominant	TEXTURE: silt sand clay loam	
BOTANICAL QUALITY: 1=low 2=medium 3=high	PARENT MATERIAL: mineral organic	Complex/Mosaic:
SLOPE: none gentle moderate steep (simple or complex)	SUBTRATE DEPTH: > 15cm < 15cm	

TOPOGRAPHY: lacustrine, riverine, tableland, rolling upland, cliff, talus slope, crevice/cave, alvar, rockland, valley slope, terrace, bottomland, sand dune, bluff, beach/bar

Height code: 1=>25m, 2=10m-25m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7=< 0.5m **Cover codes**: 0=none, 1=0%- 10%, 2=10%- 25%, 3=25%-60%, 4=>60%

VEGETATION LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE
1	Canopy			
2	Sub-Canopy			
3	Understorey			
4	Ground Layer			

SIZE CLASS ANALYSIS (abundance code): R-Rare, O=Occasional, F=Frequent, A=Abundant, D=Dominant

< 10 cm DBH:	10 - 24 cm DBH:	25 to 50 cm DBH:	> 50 cm DBH:

SPECIES	LAYER / ABUNDANCE 1	2	3	4
SAG EUX1 edge				

SPECIES	LAYER / ABUNDANCE 1	2	3	4
NYM ODOR				O
MYRIOPHYLLUM SP				O
TYPHA LATI			O	
ANGU			O	
ECH				
PER MACU				

EVIDENCE OF DISTURBANCE:
logging, sugar bush, gaps, livestock, exotic species, plantation, trails, dumping, fill, rec. use, noise, disease/death of trees, wind throw, browse, beaver, flooding, fire, ice

WILDLIFE HABITAT OBSERVATIONS:
vernal pools, hibernacula, snags, fallen logs, tracks, den/nest, scat, carcass, vocalization, feeding

CORMORANT (OB)

COMMENTS / ADDITIONAL NOTES:

mostly on edge – add to 9, OAO water in centre

ELC Summary Sheet Project Name: _____ Project No: _____ Page ___ of ___ wsp

UNIT #: 9 Observers: _____ Date: _____ Weather / Limitations: _____

SYSTEM: Terrestrial Aquatic Wetland	COMMUNITY CLASS: Beach-Bar, Sand Dune, Bluff, Cliff, Talus, Alvar, Rock Barren, Cave, Sand Barren, Prairie-Savannah-Woodland, Forest, Cultural, Swamp, Fen, Bog, Marsh, Open Water, Shallow Water	SERIES:	ECOSITE: MAS	VEG. TYPE:

STAND DESCRIPTION:	***SOIL ANALYSIS:***	**Community Inclusion:**
COMMUNITY AGE: 1=Pioneer 2=Young 3=Mid-Aged 4=Mature 5=Old Growth	**DRAINAGE:** 1=very well 2=well 3=moderate 4=imperfect 5=poor 6=very poor	
STANDING SNAGS : R=Rare O=Occasional A=Abundant D=Dominant	**SOIL MOISTURE:** 1=wet 2=wet-mesic 3=mesic 4=dry-mesic 5=dry	
DEADFALL LOGS: R=Rare O=Occasional A=Abundant D=Dominant	**TEXTURE:** silt sand clay loam	
BOTANICAL QUALITY: 1=low 2=medium 3=high	**PARENT MATERIAL:** mineral organic	**Complex/Mosaic:**
SLOPE: none gentle moderate steep (simple or complex)	**SUBTRATE DEPTH:** >15cm < 15cm	

TOPOGRAPHY: lacustrine, riverine, tableland, rolling upland, cliff, talus slope, crevice/cave, alvar, rockland, valley slope, terrace, bottomland, sand dune, bluff, beach/bar

Height code: 1=>25m, 2=10m-25m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7=< 0.5m ***Cover codes:*** 0=none, 1=0%- 10%, 2=10%- 25%, 3=25%-60%, 4=>60%

VEGETATION LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE
1	Canopy			
2	Sub-Canopy	3	1	SAL PET
3	Understorey	4	4	TYPANGU >>
4	Ground Layer	5	4	PHA ARAR > CIR ARVE > SOL ALTI > IMP CAPE

SIZE CLASS ANALYSIS (abundance code): R-Rare, O=Occasional, F=Frequent, A=Abundant, D=Dominant

< 10 cm DBH:	10 - 24 cm DBH:	25 to 50 cm DBH:	> 50 cm DBH:

SPECIES	LAYER / ABUNDANCE 1	2	3	4

SPECIES	LAYER / ABUNDANCE 1	2	3	4
TYPANGU				
PHA ARAR				
SOL ALTI				
CIR ARVE				
IMP CAPE				

EVIDENCE OF DISTURBANCE:
logging, sugar bush, gaps, livestock, exotic species, plantation, trails, dumping, fill, rec. use, noise, disease/death of trees, wind throw, browse, beaver, flooding, fire, ice

historic

WILDLIFE HABITAT OBSERVATIONS:
vernal pools, hibernacula, snags, fallen logs, tracks, den/nest, scat, carcass, vocalization, feeding

COMMENTS / ADDITIONAL NOTES:

very low diversity

ELC Summary Sheet Project Name: _____ Project No: _____ Page 10 of ___

UNIT #: 10 Observers: _____ Date: _____ Weather / Limitations: _____

SYSTEM: Terrestrial, Aquatic, Wetland	COMMUNITY CLASS: Beach/Bar, Sand Dune, Bluff, Cliff, Talus, Alvar, Rock Barren, Cave, Sand Barren, Prairie-Savannah-Woodland, Forest, Cultural, Swamp, Fen, Bog, Marsh, Open Water, Shallow Water	SERIES:	ECOSITE:	VEG. TYPE:

STAND DESCRIPTION:	SOIL ANALYSIS:	Community Inclusion:
COMMUNITY AGE: 1=Pioneer 2=Young 3=Mid-Aged 4=Mature 5=Old Growth	DRAINAGE: 1=very wet 2=wet 3=moderate 4=imperfect 5=poor 6=very poor	
STANDING SNAGS: R=Rare O=Occasional A=Abundant D=Dominant	SOIL MOISTURE: 1=wet 2=wet-mesic 3=mesic 4=dry-mesic 5=dry	
DEADFALL LOGS: R=Rare O=Occasional A=Abundant D=Dominant	TEXTURE: silt sand clay loam	
BOTANICAL QUALITY: 1=low 2=medium 3=high	PARENT MATERIAL: mineral organic	Complex/Mosaic:
SLOPE: none gentle moderate steep (simple or complex)	SUBTRATE DEPTH: > 15cm < 15cm	

TOPOGRAPHY: lacustrine, riverine, tableland, rolling upland, cliff, talus slope, crevice/cave, alvar, rockland, valley slope, terrace, bottomland, sand dune, bluff, beach/bar

Height code: 1=>25m, 2=10m-25m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7=< 0.5m Cover codes: 0=none, 1=0%-10%, 2=10%-25%, 3=25%-50%, 4=>50%

	VEGETATION LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE
1	Canopy	1	1	SAL ALBA
2	Sub-Canopy	3	3	VIT RIPA > ACE NEGU
3	Understorey	4	4	VIT RIPA = CEL ORBI > COR SPP >
4	Ground Layer	6	4	VIN ROSS = SOL ALTI = BRO INER = GEU URBA

SIZE CLASS ANALYSIS (abundance code): R=Rare, O=Occasional, F=Frequent, A=Abundant, D=Dominant

< 10 cm DBH: D	10 - 24 cm DBH: O	25 to 50 cm DBH: R	> 50 cm DBH: R

SPECIES	LAYER / ABUNDANCE 1	2	3	4
THU OCCI		R		
ACE NEGU		A		
SAL ALBA/EUX	D			
ULM AMI		O	D	
QUER ALBA				R
FRA PENN		O		
QUE MACR		R		
PIC GLAU		O		O
ACE KERE (planted?)		O		
CEL ORBI			A	A
VIT RIPA		A	A	A
COR DRUI			O	
LONI SP			O	
RHA CATH			O	O
PAR VITA				O
PRU VIRG			O	O
COR RUGO			O	
VIB OPUS				O
COR RACE				
EUO ALAT			D	
SOL BABB				
VIB LENT		R		
AMPE ARB/LAEV				

SPECIES	LAYER / ABUNDANCE 1	2	3	4
SOL ALTI				
BRO INER				
ARC MINU				
GEU URBA				
LOL PRAT				
SYM NOVA				
RAN ACRIS				
APO ANDR				
POA PRAT				
ASC SYRI				
AMP BRAC				
ERI ANNU				
VIC CRAC				
VIN ROSS				

EVIDENCE OF DISTURBANCE:
logging, sugar bush, gaps, livestock, exotic species, plantation, trails, dumping, fill, rec. use, noise, disease/death of trees, wind throw, browse, beaver, flooding, fire, ice

vines Some garbage EAB

WILDLIFE HABITAT OBSERVATIONS:
vernal pools, hibernacula, snags, fallen logs, tracks, den/nest, scat, carcass, vocalization, feeding

COMMENTS / ADDITIONAL NOTES:
Extreme dominance of vine grape + Celastrus

CUS or CUT? check aerial

ELC Summary Sheet Project Name: ______ Project No: ______ Page 11 of ____ wsp

UNIT #: 11 Observers: ______ Date: ______ Weather / Limitations: ______

SYSTEM: Terrestrial Aquatic Wetland	**COMMUNITY CLASS:** Beach-Bar, Sand Dune, Bluff, Cliff, Talus, Alvar, Rock Barren, Cave, Sand Barren, Prairie-Savannah-Woodland, Forest, Cultural, Swamp, Fen, Bog, Marsh, Open Water, Shallow Water	**SERIES:**	**ECOSITE:** SWT	**VEG. TYPE:**

STAND DESCRIPTION:	***SOIL ANALYSIS:***	**Community Inclusion:**
COMMUNITY AGE: 1=Pioneer 2=Young 3=Mid-Aged 4=Mature 5=Old Growth	**DRAINAGE:** 1=very well 2=well 3=moderate 4=imperfect 5=poor 6=very poor	
STANDING SNAGS: R=Rare O=Occasional A=Abundant D=Dominant	**SOIL MOISTURE:** 1=wet 2=wet-mesic 3=mesic 4=dry-mesic 5=dry	
DEADFALL LOGS: R=Rare O=Occasional A=Abundant D=Dominant	**TEXTURE:** silt sand clay loam	
BOTANICAL QUALITY: 1=low 2=medium 3=high	**PARENT MATERIAL:** mineral organic	**Complex/Mosaic:**
SLOPE: none gentle moderate steep (simple or complex)	**SUBTRATE DEPTH:** > 15cm < 15cm	

TOPOGRAPHY: lacustrine, riverine, tableland, rolling upland, cliff, talus slope, crevice/cave, alvar, rockland, valley slope, terrace, bottomland, sand dune, bluff, beach/bar

Height code: 1=>25m, 2=10m-25m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7=< 0.5m ***Cover codes:*** 0=none, 1=0%- 10%, 2=10%- 25%, 3=25%-60%, 4=>60%

VEGETATION LAYER		**HT**	**CVR**	**SPECIES IN ORDER OF DECREASING DOMINANCE**
1	Canopy			
2	Sub-Canopy	2	1	ACE NEGU > FRA PENN
3	Understorey	3	4	COR SPP > SAL SPP > SAM CANA > RHA CATH
4	Ground Layer	4	4	SOL ALTI > AMP BRAC >

SIZE CLASS ANALYSIS (abundance code): R-Rare, O=Occasional, F=Frequent, A=Abundant, D=Dominant	< 10 cm DBH: D	10 - 24 cm DBH: R	25 to 50 cm DBH: /	> 50 cm DBH: /

SPECIES	**LAYER / ABUNDANCE** 1	2	3	4	**SPECIES**	**LAYER / ABUNDANCE** 1	2	3	4
FRA PENN									
COR OBLI									
VIB LANTANA									
SAL ERIO / [illegible]									
(fallen over)									
SAL BEBB									

EVIDENCE OF DISTURBANCE:
logging, sugar bush, gaps, livestock, exotic species, plantation, trails, dumping, fill, rec. use, noise, disease/death of trees, wind throw, browse, beaver, flooding, fire, ice

WILDLIFE HABITAT OBSERVATIONS:
vernal pools, hibernacula, snags, fallen logs, tracks, den/nest, scat, carcass, vocalization, feeding

COMMENTS / ADDITIONAL NOTES:

ELC Summary Sheet Project Name: ______ Project No: ______ Page 12 of ___ wsp

UNIT #: 12 Observers: ______ Date: ______ Weather / Limitations: ______

SYSTEM:	COMMUNITY CLASS:	SERIES:	ECOSITE:	VEG. TYPE:
Terrestrial Aquatic Wetland	Beach-Bar, Sand Dune, Bluff, Cliff, Talus, Alvar, Rock Barren, Cave, Sand Barren, Prairie-Savannah-Woodland, Forest, Cultural, Swamp, Fen, Bog, Marsh, Open Water, Shallow Water		CUW	

STAND DESCRIPTION:	***SOIL ANALYSIS:***	Community Inclusion:
COMMUNITY AGE: 1=Pioneer 2=Young (3=Mid-Aged) 4=Mature 5=Old Growth	DRAINAGE: 1=very well 2=well 3=moderate 4=imperfect 5=poor 6=very poor	
STANDING SNAGS: R=Rare (O=Occasional) A=Abundant D=Dominant	SOIL MOISTURE: 1=wet 2=wet-mesic 3=mesic 4=dry-mesic 5=dry	
DEADFALL LOGS: R=Rare (O=Occasional) A=Abundant D=Dominant	TEXTURE: silt sand clay loam	
BOTANICAL QUALITY: (1=low) 2=medium 3=high	PARENT MATERIAL: mineral organic	Complex/Mosaic:
SLOPE: (none) gentle moderate steep (simple or complex)	SUBTRATE DEPTH: > 15cm < 15cm	

TOPOGRAPHY: lacustrine, riverine, tableland, rolling upland, cliff, talus slope, crevice/cave, alvar, rockland, valley slope, terrace, bottomland, sand dune, bluff, beach/bar

Height code: 1=>25m, 2=10m-25m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7=< 0.5m ***Cover codes:*** 0=none, 1=0%- 10%, 2=10%- 25%, 3=25%-60%, 4=>60%

VEGETATION LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE
1	Canopy	1	3	SALIX > ~~ACE NEGU~~
2	Sub-Canopy	3	3	ACE NEGU
3	Understorey	4	3	LONI > ACE NEGU > PRU VIRG ≥ COR SPP
4	Ground Layer	6	4	BRO INER > GEU URBA > ARC LAPA

SIZE CLASS ANALYSIS (abundance code): R-Rare, O=Occasional, F=Frequent, A=Abundant, D=Dominant	< 10 cm DBH: A	10 - 24 cm DBH: A	25 to 50 cm DBH: O	> 50 cm DBH: R

SPECIES	LAYER / ABUNDANCE 1	2	3	4	SPECIES	LAYER / ABUNDANCE 1	2	3	4
PIC GLAU				R	IMP CAPE				
GYM DIOI	O				SOL ALTI				
↳ southern end					ASC SYRI				
prob. planted					ERI ANNU				
GPS taken					RAN ACRIS				
x4 large 80 DBH									
some Negun too									
VIT RIPA									

EVIDENCE OF DISTURBANCE:
logging, sugar bush, gaps, livestock, exotic species, plantation, trails, (dumping), fill, rec. use, noise, disease/death of trees, wind throw, browse, beaver, flooding, fire, ice

old silt fencing ~~by~~ stream

WILDLIFE HABITAT OBSERVATIONS:
vernal pools, hibernacula, snags, fallen logs, tracks, den/nest, scat, carcass, vocalization, feeding

COMMENTS / ADDITIONAL NOTES:

weedy growth under old willows

ELC Summary Sheet Project Name: _____ Project No: _____ Page 13 of ___

UNIT #: 13 Observers: _____ Date: _____ Weather / Limitations: _____

SYSTEM: Terrestrial Aquatic Wetland	COMMUNITY CLASS: Beach-Bar, Sand Dune, Bluff, Cliff, Talus, Alvar, Rock Barren, Cave, Sand Barren, Prairie-Savannah-Woodland, Forest, Cultural, Swamp, Fen, Bog, Marsh, Open Water, Shallow Water	SERIES:	ECOSITE: CUS	VEG. TYPE:

STAND DESCRIPTION:	***SOIL ANALYSIS***:	**Community Inclusion:**
COMMUNITY AGE: 1=Pioneer 2=Young 3=Mid-Aged 4=Mature 5=Old Growth	**DRAINAGE:** 1=very well 2=well 3=moderate 4=imperfect 5=poor 6=very poor	
STANDING SNAGS: R=Rare O=Occasional A=Abundant D=Dominant	**SOIL MOISTURE:** 1=wet 2=wet-mesic 3=mesic 4=dry-mesic 5=dry	
DEADFALL LOGS: R=Rare O=Occasional A=Abundant D=Dominant	**TEXTURE:** silt sand clay loam	
BOTANICAL QUALITY: 1=low 2=medium 3=high	**PARENT MATERIAL:** mineral organic	**Complex/Mosaic:**
SLOPE: none gentle moderate steep (simple or complex)	**SUBTRATE DEPTH:** > 15cm < 15cm	

TOPOGRAPHY: lacustrine, riverine, tableland, rolling upland, cliff, talus slope, crevice/cave, alvar, rockland, valley slope, terrace, bottomland, sand dune, bluff, beach/bar

Height code: 1=>25m, 2=10m-25m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7=< 0.5m ***Cover codes***: 0=none, 1=0%- 10%, 2=10%- 25%, 3=25%-60%, 4=>60%

	VEGETATION LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE
1	Canopy	2	3	FRA AMER = ACE NEGU > PIC GLAU = ACE RUBRE
2	Sub-Canopy	3	4	RHU TYPH > RHA CATH > SAL SPP
3	Understorey	4	3	" > LIG VULG
4	Ground Layer	Ce	U	BRO INER > SOL ALTI > POA PRAT

SIZE CLASS ANALYSIS (abundance code): R-Rare, O=Occasional, F=Frequent, A=Abundant, D=Dominant

< 10 cm DBH:	10 - 24 cm DBH:	25 to 50 cm DBH:	> 50 cm DBH:
D	O	N	N

SPECIES	LAYER / ABUNDANCE 1	2	3	4
PIC GLAU				
PIN STRO				
ACE RUBRE				
FRA AMER				
ACE NEGU				
DOP TREM				
MALUS SP crab apple				
THU OCCI				
RHACATTI				
LIG VULG				
SAL PPTI				
SAL CINE CT				

SPECIES	LAYER / ABUNDANCE 1	2	3	4
SEC VARI				
SYM NOVA				
DIP FULL				
PHA ARAR				
ARC LAPP				

EVIDENCE OF DISTURBANCE:
logging, sugar bush, gaps, livestock, exotic species, plantation, trails, dumping, fill, rec. use, noise, disease/death of trees, wind throw, browse, beaver, flooding, fire, ice

EAB

WILDLIFE HABITAT OBSERVATIONS:
vernal pools, hibernacula, snags, fallen logs, tracks, den/nest, scat, carcass, vocalization, feeding

COMMENTS / ADDITIONAL NOTES:

thicketty cultural savvanah with staghorn CUT inclusion

ELC Summary Sheet Project Name: _____ Project No: _____ Page __ of __

UNIT #: 14 Observers: _____ Date: _____ Weather / Limitations: _____

SYSTEM: Terrestrial Aquatic Wetland	COMMUNITY CLASS: Beach-Bar, Sand Dune, Bluff, Cliff, Talus, Alvar, Rock Barren, Cave, Sand Barren, Prairie-Savannah-Woodland, Forest, Cultural, Swamp, Fen, Bog, Marsh, Open Water, Shallow Water	SERIES:	ECOSITE: CUP	VEG. TYPE:

STAND DESCRIPTION:	***SOIL ANALYSIS:***	**Community Inclusion:**
COMMUNITY AGE: 1=Pioneer 2=Young 3=Mid-Aged 4=Mature 5=Old Growth	**DRAINAGE:** 1=very well 2=well 3=moderate 4=imperfect 5=poor 6=very poor	
STANDING SNAGS: R=Rare O=Occasional A=Abundant D=Dominant	**SOIL MOISTURE:** 1=wet 2=wet-mesic 3=mesic 4=dry-mesic 5=dry	
DEADFALL LOGS: R=Rare O=Occasional A=Abundant D=Dominant	**TEXTURE:** silt sand clay loam	
BOTANICAL QUALITY: 1=low 2=medium 3=high	**PARENT MATERIAL:** mineral organic	**Complex/Mosaic:**
SLOPE: none gentle moderate steep (simple or complex)	**SUBTRATE DEPTH:** > 15cm < 15cm	

TOPOGRAPHY: lacustrine, riverine, tableland, rolling upland, cliff, talus slope, crevice/cave, alvar, rockland, valley slope, terrace, bottomland, sand dune, bluff, beach/bar

Height code: 1=>25m, 2=10m-25m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7=< 0.5m ***Cover codes:*** 0=none, 1=0%- 10%, 2=10%- 25%, 3=25%-60%, 4=>60%

VEGETATION LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE
1	Canopy	1	4	PIN STRO = PIN RESI > PIC GLAU
2	Sub-Canopy			
3	Understorey			
4	Ground Layer			

SIZE CLASS ANALYSIS (abundance code): R-Rare, O=Occasional, F=Frequent, A=Abundant, D=Dominant

< 10 cm DBH: A | 10 - 24 cm DBH: D | 25 to 50 cm DBH: O | > 50 cm DBH: N

SPECIES	LAYER / ABUNDANCE 1	2	3	4
ACE SACH		O		
ACE NEGU		"		
THU OCCI		"	"	
TSU CANA			"	
RHA CATH				
LON I				
SAM RACE				
RUB IDST				

SPECIES	LAYER / ABUNDANCE 1	2	3	4
HEM FULV				
SOL ALTI				

EVIDENCE OF DISTURBANCE:
logging, sugar bush, gaps, livestock, exotic species, plantation, trails, dumping, fill, rec. use, noise, disease/death of trees, wind throw, browse, beaver, flooding, fire, ice

WILDLIFE HABITAT OBSERVATIONS:
vernal pools, hibernacula, snags, fallen logs, tracks, den/nest, scat, carcass, vocalization, feeding

COMMENTS / ADDITIONAL NOTES:

Several trails already existing along W side and E with pine needle cleared path

extension of (3)? check aerial

ELC Summary Sheet Project Name: _____ Project No: _____ Page___of___

UNIT #: 15 Observers: _____ Date: _____ Weather / Limitations: _____

SYSTEM: Terrestrial Aquatic Wetland	COMMUNITY CLASS: Beach-Bar, Sand Dune, Bluff, Cliff, Talus, Alvar, Rock Barren, Cave, Sand Barren, Prairie-Savannah-Woodland, Forest, Cultural, Swamp, Fen, Bog, Marsh, Open Water, Shallow Water	SERIES:	ECOSITE:	VEG. TYPE:

STAND DESCRIPTION:	***SOIL ANALYSIS:***	**Community Inclusion:**
COMMUNITY AGE: 1=Pioneer 2=Young 3=Mid-Aged 4=Mature 5=Old Growth	**DRAINAGE:** 1=very well 2=well 3=moderate 4=imperfect 5=poor 6=very poor	
STANDING SNAGS : R=Rare O=Occasional A=Abundant D=Dominant	**SOIL MOISTURE:** 1=wet 2=wet-mesic 3=mesic 4=dry-mesic 5=dry	
DEADFALL LOGS: R=Rare O=Occasional A=Abundant D=Dominant	**TEXTURE:** silt sand clay loam	
BOTANICAL QUALITY: 1=low 2=medium 3=high	**PARENT MATERIAL:** mineral organic	**Complex/Mosaic:**
SLOPE: none gentle moderate steep (simple or complex)	**SUBTRATE DEPTH:** > 15cm < 15cm	

TOPOGRAPHY: lacustrine, riverine, tableland, rolling upland, cliff, talus slope, crevice/cave, alvar, rockland, valley slope, terrace, bottomland, sand dune, bluff, beach/bar

Height code: 1=>25m, 2=10m-25m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7=< 0.5m ***Cover codes:*** 0=none, 1=0%- 10%, 2=10%- 25%, 3=25%-60%, 4=>60%

VEGETATION LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE
1	Canopy		3	SAL EUXI > ACE PLAT
2	Sub-Canopy			ACE NEGU
3	Understorey			VIT RIPA
4	Ground Layer			TUS FARF > GAL SP > VIO SP

SIZE CLASS ANALYSIS (abundance code): R-Rare, O=Occasional, F=Frequent, A=Abundant, D=Dominant	< 10 cm DBH:	10 - 24 cm DBH:	25 to 50 cm DBH:	> 50 cm DBH:

SPECIES	LAYER / ABUNDANCE 1	2	3	4	SPECIES	LAYER / ABUNDANCE 1	2	3	4
FRA AMER									

EVIDENCE OF DISTURBANCE:
logging, sugar bush, gaps, livestock, exotic species, plantation, trails, dumping, fill, rec. use, noise, disease/death of trees, wind throw, browse, beaver, flooding, fire, ice

WILDLIFE HABITAT OBSERVATIONS:
vernal pools, hibernacula, snags, fallen logs, tracks, den/nest, scat, carcass, vocalization, feeding

COMMENTS / ADDITIONAL NOTES:

Planted and naturalizing trees

skinny polygon 5-10m west of stream, east is all turf and mostly planted

could be just lumped with CUP and described in text

ELC Summary Sheet Project Name: _____ Project No: _____ Page___of___

UNIT #: 16 Observers: _____ Date: _____ Weather / Limitations: _____

SYSTEM: Terrestrial Aquatic Wetland	COMMUNITY CLASS: Beach-Bar, Sand Dune, Bluff, Cliff, Talus, Alvar, Rock Barren, Cave, Sand Barren, Prairie-Savannah-Woodland, Forest, Cultural, Swamp, Fen, Bog, Marsh, Open Water, Shallow Water	SERIES:	ECOSITE: CUK-1	VEG. TYPE:

STAND DESCRIPTION:	SOIL ANALYSIS:	Community Inclusion:
COMMUNITY AGE: 1=Pioneer 2=Young 3=Mid-Aged 4=Mature 5=Old Growth	DRAINAGE: 1=very well 2=well 3=moderate 4=imperfect 5=poor 6=very poor	
STANDING SNAGS : R=Rare O=Occasional A=Abundant D=Dominant	SOIL MOISTURE: 1=wet 2=wet-mesic 3=mesic 4=dry-mesic 5=dry	
DEADFALL LOGS: R=Rare O=Occasional A=Abundant D=Dominant	TEXTURE: silt sand clay loam	
BOTANICAL QUALITY: 1=low 2=medium 3=high	PARENT MATERIAL: mineral organic	Complex/Mosaic:
SLOPE: none gentle moderate steep (simple or complex)	SUBTRATE DEPTH: > 15cm < 15cm	

TOPOGRAPHY: lacustrine, riverine, tableland, rolling upland, cliff, talus slope, crevice/cave, alvar, rockland, valley slope, terrace, bottomland, sand dune, bluff, beach/bar

Height code: 1=>25m, 2=10m-25m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7=< 0.5m **Cover codes**: 0=none, 1=0%- 10%, 2=10%- 25%, 3=25%-60%, 4=>60%

	VEGETATION LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE
1	Canopy			NO DOMINANCE
2	Sub-Canopy			
3	Understorey			
4	Ground Layer			

SIZE CLASS ANALYSIS (abundance code): R-Rare, O=Occasional, F=Frequent, A=Abundant, D=Dominant	< 10 cm DBH:	10 - 24 cm DBH:	25 to 50 cm DBH:	> 50 cm DBH:

SPECIES	LAYER / ABUNDANCE 1	2	3	4	SPECIES	LAYER / ABUNDANCE 1	2	3	4
PLANTED TREES									
ACE PLAT	A								
MAL SP		O							
ULE TRIC	O								
BET PAPY	R								
SEVERAL DEAD PIC SP.	O								
PRUNUS SERA AMER	O								
AES HIPO		R	R						
JUN VIRG		R							
ACER SACH	O								
SAL EUXL/ALBA	R								

EVIDENCE OF DISTURBANCE:
logging, sugar bush, gaps, livestock, exotic species, plantation, trails, dumping, fill, rec. use, noise, disease/death of trees, wind throw, browse, beaver, flooding, fire, ice

WILDLIFE HABITAT OBSERVATIONS:
vernal pools, hibernacula, snags, fallen logs, tracks, den/nest, scat, carcass, vocalization, feeding

COMMENTS / ADDITIONAL NOTES:
Residential / Parkland / Landscaped

path between pond and stream is turf

ELC Summary Sheet Project Name: _____ Project No: _____ Page ___ of ___

wsp

UNIT #: 17 Observers: _____ Date: _____ Weather / Limitations: _____

SYSTEM: Terrestrial Aquatic Wetland	COMMUNITY CLASS: Beach-Bar, Sand Dune, Bluff, Cliff, Talus, Alvar, Rock Barren, Cave, Sand Barren, Prairie-Savannah-Woodland, Forest, Cultural, Swamp, Fen, Bog, Marsh, Open Water, Shallow Water	SERIES:	ECOSITE:	VEG. TYPE:

STAND DESCRIPTION:	***SOIL ANALYSIS:***	**Community Inclusion:**
COMMUNITY AGE: 1=Pioneer 2=Young 3=Mid-Aged 4=Mature 5=Old Growth	**DRAINAGE:** 1=very well 2=well 3=moderate 4=imperfect 5=poor 6=very poor	
STANDING SNAGS : R=Rare O=Occasional A=Abundant D=Dominant	**SOIL MOISTURE:** 1=wet 2=wet-mesic 3=mesic 4=dry-mesic 5=dry	
DEADFALL LOGS: R=Rare O=Occasional A=Abundant D=Dominant	**TEXTURE:** silt sand clay loam	
BOTANICAL QUALITY: 1=low 2=medium 3=high	**PARENT MATERIAL:** mineral organic	**Complex/Mosaic:**
SLOPE: none gentle moderate steep (simple or complex)	**SUBTRATE DEPTH:** > 15cm < 15cm	

TOPOGRAPHY: lacustrine, riverine, tableland, rolling upland, cliff, talus slope, crevice/cave, alvar, rockland, valley slope, terrace, bottomland, sand dune, bluff, beach/bar

Height code: 1=>25m, 2=10m-25m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7=< 0.5m ***Cover codes:*** 0=none, 1=0%- 10%, 2=10%- 25%, 3=25%-60%, 4=>60%

VEGETATION LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE
1	Canopy			
2	Sub-Canopy			
3	Understorey	4	3	TYP LATI > SOL ALTI > SYM LANC > RHU TYP
4	Ground Layer	7	3	TOS FARF > PAR VITA > HEM FULV > CIR ARV

SIZE CLASS ANALYSIS (abundance code): R-Rare, O=Occasional, F=Frequent, A=Abundant, D=Dominant

< 10 cm DBH:	10 - 24 cm DBH:	25 to 50 cm DBH:	> 50 cm DBH:

SPECIES	LAYER / ABUNDANCE 1	2	3	4	SPECIES	LAYER / ABUNDANCE 1	2	3	4

EVIDENCE OF DISTURBANCE:
logging, sugar bush, gaps, livestock, exotic species, plantation, trails, dumping, fill, rec. use, noise, disease/death of trees, wind throw, browse, beaver, flooding, fire, ice

WILDLIFE HABITAT OBSERVATIONS:
vernal pools, hibernacula, snags, fallen logs, tracks, den/nest, scat, carcass, vocalization, feeding

COMMENTS / ADDITIONAL NOTES:

pond edges, very skinny strip of veg MAM?

ELC Summary Sheet Project Name: _____ Project No: _____ Page ___ of ___

UNIT #: 18 Observers: _____ Date: _____ Weather / Limitations: _____

SYSTEM: Terrestrial / Aquatic / Wetland	COMMUNITY CLASS: Beach-Bar, Sand Dune, Bluff, Cliff, Talus, Alvar, Rock Barren, Cave, Sand Barren, Prairie-Savannah-Woodland, Forest, Cultural, Swamp, Fen, Bog, Marsh, Open Water, Shallow Water	SERIES: FOM	ECOSITE:	VEG. TYPE:

STAND DESCRIPTION:	SOIL ANALYSIS:	Community Inclusion:
COMMUNITY AGE: 1=Pioneer 2=Young 3=Mid-Aged 4=Mature 5=Old Growth	DRAINAGE: 1=very well 2=well 3=moderate 4=imperfect 5=poor 6=very poor	
STANDING SNAGS: R=Rare O=Occasional A=Abundant D=Dominant	SOIL MOISTURE: 1=wet 2=wet-mesic 3=mesic 4=dry-mesic 5=dry	
DEADFALL LOGS: R=Rare O=Occasional A=Abundant D=Dominant	TEXTURE: silt sand clay loam	
BOTANICAL QUALITY: 1=low 2=medium 3=high	PARENT MATERIAL: mineral organic	Complex/Mosaic:
SLOPE: none gentle moderate steep (simple or complex)	SUBTRATE DEPTH: > 15cm < 15cm	

TOPOGRAPHY: lacustrine, riverine, tableland, rolling upland, cliff, talus slope, crevice/cave, alvar, rockland, valley slope, terrace, bottomland, sand dune, bluff, beach/bar

Height code: 1=>25m, 2=10m-25m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7=< 0.5m ***Cover codes:*** 0=none, 1=0%- 10%, 2=10%- 25%, 3=25%-60%, 4=>60%

	VEGETATION LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE
1	Canopy	1	4	PIN STR > ACE SACH > PRU SERO
2	Sub-Canopy	3	3	ACE SACH > VIT RIPA > FRA AMER > OST VIRG
3	Understorey	4	4	PRU VIRG > FRA AMER
4	Ground Layer	7	3	PRU VIRG > GER ROBE > PAR VITA > GEU URBA

SIZE CLASS ANALYSIS (abundance code): R-Rare, O=Occasional, F=Frequent, A=Abundant, D=Dominant	< 10 cm DBH: F	10 - 24 cm DBH: O	25 to 50 cm DBH: A	> 50 cm DBH: O

SPECIES	LAYER / ABUNDANCE 1	2	3	4
BET ALLE	•			
FAG GRAN				
↳ infected BED	•			
OST VIRG		•		
TIL AMER	•			
VIB OPUP				
RIB RUBR				

SPECIES	LAYER / ABUNDANCE 1	2	3	4
SOL FLEY				

EVIDENCE OF DISTURBANCE:
logging, sugar bush, gaps, livestock, exotic species, plantation, trails, dumping, fill, rec. use, noise, disease/death of trees, wind throw, browse, beaver, flooding, fire, ice

BED

WILDLIFE HABITAT OBSERVATIONS:
vernal pools, hibernacula, snags, fallen logs, tracks, den/nest, scat, carcass, vocalization, feeding

WBNU (VO)

80 - 90 DBH PINE GPS

COMMENTS / ADDITIONAL NOTES:

(GPS CHOKE POINT)

3-4 clearance between private prop and slope top

heavy tree impact / removals

↳ alt path is down steep slope into floodplain

ELC Summary Sheet Project Name: ______ Project No: ______ Page___of____

wsp

UNIT #: 19 Observers: ______ Date: ______ Weather / Limitations: ______

SYSTEM: Terrestrial Aquatic Wetland	COMMUNITY CLASS: Beach-Bar, Sand Dune, Bluff, Cliff, Talus, Alvar, Rock Barren, Cave, Sand Barren, Prairie-Savannah-Woodland, Forest, Cultural, Swamp, Fen, Bog, Marsh, Open Water, Shallow Water	SERIES: FOD	ECOSITE:	VEG. TYPE: FOD7a

STAND DESCRIPTION:	*SOIL ANALYSIS:*	Community Inclusion:
COMMUNITY AGE: 1=Pioneer 2=Young **3=Mid-Aged** 4=Mature 5=Old Growth	DRAINAGE: 1=very well 2=well 3=moderate 4=imperfect 5=poor 6=very poor	
STANDING SNAGS: R=Rare **O=Occasional** A=Abundant D=Dominant	SOIL MOISTURE: 1=wet 2=wet-mesic 3=mesic 4=dry-mesic 5=dry	
DEADFALL LOGS: R=Rare O=Occasional A=Abundant **D=Dominant**	TEXTURE: silt sand clay loam	
BOTANICAL QUALITY: **1=low** 2=medium 3=high	PARENT MATERIAL: mineral organic	Complex/Mosaic:
SLOPE: **none** gentle moderate steep (simple or complex)	SUBTRATE DEPTH: > 15cm < 15cm	

TOPOGRAPHY: lacustrine, **riverine**, tableland, rolling upland, cliff, talus slope, crevice/cave, alvar, rockland, valley slope, terrace, bottomland, sand dune, bluff, beach/bar

Height code: 1=>25m, 2=10m-25m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7=< 0.5m *Cover codes:* 0=none, 1=0%- 10%, 2=10%- 25%, 3=25%-60%, 4=>60%

VEGETATION LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE
1	Canopy	~~1~~		
2	Sub-Canopy	3	4	ACE NEGU > VIT RIPA
3	Understorey	4	4	VIT RIPA ≥ ACE NEGU > FRA PENN > PAR VITA
4	Ground Layer	7	4	VIO SP > PAR VITA > IMP CAPE >> SYM LATE

SIZE CLASS ANALYSIS (abundance code): R-Rare, O=Occasional, F=Frequent, A=Abundant, D=Dominant	< 10 cm DBH: A	10 - 24 cm DBH: O	25 to 50 cm DBH: N	> 50 cm DBH: N

SPECIES	LAYER / ABUNDANCE 1	2	3	4	SPECIES	LAYER / ABUNDANCE 1	2	3	4
~~FAG GRAN~~	~~[illegible]~~				CIR CANA				
~~[illegible]~~					SOL FLEX				
					SOL ALTI				
RIB CYNO									

EVIDENCE OF DISTURBANCE:
logging, sugar bush, gaps, livestock, exotic species, plantation, trails, dumping, fill, rec. use, noise, **disease/death of trees**, wind throw, browse, beaver, flooding, fire, ice

WILDLIFE HABITAT OBSERVATIONS:
vernal pools, hibernacula, snags, fallen logs, tracks, den/nest, scat, carcass, vocalization, feeding

COMMENTS / ADDITIONAL NOTES:

ELC Summary Sheet Project Name: _____ Project No: _____ Page__of___

UNIT #: 26 Observers: _____ Date: _____ Weather / Limitations: _____

SYSTEM:	COMMUNITY CLASS: Beach-Bar, Sand Dune, Bluff, Cliff, Talus, Alvar, Rock Barren, Cave, Sand Barren, Prairie-Savannah-Woodland, Forest, Cultural, Swamp, Fen, Bog, Marsh, Open Water, Shallow Water	SERIES:	ECOSITE:	VEG. TYPE:
Terrestrial Aquatic Wetland		MA		MAMM3-1

STAND DESCRIPTION:	SOIL ANALYSIS:	Community Inclusion:
COMMUNITY AGE: 1=Pioneer 2=Young 3=Mid-Aged 4=Mature 5=Old Growth	DRAINAGE: 1=very well 2=well 3=moderate 4=imperfect 5=poor 6=very poor	
STANDING SNAGS : R=Rare O=Occasional A=Abundant D=Dominant	SOIL MOISTURE: 1=wet 2=wet-mesic 3=mesic 4=dry-mesic 5=dry	
DEADFALL LOGS: R=Rare O=Occasional A=Abundant D=Dominant	TEXTURE: silt sand clay loam	
BOTANICAL QUALITY: 1=low 2=medium 3=high	PARENT MATERIAL: mineral organic	Complex/Mosaic:
SLOPE: none gentle moderate steep (simple or complex)	SUBTRATE DEPTH: > 15cm < 15cm	

TOPOGRAPHY: lacustrine, riverine, tableland, rolling upland, cliff, talus slope, crevice/cave, alvar, rockland, valley slope, terrace, bottomland, sand dune, bluff, beach/bar

Height code: 1=>25m, 2=10m-25m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7=< 0.5m **Cover codes**: 0=none, 1=0%- 10%, 2=10%- 25%, 3=25%-60%, 4=>60%

VEGETATION LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE
1	Canopy			
2	Sub-Canopy			
3	Understorey			
4	Ground Layer	G	U	PHA ARAR > SOL ALTI > CAR SP F > SYM SPP

SIZE CLASS ANALYSIS (abundance code): R-Rare, O=Occasional, F=Frequent, A=Abundant, D=Dominant	< 10 cm DBH: R	10 - 24 cm DBH: /	25 to 50 cm DBH: /	> 50 cm DBH: /

SPECIES	LAYER / ABUNDANCE 1	2	3	4
COR SERI			D	
VIT RIPA				O

SPECIES	LAYER / ABUNDANCE 1	2	3	4
SOL ALTI				A
EUT MAMT				
SYM LANC				
IONARVE				
SYM NOVA				
CAR SP				F
IVS 4mm M Shape Stem triangular not compressed base red/brown rhizomatous				
SOL RUGO				
JUN SP				
LYC AMER				
HYP PERF				
POA PRAT				
VIC CRAC				
PHA ARAR				A
CIR ARVE				F
BID FRON				
LYT SALI				
CAR VULP				F
SYM ERIC				
BRO INER				F
ASC IYRI				
EUT GRAM				

EVIDENCE OF DISTURBANCE:
logging, sugar bush, gaps, livestock, exotic species, plantation, trails, dumping, fill, rec. use, noise, disease/death of trees, wind throw, browse, beaver, flooding, fire, ice

WILDLIFE HABITAT OBSERVATIONS:
vernal pools, hibernacula, snags, fallen logs, tracks, den/nest, scat, carcass, vocalization, feeding

EACO

COMMENTS / ADDITIONAL NOTES:

ELC Summary Sheet Project Name: ______ Project No: ______ Page ___ of ___

wsp

UNIT #: 21 Observers: ______ Date: ______ Weather / Limitations: ______

SYSTEM: Terrestrial Aquatic Wetland	COMMUNITY CLASS: Beach-Bar, Sand Dune, Bluff, Cliff, Talus, Alvar, Rock Barren, Cave, Sand Barren, Prairie-Savannah-Woodland, Forest, Cultural, Swamp, Fen, Bog, Marsh, Open Water, Shallow Water	SERIES:	ECOSITE: CUW	VEG. TYPE:

STAND DESCRIPTION:	***SOIL ANALYSIS:***	**Community Inclusion:**
COMMUNITY AGE: 1=Pioneer 2=Young 3=Mid-Aged 4=Mature 5=Old Growth (circled: 3=Mid-Aged)	**DRAINAGE:** 1=very well 2=well 3=moderate 4=imperfect 5=poor 6=very poor	
STANDING SNAGS: R=Rare O=Occasional A=Abundant D=Dominant (circled: A=Abundant)	**SOIL MOISTURE:** 1=wet 2=wet-mesic 3=mesic 4=dry-mesic 5=dry	
DEADFALL LOGS: R=Rare O=Occasional A=Abundant D=Dominant (circled: A=Abundant)	**TEXTURE:** silt sand clay loam	
BOTANICAL QUALITY: 1=low 2=medium 3=high (circled: 1=low)	**PARENT MATERIAL:** mineral organic	**Complex/Mosaic:**
SLOPE: none gentle moderate steep (simple or complex) (circled: none)	**SUBTRATE DEPTH:** > 15cm < 15cm	

TOPOGRAPHY: lacustrine, riverine, tableland, rolling upland, cliff, talus slope, crevice/cave, alvar, rockland, valley slope, terrace, bottomland, sand dune, bluff, beach/bar (circled: riverine)

Height code: 1=>25m, 2=10m-25m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7=< 0.5m ***Cover codes:*** 0=none, 1=0%- 10%, 2=10%- 25%, 3=25%-60%, 4=>60%

VEGETATION LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE
1	Canopy	1	3	SAL ALBA
2	Sub-Canopy	3	3	SAL ALBA > ACE NEGU
3	Understorey	4	4	PRU VIRG > RHA CATH > ACE NEGU > VIT RIPA
4	Ground Layer	7	4	BRO INER > GEU URBA > PAR VITA > SOL ALTI

SIZE CLASS ANALYSIS (abundance code): R-Rare, O=Occasional, F=Frequent, A=Abundant, D=Dominant	< 10 cm DBH: A	10 - 24 cm DBH: O	25 to 50 cm DBH: O	> 50 cm DBH: O

SPECIES	Layer / Abundance 1	2	3	4
SAL ALBA	D			
28–Γ teeth + silky				
ACE NEGU	A	A		
ACE PLAT				
VIT RIPA				
PRU VIRG				
RHA CATH			O	F
PAR VITA				
RIB RUBR				
PRU VIRG 'SHUBERT'				
VIB OPOP				
EUO FORT				
COR SERI				
EUO EURO				

SPECIES	Layer / Abundance 1	2	3	4
BRO INER				D
SOL ALTI				A
PHA ARUN				
ASC SYRI				
SYM LANC				
ECH LOBE				
GLE HEDE				
VIN ROSS				
CIR CANA				
GEU URBA				
VIO SP				
URT DIGR				

EVIDENCE OF DISTURBANCE:
logging, sugar bush, gaps, livestock, exotic species, plantation, trails, dumping, fill, rec. use, noise, disease/death of trees, wind throw, browse, beaver, flooding, fire, ice (circled: disease/death)

black knot

WILDLIFE HABITAT OBSERVATIONS:
vernal pools, hibernacula, snags, fallen logs, tracks, den/nest, scat, carcass, vocalization, feeding

WITU (OB group of 8 w/ Juviniles)

COMMENTS / ADDITIONAL NOTES:

ELC Summary Sheet Project Name: _____ Project No: _____ Page ___ of ___

UNIT #: 22 Observers: _____ Date: _____ Weather / Limitations: _____

SYSTEM:	COMMUNITY CLASS:	SERIES:	ECOSITE:	VEG. TYPE:
Terrestrial Aquatic Wetland	Beach-Bar, Sand Dune, Bluff, Cliff, Talus, Alvar, Rock Barren, Cave, Sand Barren, Prairie-Savannah-Woodland, Forest, Cultural, Swamp, Fen, Bog, Marsh, Open Water, Shallow Water			FODS

STAND DESCRIPTION:	***SOIL ANALYSIS:***	**Community Inclusion:**
COMMUNITY AGE: 1=Pioneer 2=Young 3=Mid-Aged 4=Mature 5=Old Growth	**DRAINAGE:** 1=very well 2=well 3=moderate 4=imperfect 5=poor 6=very poor	
STANDING SNAGS : R=Rare O=Occasional A=Abundant D=Dominant	**SOIL MOISTURE:** 1=wet 2=wet-mesic 3=mesic 4=dry-mesic 5=dry	
DEADFALL LOGS: R=Rare O=Occasional A=Abundant D=Dominant	**TEXTURE:** silt sand clay loam	
BOTANICAL QUALITY: 1=low 2=medium 3=High	**PARENT MATERIAL:** mineral organic	**Complex/Mosaic:**
SLOPE: none gentle moderate steep (simple or complex)	**SUBTRATE DEPTH:** > 15cm < 15cm	

TOPOGRAPHY: lacustrine, riverine, tableland, rolling upland, cliff, talus slope, crevice/cave, alvar, rockland, valley slope, terrace, bottomland, sand dune, bluff, beach/bar

Height code: 1=>25m, 2=10m-25m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7=< 0.5m ***Cover codes***: 0=none, 1=0%- 10%, 2=10%- 25%, 3=25%-60%, 4=>60%

	VEGETATION LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE
1	Canopy	1	4	ACE SACH >> QUE RUBR > TIL AMER
2	Sub-Canopy	3	3	ACE SACH > ERA AMER > RHA CATH
3	Understorey	4	3	ACE SACH > FRA AMER > PRU VIRG
4	Ground Layer	7	3	ACE SACH >> SOL FLEX > PAR VITA > FRA AMER

SIZE CLASS ANALYSIS (abundance code): R-Rare, O=Occasional, F=Frequent, A=Abundant, D=Dominant

< 10 cm DBH:	10 - 24 cm DBH:	25 to 50 cm DBH:	> 50 cm DBH:
A	A	D	A

SPECIES	LAYER / ABUNDANCE 1	2	3	4
QUE RUBR				
ACE SACH	D	A	A	D
TSU CANA				
La only NW side				
in several bend				
woodlot adjacent?				
EDGE SPECIES				
QUE RUBR				
ROB PSEU				
JUG NIGR (Invasive)				
ACE NEGU				
RHU TYPA				
QUE MACR				
ACE SACH				
CAR CARO				

SPECIES	LAYER / ABUNDANCE 1	2	3	4
SANG CANA				R
CAULOPHYLLUM SP				
CIR CAN				
PRY INTE				

EVIDENCE OF DISTURBANCE:
logging, sugar bush, gaps, livestock, exotic species, plantation, trails, dumping, fill, rec. use, noise, disease/death of trees, wind throw, browse, beaver, flooding, fire, ice

WILDLIFE HABITAT OBSERVATIONS:
vernal pools, hibernacula, snags, fallen logs, tracks, den/nest, scat, carcass, vocalization, feeding

COMMENTS / ADDITIONAL NOTES:

Approx 10-15m from curb space before major slope drop off

Large old trees

APPENDIX J

Agency Correspondence

October 28, 2021

Ontario Ministry of Environment, Conservation and Parks
Permissions and Compliance
Species at Risk Branch
50 Bloomington Road, Aurora, ON L4G 0L8

Dear Madam/Sir:

WSP Canada Inc. (WSP) has been retained by the City of Vaughan to complete a Trail Gap Feasibility Study to connect critical gaps along the Bartley Smith Greenway ("BSG") Trail in Vaughan, Ontario. The BSG Trail is a 3-km section of the city-wide Vaughan Super Trail (100-km) between McNaughton Road and Keele Street, along the Don Valley Corridor. Field investigations for vegetation, breeding birds, and amphibian calls were conducted between June and September 2021. We are formally contacting you to request any available natural heritage information pertinent in this area.

Figure 1. Study Area

582 Lancaster Street West
Kitchener, ON
Canada N2K 1M3

wsp.com

Based on publicly available online databases as well as field investigations, WSP is currently aware of the following SAR that do or have potential to occur within the study area and vicinity:

COMMON NAME	SCIENTIFIC NAME	CONSERVATION STATUS	OBSERVED DURING FIELD INVESTIGATION
Little Brown Bat	*Myotis lucifugus*	Endangered	Potential habitat was observed.
Northern Long-eared Bat	*Myotis septentrionalis*	Endangered	Potential habitat was observed.
Redside Dace	*Clinostomus elongatus*	Endangered	No
Small-footed Bat	*Myotis leibii*	Endangered	Potential habitat was observed.
Tri-colored Bat	*Perimyotis subflavus*	Endangered	Potential habitat was observed.
Eastern Wood-pewee	*Contopus virens*	Special Concern	Two individuals were recorded with 'Possible' breeding evidence.
Monarch	*Danaus plexippus*	Special Concern	No
Snapping Turtle	*Chelydra serpentina*	Special Concern	No
Wood Thrush	*Hylocichla mustelina*	Special Concern	No
Bank Swallow	*Riparia riparia*	Threatened	No
Barn Swallow	*Riparia riparia*	Threatened	No
Blanding's Turtle	*Emydoidea blandingii*	Threatened	No
Bobolink	*Dolichonyx oryzivorus*	Threatened	No
Butternut	*Juglans cinerea*	Threatened	No
Eastern Meadowlark	*Sturnella magna*	Threatened	No

Kentucky Coffee Tree	*Gymnocladus dioicus*	Threatened	Yes. Several mature individuals and natural regeneration saplings. This recording is well outside the known range of spontaneous natural occurrence in southwest Ontario (west of Brantford) where it has been documented at only 20 locations in 2000 (MECP, 2021). It is most likely that these specimens have been planted and as such are not protected under the ESA.

In fulfillment of the Feasibility Study, updated ecological background information is required in the vicinity of the study area. As such, we are formally contacting you to request additional information on the following subjects:

- Records of SAR or locally rare species, including observation dates and UTMs (if known).

WSP will also be contacting the Toronto and Region Conservation Authority (TRCA) and the Ministry of Northern Development, Mines, Natural Resources and Forestry (MNDMNRF) for relevant natural heritage and SAR information.

Thank you for your assistance, it is greatly appreciated.

Yours sincerely,

Avery Tyrell
Terrestrial Ecologist

RE: WSP Data Request - Bartley Smith Greenway Trail

Species at Risk (MECP) <SAROntario@ontario.ca>

Thu 10/28/2021 3:14 PM

To: Tyrell, Avery <Avery.Tyrell@wsp.com>

Avery;

MECP staff has nothing further to add. We are uncertain what a “No” observation means, however, the presence/absence of each species will need to be assessed according to accepted standards at an appropriate time of year.

Regards;

JJA

JEFF J. ANDERSEN

MANAGEMENT BIOLOGIST
PERMISSIONS AND COMPLIANCE SECTION, SPECIES AT RISK BRANCH
LAND AND WATER DIVISION
ONTARIO MINISTRY OF THE ENVIRONMENT, CONSERVATION AND PARKS

50 Bloomington Road, Aurora ON L4G 0L8 | jeff.andersen@ontario.ca | 289-221-1705

Ontario

From: Tyrell, Avery <Avery.Tyrell@wsp.com>
Sent: October 28, 2021 2:25 PM
To: Species at Risk (MECP) <SAROntario@ontario.ca>
Cc: Pugh, Margaret <Margaret.Pugh@wsp.com>
Subject: WSP Data Request - Bartley Smith Greenway Trail

Hello,

WSP Canada Inc. (WSP) has been retained by the City of Vaughan to complete a Trail Gap Feasibility Study to connect critical gaps along the Bartley Smith Greenway (“BSG”) Trail in Vaughan, Ontario. The BSG Trail is a 3-km section of the city-wide Vaughan Super Trail (100-km) between McNaughton Road and Keele Street, along the Don Valley Corridor. Please see the attached data request letter for additional project details and requested information.

Please direct all questions and responses to Margaret Pugh (margaret.pugh@wsp.com).

Best,

Avery Tyrell

Avery Tyrell, B.E.S.
Terrestrial Ecologist
Ecology & Environmental Impact Assessment (EIA)

T+ 1 519-904-1866

-LAEmHhHzdJzBlTWfa4Hgs7pbKl

Drost, Heather

From: Scientific Collection Permits Aurora (NDMNRF) <scp.aurora@ontario.ca>
Sent: November 8, 2021 4:14 PM
To: Tyrell, Avery
Subject: RE: WSP Data Request - Bartley Smith Greenway Trail
Attachments: NHGuide_MNRF_2019-04-01.pdf

Hello,

Thank you for your request for information on natural heritage features. In order to provide the most efficient service possible, the attached *Natural Heritage Information Request Guide* has been developed to assist you with accessing natural heritage data and values from convenient online sources.

It remains the proponent's responsibility to complete a preliminary screening for each project, to obtain available information from multiple sources, to conduct any necessary field studies, and to consider any potential environmental impacts that may result from an activity. We wish to emphasize the need for the proponents of development activities to complete screenings prior to contacting the Ministry or other agencies for more detailed technical information and advice.

The Ministry continues to work on updating data housed by Lands Information Ontario and the Natural Heritage Information Centre, and ensuring this information is accessible through online resources. Species at risk data is regularly being updated. To ensure access to reliable and up to date information, please contact SAROntario@ontario.ca.

This information will assist in scoping the necessary field assessments for an area if development or site alteration is proposed. This information is not meant to replace the responsibility of the proponent to undertake species and / or habitat surveys. Surveys or additional site level assessment are often required to confirm presence or absence of natural heritage features and values. Environmental consulting firms have the professional and technical expertise to assess sites for natural heritage features and can gauge the potential for such features to exist.

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.

Thank you for your inquiry.

NDMNRF Aurora District Office
50 Bloomington Road, Aurora, ON, L4G 0L8
Tel: (905) 713-7400
Email: scp.aurora@ontario.ca

As part of providing accessible customer service, please let us know if you have any accommodation needs or require communication supports or alternate formats.

From: Tyrell, Avery <Avery.Tyrell@wsp.com>
Sent: October 28, 2021 2:25 PM
To: Scientific Collection Permits Aurora (NDMNRF) <scp.aurora@ontario.ca>
Cc: Pugh, Margaret <Margaret.Pugh@wsp.com>
Subject: WSP Data Request - Bartley Smith Greenway Trail

Hello,

WSP Canada Inc. (WSP) has been retained by the City of Vaughan to complete a Trail Gap Feasibility Study to connect critical gaps along the Bartley Smith Greenway ("BSG") Trail in Vaughan, Ontario. The BSG Trail is a 3-km section of the city-wide Vaughan Super Trail (100-km) between McNaughton Road and Keele Street, along the Don Valley Corridor. Please see the attached data request letter for additional project details and requested information.

Please direct all questions and responses to Margaret Pugh (margaret.pugh@wsp.com).

Best,

Avery Tyrell

Avery Tyrell, B.E.S.
Terrestrial Ecologist
Ecology & Environmental Impact Assessment (EIA)

T+ 1 519-904-1866

and destroy any printed copies. You are receiving this communication because you are listed as a current WSP contact. Should you have any questions regarding WSP's electronic communications policy, please consult our Anti-Spam Commitment at www.wsp.com/casl. For any concern or if you believe you should not be receiving this message, please forward this message to caslcompliance@wsp.com so that we can promptly address your request. Note that not all messages sent by WSP qualify as commercial electronic messages.

AVIS : Ce message, incluant tout fichier l'accompagnant (« le message »), peut contenir des renseignements ou de l'information privilégiés, confidentiels, propriétaires ou à divulgation restreinte en vertu de la loi. Ce message est destiné à l'usage exclusif du/des destinataire(s) voulu(s). Toute utilisation non permise, divulgation, lecture, reproduction, modification, diffusion ou distribution est interdite. Si vous avez reçu ce message par erreur, ou que vous n'êtes pas un destinataire autorisé ou voulu, veuillez en aviser l'expéditeur immédiatement et détruire le message et toute copie électronique ou imprimée. Vous recevez cette communication car vous faites partie des contacts de WSP. Si vous avez des questions concernant la politique de communications électroniques de WSP, veuillez consulter notre Engagement anti-pourriel au www.wsp.com/lcap. Pour toute question ou si vous croyez que vous ne devriez pas recevoir ce message, prière de le transférer au conformitelcap@wsp.com afin que nous puissions rapidement traiter votre demande. Notez que ce ne sont pas tous les messages transmis par WSP qui constituent des messages électroniques commerciaux.

-LAEmHhHzdJzBlTWfa4Hgs7pbKI