Appendix D – Natural Environment

Schedule “C” Class Environmental Assessment for Airport Road from Braydon Boulevard / Stonecrest Drive to Countryside Drive

D.1 – Natural Heritage Impact Assessment Report

Schedule “C” Class Environmental Assessment for Airport Road from Braydon Boulevard / Stonecrest Drive to Countryside Drive

Final

Airport Road (Braydon Boulevard/Stonecrest Drive to Countryside Drive), Brampton Environmental Assessment

Natural Environment Technical Report

Prepared for:

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NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Airport Road (Braydon Boulevard/Stonecrest Drive to Countryside Drive), Brampton Environmental Assessment

Natural Environment Technical Report

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Table of Contents

List of Tables

List of Appendices

Maps

1.0 Introduction

Natural Resource Solutions Inc. (NRSI) was retained by HDR Inc., on behalf of the Region of Peel, to complete a Natural Environment Assessment (NEA) as part of the Class Environmental Assessment (EA) for Airport Road within the City of Brampton. The Class EA has been initiated by the Region in response to required improvements to Airport Road between Braydon Boulevard/Stonecrest Drive in the south to Countryside Drive in the north.

For the purposes of this report, the "study area" refers to the Airport Road right-of-way (ROW) and adjacent lands within approximately 120m as shown on Map 1. The area is highly developed and is dominated by residential subdivisions on both sides of the road; existing natural features are limited. The study area is within the West Humber River subwatershed and is crossed by two tributary watercourses of the West Humber River. Two additional West Humber River tributary watercourses cross Airport Road immediately north and south of the study area boundaries. For the purposes of this study, these watercourse crossings are referred to as Tributaries A, B, C and D, with Tributary A being the southernmost and Tributary D being the northernmost. Tributaries B and C fall within the study area boundaries and were the primary focus of field assessments.

The City of Brampton Official Plan (OP) (Schedule D) (City of Brampton 2015) delineates the presence of "valleyland/watercourse corridor" associated with each of the four watercourses, and delineates "woodland" corresponding to the wooded riparian features located along each of these watercourses on the west side of Airport Road. Non-provincially significant wetland has been mapped along Tributary A immediately east of Airport Road (Appendix I). These features also fall within the regulation limits of the Toronto and Region Conservation Authority (TRCA) and are subject to Ontario Regulation 166/06.

The Peel Region OP Schedule A identifies the riparian wooded feature surrounding Tributary D, immediately north of Countryside Drive, as Core Greenland, while Map 2 of the Regional OP identifies this feature as "River Valley Connection (Outside Greenbelt)" (Region of Peel 2016) (Appendix I). This watercourse and its wooded valleylands are understood to be considered significant in the OP due to its function as a major tributary to the West Humber River, and the continuous linkage that it provides to other areas of the Regional Greenlands system.

This report summarizes background information on natural heritage features within the study area as well as the results of field surveys completed to accurately characterize the existing

natural environment conditions. The detailed characterization was used to inform an analysis of natural feature significance and sensitivity within the study area with consideration for applicable City, Regional and provincial policies and legislation and the TRCA regulation. An impact assessment has been completed based on details of the selected preliminary design for the road improvements. The impact assessment incorporates an analysis of direct impacts (i.e., impacts within the footprint of the planned undertaking), as well as indirect impacts (e.g., due to road runoff/stormwater management (SWM) and water quality mitigation). General recommendations pertaining to ecological restoration and enhancement opportunities and monitoring have also been provided. These recommendations are to be reviewed and refined as required based on the subsequent detailed design of the road improvements.

2.0 Background Review and Significant Habitat Screening

2.1 Background Information Secondary Sources

A review of existing natural heritage information was completed to identify key natural heritage features and species that are known or have potential to occur within the study area. Requests for background information were sent to the Ontario Ministry of Natural Resources and Forestry (MNRF) Aurora District as well as to the TRCA. Background information relevant to the study area was also collected and reviewed from sources including the following:

- Natural Heritage Information Centre (NHIC) (MNRF 2015a);
- Land Information Ontario (LIO) data base mapping;
- Region of Peel Official Plan (2016);
- City of Brampton Official Plan (2015);
- *Airport Road Class EA – Bovaird Drive/Castlemore Road to Mayfield Road* (MRC 2002);
- *Overall Benefit Strategy for Strategic Planning of Urban Development Projects Within Redside Dace-Regulated Habitat, West Humber River Subwatershed, Brampton, Ontario* (Matrix Solutions 2017);
- Department of Fisheries and Oceans Canada (DFO) Species at Risk Mapping (DFO 2017);
- Atlas of the Mammals of Ontario (Dobbyn 1994);
- Ontario Reptile and Amphibian Atlas (Ontario Nature 2015); and,
- Ontario Breeding Bird Atlas (BSC *et al.* 2008).

2.2 Significant Species Habitat Screening

For the purposes of this report, SAR include species listed as ‘Threatened’ or ‘Endangered’ under the provincial *Endangered Species Act* (ESA), or on Schedule 1 of the federal *Species at Risk Act* (SARA). In Ontario, provincial Species of Conservation Concern (SCC) include:

- species designated under the ESA as ‘Special Concern’ within Ontario,
- species that have been assigned a conservation status (S-Rank) of S1 to S3 or SH by the Natural Heritage Information Centre,

- species that have a high percentage of their global population in Ontario, and
- species that are designated federally as Threatened or Endangered by the Committee for the Status of Endangered Wildlife in Canada (COSEWIC) but not provincially by the COSSARO. These species may be protected by the federal SARA if they are listed as Threatened or Endangered on Schedule 1 of the SARA.

Habitat for SCC is considered Significant Wildlife Habitat (SWH), which is afforded protection under the Provincial Policy Statement (OMMAH 2020) and municipal natural heritage protection policies.

Based on NRSI's examination of background sources and federally or provincially significant species with occurrence records in the study area vicinity (within 10km), an assessment of SAR and SCC suitable habitat presence within the study area was completed. Assessments of habitat suitability in the study area were made by cross-referencing each species' known habitat preferences or requirements (e.g., OMNR 2000) against habitats known to occur in the study area. This was completed to ensure that the potential presence of all significant species within the study area was adequately assessed to inform the EA.

Based on this screening exercise, potentially suitable habitat for 8 SAR and 7 SCC were identified within the study area as listed below. This includes 4 SAR/SCC that have been previously recorded in the study area (TRCA 2017) as shown below. Suitable habitat for certain species is restricted to natural areas outside of the Airport Road ROW and adjacent lands (within 10m of the ROW) and are unlikely to be impacted by the proposed undertaking.

<u>Species at Risk</u>

- Chimney Swift (*Chaetura pelagica*) – provincially and federally Threatened (*suitable habitat is located outside of the Airport Road ROW)*
- Barn Swallow (*Hirundo rustica*) – provincially and federally Threatened; this species was previously documented within the study area (TRCA 2017)
- Little Brown Myotis (*Myotis lucifugus*) – provincially and federally Endangered
- Northern Myotis (*Myotis septentrionalis*) – provincially and federally Endangered
- Tri-colored Bat (*Perimyotis subflavus*) – provincially and federally Endangered (*suitable habitat is located outside of the Airport Road ROW)*

- Redside Dace (*Clinostomus elongatus*) – provincially and federally Endangered; Redside Dace Contributing Habitat was identified for the study area watercourses B and C (MNRF 2017a), and Occupied Habitat was identified for Tributaries A and D (Matrix Solutions 2017)
- Eastern Meadowlark (*Sturnella magna*) – provincially and federally Threatened; this species was previously documented within the study area (TRCA 2017) (*suitable habitat is located outside of the Airport Road ROW)*
- Bobolink (*Dolichonyx oryzivorus*) – provincially and federally Threatened; this species was previously documented within the study area (TRCA 2017) (*suitable habitat is located outside of the Airport Road ROW)*

<u>Species of Conservation Concern</u>

- Honey Locust (*Gleditsia triacanthos*) – naturally occurring individuals provincially rare (ranked S2 “Imperilled” in Ontario; MNRF 2015a)) (*natural occurrences of this species are historical to the study area vicinity*)
- Amber-winged Spreadwing (*Lestes eurinus*) – provincially rare (ranked S3 “Vulnerable” in Ontario; MNRF 2015a) (*suitable habitat is located outside of the Airport Road ROW)*
- Lilypad Clubtail (*Arigomphus furcifer*) – provincially rare (ranked S3 “Vulnerable” in Ontario; MNRF 2015a) (*suitable habitat is located outside of the Airport Road ROW)*
- Eastern Wood-Pewee (*Contopus virens*) – species of Special Concern in Ontario; designated Special Concern nationally by COSEWIC
- Western Chorus Frog (*Pseudacris triseriata*) (*Great Lakes/St. Lawrence-Canadian Sheild population*) – federally Threatened (*suitable habitat is located outside of the Airport Road ROW)*
- Snapping Turtle (*Chelydra serpentina serpentina*) – species of Special Concern provincially and federally
- Wood Thrush (*Hylocichla mustelina*) – species of Special Concern provincially, designated nationally Threatened by COSEWIC; this species was previously documented within the study area (TRCA 2017) (*suitable habitat is located outside of the Airport Road ROW)*

A preliminary screening for the presence of SWH was also completed for the study area. The Significant Wildlife Habitat Technical Guide (SWHTG) is a guideline document that outlines the types of habitats that the MNRF considers significant in Ontario as well as criteria to identify these habitats (OMNR 2000, MNRF 2015b). The SWHTG groups SWH into four broad categories: seasonal concentration areas, rare vegetation communities and specialized wildlife habitat, habitats of SCC, and animal movement corridors. This screening involved the comparison of MNRF criteria outlined for Ecoregion 7E, in which the study area is located, against habitats known to occur in the study area. Based on previous work completed within the study area (TRCA 2017), one form of SWH; Terrestrial Crayfish Habitat, is known from the study area but outside of the Airport Road ROW. This is described further below.

Based on the results of this preliminary screening exercise, an additional 5 Candidate SWH types were identified within the study area, as follows:

- Bat Maternity Colonies (*suitable habitat is located outside of the Airport Road ROW)*
- Turtle Wintering Areas *(including significant habitat for the SCC Snapping Turtle)* (*suitable habitat is located outside of the Airport Road ROW)*
- Reptile Hibernaculum
- Amphibian Breeding Habitat (Woodland) *(including significant habitat for the SCC Western Chorus Frog)* (*suitable habitat is located outside of the Airport Road ROW)*
- Habitat for the other SCC listed above that are not otherwise covered under other SWH categories

Existing background information on vegetation and wildlife species occurrence in the study area (TRCA 2017) was also reviewed for the presence of regionally significant species. Regional significance was evaluated based on rarity rankings derived for Peel Region (Kaiser 2001) and the TRCA watersheds (TRCA 2008). Species considered “locally rare” in Kaiser (2001) are considered rare in Peel Region. Regional significance based on TRCA rankings included any species that are ranked up to L3 (“able to withstand minor disturbance; generally secure in natural matrix; considered to be of regional concern”) in the 5-level ranking system. The following regionally significant vegetation species have been previously recorded in the study area.

Table 1. Regionally Significant Vegetation Species Recorded in the Study Area (TRCA 2017).

Common Name	Scientific Name	Peel Region Ranking (Kaiser 2001)	TRCA Ranking (TRCA 2008)
Eastern Buttonbush	*Cephalanthus occidentalis*	Rare	L3
Leafy Pondweed	*Potamogeton foliosus*	Rare	L4
Ninebark	*Physocarpus opulifolius*	Rare	L3
Peach-leaved Willow	*Salix amygdaloides*	Rare	L4
Silky Dogwood	*Cornus amomum ssp. obliqua*	Rare	L3
Tamarack	*Larix laricina*	No rank	L3
White Cut Grass	*Leersia virginica*	Rare	L3
White Spruce	*Picea glauca*	Rare	L3

See Appendix II for the mapped locations of the regionally significant vegetation species (TRCA 2017).

Background fisheries information was provided from the TRCA and the MNRF in support of this study. This information included fish community sampling at locations within the West Humber River and certain tributaries to the West Humber River. Existing information about the study area Tributaries B and C was limited to information provided for the 2002 Airport Road EA (MRC 2002). These tributaries were surveyed by LGL Ltd. in support of the EA, and were determined to be warmwater tributaries. No fish sampling was conducted by LGL because the tributaries were dry at the time of the assessment.

3.0 Fieldwork Methodology

Aquatic and terrestrial field surveys were undertaken within the study area to characterize natural features and identify those that are significant and sensitive and that have potential to be adversely affected by the proposed undertaking. A total of 7 site visits were completed between April and August 2017. Field investigations focused on areas within and immediately adjacent to the Airport Road ROW that were most likely to be potentially impacted by the proposed undertaking, as well as the wooded riparian corridors of Tributaries B and C within 120m of the ROW which together comprise the natural feature coverage within the study area. Although Tributaries A and D are located outside of the study area boundaries, the terrestrial vegetation communities and bird species within these features were surveyed and described as could be completed based on site access.

Vegetation Community Mapping and Species Inventories

Vegetation communities within the study area were described and mapped using the Ecological Land Classification (ELC) system for southern Ontario (Lee *et al.* 1998) on June 5 and August 18, 2017. A comprehensive inventory of vascular flora was completed on each of these dates to inform the ELC vegetation community classifications. ELC and vegetation inventory work was restricted to the ROW and areas that could be viewed immediately adjacent to the ROW during the June 5 site visit due to adjacent property access restrictions. ELC mapping and vegetation inventory work was expanded to City-owned lands within the Tributary B and C wooded riparian areas within 120m of the ROW on August 18 due to access permissions granted at that time.

Surficial soils were characterized within the adjacent natural features to further inform the ELC vegetation community classifications, including the classification of natural features as wetland or terrestrial features. The vegetation inventory work also included an emphasis on the identification of any federally, provincially, or regionally significant vegetation species within the study area.

Breeding Bird Surveys

Two early morning breeding bird surveys were completed on June 5 and June 29, 2017 in accordance with Ontario Breeding Bird Atlas (OBBA) protocol (BSC 2001). Surveys were completed between a half-hour before sunrise and 10:00am and were timed to occur at least 10 days apart. Surveys were completed through a comprehensive area search of study area lands

with a focus on the Tributary B and C corridors. The tributary corridors were also surveyed through completion of 10-minute point counts at locations as shown on Maps 2a-c. Standard breeding evidence codes were recorded based on OBBA protocol.

Spring Reptile Survey

A spring survey was completed on April 28, 2017 to assess the presence of basking reptiles (snakes and turtles) in suitable habitat within the study area (i.e., the vegetated riparian valley features). This work was timed to occur following spring emergence and appropriate weather and temperature conditions (11-18°C, sunny, low wind), when reptiles are most conspicuously observed while basking. This work was completed to inform assessments of significant reptile habitats within the study area and that may occur along the tributary watercourses within the study area. The investigation included an assessment of habitat suitability for reptiles known to occur in the study area vicinity (Ontario Nature 2015) as listed in Appendix III.

Tree Inventory

All trees ≥10cm diameter-at-breast-height (DBH) within the study area ROWs, including intersecting roads to a distance of approximately 35m from Airport Road, were inventoried and assessed for health condition by Certified Arborists on August 9 and 10, 2017. Trees immediately adjacent to (i.e., within approximately 5m of) the ROW limits, as could be accessed, were also inventoried where potential for road improvement impacts to adjacent trees exists. The following information was recorded for each tree:

- species,
- DBH (cm),
- crown radius (m),
- general health (excellent, good, fair, poor, very poor),
- potential for structural failure (low, medium, high),
- general comments (i.e. disease, aesthetic quality, development constraints, sensitivity to development) and,
- presence of tree cavities using MNRF bat habitat assessment protocol (see below).

The location of each inventoried tree was georeferenced to sub-50cm accuracy using an SXBlue II GNSS GPS unit by the Certified Arborist. See the Tree Evaluation Report (TER) for this Class EA (NRSI 2020) for additional discussion about the tree inventory methodology.

Bat Habitat Tree Assessment

An inspection of trees within the study area ROWs was completed in conjunction with the tree inventory to determine the presence of suitable snags or cavity trees that may provide bat roosting or maternity colony habitat. Bat habitat assessments were completed by staff experienced in such surveys and followed guidelines for the identification of suitable bat habitat outlined in the MNRF's *Survey Protocol for Species at Risk Bats in Treed Habitats* (MNRF 2017b). This information was collected to assess the potential occurrence of SAR habitat for Little Brown Myotis and Northern Myotis. Any suitable habitat trees were photographed, described in detail, and GPS-georeferenced on standardized survey forms.

Aquatic Habitat Assessment and Fish Community Characterization

NRSI aquatic biologists completed surveys on August 1, 2017 to characterize the aquatic habitats and fish community at two tributaries to the West Humber River (Tributary B and Tributary C, Map 3) where they cross under Airport Road within the study area. Both of the tributaries have been previously identified as intermittent, warmwater watercourses (MRC 2002).

During these assessments, the following information was recorded:

- riparian and aquatic vegetation;
- channel dimensions;
- general bank stability;
- cover type and quality;
- substrate type;
- flow conditions; and
- water temperature.

In addition, specific consideration was given to the suitability of habitat for Redside Dace, which include pools and shrubby bank vegetation.

Fish community sampling was completed as part of this survey on August 1, 2017 within 50m downstream of Airport Road for Tributary B (EMS-002, Map 3) and 30m downstream of Airport Road for Tributary C (EMS-001, Map 3). The fish community assessments were undertaken by a two-person crew using a Smith-Root LR-20B Electrofishing Backpack. Within these tributaries, electrofishing followed a single pass screening level assessment based on the Ontario Stream Assessment Protocol (Stanfield 2013). This method is designed to provide a qualitative assessment of fish species abundance and generally characterize the fish community in the sampling reach.

The observed electrofishing conditions, settings and total sampling time are summarized in Table 2 for each sampling site. All captured fish were identified, enumerated and released.

Table 2. Electrofishing Conditions, Settings, and Shocking Time

	Station EMS-001	Station EMS-002
Date	August 1, 2017	August 1, 2017
Sampling start time	1350hrs	1420hrs
Sampling end time	1415hrs	1445hrs
Air temperature (°C)	24	25
Water temperature (°C)	21	22
Time water temp. taken	1155hrs	1230hrs
Electrofisher Type	Smith-Root LR-20B	Smith-Root LR-20B
Number of Netters	1	1
Voltage (V)	200	150-250
Pulsating Frequency (Hz)	90	90
Ampere (Amps)	3.2	2.3-3.4
Shocking time (sec.) – Pass 1	217	450

This sampling was completed under license issued to NRSI on June 16, 2017 by the MNRF Aurora District Office (No. 1087065).

Incidental Observations

During the field work program, all incidental observations of mammals and herpetofauna were documented on all field visits. This included direct observations of individuals, as well as signs of wildlife presence (i.e. tracks, scat, dens, nests, etc.).

4.0 Existing Conditions

4.1 Soils, Terrain and Drainage

The study area is located within the South Slope physiographic region, which slopes gradually toward Lake Ontario. The South Slope is underlain by glacial till and is dominated by clay, clay loam, and loam soils. The combination of topography and soils within this physiographic region results in relatively high runoff and low infiltration capacity. The tributaries originate to the northwest of the study area within the Peel Plain physiographic region. The Peel Plain is made up of deep deposits of limestone and shale till, often covered by a layer of clay sediment. According to the Surficial Geology of Southern Ontario Mapping (2010), the dominant soil within the subject property is clay to silt-textured till. A small section of the study area is made up of silt and clay, minor sand and gravel (8b Fine-textured glaciolacustrine deposits). This soil is imperfectly drained with a moderate to gently sloping topography and few stones.

The study area is located within the West Humber River subwatershed of the Humber River watershed. The majority of the study area is developed and natural features are limited to the watercourses and their valley corridors. The two tributaries that cross under Airport Road within the study area drain into the West Humber River. Tributary B originates to the northwest of Countryside Drive, although this section has been used for agriculture and there is little evidence of the original headwater area visible. Tributary B travels east through an urbanized area, which has a narrow vegetated riparian zone and a small wooded area upstream of Airport Road. A SWM pond, which is used for erosion and quantity control is located immediately south of where Tributary B crosses under Airport Road. Tributary B continues to travel east through a vegetated riparian zone for approximately 1.6km before its confluence with the West Humber River. Tributary C also originates to the north of Countryside Drive and a section has been used for agriculture. Tributary C travels southeast within a vegetated riparian zone through an urbanized area. A SWM pond, which is used for erosion and quality control is located immediately south of where Tributary C crosses under Airport Road. Tributary C continues to travel in an easterly direction for approximately 1km before entering a SWM pond. From this pond, the tributary travels another approximately 1km through a forested riparian zone before its confluence with the West Humber River.

4.2 Terrestrial Features

4.2.1 Vegetation Communities

The majority of the surrounding land uses comprised urban residential properties with some limited agricultural areas consisting of corn and winter wheat annual row crops. Vegetation communities are described in Table 3 below and are subdivided into 4 distinct assessment units; each associated with a watercourse (Tributaries A-D). The assessment units are described separately in order to more accurately characterize the habitats where similar vegetation communities have been identified throughout the greater study area. Refer to Maps 2a-c for study area ELC communities and surrounding land uses.

Table 3. Vegetation Communities Identified within the Study Area

ELC Ecosite Type	ELC Description	Environmental Characteristics
Assessment Unit A		
FOD7/ FOD7-3	Fresh-Moist Lowland Deciduous Forest/ Fresh-Moist Lowland Willow Deciduous Forest	This lowland deciduous forest community is associated with the treed riparian areas along Tributary A. It is dominated by Crack Willow (*Salix fragilis*), Green Ash (*Fraxinus pensylvanica*), and White Elm (*Ulmus americana*) in the canopy. The sub-canopy is dominated by Manitoba Maple (*Acer negundo*), Green Ash, and Crack Willow. Understorey vegetation is comprised of Common Buckthorn (*Rhamnus cathartica*), Red-osier Dogwood (*Cornus stolonifera*), and Nannyberry (*Viburnum lentago*). The groundcover layer is dominated by Woodland Chervil (A*nthriscus sylvestris*), Reed Canary Grass (*Phalaris arundinacea*), Spotted Touch-me-not (*Impatiens capensis*), White Avens (*Geum canadense*), Calico Aster (*Symphyotrichum lateriflorum var. lateriflorum*), and Lance-leaved Aster (*Symphyotrichum lanceolatum var. lanceolatum*). Two distinct habitat inclusions exist within this feature: Mineral Meadow Marsh (MAM2), and Mineral Cultural Meadow (CUM1). Dominant species within the MAM2 community include European Common Reed (*Phragmites australis ssp. australis*), and Narrow-leaved Cattail (*Typha angustifolia*). Dominant species within the CUM1 community include Canada Goldenrod (*Solidago canadensis*), Canada Thistle (*Cirsium arvense*), Awnless Brome (*Bromus inermis ssp. inermis*), New England Aster (*Symphyotrichum novae-angliae*), and Lance-leaved Aster. Throughout this assessment unit, marsh species were occasionally observed along the watercourse edges; however, due to the small size of these areas relative to the surrounding lowland forest, these areas were not mapped nor identified as a habitat complex. Soil sampling within this assessment unit resulted in a soil moisture regime of 3 which is representative of a lowland forest classification.
Assessment Unit B		
FOD7	Fresh-Moist Lowland Deciduous Forest	This lowland deciduous forest community is associated with the treed riparian area along Tributary B. It is dominated by Manitoba Maple, Crack Willow, and Green Ash in the canopy and sub-canopy layers. Understorey vegetation is comprised of Common Buckthorn, Red-osier Dogwood, and Nannyberry. The groundcover layer is dominated by Garlic Mustard (*Alliaria petiolata*), Dame's Rocket (*Hesperis matronalis*), and Spotted Touch-me-not. Two distinct habitat inclusions and a habitat complex exist within this feature: Open Water (OA), Mineral Cultural Meadow (CUM1), and Mineral Cultural Thicket (CUT1), respectively. The OA community was unvegetated at the

ELC Ecosite Type	ELC Description	Environmental Characteristics
		time of assessment. Dominant species within the CUM1 community include Canada Goldenrod (*Solidago canadensis*), Canada Thistle (*Cirsium arvense*), Awnless Brome (*Bromus inermis ssp. inermis*), New England Aster (*Symphyotrichum novae-angliae*), and Lance-leaved Aster. Dominant species within the CUT1 community include Common Buckthorn, hawthorn (*Crataegus* spp.), and Calico Aster. Throughout this assessment unit, marsh species were occasionally observed along the watercourse edges; however, due to the small size of these areas relative to the surrounding lowland forest, these areas were not mapped nor identified as a habitat complex. Soil sampling within this assessment unit resulted in a soil moisture regime of 5 which is representative of a lowland forest classification.
Assessment Unit C		
FOD7	Fresh-Moist Lowland Deciduous Forest	This lowland deciduous forest community is associated with the treed riparian area along Tributary C. It is dominated by Manitoba Maple, Crack Willow, and Green Ash in the canopy and sub-canopy layers. Understorey vegetation is comprised of Common Buckthorn, Red-osier Dogwood, and Tartarian Honeysuckle (*Lonicera tatarica*). The groundcover layer is dominated by Spotted Touch-me-not, Yellow Avens (*Geum aleppicum*), and Dame's Rocket. A habitat complex exists within this feature: Mineral Cultural Thicket (CUT1). Dominant species within this complex include Common Buckthorn, hawthorn, and Calico Aster. Throughout this assessment unit, marsh species were occasionally observed along the watercourse edges; however, due to the small size of these areas relative to the surrounding lowland forest, these areas were not mapped nor identified as a habitat complex. Soil sampling within this assessment unit resulted in a soil moisture regime of 5 which is representative of a lowland forest classification.
Assessment Unit D		
FOD7-3	Fresh-Moist Lowland Willow Deciduous Forest	This lowland deciduous forest community is associated with the treed riparian area along Tributary D. It is dominated by Crack Willow, White Elm, Green Ash, and Manitoba Maple in the canopy and sub-canopy layers. Understorey vegetation is comprised of Common Buckthorn, Tartarian Honeysuckle, and Red-osier Dogwood. The groudcover layer is dominated by Dame's Rocket, Reed Canary Grass, Lance-leaved Aster, and Calico Aster. Three distinct habitat inclusions exist within this feature: Mineral Cultural Meadow (CUM1), Mineral Cultural Woodland (CUW1), and Fresh-Moist White Elm Lowland Deciduous Forest (FOD7-1). Dominant species within the CUM1 community include Canada Goldenrod (*Solidago canadensis*), Canada Thistle (*Cirsium arvense*), Awnless Brome (*Bromus inermis ssp. inermis*), New England Aster (*Symphyotrichum novae-angliae*), and Lance-leaved Aster. Dominant species within the CUW1 community include Scot's Pine (*Pinus sylvestris*), and Choke Cherry (*Prunus virginiana ssp. virginiana*). The dominant species within the FOD7-1 community is White Elm. Throughout this assessment unit, marsh species were occasionally observed along the watercourse edges; however, due to the small size of these areas relative to the surrounding lowland forest, these areas were not mapped nor identified as a habitat complex. Soil sampling within this assessment unit resulted in a soil moisture regime of 5 which is representative of a lowland forest classification.
Study Area-Wide		
N/A	ROW Roadside Areas	Roadside areas are dominated by hardy and opportunistic graminoids such as Smooth Brome (*Bromus inermis ssp. inermis*), Witch Grass (*Panicum capillare*), and Kentucky Bluegrass (*Poa pratensis ssp. pratensis*). Few trees

ELC Ecosite Type	ELC Description	Environmental Characteristics
		exist within the right-of-way, and include White Ash, Freeman's Maple, Norway Spruce, and Norway Maple (*Acer platanoides*).

4.2.2 Vascular Flora

A total of 150 species of vascular flora were inventoried within the study area. A complete list of inventoried species is provided in Appendix IV. Of the species observed, 42% were non-native species. The majority of inventoried species are urban-tolerant and reflective of disturbed conditions. However, certain observed species have lower tolerances to site alteration and disturbance, and have a higher fidelity to a particular suite of habitat conditions (species with higher Coefficient of Conservatism (CC) values; see Appendix IV). The presence of these species is indicative of higher quality habitat conditions afforded by portions of the wooded tributary valleylands despite the surrounding disturbance regime. Roadside areas that are most likely to be impacted by the proposed undertaking were regularly mown and dominated by common non-native weeds and other native species tolerant to disturbance.

Appendix V lists federally and provincially significant flora species known from the study area vicinity (within 1 km) based the results of background review and whether suitable habitat is present for each within the study area. A total of 6 regionally significant (Kaiser 2001, TRCA 2008) vegetation species were inventoried within the study area as listed below and shown on Maps 4a-c. TRCA-significant species are considered species ranked L3 and below for the purposes of this report.

Table 4. Regionally Significant Vegetation Species Inventoried Within the Study Area.

Common Name	Scientific Name	Peel Region Significance (Kaiser 2001)	TRCA Watershed Significance (TRCA 2008)	Study Area Location
Cleavers	*Galium aparine*	Rare	L5	Assessment Unit A FOD7 west of ROW
Hairy Aster	*Symphiotrichum pilosum var. pilosum*	Not significant	L2	Assessment Unit A CUM1 east of ROW
Purple-veined Willow-herb	*Epilobium coloratum*	Rare	L4	Assessment Units B, C FOD7 west of ROW; Assessment Unit A FOD7-3 west of ROW
Rough Hedge-nettle	*Stachys hispida*	Rare	L3	Assessment Units B, C FOD7

Common Name	Scientific Name	Peel Region Significance (Kaiser 2001)	TRCA Watershed Significance (TRCA 2008)	Study Area Location
				(various locations) outside ROW
Sandbar Willow	*Salix exigua*	Rare	No ranking	Assessment Units B, C FOD7 (various locations) outside ROW
White Cut Grass	*Leersia virginica*	Rare	L4	Assessment Units B, C FOD7 west of ROW

White Spruce trees were inventoried within the study area. Although this species is listed as regionally significant (Kaiser 2001, TRCA 2008), all of the observed individuals were planted trees associated with the City's landscape planting easements immediately east and west of the Airport Road ROW as well as certain landscape planting trees on private properties immediately adjacent to the ROW. Similarly, all observed Tamarack trees, which is an L3-ranked species for the TRCA watershed, comprised planted individuals. Therefore, none of the inventoried White Spruces or Tamaracks are considered regionally significant individuals.

4.2.3 Tree Inventory

In total, 368 trees were inventoried, comprising 27 species. Of the trees inventoried and assessed, 95 (25.8%) are native species and 273 (74.2%) are non-native species. See the TER (NRSI 2020) for a complete list and mapping of trees inventoried within the study area.

Table 5 provides a list of tree species inventoried within the study area, whether they are native or non-native and their overall health.

Table 5. Summary of Inventoried Trees

Common Name	Scientific Name	Excellent	Good	Fair	Poor	Very Poor	Dead	Total
Native Species								
Black Willow	*Salix nigra*			2				2
Bur Oak	*Quercus macrocarpa*		2	3	1			6
Eastern White Cedar	*Thuja occidentalis*	2	1					3
Eastern White Pine	*Pinus strobus*	1	1	1				3
Freeman's Maple	*Acer X freemanii*		6	2				8
Manitoba Maple	*Acer negundo*			10	1			11
Red Oak	*Quercus rubra*		3					3
Silver Maple	*Acer saccharinum*		1	6				7
Speckled Alder	*Alnus incana spp. rugosa*		3	2	1			6
Sugar Maple	*Acer saccharum ssp. saccharum*				2	1		3
White Ash	*Fraxinus americana*					1		1
White Spruce	*Picea glauca*	5	20	13	4			42
Total		8	37	39	9	2	0	95
Non-Native Species								
Amur Maple	*Acer ginnala*			2				2
Austrian Pine	*Pinus nigra*	2	5	17	1			25
Black Locust	*Robinia pseudoacacia*			1				1
Colorado Spruce	*Picea pungens*	17	49	47	5	1	1	120
Common Pear	*Pyrus communis*			2				2
Crabapple	*Malus sp.*		1	5				6
English Oak	*Quercus robur*		3					3
European Larch	*Larix decidua*				1			1
European Mountain-Ash	*Sorbus aucuparia*		1					1
Japanese Silk Lilac	*Syringa reticulata*		2					2
Norway Maple	*Acer platanoides*		22	12				34
Norway Spruce	*Picea abies*		9	7	3			19
Scot's Pine	*Pinus sylvestris*		1					1

Common Name	Scientific Name	Excellent	Good	Fair	Poor	Very Poor	Dead	Total
Serbian Spruce	*Picea omorika*		3	9				12
Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	1	22	21				44
Total		20	118	123	10	1	1	273
Overall Total		**28**	**155**	**162**	**19**	**3**	**1**	**368**

Table 6 provides a summary of the overall health of trees inventoried within the study area, along with their potential for structural failure. A majority of the trees inventoried are in good or fair health with an improbable potential for structural failure.

Table 6. Overall Health of Trees Inventoried

Potential for Structural Failure Rating	Overall Condition						Total
	Excellent	Good	Fair	Poor	Very Poor	Dead	
Improbable	28	153	138	6			325
Possible		2	23	13			38
Probable			1		3	1	5
Imminent							0
Total	**28**	**155**	**162**	**19**	**3**	**1**	**368**

4.2.4 Birds

In total, 106 bird species have been recorded in the vicinity of the study area (BSC et al. 2008). Thirty-three (33) of these species were documented within the study area during field surveys. Of these, 30 species displayed evidence of possible, probable or confirmed breeding within the study area based on OBBA breeding evidence codes (BSC 2001). Refer to Appendix VI for a complete list of all bird species known and observed in the study area and vicinity, including highest breeding evidence codes in accordance with the OBBA (BSC 2001).

Based on background review data, 4 bird SAR (Barn Swallow, Bobolink, Eastern Meadowlark and Chimney Swift), and 2 bird SCC (Eastern Wood-Pewee and Wood Thrush) were identified as having potential to occur within the study area based on existing records in the vicinity and presence of appropriate habitat (Appendix V) and/or have previously been recorded in the study area (TRCA 2017; Appendix II). Of these, only 1 species, Barn Swallow, was documented during field investigations.

Multiple foraging Barn Swallow individuals were observed over portions of the study area near the Tributary B and C watercourse crossings during field investigations. Most observed individuals were recorded flying over SWM ponds that exist immediately upstream of the Airport Road watercourse crossing locations. These include observed foraging Barn Swallows over the Tributary C riparian valley crossing and SWM pond on the April 28 and June 5 site visits, and at the Tributary B riparian valley crossing and SWM pond on the April 28, June 5, and June 29 site visits. The number of recorded individuals at a given location ranged from 2 to 6. No Barn

Swallows were observed foraging adjacent to the Tributary A or D crossings. No Barn Swallow nests were observed within or immediately adjacent to the study area, including within the culvert/bridge structures conveying Tributaries A-D under Airport Road. However, a possible Barn Swallow nest was observed on the exterior of a house on Bay Breeze Drive, within approximately 150m of the Tributary C Airport Road crossing and SWM pond, and within approximately 300m of the Tributary B Airport Road crossing and SWM pond.

Of the observed bird species, only 1 species is considered significant in the TRCA watersheds (rank of L3 or less): Great Blue Heron (*Ardea herodias*) (ranked L3; TRCA 2008). One individual Great Blue Heron was observed during NRSI site investigations as a fly-over and was not utilizing study area habitats. All other observed species are considered to have secure or generally secure populations in the TRCA watersheds.

4.2.5 Herpetofauna

In total, 14 reptile and amphibian species have been recorded form the vicinity of the study area (Ontario Nature 2015). No herpetofauna species were observed during field investigations in the study area, including during the spring reptile survey completed during ideal basking conditions. A complete list of all herpetofauna species known from the study area is provided in Appendix III.

Based on a review of background information, 2 herptofauna SCC, Snapping Turtle and Western Chorus Frog, were identified as having potential to occur within the study area based on existing records in the vicinity and presence of suitable habitat (Appendix V). Neither of these species were identified in the study area during previous survey work undertaken by the TRCA (TRCA 2017). Furthermore, neither of these species, nor any other significant herpetofauna species, were recorded during site investigations.

4.2.6 Mammals

In total, 18 mammal species have been documented within the vicinity of the study area (Dobbyn 1994). Four mammal species were observed incidentally during field investigations in the study area: Eastern Cottontail (*Sylvilagus floridanus*), Beaver (*Castor canadensis*) (indirect evidence based on tree cuttings), Muskrat (*Ondatra zibethicus*) and Eastern Gray Squirrel (*Sciurus carolinensis*). A complete list of all mammal species known from the study area is provided in Appendix VII.

Although not identified to the study area vicinity in the Ontario Mammal Atlas (Dobbyn 1994), it is understood that the provincial range of Little Brown Myotis, Northern Myotis and Tri-colored Bat occurs throughout southern Ontario (Environment Canada 2015) and therefore these species may occur within the study area. Suitable habitat for Tri-colored Bat, which comprises oak- or maple-dominated forests (Environment Canada 2015, MNRF 2017b) is considered absent within or immediately adjacent to the Airport Road ROW. The habitat tree assessment completed to assess the potential occurrence of Little Brown Myotis or Northern Myotis roosting habitat within inventoried trees resulted in two trees with cavity features that could potentially provide bat maternity roosting habitat. Both trees were mature Sugar Maples (*Acer saccharum* ssp. *saccharum*) at the western corner of Airport Road and Countryside Drive (Trees #367-368; see TER (NRSI 2020)). These 2 trees fall outside the area that could be impacted by the proposed road reconstruction and will not be directly affected by the undertaking. Potential SAR bat habitat is therefore not considered further within this report.

4.2.7 Insects

One odonate species, Ebony Jewelwing (*Calopteryx maculata*), and 1 butterfly species, Cabbage White (*Pieris brassicae*) were observed during field investigations. Two odonate species identified through background review, Amber-winged Spreadwing and Lilypad Clubtail, were not recorded within the study area.

4.3 Aquatic Features

4.3.1 Aquatic Habitat

The following is a description of the aquatic habitat present in each of Tributaries B and C within the study area. A photo log for both of the Tributaries is located in Appendix VIII.

Tributary B

An aquatic habitat assessment was conducted along a 150m section of Tributary B, 50m upstream of Airport Road and 100m downstream (Map 3).

Within the 50m upstream section, the bankfull width varied between 1-3m, although at the time of assessment there was very limited flow with some pooled water connected by a very slightly wetted channel. The water present within the pools was turbid at the time of the assessment. The channel banks were very minimal and stable, measuring 0.1-0.2m, and were very densely vegetated with deciduous trees, shrubs and herbaceous species. The channel substrate is comprised mostly of clay and silt. The channel has a low gradient and meanders through a

narrow vegetated corridor, where the extent of natural vegetation is 10-20m wide. The channel is approximately 50% shaded through this 50m section with the shade being provided through deciduous trees and shrubs. Habitat is provided within this reach through shallow pools, woody debris and terrestrial vegetation. A patch of the non-native, invasive Common Reed (*Phragmites australis*) is present near Airport Road at the culvert. A SWM pond is also present immediately to the south of this tributary along the western side of Airport Road. During high water periods it is expected that the SWM pond outlets into this tributary.

Tributary B downstream of the culvert runs parallel to Airport Road for approximately 175m before turning toward an easterly direction. Immediately downstream of the culvert is a long stagnant pool with herbaceous species along the banks. The pool narrows and flow was present in what appears to be a constructed channel, as there is an abundance of cobble substrate. The water was slightly turbid within the stagnant pool but clear within the narrow channel. The channel banks ranged in height from 0.2-0.3m, and were very densely vegetated with willow species, other deciduous trees, and herbaceous species. The banks appeared to be stable and the channel was straight within the 50m assessed. The channel substrate had abundant cobble, as well as some sand, gravel, and boulder. The channel has approximately 50% shade provided through deciduous trees and smaller willow species. The adjacent lands have 0-10m of natural vegetation alongside a residential area. In-stream habitat and cover was provided through a pool at the culvert, a riffle, which appears to have been constructed based on the cobble and other rock present, and through woody debris. Depths within the riffle were a maximum of 0.17m and the pool had a maximum depth of 0.22m.

Tributary C

An aquatic habitat assessment was conducted for this tributary along a 100m section of Tributary C, 50m upstream of Airport Road and 50m downstream.

Within the 50m upstream section, the bankfull width varied between 1.5-1.7m, although at the time of assessment the channel was dry. Some terrestrial grasses were growing within the channel, although there is evidence of flow from earlier within the year and the substrates were damp. The substrates within the channel varied and consisted of clay, silt, gravel and cobble. The cobble and gravel were primarily present immediately upstream of the culvert. The channel, except for immediately adjacent to the culvert, is heavily shaded (75%) by dense terrestrial vegetation, which extends 10-20m adjacent to the channel. This dense vegetation extends right to the channel banks, which were very minimal and stable, measuring 0.1-0.2m.

The channel has a low gradient, meanders, and had woody debris throughout. The land use surrounding the tributary is urban with a commercial plaza and SWM pond in the immediate vicinity.

Tributary C downstream of the culvert had a very minor flow at the time of the assessment, which derives from the SWM pond outflow. Immediately downstream of the culvert was a pool feature lined with cobble, and was abundant with Common Reed and cattail growth. The tributary narrows approximately 15m from the culvert into a more naturalized channel with clay, silt, and gravel substrates. The narrow channel is heavily shaded (75%) by dense vegetation, which extends 10-20m from the bank. The bankfull width averaged 2.7m and had a wetted width range of 0.5-1.3m. The tributary within this 50m section had a pool, riffle, and run feature. The pool had a maximum depth of 0.15m, with the riffle maximum depth being 0.17m and the run 0.16m. In-stream habitat was provided through woody debris, cobble, and willow roots. The land use is urban, with residential areas being present to the south and north.

4.3.2 Fish Community

The fish community was assessed within Tributary B at monitoring station EMS-002 and within Tributary C at monitoring station EMS-001 (Map 3). Both of these monitoring stations were on the downstream (east side) of Airport Road due to the presence of standing water in those locations. A total of 3 species (Creek Chub (*Semotilus atromaculatus*), Fathead Minnow (*Pimephales promelas*), and Goldfish (*Carassius auratus*)) were captured within Tributary B and 1 species (Creek Chub) was captured within Tributary C.

Creek Chub are a tolerant, coolwater species found throughout Ontario. Fathead Minnow and Goldfish are both a highly tolerant, warmwater species found throughout southwestern Ontario. These species are common, with Goldfish being an invasive species. All of these species are quite often found within SWM ponds and the watercourses they outlet to.

Additional fish community information was available from the TRCA and the MNRF West Humber River tributaries in the vicinity, although not for the 2 tributaries located in the study area. Tributaries B and C were previously investigated as part of the Airport Road Class EA – Bovaird Drive/Castlemore Road to Mayfield Road (MRC 2002). Aquatic surveys were completed in 2003 by LGL Limited which found both of the tributaries to be dry at the time of the assessment.

The fish species known from the West Branch of the Humber River was provided by the TRCA. Their records show that typical species found are cool- and warmwater fish made up of a combination of highly tolerant and intermediate tolerant species. None of the fish species known from within the project area are SAR. The background review did not confirm the presence of any SAR fish or mussel species within the study area (DFO 2017). The MNRF background information confirmed that these tributaries contribute flow to downstream Redside Dace occupied habitat (MNRF 2017c). Redside Dace prefer cool, slow-moving areas of small streams and headwaters with a gravel bottom, where there is overhanging grasses and shrubs (MNRF 2016). No occupied habitat for Redside Dace exists within the study area reach of these tributaries.

5.0 Natural Feature Significance and Sensitivity

Analysis of the significance of existing natural features was used to identify those features and habitats that are sensitive to disturbance based on the rarity or sensitivity of the feature or the functions/processes that contribute toward their significance. This assessment also considered the policies, legislation, and regulations that apply to the study area natural features which must be considered in the evaluation of a preferred alternative design. The following is a brief discussion of the results of this analysis with regards to significant natural areas and features which may represent constraints and are to be considered as part of the selection of a preferred alternative design for the proposed undertaking.

5.1 Designated Natural Features and TRCA Regulated Areas

The wooded riparian valleylands associated with Tributaries B and C represent the primary natural feature constraints within the study area, while the riparian valleylands associated with Tributaries A and D represent additional constraints immediately adjacent to the study area boundaries. These riparian valleylands are part of a large, landscape-level natural heritage network that spans the Region and connects upper and lower watershed areas. These natural linkages provide important regional- and local-scale wildlife movement corridors as well as other important habitat functions within a highly developed urban matrix. In recognition of this, the Regional and City OPs contain policies to ensure the identification, protection, conservation, and where possible restoration of these wooded riparian valleylands.

5.1.1 Region of Peel Official Plan Policies

Regionally designated natural heritage features within the study area comprise the following:

- Core Area of the Greenland System
    - associated with Tributary D (outside the study area)
- Natural Areas and Corridors
    - associated with Tributaries B and C (within the study area) and A (outside the study area)

Section 2.3.2.9 of the Regional OP defines Natural Areas and Corridors as containing any of several elements that afford these features ecological significance. One of these elements, fish habitat, is present within Tributaries B and C, rendering these features as Natural Areas and Corridors as opposed to Potential Natural Areas and Corridors (as defined in Section 2.3.2.10).

The Regional OP identifies these features of the Greenlands system to be identified and protected through the policies of "area municipal official plans"; Tributaries B and C therefore fall under the protective policies of the City OP as described below.

Section 2.3.2.2 of the Regional OP defines Core Areas, which include "Core Valley and Stream Corridors". These features include "major tributaries" of the West Humber River and include Tributary D as mapped in Schedule A of the OP. Figure 2 of the OP further maps Tributary D as a "River Valley Connection (Outside Greenbelt)". These valley and stream corridors are considered important continuous linkages that connect other elements of the Greenlands System Core Areas (Region of Peel 2016). As per Section 2.3.2.6, development and site alteration within Core Areas is prohibited except for certain activities including "essential infrastructure exempted, pre-approved or authorized under an environmental assessment process". These exceptions are subject to demonstration that

- there are no reasonable alternative locations outside of the Core Area,
- that development and site alteration is directed away from the Core Area feature to the extent possible,
- that impact to the Core Area feature is minimized, and
- that any impact to the feature or its functions that cannot be avoided be mitigated through restoration or enhancement to the greatest extent possible (Region of Peel 2016).

See Maps 4a-c for the location of Regionally-designated natural features within and immediately adjacent to the study area. Note that the delineated significant valleyland/corridor features do not represent the limits of physically-mapped valley slopes.

5.1.2 City of Brampton Official Plan Policies

City-designated natural heritage features within the study area comprise the following as illustrated on OP Schedule D:

- Valleyland/Watercourse Corridor
    - associated with Tributaries A, B, C and D
- Woodland

    - associated with Tributaries A, B, C and D immediately west of the Airport Road ROW

- Other Wetland
    - associated with Tributary A immediately east of the Airport Road ROW

Collectively, these features comprise portions of the City's Natural Heritage System (City of Brampton 2015). It is the intent of the City OP that development and site alteration be maintained outside of Natural Heritage System features and that these features be enhanced or restored where feasible in conjunction with adjacent developments. Section 4.6.6.8 of the OP states that development or site alteration adjacent to Natural Heritage System features illustrated on Schedule D are prohibited unless it can be demonstrated that there will be no negative impacts to the significant natural features or their ecological functions (City of Brampton 2015).

Section 4.6.7 of the OP further specifies policies associated with Valleyland/Watercourse Corridors. In addition to the need to demonstrate no negative impact to Valleyland/Watercourse Corridors or their ecological functions, adjacent developments and site alterations must consider the identified hazards limits, including stable slopes, 100-year erosion limits, and meander belt width hazards. Developments that span Valleyland/Watercourse Corridors must also ensure the maintenance of contiguous natural heritage or open space networks, such as to facilitate existing wildlife movement corridors.

Based on NRSI field investigations, "Woodland", identified as a component of the City's Natural Heritage System, was confirmed to occur within the majority of the study area riparian valley features both immediately east and west of the Airport Road ROW (Map 5a). As shown on Map 2a-c, these woodlands were primarily Fresh-Moist Lowland Deciduous Forest (FOD7) and Fresh-Moist Willow Lowland Deciduous Forest (FOD7-3). Section 4.6.8 of the OP states that the significance of woodlands are to be evaluated, and appropriate recommendations made for the protection of woodlands, in conjunction with adjacent development applications. Study area mapped woodlands abut, but do not occur within, the Airport Road ROW limits. Although woodland significance was not evaluated as part of this study, significant direct impacts to these features are not anticipated as a result of the planned undertaking, as described further below in Section 6.0. However, detailed refinement of the woodland limits adjacent to the ROW may be required during Detailed Design to confirm appropriate woodland edge protection and mitigation

measures. Opportunities for woodland edge enhancement through native species plantings, as can be accommodated between the road infrastructure and woodland edge, should also be explored during Detailed Design.

Wetlands identified within the study area are considered unevaluated wetlands. Within the study area, wetland occurrence was limited to one small Open Water (OA) pond immediately south of Tributary B, approximately 65m west of Airport Road (Map 4a). Narrow, fringing and tiny patches of wetland vegetation growth were also identified within sections of the study area watercourses; however, these features do not represent ecologically functional wetlands as defined by ELC (Lee et al. 1998) and are rather small inclusions within an otherwise terrestrial vegetation community. The majority of identified wetland was mapped immediately upstream of the Airport Road crossing of Tributary A, just south of the study area. It is therefore unlikely that ecologically significant wetland occurs within the study area (see below with respect to turtle overwintering potential within the OA pond). Nonetheless, the proposed undertaking will not require direct impact to any mapped wetland features as discussed further below in Section 6.0. Wetland mapped by the TRCA along Tributary A immediately east of Airport Road (TRCA 2017) was confirmed to be absent during NRSI ELC site characterization.

5.1.3 TRCA Regulated Areas

Portions of the study area adjacent to Tributaries A-D are regulated under the TRCA's *Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation* (Ontario Regulation 166/06). Development and site alteration within TRCA-regulated lands is prohibited unless permitted by the TRCA under the policies of the regulation. The TRCA has developed a policy guideline document, *The Living City Policies for Planning and Development in the Watersheds of the Toronto and Region Conservation Authority*, which describes the policies that are used to administer O. Reg. 166/06 (TRCA 2014). Section 8.9 of the Living City Policies addresses infrastructure developments that are required to occur in TRCA regulated areas, including for the purposes of replacing or expanding existing road and culvert infrastructure. Under this policy, development and site alteration associated with infrastructure may be permitted to occur in regulated areas provided that various conditions are met, which include but are not limited to the following as it relates to the proposed undertaking:

- risks associated with flood and erosion hazards are avoided or acceptably mitigated;
- intrusions into natural areas are avoided or otherwise minimized, with restoration and enhancement measures implemented where feasible;

- the infrastructure is designed to maintain existing watercourse baseflow, floodplain configuration, and valley or stream corridor topography;
- surface and groundwater quality is not impaired by sediments or contaminants; and,
- environmental monitoring and contingency plans are developed according to TRCA standards in case of emergencies during construction and operation.

See the Living City Policies (TRCA 2014) for the full suite of conditions by which the TRCA may permit infrastructure development within regulated lands in accordance with O. Reg. 166/06.

5.2 Species at Risk

5.2.1 Redside Dace

Redside Dace is designated as Endangered provincially and federally (MNRF 2018, Government of Canada 2018). Redside Dace does not occupy the study area reaches of Tributaries B and C due to insufficient watercourse baseflow and a lack of suitable habitat. Furthermore, based on collected background information, Redside Dace is not known to have occupied the study area reaches of these tributaries at any point in the past.

In accordance with background information provided by the MNRF (Appendix IX) and the results of NRSI aquatic habitat assessments, Tributaries B and C represent “Contributing” habitat for Redside Dace and are therefore considered a form of regulated habitat for the species as defined in O. Reg. 242/08 Section 29.1. Specifically, the tributaries represent habitat that “augments or maintains the baseflow, coarse sediment supply or surface water quality of a part of a stream” that is part of a stream that is being used by Redside Dace and has a bankful width of 7.5m or less, as described in the Regulation. Redside Dace is known to occupy portions of the West Humber River system that are downstream of the studied tributary reaches (Matrix Solutions 2017) as shown in Appendix IX.

Based on O. Reg. 242/08 Section 29.1, since Redside Dace does not occupy the study area reaches and there is no evidence that Redside Dace has occupied these reaches at any point in the past, regulated habitat for this species is limited to the watercourses themselves which provide the contributing habitat (Map 5). Development and site alteration within regulated habitat for Redside Dace is prohibited under Section 10 of the ESA as well as Regional and City OP policies unless permitted or authorized by the Ontario Ministry of Environment, Conservation and Parks (MECP). The mandate for ESA administration was transferred from the MNRF to the

MECP as of April 1, 2019. Further MECP consultation may be required at the Detailed Design stage to inform further project requirements under the ESA.

Because portions of the study area watercourses are periodically dry, a permit under Section 17(2)(c) of the ESA may not be required if a suitable mitigation plan is developed in conjunction with the MECP. Based on the *Guidance for Development Activities in Redside Dace Protected Habitat* (MNRF 2016), permit requirements for development in indirect habitat for Redside Dace may be avoided if the form and function of the supporting habitat is maintained. This can be achieved through:

- in-water timing windows;
- working in the dry or minimal flow;
- keeping any in-water works to a minimum;
- not impeding or blocking flows to limit fish movement;
- appropriate sediment controls to prevent sediment from exceeding 25 mg/L above background level during construction;
- limiting exposed soil and grading it to a stable angle and revegetated in a manner that prevents erosion;
- if using closed-bottom culverts, installing these so that the invert is embedded a minimum of 20% (of the culvert diameter) below stream bed;
- mimicking the slope of the culvert to the natural stream bed; and,
- keeping construction materials stockpiled at least 30m from the watercourse.

Various Best Management Plans are presented in the guidance document to avoid or mitigate erosion and sedimentation impacts to streams during construction (MNRF 2016).

5.2.2 Barn Swallow

A general habitat description for Barn Swallow has been provided by the MNRF to identify habitat areas subject to protection under Section 10 of the ESA. Protected habitat includes suitable foraging habitat up to 200m from a nest site (MNRF undated). Barn Swallow foraging habitat was confirmed to occur over the Tributary B and C riparian valleys crossing Airport Road as well as their adjacent SWM ponds. The nest sites that these Barn Swallows originated from are unknown, although a potential nest site was observed on the exterior of a house on Bay

Breeze Drive within 200m of the Airport Road Tributary C crossing location. Due to the highly developed urban landscape surrounding the Tributary B and C crossing locations, it is anticipated that Barn Swallow nesting sites for these individuals may be located on house, shed or small outbuilding exteriors or within culverts within approximately 500m of these crossing locations, and not on typical barn or agricultural outbuilding structures which are located more distantly to the north of these watercourse crossings. Barn Swallow nesting was confirmed to be absent within the study area watercourse culverts as well as absent on the Airport Road bridge over Tributary D.

Suitable foraging habitat for Barn Swallows includes a wide variety of open lands including human-modified landscapes. The SWM ponds provide ideal foraging habitat due to the presence of flying insect prey that they provide. Wooded and forested features are generally considered unsuitable foraging habitat. The location and extent of ESA-protected foraging habitat within the study area is dependent on the known or suspected location of nesting sites. Since these are unknown, but may include at least one nest site within 200m of a tributary crossing (house on Bay Breeze Drive), it may be assumed that ESA protected foraging habitat occurs within the study area based on a conservative approach. Nevertheless, the proposed undertaking is not anticipated to negatively impact Barn Swallow foraging habitat as described further in Section 6.0. Therefore, ESA-protected habitat for Barn Swallow is not shown on Map 5.

5.3 Significant Wildlife Habitat

Various forms of Candidate SWH were identified for the study area as listed above. Based on the results of desktop evaluation and field investigations, several of these are restricted to natural features that are outside of the Airport Road ROW and lands immediately adjacent to the ROW (i.e., within 10m) that may be directly or indirectly impacted through construction and/or operation of the planned road infrastructure upgrades. These include the following Candidate SWH types:

- Bat Maternity Colonies – associated with forested communities with a sufficiently high density of bat habitat trees/snags as defined by the MNRF (MNRF 2015b);
- Turtle Wintering Habitat, including significant habitat for the SCC Snapping Turtle – associated with the OA pond feature located approximately 60m west of the ROW;

- Woodland Amphibian Breeding Habitat, including significant habitat for the SCC Western Chorus Frog – associated with the OA pond feature located approximately 60m west of the ROW;
- Habitat for the following SCC not addressed through other SWH types:
    - Amber-winged Spreadwing – associated with SWM pond features and the OA pond
    - Lilypad Clubtail – associated with SWM pond features and the OA pond
    - Wood Thrush – associated with forest communities within the wooded tributary valley lands and larger forested habitat to the west of the study area, away from the Airport Road ROW.

The proposed undertaking is not anticipated to cause negative impact to these Candidate SWH types; therefore, targeted surveys to confirm or rule out the presence of these SWH types is considered unnecessary for the purposes of the EA.

No other candidate or confirmed SWH types were identified within the Airport Road ROW or lands immediately adjacent that may be impacted (i.e. within 10m). Terrestrial Crayfish SWH, which had previously been documented in the study area, was not observed during site investigations. However, due to past TRCA documentation of terrestrial crayfish chimneys, areas of the wooded riparian corridors outside of the Airport Road ROW limits are considered confirmed SWH. Although the riparian valley features provide a regionally important wildlife movement corridor, potentially including Snapping Turtle, these features do not meet provincial significance criteria (MNRF 2015b). Candidate SWH types that were initially screened to potentially occur within the Airport Road ROW or immediately adjacent (i.e., SCC habitat for Honey Locust and Eastern Wood-Pewee; Reptile Hibernaculum) are considered absent based on the results of site investigations.

See Appendix X for the full results of the SWH assessment. Map 5 shows areas of Candidate SWH identified for natural wooded riparian corridors outside of the ROW limits.

5.4 Fish Habitat

Aquatic habitat within the study area includes Tributaries B and C to the West Humber River. The value of the habitat is largely based on their contribution to downstream Redside Dace

habitat, as well as limited in-situ fish habitat, fish species presence and suspected thermal regime information within the tributaries.

Considering the observed coolwater to warmwater thermal preferences of the observed fish species and their general tolerances, the tributary reaches downstream of the Airport Road crossings can be considered to provide direct fish habitat for a small number of tolerant and intermediately tolerant cool- and warmwater fish species. Direct fish habitat is defined as spawning grounds and any other areas, including nursery, rearing, food supply and migration areas, on which fish depend directly in order to carry out their life processes. The watercourse reaches immediately downstream of Airport Road receive SWM pond discharge and are anticipated to sustain longer seasonal periods of surface flow. By contrast, the watercourse reaches upstream of the Airport Road crossings are anticipated to be more intermittent in nature. However, these reaches provide indirect fish habitat, such as through the transport of nutrients to downstream direct habitat reaches. See Map 5 for the extent of assessed fish habitat within the study area.

5.5 Ecological Linkages

The study area riparian valley features provide important regional ecological linkages between upstream and downstream areas of the watershed, and facilitate gene flow through wildlife movement opportunities and plant propagule dispersal which in turn helps to maintain local species population integrity and biodiversity. Ecological linkages are crucial on urbanized and rapidly urbanizing landscapes, such as occurs in the Airport Road study area vicinity, where natural features are often fragmented and isolated.

An important function of ecological linkages is to provide wildlife movement corridors. Within the study area the valleys of Tributaries B and C currently provide movement access for small to medium-sized wildlife via the culverts under Airport Road, and provide wooded corridors for urban-adapted bird movements across the landscape. Land-based wildlife use of these corridors may include Snapping Turtles, which may potentially overwinter and forage in the small OA pond feature or within the adjacent SWM ponds. Although SWH for the SCC Snapping Turtle is associated with nesting and overwintering habitat (MNRF 2015b), both of which are absent within and immediately adjacent to the Airport Road ROW, Snapping Turtles may make use of terrestrial movement corridors such as by females during the nesting season to establish nest sites. The Tributary B and C valleylands do provide suitable movement corridor conditions for this species and the existing culverts are passible for their movement.

Amphibians may also use the tributary valleylands between these areas to fulfill their seasonal habitat requirements (e.g., dispersal from wetland breeding habitat to summer terrestrial habitat). The existing features within the study area are suitable to support an amphibian movement function (e.g., sufficiently shaded with moist microclimate conditions adjacent to wet/standing water areas). These tributary valleylands should therefore be considered potential movement corridors for Snapping Turtle, amphibians and other land-based wildlife species.

Regional and City OP policy protections mitigate the potential for negative impacts to these natural corridors and their ecological functions. Detailed design of the preferred alternative should incorporate elements to ensure the maintenance or enhancement of this movement corridor function for small to medium-sized wildlife, such as by ensuring that barriers to access are not created, appropriate natural/native substrates are provided through culverts, and intrusions into vegetated communities are avoided or minimized and restored where possible.

5.6 Regionally Significant Species

Six regionally significant vegetation species were inventoried within the study area during NRSI field investigations as listed in Table 4 and shown on Map 4a-c. These rare plant species were all located within the wooded riparian valley corridors associated with the watercourse tributaries. The presence of these regionally significant species is indicative of the importance that these valley corridors provide as natural habitat within a largely urban-developed surrounding landscape. The habitat function provided for these regionally significant species is one aspect of the overall significance afforded to these landscape features, which is reflected in the Regional and City Greenlands/Natural Heritage System designations afforded to them.

Measures may be required during Detailed Design to ensure that impacts to these species are avoided or otherwise mitigated (e.g., through transplantation to suitable habitat and monitoring). This may include further detailed vegetation inventory for areas that will be impacted by the road works to verify their presence/absence at that time. The locations of any identified significant species are to be accurately mapped against details of the preferred alternative design to inform appropriate mitigation actions.

6.0 Impact Assessment

6.1 Description of the Proposed Works

The Region of Peel's 2012 Updated Long Range Transportation Plan (LRTP) identified the need for the following:

- widening Airport Road between Braydon Boulevard/Stonecrest Drive and Countryside Drive in the City of Brampton to meet existing and future needs; and,
- improving other infrastructure such as transit and active transportation facilities to provide efficient movement of people and goods.

The Region has initiated a Schedule C Class EA to undertake these requirements. As per the LRTP, Airport Road is planned for widening to six lanes by 2031 and this planned road widening is, in part, the subject of this EA.

6.2 Approach to Impact Analysis

The analysis of potential impacts was determined by comparing the details of the proposed undertaking with the characteristics of the existing natural features and their functions. The outcome of this process was based primarily on the resilience of the identified natural features to withstand predicted disturbances caused by design, construction and operation of the development. In this manner, both the significance and sensitivity of the affected natural features to disturbance were considered. The following is a description of the types of impacts which will be discussed.

- Direct Impacts – associated with the disruption or displacement of natural features, caused by the actual "footprint" of the undertaking; and
- Indirect Impacts – associated with changes in site conditions such as drainage and water quantity/quality, and temporary construction-related disturbances.

6.3 Direct Impacts and Mitigations

6.3.1 Vegetation Removal and Site Grading

The majority of the roadside lands to be directly impacted by the future road widening comprise areas of mown grass that fall within the Airport Road ROW (Map 6a-e). In some areas this will require the removal of young, planted street trees within the ROW, including trees <10cm DBH that were not inventoried. Small fringing areas of Mineral Cultural Meadow (CUM1) will require

removal along the ROW boundary adjacent to Yellow Avens Boulevard and immediately north of Tributary B.

Grading limits will be maintained outside of the City's landscape planting easements immediately adjacent to the Region's Airport Road ROW. However, some trees within these landscape easements will require removal due to anticipated root zone impacts as stated below. Based on the preliminary design, the widening of Airport Road at the crossings of the tributary watercourses will largely occur within the existing road footprint. The existing culverts have been sized to accommodate the planned widening and will be retained in place. No culvert extensions are expected to be required. No fill placement or other construction activities will be required within the riparian valley features. Small fringing areas of the Tributary B and C wooded corridors, along their interface with the west side of the Airport Road ROW, will require removal to accommodate the undertaking. These small edge encroachments will primarily affect early successional herbaceous growth and will only require removal of 2 trees of inventoried size (at the Tributary C crossing; see TER Map 1b (NRSI 2020)). These small removals will not negatively impact the integrity of the adjacent features.

No federally, provincially or regionally significant species will require removal as a result of the planned road improvements. The regionally significant species Sandbar Willow and Rough Hedge-nettle, which were inventoried in various locations within the Tributary B and C wooded valleylands, are not located along the feature edges facing the ROW and will therefore not be impacted.

Tree Removal

Of 368 trees that were inventoried within the study area, 42 are anticipated to be removed. Of the 42 anticipated to be removed, 5 are recommended for removal as a result of their poor condition which may pose a public hazard to adjacent structures or public use of the ROW.

The remaining 37 trees require removal based on the extent of the proposed site grading within the ROW. The stems of most of these trees are not in direct conflict with the undertaking but these trees are situated along the grading limit or immediately adjacent within the City's landscape planting easements and may incur severe root damage as a result of grading. Most of these trees are in good to fair health with an improbable potential for structural failure, and range in size from 10.2cm DBH to 26.9cm DBH. Approximately 26% of trees to be removed are native. The remaining trees to be removed are non-native species dominated by Colorado

Spruce. Multiple additional young planted street trees, which were too small to be inventoried, will also require removal.

Recommendations have been provided in the TER to protect trees to be retained through the use of tree protection fencing. Recommended measures have also been provided in the TER to mitigate construction impacts to adjacent retained trees, and to inspect tree protection fencing and respond to instances of mortality or damage to retained trees. Based on City guidelines, a total of 39 trees of at least 70mm caliper stock are to be planted in compensation for tree removal requirements. These compensation plantings are to be accommodated within the Airport Road ROW and/or in replacement of trees or other vegetation requiring removal within the City landscape planting easements. Compensation planting details will be provided within a future Landscape Plan to be provided during the Detailed Design stage. See the TER (NRSI 2020) for additional details of the tree removal, protection, and mitigation requirements.

6.3.2 Impacts to Terrestrial Wildlife and Their Habitats

Barn Swallow

As described in Section 5.2.2, Barn Swallow foraging habitat is present in the wooded riparian corridors and SWM ponds within the study area. Since these features will not be affected by road improvement works, no negative impact to Barn Swallow foraging habitat will occur. It is recommended that an updated inspection for the presence of Barn Swallow nests be completed for the Tributary B and C culvert structures during the Detailed Design stage. If nests are observed, measures must be taken to avoid negative impacts to Barn Swallows and their nests in accordance with the ESA and in consultation with the MECP. Habitat removal may be authorized in accordance with Ontario Regulation 242/08 Section 23.5, provided measures are taken to mitigate impact to the species and habitat compensation is implemented as required under the Regulation.

Other Wildlife Species

Other wildlife species documented within the study area are common and ubiquitous on the landscape, and have been habituated to human-altered or urban environments. The ROW roadside lands to be directly impacted are predominantly manicured and do not provide important habitat functions. The planned undertaking will not negatively impact local wildlife species or populations.

Vegetation clearing has the potential to directly impact bird breeding activity through damage and destruction of nests, eggs and young, or avoidance of the area by breeding adults. Vegetation clearing should therefore occur outside the bird nesting season of April 1-August 31 so as to limit disturbances to nesting activities of birds and to avoid destruction of active nests. Bridge and culvert structures should be inspected prior to any construction work to document any birds and their nests that may be present and to provide mitigation and protection measures. The destruction of migratory birds and their nests is prohibited under the federal *Migratory Birds Convention Act*.

Wildlife Movement Corridors

The existing Tributary B and C culverts do not require extension to accommodate the planned road improvement works, and will not be modified in any way as a result of the undertaking. The connectivity for small- to medium-sized wildlife movements that these culverts currently provide will therefore not change. No negative impacts to wildlife movement or ecological connectivity will occur as a result of the undertaking provided construction-stage disturbances are appropriately mitigated as described in Section 6.4.

6.3.3 Impacts to Fish and Aquatic Habitats

Redside Dace

As described in Section 5.2.1, regulated habitat for Redside Dace is restricted to the Tributary B and C watercourses themselves within the study area, which represent contributing habitat for the species. The planned undertaking will not require any in-water works, nor will any work on the culverts or lands within the wooded riparian valley features be required. Therefore, no direct impacts to Redside Dace regulated habitat will occur. It is anticipated that the planned undertaking should be able to proceed without the need for a permit under Section 17(2)(c) of the ESA or for authorization under O. Reg. 242/08 Section 23.1. Consultation with the MECP should be undertaken during the Detailed Design stage to confirm these expectations.

The planned undertaking will require construction activities that could indirectly impact Redside Dace habitat if not appropriately mitigated. These include minor localized woody vegetation removal requirements along the ROW boundaries, erosion and sedimentation, and off-site movement of deleterious substances (e.g., oils). MNRF staff have previously identified the need to improve existing water quality mitigation measures within the Airport Road ROW as a component of the road design. These measures reflect the sensitivity of Redside Dace to

impaired water quality conditions. It is anticipated that these requirements will be confirmed through a Letter of Advice (M. Heaton, MNRF, pers. comm., March 2018). It is anticipated that the Letter of Advice will be issued by the MECP, which has since assumed responsibility for administering requirements under the ESA as of April 1, 2019.

Other Fish Species and Aquatic Habitat

No in-water works or modifications to the existing culverts will occur during completion of the road improvement works. Further, no vegetation removal or other construction work within the wooded riparian valleylands that could alter the existing aquatic habitat regime (e.g., through riparian vegetation shading, woody debris inputs) will occur. Aquatic habitat connectivity will be maintained via the culverts through the undertaking. Therefore, no direct impacts to other fish species or their aquatic habitats will occur. Review by the federal Department of Fisheries and Oceans will not be required for this assignment. See Section 6.4 for measures to mitigate water quantity and quality impacts to the aquatic features.

6.4 Indirect Impacts and Mitigations

The planned road improvements have the potential to cause indirect impacts to adjacent lands and natural features if not mitigated appropriately. Recommended mitigation measures are provided for each potential impact below.

6.4.1 Disturbance to Adjacent Vegetation and Wildlife Habitat

Potential for construction disturbance to adjacent natural features is limited to where the Tributary B and C wooded corridors interface with the ROW on the west and east sides. Efforts should be made to avoid unnecessary or inadvertent damage or destruction of vegetation adjacent to project construction limits. Clearly defined construction limits in the form of tree protection fencing should be established to avoid unnecessary vegetation removal where tree protection measures have been recommended in the TER (NRSI 2020). Tree protection fencing will take the form of heavy duty paige wire fencing following the specifications outlined in the TER. Silt fencing can be combined with tree protection fencing where erosion and sediment control measures are also required. Where tree protection fencing is not required along construction area limits, construction limit fencing in the form of silt fencing, or otherwise brightly coloured snow fencing, should be used to delineate the work area.

Measures have been recommended in the TER to protect retained trees through the installation of appropriate tree protection fencing as detailed on Map 2 of the TER. Prior to any

construction activities (rough grading, vegetation and tree removal), the tree protection fencing should be installed where indicated in the TER. Where trees are to be retained but where it is not feasible to afford the full extent of the City's recommended tree protection fencing dripline offset, it is with the intent of retaining as many trees as possible, and anticipating that the affected trees will tolerate the proposed impacts. Trees will be afforded as much protection as is possible within the proposed grading and reconstruction plan. See the TER (NRSI 2020) for further details about the recommended tree protection measures.

Potential indirect impacts to natural features and wildlife may also arise from noise, vibrations, human presence, dust and artificial lighting associated with construction activities.

During construction activities such as vegetation clearing and grubbing, dust can potentially result in the following:

- Changes in vegetation due to increased heat absorption and decreased transpiration,
- Immediate visual impacts.

Impacts due to dust should be mitigated for by moistening areas of bare, dry soil with water as needed during construction activities to reduce the amount of dust produced.

Wildlife impacts resulting from dust, noise, and vibrations are expected to be temporary, minimal and localized during the road construction works. Furthermore, wildlife occupying the affected roadside areas are urban-adapted and resilient to some degree of disturbance. Significant effects on wildlife are not anticipated and it is expected that displaced wildlife species will return to the vicinity of the roadside features following construction.

6.4.2 Water Quantity Control

The existing drainage system for the study area section of Airport Road ROW comprises a combination of discharge to a municipal storm sewer along Braydon Boulevard, and outflows to both Tributaries B and C as described in the Drainage and Stormwater Management Report (HDR 2019). This drainage system will be unaltered as part of the planned road improvements. Road drainage will be captured by a series of catchbasins that will be relocated in conjunction with the road widening. The catchbasins will direct flow to the various discharge locations.

Alterations to flow inputs to the watercourses, by way of significant reductions or increases in flow volume, can over time result in changes to the vegetation community characteristics and

species compositions such as by more frequent dry or flooded conditions, respectively. Reductions in flow can also remove direct habitat for fish species, or alter the contribution of these features as contributing habitat for downstream Redside Dace populations.

Stormwater runoff flows, if uncontrolled, can result in scouring and erosion of drainage channels, with associated sedimentation of the receiving watercourses that negatively impacts water quality for aquatic biota. These effects can be particularly acute following heavy precipitation events or during rapid snowmelt. Discharge flow rate controls are therefore necessary to ensure that sedimentation and erosion impacts are mitigated during operation of the reconstructed infrastructure.

Flood control is not required for stormwater outfalls at Tributaries B and C based on the TRCA's water quantity control targets for watersheds (HDR 2019). Water balance and erosion control criteria are required based on TRCA and Region of Peel requirements, with consideration of the status of these watercourses as Redside Dace contributing habitat. This pre- vs post-construction water balance is required to protect the natural hydrological functions of the watercourses.

Infiltration trenches are proposed as a means of maintaining a water balance and erosion control with the receiving watercourses, as well as to provide water quality controls, mitigate thermal impacts, and to attenuate and reduce flow rates. The 1.0m wide x 0.4m deep infiltration trenches will be lined with geotextile fabric and contain clean granular fill, and will be located parallel to storm sewers within the ROW. The trenches are proposed for drainage areas of the ROW that are directed toward the watercourses. See Appendix D of the Drainage and Stormwater Management Report (HDR 2019) for more details about the infiltration trench locations and design.

Water balance will be achieved through the storage volume provided by the infiltration trenches. The first 15mm of any precipitation event will be captured, which exceeds the TRCA water balance and erosion control targets as well as the Regional water balance targets for Endangered Species habitat (HDR 2019). Stream baseflows will be maintained through infiltration into the native soils and recharge of the shallow groundwater. Excess flows will be directed via storm sewers to the existing discharge outfalls at the watercourses. The infiltration trenches were sized to allow for a water balance while accounting for the increase in impervious surface within the study area ROW (0.92ha increase).

Based on discussions with the MNRF and TRCA, supplemental Low Impact Development (LID) measures were recommended for inclusion in the ROW upgrades to provide further capacity for water quality treatment, water balance, thermal cooling and flow rate attenuation. The appropriate locations and design of the supplemental BMP measures will be determined during the Detailed Design stage, and will be informed by more detailed assessments of geotechnical considerations and hydrogeological conditions. Various potential LID systems were evaluated for their feasibility for use within the study area ROW in the Drainage and Stormwater Management Report (HDR 2019). BMP measures that should be further considered as part of the ROW redesign include the use of bioretention systems within the roadway boulevard, and vegetated filter strips on shallow graded soils and the use of plunge pools at discharge locations. See the Drainage and Stormwater Management Report for further details about the LID feasibility assessment and supplemental BMP measure options for the ROW.

6.4.3 Water Quality Control

Water quality controls on discharge to the watercourses are required owing to the sensitivity of these features as contributing habitat for Redside Dace, and as direct habitat for other fish species. Redside Dace are sensitive to reduced water quality. For example, Total Suspended Solids (TSS) concentrations >25mg/L will negatively impact the aquatic habitat for the species (MNRF 2016). Various best management practices have been identified, as listed in Section 5.2.1, to maintain the form and function of the supporting habitat. Provided these measures are implemented, it is anticipated that a Section 17(2)(c) permit under the ESA can be avoided. Further consultation with the MECP will be required to confirm the appropriate measures for water quality control during the Detailed Design stage. Measures to protect water quality within the receiving watercourses for the purposes of Redside Dace mitigation requirements will also benefit other resident fish species.

A treatment train approach to water quality control is proposed as part of the proposed SWM system within the ROW. Pre-treatment of runoff directed toward the infiltration trenches is first proposed through the use of catchbasin inserts such as Goss traps or catchbasin shields. An “enhanced” level of TSS removal (80%) will be achieved through this stormwater management system, which will incorporate the use of existing oil-grit separator at the discharge locations for any excess stormwater that is not infiltrated within the infiltration trenches. Water quality control can be provided for 4.83ha of pavement, exceeding the MECP requirement of providing treatment for the increased pavement area of 0.91ha (HDR 2019).

Measures must be taken during construction activities to minimize the potential for the entry of deleterious substances into the watercourses and adjacent natural features. In particular, vehicular refueling must not occur within 30m of the watercourses. The storage of any machinery, construction materials, or topsoil/fill must also be located away from the natural features. Silt fencing or other protective measures should be installed around any stockpiles that have the potential to leach deleterious substances or water-borne sediments. A Spill Response Plan should be prepared and be ready to be implemented on-site if required.

6.4.4 Thermal Impacts

Tributaries B and C represent warmwater, intermittent tributaries (MRC 2002). Upstream stormwater management ponds, located west of Airport Road, discharge water into the tributaries that has been warmed through sun exposure and extended detention times. These watercourses are therefore generally not sensitive to thermal impacts that may arise from ROW stormwater runoff. However, the downstream reaches of Tributaries B and C adjacent to Airport Road were observed to contain the tolerant, coolwater species Creek Chub. This species may be displaced if mean water temperatures increase post-development. The infiltration galleries will have the effect of thermally cooling the collected runoff by way of its passage through the subsurface filtration medium and infiltration into the shallow groundwater. Measures to cool runoff discharged to Tributaries B and C, such as the use of infiltration trenches, are also important due to the contributing habitat that these features provide to downstream Redside Dace habitat. Redside Dace are sensitive to water temperature increases, which result in lower oxygen concentrations that cannot be tolerated by the species (MNRF 2016).

6.4.5 Construction-Stage Sedimentation and Erosion

During vegetation removal and site grading activities, areas of bare soil will be exposed along roadside areas which have the potential to erode during rainfall events and impact adjacent lands and vegetation. Reduced vegetation cover along the roadsides in combination with the presence of exposed soils during construction activities may also increase the potential for stormwater flow to down-slope areas, such as into the adjacent woodland and wetland features west of Gordon Street, if not appropriately mitigated. Increased stormwater surface flow and erosion processes may cause the deposition of sediments into the watercourses causing degraded water quality, or onto down-slope vegetation, ultimately causing vegetation die-back or impaired health.

Soil compaction also has potential to occur as a result of heavy machinery in the area of construction. Soil compaction can greatly reduce the permeability of soils and affect their ability to retain water during rain/snow melt events. This will result in an increase in surface water run-off which will ultimately increase the erosion potential and the amount of sediment being transported into adjacent natural features.

An Erosion and Sediment Control (ESC) Plan must be developed prior to any construction activities on-site. The primary principles associated with sedimentation and erosion protection measures are to: (1) minimize the duration of soil exposure, (2) retain existing vegetation, where feasible, (3) encourage re-vegetation, (4) divert runoff away from exposed soils, (5) keep runoff velocities low, and (6) trap sediment as close to the source as possible.

The ESC Plan should include, but not be limited to, the following measures:

- Placement of silt fencing along any construction limits that are down-gradient of construction zones and may receive sediment-laden runoff;
- Regular inspection, maintenance/repair and where necessary, replacement of damaged silt fencing;
- Operation and storage of all materials and equipment in a manner that prevents any deleterious substance from leaving the construction zone;
- Stripping and strategic placement of topsoil stockpiles, and placement of sediment control fencing around all stockpile areas; and,
- Re-vegetation of completed areas as soon as possible after construction.

7.0 Ecological Restoration and Enhancement

The planned road works will not require construction encroachment into the adjacent natural features outside of the ROW, with the exception of some minor fringing early successional vegetation along the interfaces with the Airport Road ROW. Provided the recommended mitigation measures are implemented, construction disturbances of the adjacent features are not expected. Vegetative restoration of disturbed natural areas is therefore not required. However, opportunities for woodland edge enhancement through native species plantings, as can be accommodated between the road infrastructure and woodland edge, should also be explored for feasibility during Detailed Design.

Based on the preliminary design and stormwater management plan, construction incursions into the valleyland natural features are not anticipated. However, if during Detailed Design it is determined that minor construction activities are required within these features (e.g., to accommodate improvements to SWM discharge locations), then detailed plans must be prepared to restore any construction disturbance areas back to their pre-construction state. These plans must include the use of native species suitable to the site conditions and reflective of the existing adjacent species compositions, and compatible with the functioning and periodic maintenance of the SWM outfall infrastructure.

The planned undertaking also provides the opportunity to establish a diverse assemblage of tree plantings within the study area ROW, including species and planting locations that will render the trees less susceptible to road salt toxicity effects. Opportunities to establish a variety of native woody species, suitable to the urban planting conditions, will also be afforded for the adjacent landscape easements through re-establishment of individuals that required removal to accommodate construction activities. These ROW and landscape easement plantings are anticipated to satisfy the compensation requirements for anticipated tree removals (39 compensation plantings) as recommended in the TER (NRSI 2020). ROW plantings, including the requirements for tree compensation, will be detailed in a future Landscape Planting Plan to be prepared during the Detailed Designs stage.

8.0 Monitoring

Recommended monitoring tasks associated with this undertaking are primarily grouped into 2 categories: (a) compliance monitoring associated with the effective functioning of construction mitigation measures, and (b) water quality monitoring of the receiving watercourses to ensure relevant quality criteria are not being exceeded as a result of the newly installed stormwater infrastructure.

8.1 Construction-Stage Compliance Monitoring

8.1.1 Pre-Construction

Prior to any construction activity on-site, including vegetation clearing and grubbing, on-site inspections of the following should be undertaken to ensure proper installation:

- sediment and erosion control measures (e.g., silt fencing); and
- tree and natural feature protection measures, including proper installation of tree protection fencing as confirmed by a Certified Arborist or environmental inspector, or other construction limit fencing where tree protection fencing isn't required.

8.1.2 During Construction

Construction monitoring is the responsibility of the proponent and is tied to the specific undertaking. Generally, construction monitoring must occur to ensure compliance with the conditions of various permits, and is to be undertaken by the environmental monitor.

- Periodic monitoring of the above measures to ensure maintenance and effectiveness.
- Pruning of any limbs or roots (of trees to be retained) damaged during construction by a Certified Arborist.
- Visual inspection of the valleyland natural features, to ensure no unauthorized construction encroachments, vegetation damage, or other disturbances caused by construction activities.
- Fueling of machinery to be undertaken at a designated location away from the adjacent natural area.
- Storage of machinery and material, fill, etc. in designated areas away from the adjacent natural features.

8.2 Water Quality Monitoring

A construction- and post-construction water quality monitoring plan should be developed and implemented to ensure that negative impacts to Redside Dace supporting habitat, and direct habitat for other fish species, are not occurring either as a result of the construction activities or through functioning of the SWM system. The need for and details of such as plan should be discussed with the MECP during Detailed Design in the context of confirming necessary approvals for work in or adjacent to Redside Dace regulated habitat. Water quality measures to be considered include turbidity monitoring, water temperature monitoring, and to ensure that suspended sediment concentrations do not exceed 25mg/L above background levels during construction, in accordance with provincial guidelines (MNRF 2016). The monitoring methodology must be designed to avoid confounding influences associated with upstream flows or discharge from the adjacent SWM facilities. Where possible, control values should be collected at upstream locations when flowing water is available, and comparisons made with monitoring points at the ROW discharge locations as well as further downstream where access permits. Pre-construction monitoring should be undertaken (e.g., 1 year prior to construction) to establish baseline/background monitoring values. The methodology and timing of this monitoring should also be discussed with the TRCA to conform with their monitoring objectives and protocols.

9.0 Summary

NRSI was retained by HDR Inc., on behalf of the Region of Peel, to complete an NEA as part of the Class EA for Airport Road (Braydon Boulevard/Stonecrest Drive to Countryside Drive) within the City of Brampton. The Region intends to widen the study area stretch of Airport Road from 4 to 6 lanes to accommodate future increases in traffic volume. Upgrades to the existing ROW SWM system will also be undertaken in conjunction with this work. No work on the existing culverts will be required, and no in-water work is necessary.

The majority of the EA study area is highly urbanized with residential development. The study area includes 2 watercourse crossings (Tributaries B and C to the West Humber River), which are identified as Valleyland/Watercourse Corridors and contain “Woodland” based on City of Brampton OP criteria and mapping. Two other watercourses, Tributaries A and D, the latter of which is mapped as a Core Area of the Greenland System in the Regional OP, are located immediately outside of the EA study area and will not be impacted by the undertaking.

Tributaries B and C have been classified as intermittent warmwater watercourses, although NRSI field investigations have documented the presence of the tolerant, coolwater species Creek Chub within these features at the ROW. These tributaries represent supporting habitat for downstream populations of Redside Dace within the West Humber River; these features therefore represent a form of regulated habitat for the species. No SAR habitat or SWH occurs within or immediately adjacent to the ROW that will be impacted by the undertaking, and no regionally-significant plants are expected to require relocation prior to construction. The wooded tributary valleys likely provide regionally important wildlife movement corridors, and this function will be unaffected by the planned road improvements.

The ROW upgrades have been designed to avoid impact to the terrestrial and aquatic natural features. However, 42 inventoried trees, comprising ROW-planted street trees and certain trees within the adjacent landscaping easements, will require removal to accommodate construction. Recommendations have been made to protect trees to be retained, and a total of 39 trees of at least 70mm caliper stock should be planted in compensation for the anticipated tree removals. Tree removal, protection and compensation requirements should be updated as necessary during the Detailed Design stage. See the TER for additional details.

Although no in-water work is proposed within the Redside Dace habitat, various measures have been proposed to mitigate indirect construction-stage impacts that could otherwise degrade the habitat quality. Treatment of road runoff water quality prior to release into the receiving watercourses is also required as a component of the ROW SWM system. Further consultation with MECP is required to confirm appropriate measures to avoid and mitigate impacts, and to monitor habitat quality during- and post-construction where required. It is anticipated that an MECP Letter of Advice will be issued in lieu of a permit requirement under Section 17(2)(c) of the ESA.

Various other recommendations are provided in this report to ensure direct and indirect impacts to adjacent features and ecological functions are avoided or appropriately mitigated. These include recommendations stormwater drainage and management measures described in the Drainage and Stormwater Management Report (HDR 2019). ROW enhancements, including but not limited to compensation tree plantings, are to be detailed in a future Landscape Plan. Requirements for monitoring should be confirmed through future consultation with the MECP and TRCA.

10.0 References

Bird Studies Canada (BSC). 2001. Ontario Breeding Bird Atlas: Guide for Participants. Published by Bird Studies Canada in Cooperation with the Federation of Ontario Naturalists, Ontario Field Ornithologists, Environment Canada and the Ontario Ministry of Natural Resources.

Bird Studies Canada, Environment Canada's Canadian Wildlife Service, Ontario Nature, Ontario Field Ornithologists and Ontario Ministry of Natural Resources. 2008. Ontario Breeding Bird Atlas Database, 31 January 2008. http://www.birdsontario.org/atlas/aboutdata.jsp?lang=en (Accessed September 2015)

City of Brampton. 2015. 2006 Official Plan. Office Consolidation September 2015.

Department of Fisheries and Oceans Canada (DFO). 2017. Aquatic Species at Risk Maps. http://www.dfo-mpo.gc.ca/species-especes/fpp-ppp/index-eng.htm. Last updated July 24, 2017.

Dobbyn, J.S. 1994. Atlas of the Mammals of Ontario. Don Mills, Federation of Ontario Naturalists.

Environment Canada. 2015. Proposed Recovery Strategy for Little Brown Myotis (Myotis lucifugus), Northern Myotis (Myotis septentrionalis), and Tri-colored Bat (Perimyotis subflavus) in Canada. Species at Risk Recovery Strategy Series. Environment Canada, Ottawa. ix + 110pp.

Government of Canada. 2017. Species at Risk Public Registry: Species Index. Last updated July 21, 2016. http://www.sararegistry.gc.ca/sar/index/default_e.cfm

HDR. 2019. Airport Road Class Environmental Assessment, Braydon Boulevard/Stonecrest Drive to Countryside Drive, City of Brampton. Drainage and Stormwater Management Report. Prepared for the Regional Municipality of Peel. Draft. October 4, 2019.

Kaiser, J. 2001. The Vascular Plant Flora of the Region of Peel and the Credit River Watershed. Prepared for Credit Valley Conservation, the Regional Municipality of Peel, and Toronto and Region Conservation Authority. Mississauga. 34 pp.

Lee, H.T., W.D. Bakowsky, J. 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 Science Section, Science Development and Transfer Branch. SCSS Field Guide FG-02.

Matrix Solutions Inc. 2017. Overall Benefit Strategy for Strategic Planning of Urban Development Projects within Redside Dace-Regulated Habitat. West Humber River Subwatershed, Brampton, Ontario. Prepared for the Corporation of the City of Brampton. November 2017.

McCormick Rankin Corporation (MRC). 2002. Reconstruction of Airport Road, Bovaird Drive to Mayfield Road, City of Brampton. Addendum to the Environmental Study Report. May 2002.

Natural Resource Solutions Inc. (NRSI). 2020. Draft Airport Road (Braydon Boulevard/Stonecrest Drive to Countryside Drive), Brampton Environmental Assessment. Tree Evaluation Report. Prepared for HDR Inc. November 2020

Ontario Ministry of Municipal Affairs and Housing (OMMAH). 2020. Provincial Policy Statement. Ontario Ministry of Municipal Affairs and Housing.

Ontario Ministry of Natural Resources (OMNR). 2000. Significant Wildlife Habitat Technical Guide. October 2000.

Ontario Ministry of Natural Resources (OMNR). 2011. Bats and Bat Habitats: Guidelines for Wind Power Projects. July 2011.

Ontario Ministry of Natural Resources and Forestry (MNRF). 2015a. Natural Heritage Information Centre (NHIC): Biodiversity Explorer, Land Information Ontario: http://www.giscoeapp.lrc.gov.on.ca/web/MNR/NHLUPS/NaturalHeritage/Viewer/Viewer.html.

Ontario Ministry of Natural Resources and Forestry (MNRF). 2015b. Significant Wildlife Habitat Ecoregion 7E Criterion Schedule: Addendum to Significant Wildlife Habitat Technical Guide. MNRF, January 2015.

Ontario Ministry of Natural Resources and Forestry (MNRF). 2016. Guidance for Development Activities in Redside Dace Protected Habitat. Ministry of Natural Resources and Forestry, Species at Risk Conservation Policy. Version 1.2. March 2016.

Ontario Ministry of Natural Resources and Forestry (MNRF). 2017a. Letter dated August 1, 2017. Re. Request for Information for Airport Road Improvements, City of Brampton, Regional Municipality of Peel. Signed by Brianne Brothers, MNRF Aurora District.

Ontario Ministry of Natural Resources and Forestry (MNRF). 2017b. Survey Protocol for Species at Risk Bats Within Treed Habitats: Little Brown Myotis, Northern Myotis & Tri-colored Bat. April 2017.

Ontario Ministry of Natural Resources and Forestry (MNRF). 2017c. Species at Risk in Ontario List. Updated July 5, 2017. Available at: https://www.ontario.ca/environment-and-energy/species-risk-type

Ontario Ministry of Natural Resources and Forestry (MNRF). Undated. General Habitat Description for the Barn Swallow (*Hirundo rustica*).

Ontario Nature. 2015. Reptiles and Amphibians of Ontario Range Maps. Last Updated June 2015. http://www.ontarioinsects.org/herpatlas/herp_online.html

Region of Peel. 2016. Official Plan. Office Consolidation December 2016.

Toronto and Region Conservation Authority (TRCA). 2008. Toronto and Region Conservation Authority's Terrestrial Natural Heritage Program Vegetation Community and Species Ranking and Scoring Method. March 2008. 31pp

Toronto and Region Conservation Authority (TRCA). 2014. The Living City Policies for Planning and Development in the Watersheds of the Toronto and Region Conservation Authority. November 28, 2014.

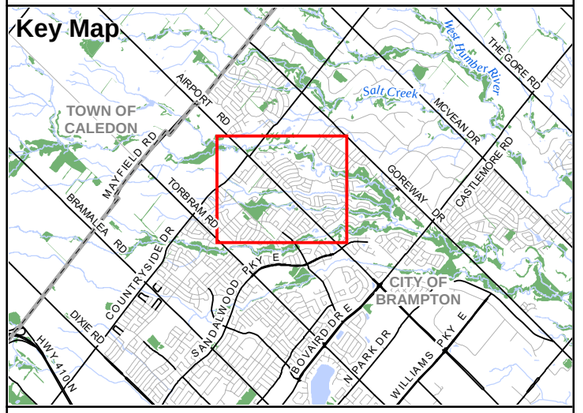
Toronto and Region Conservation Authority (TRCA). 2017. Flora and fauna inventory maps provided in response to the NRSI information request for Airport Road EA natural environment study. Provided by Annette Lister, July 17, 2017.

MAPS

Map 1

Airport Road EA

Study Area



Legend

- Study Area
- Watercourse
- Unevaluated Wetland
- Wooded Area

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1905 Date: October 13, 2017	NAD83 - UTM Zone 17 Size: 11x17" **1:7,000**

0 100 200 300 400 Metres

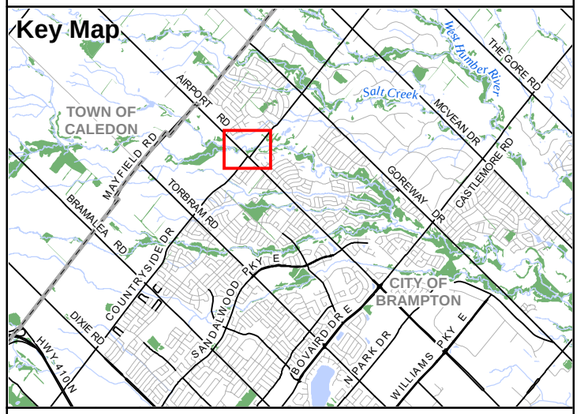
N

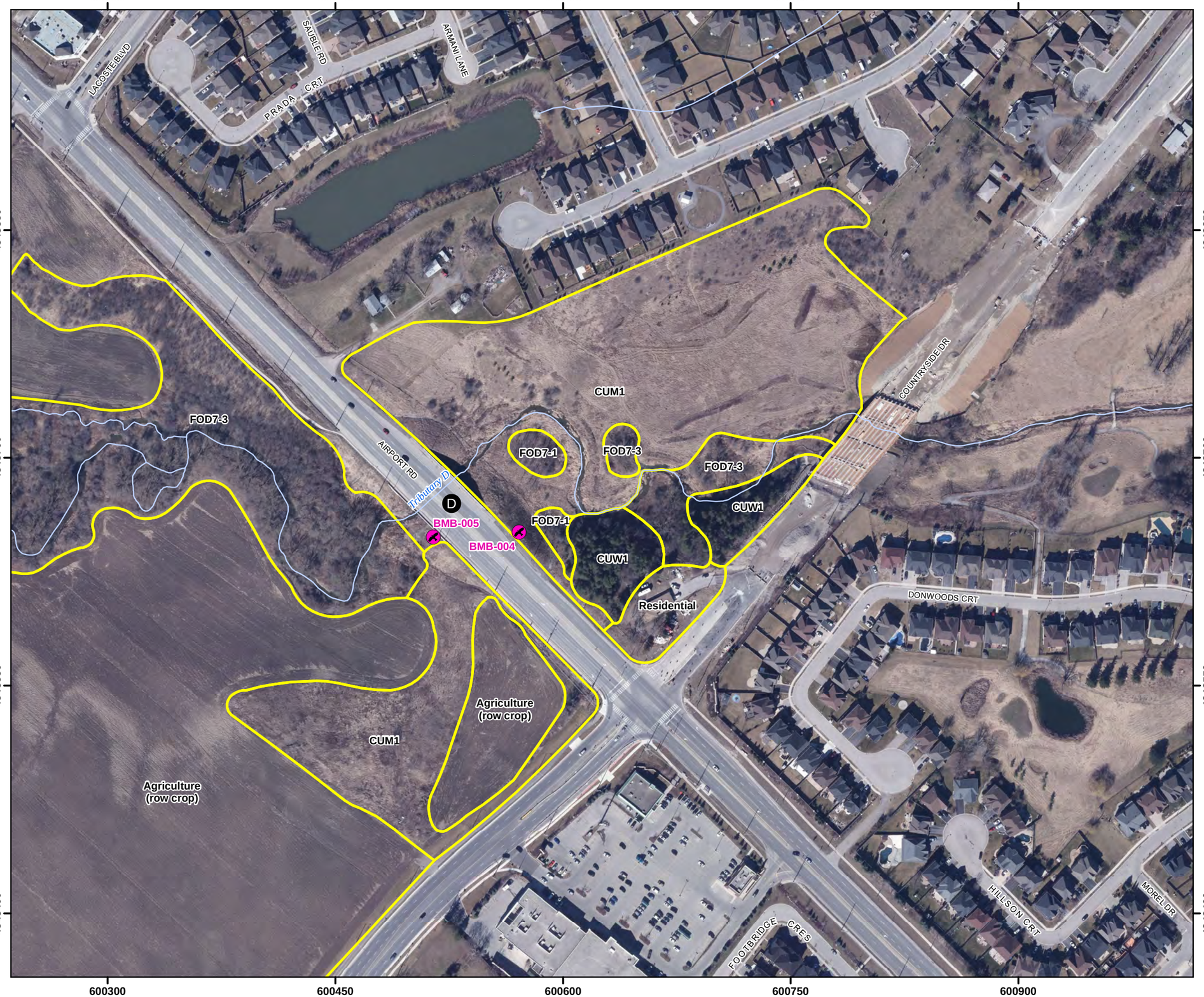
Path: X:\1905_AirportRoadEA\NRSI_1905_Map1_StudyArea_7K_2017_10_13_LEH.mxd

Map 2a

Airport Road EA

Vegetation Communities and Survey Locations





Legend

- Breeding Bird Point Count Stations
- Assessment Unit
- Watercourse
- Ecological Land Classification (ELC)

(CUM1) Mineral Cultural Meadow Ecosite

(CUW1) Mineral Cultural Woodland Ecosite

(FOD7-1) Fresh - Moist White Elm Lowland Deciduous Forest Type

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

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1905
Date: October 19, 2017

NAD83 - UTM Zone 17
Size: 11x17"
1:2,500

0 40 80 120 Metres

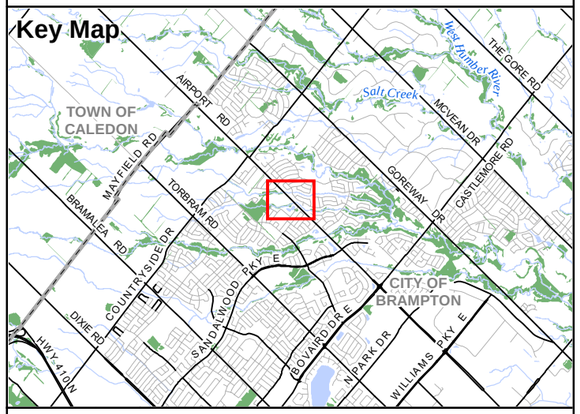
N

Path: X:\1905_AirportRoadEA\NRSI_1905_Map2A-C_ELC_3K_2017_10_19_LEH.mxd

Map 2b

Airport Road EA

Vegetation Communities and Survey Locations



Legend

- Breeding Bird Point Count Stations
- Assessment Unit
- Watercourse
- Ecological Land Classification (ELC)

(CUM1) Mineral Cultural Meadow Ecosite

(FOD7) Fresh - Moist Lowland Deciduous Forest Ecosite

(OA) Open Water

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1905
Date: October 19, 2017

NAD83 - UTM Zone 17
Size: 11x17"
1:2,500

0 40 80 120 Metres

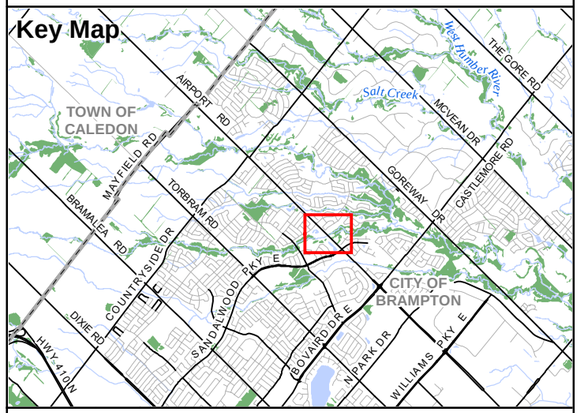
N

Path: X:\1905_AirportRoadEA\NRSI_1905_Map2A-C_ELC_3K_2017_10_19_LEH.mxd

Map 2c

Airport Road EA

Vegetation Communities and Survey Locations



Legend

- Breeding Bird Point Count Stations
- Assessment Unit
- Watercourse
- Ecological Land Classification (ELC)

(CUM1) Mineral Cultural Meadow Ecosite

(FOD7) Fresh - Moist Lowland Deciduous Forest Ecosite

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

(MAM2) Mineral Meadow Marsh Ecosite

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1905 Date: October 19, 2017	NAD83 - UTM Zone 17 Size: 11x17" **1:2,500**

0 40 80 120 Metres

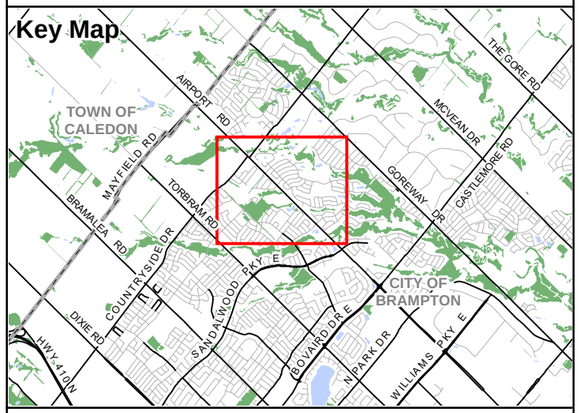
N

Path: X:\1905_AirportRoadEA\NRSI_1905_Map2A-C_ELC_3K_2017_10_19_LEH.mxd

Map 3

Airport Road EA

Aquatic Habitat Assessment



Legend

- Study Area
- Aquatic Habitat Reach
- Electrofishing Reach
- Watercourse

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1905
Date: October 19, 2017

NAD83 - UTM Zone 17
Size: 11x17"
1:7,000

0 100 200 300 400 Metres

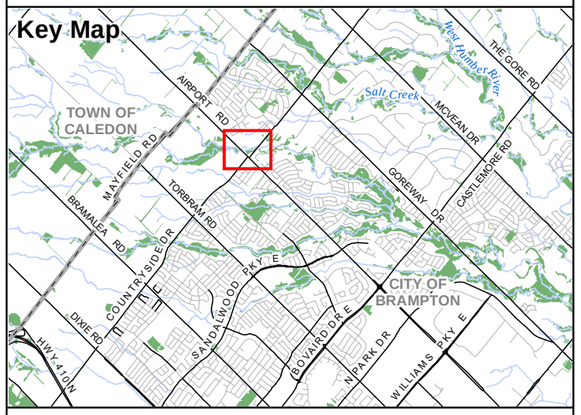
N

Path: X:\1905_AirportRoadEA\NRSI_1905_Map3_AquaticHabitat_7K_2017_10_19_LEH.mxd

Map 4a

Airport Road EA

Designated Natural Feature Constraints



Legend

- Study Area (Approximate)
- Woodland
- Greenlands Core Area (Limits are approximate)
- Watercourse
- Ecological Land Classification (ELC)

(CUM1) Mineral Cultural Meadow Ecosite

(CUW1) Mineral Cultural Woodland Ecosite

(FOD7-1) Fresh - Moist White Elm Lowland Deciduous Forest Type

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

Regionally Significant Species

- Purple-veined Willow-Herb

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1905
Date: April 23, 2019

NAD83 - UTM Zone 17
Size: 11x17"
1:2,500

0 40 80 120 Metres

N

Map 4b

Airport Road EA

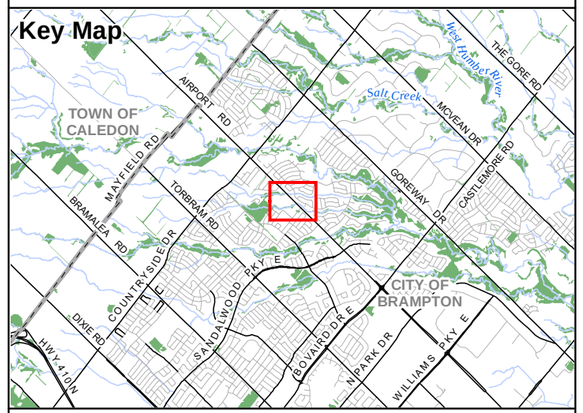
Designated Natural Feature Constraints

601050 601200 601350 601500 601650

4848100 4847950 4847800 4847650

KETTLEWELL CRES
BROCK DR
BINNERY DR
TREELINE BLVD
GERRARD DR
UPSHALL DR
COGSWELL CRES
GRUBER DR
YELLOW AVENS BLVD
LINSTOCK DR
WHITWELL DR
RUFFORD DR
AIRPORT RD
SMALL CRT
KLONDIKE TRAIL
CASSINWAY RD
UNGAVA BAY RD
EAGLE PLAINS DR
NORTHFACE CRES
PERMAFROST DR
COLT LANE

Agriculture (row crop)
FOD7
Tributary C
Stormwater Pond
CUM1
OA
Tributary B



Legend

- Study Area (Approximate)
- Woodland
- Wetland (unevaluated)
- Valleyland / Watercourse Corridor (Limits are approximate)
- Watercourse
- Ecological Land Classification (ELC)

(CUM1) Mineral Cultural Meadow Ecosite

(FOD7) Fresh - Moist Lowland Deciduous Forest Ecosite

(OA) Open Water

Regionally Significant Species

- Purple-veined Willow-Herb
- White Cut Grass
- Sandbar Willow and Rough Hedge-nettle (Various Locations)

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1905
Date: April 23, 2019

NAD83 - UTM Zone 17
Size: 11x17"
1:2,500

0 40 80 120 Metres

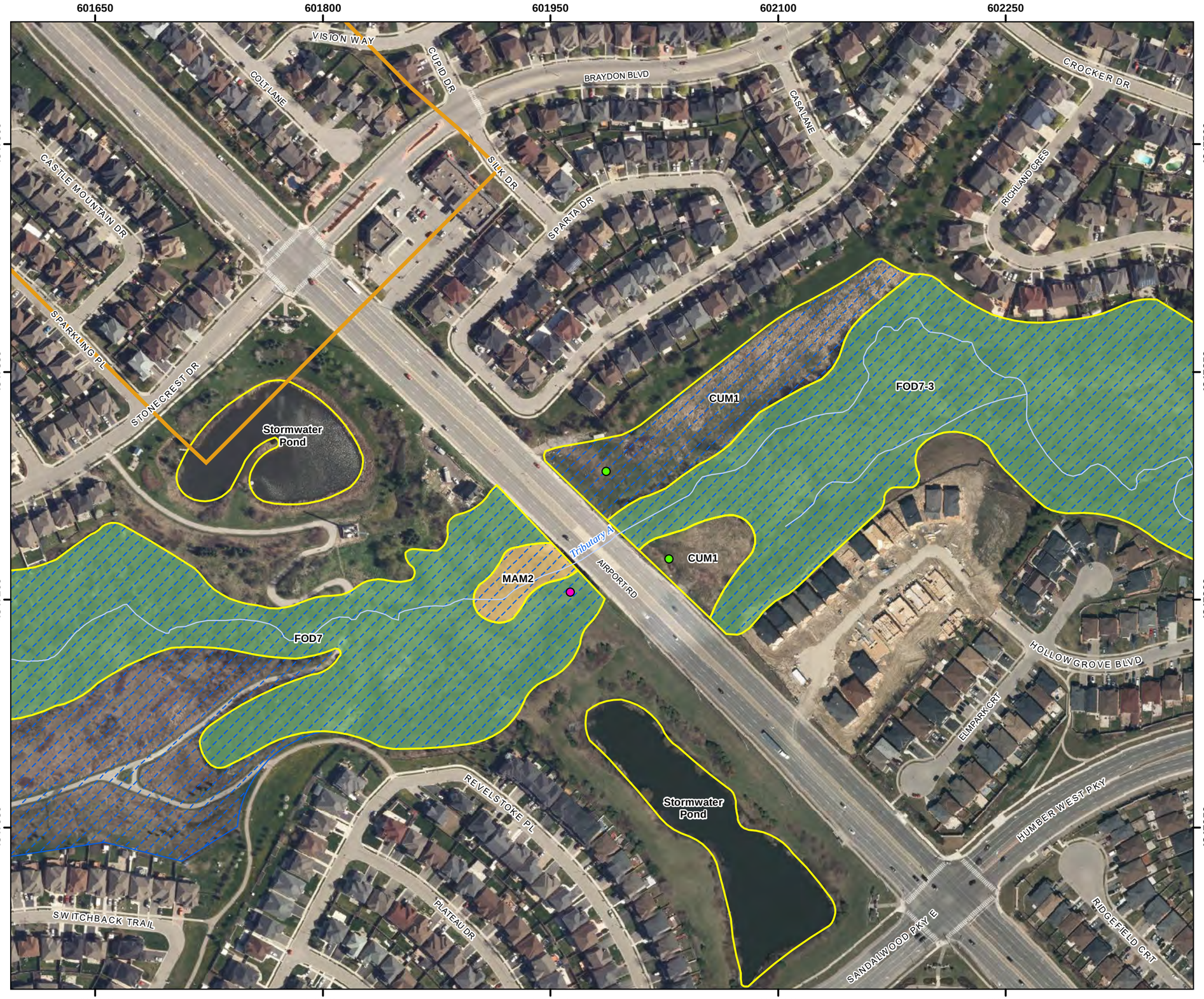
N

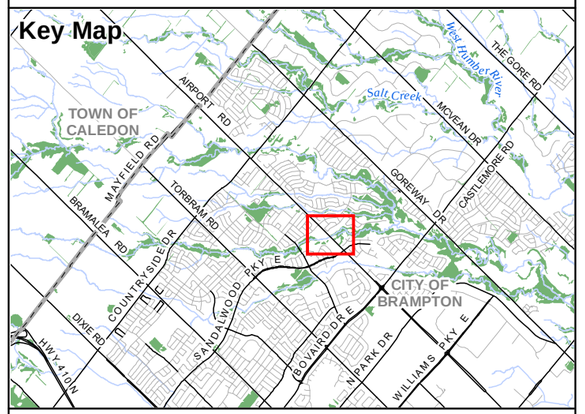
Path: X:\1905_AirportRoadEA\NRSI_1905_Map4A-C_NaturalConstraints_2019_04_23_KEF.mxd

Map 4c

Airport Road EA

Designated Natural Feature Constraints





Legend

- Study Area (Approximate)
- Woodland
- Wetland (unevaluated)
- Valleyland / Watercourse Corridor (Limits are approximate)
- Watercourse
- Ecological Land Classification (ELC)

(CUM1) Mineral Cultural Meadow Ecosite

(FOD7) Fresh - Moist Lowland Deciduous Forest Ecosite

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

(MAM2) Mineral Meadow Marsh Ecosite

Regionally Significant Species

- Cleavers
- Hairy Aster

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1905
Date: April 23, 2019

NAD83 - UTM Zone 17
Size: 11x17"
1:2,500

0 40 80 120 Metres

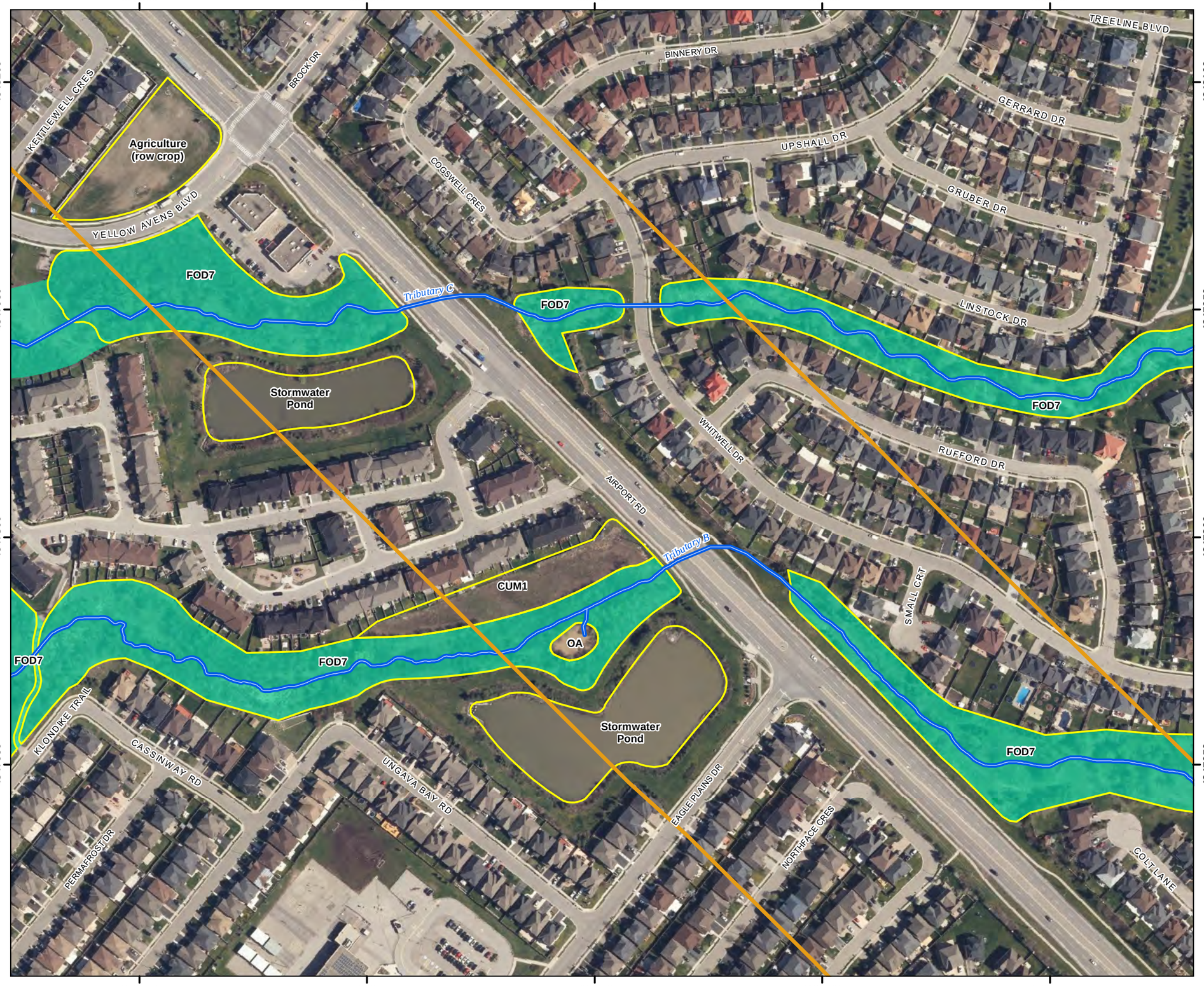
N

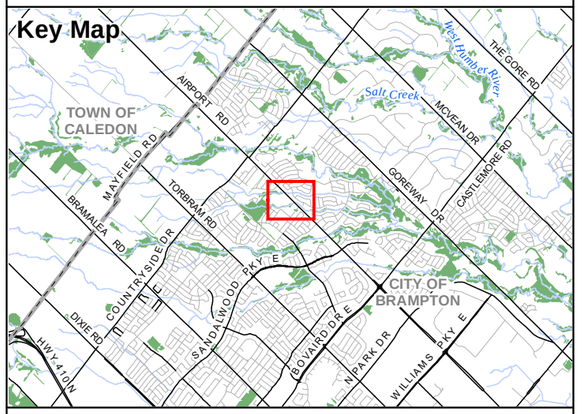
Path: X:\1905_AirportRoadEA\NRSI_1905_Map4A-C_NaturalConstraints_2019_04_23_KEF.mxd

Map 5

Airport Road EA

Fish and Wildlife Habitat Constraints





Legend

- Study Area (Approximate)
- Candidate SWH/Confirmed Terrestrial Crayfish SWH (outside ROW)
- Fish Habitat and Redside Dace Contributing Habitat
- Watercourse
- Ecological Land Classification (ELC)

(CUM1) Mineral Cultural Meadow Ecosite

(FOD7) Fresh - Moist Lowland Deciduous Forest Ecosite

(OA) Open Water

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1905
Date: April 23, 2019

NAD83 - UTM Zone 17
Size: 11x17"
1:2,500

0 40 80 120 Metres

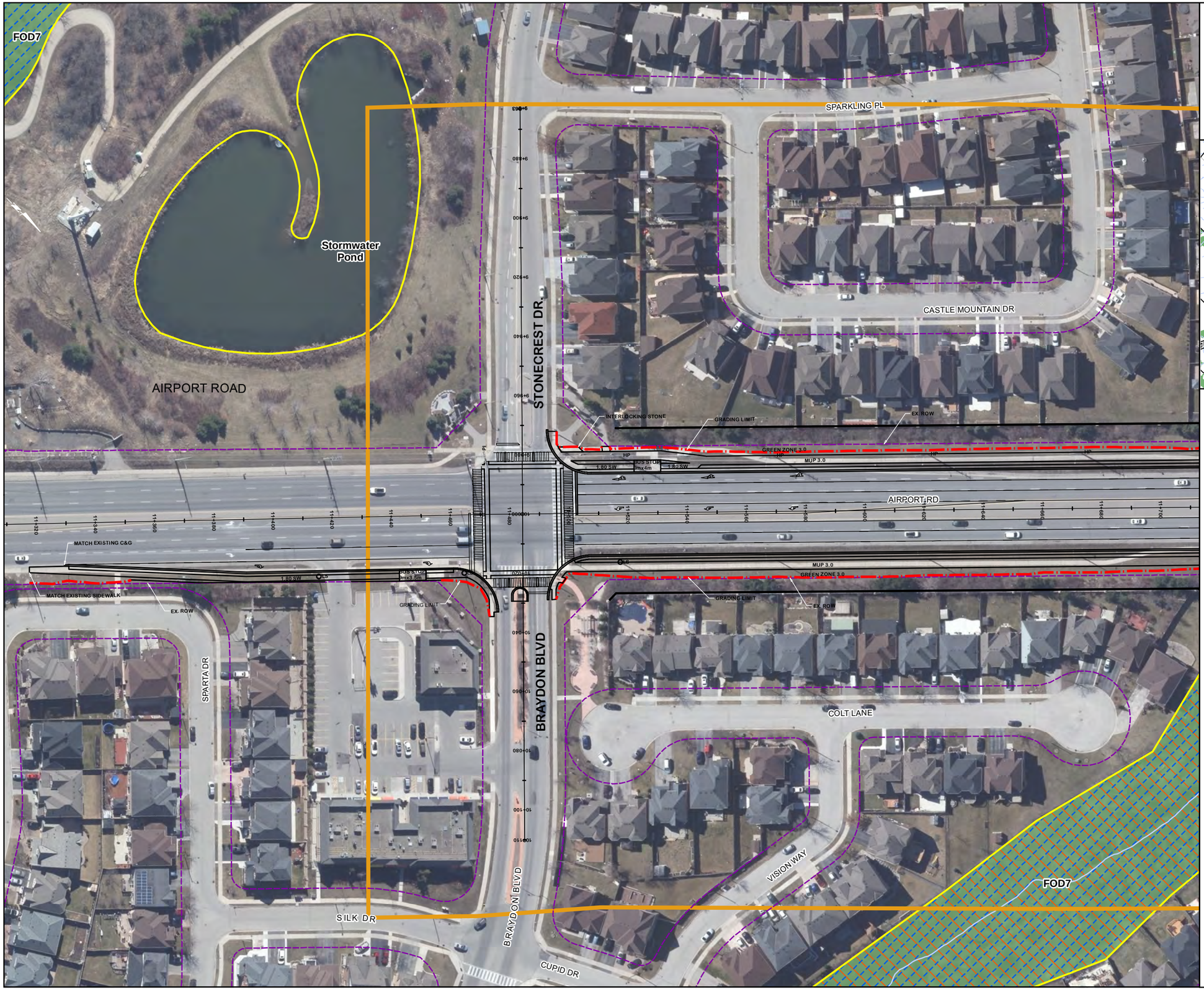
N

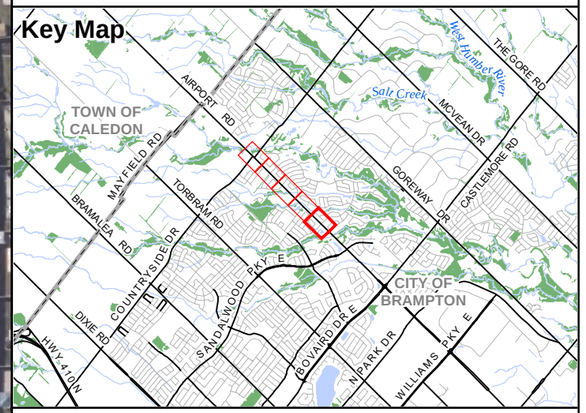
Path: X:\1905_AirportRoadEA\NRSI_1905_Map5_Fish_WildlifeConstraints_2019_04_23_KEF.mxd

Map 6a

Airport Road EA

Preliminary Design





Legend

- Study Area (Approximate)
- Preliminary Design
- Grading Limit
- Right-of-Way
- Woodland
- Greenlands Core Area (Limits are approximate)
- Valleyland / Watercourse Corridor (Limits are approximate)
- Watercourse
- Ecological Land Classification (ELC)

(FOD7) Fresh - Moist Lowland Deciduous Forest Ecosite

Regionally Significant Species

- Sandbar Willow and Rough Hedge-nettle (Various Locations)

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1905
Date: April 17, 2019

NAD83 - UTM Zone 17
Size: 11x17"
1:1,250

0 20 40 60 80 Metres

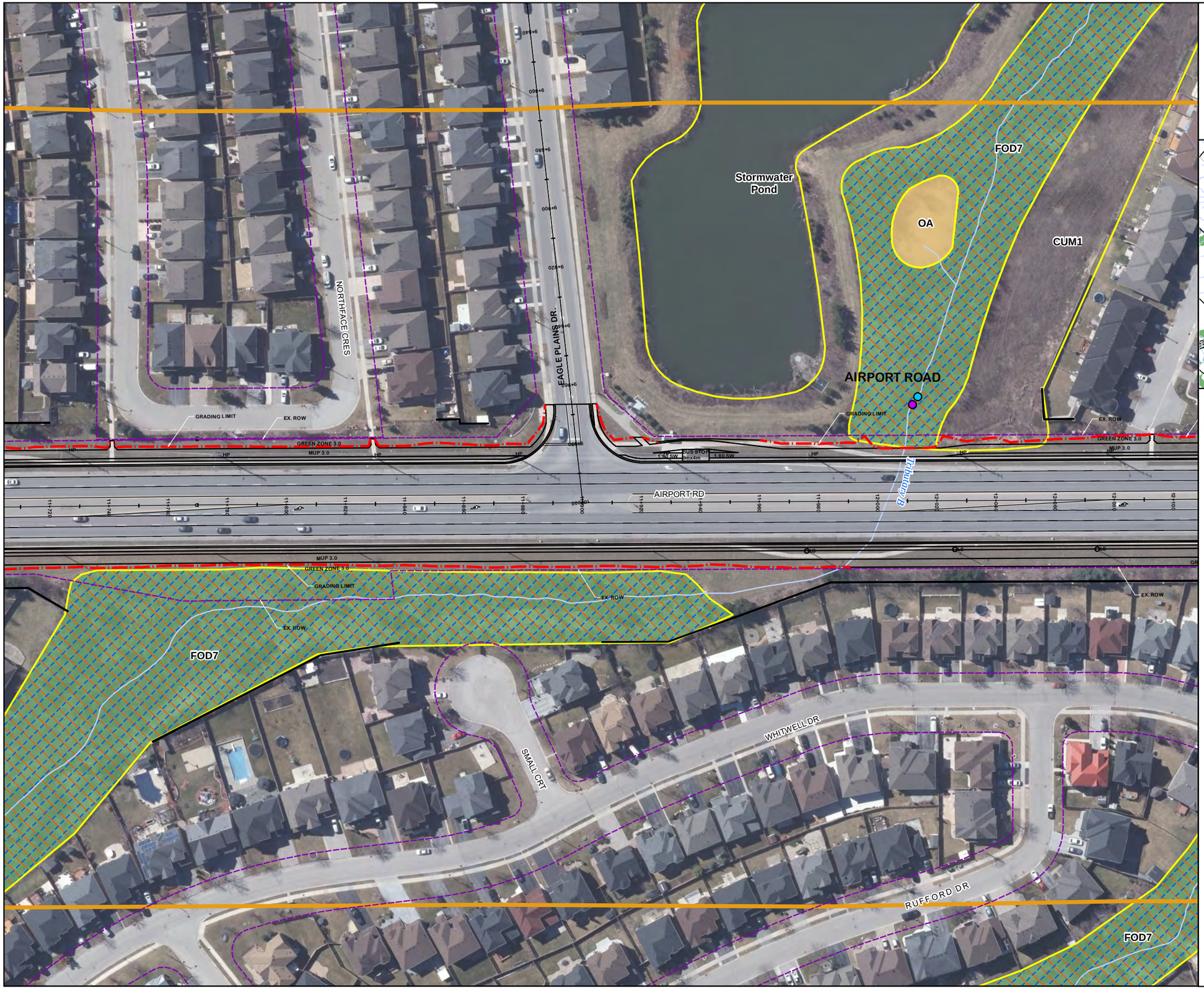
N

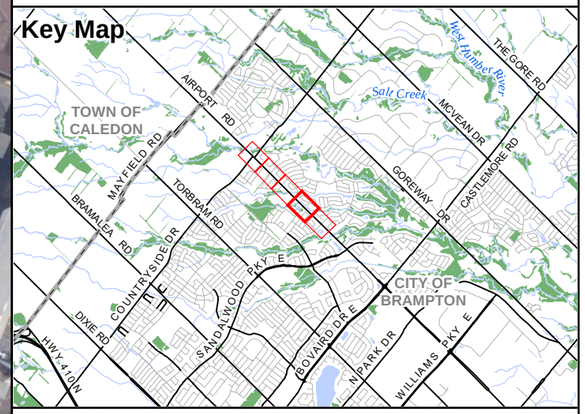
Path: X:\1905_AirportRoadEA\NRSI_1905_Map6A-e_PrelimDesign_2019_04_17_LEH.mxd

Map 6b

Airport Road EA

Preliminary Design





Legend

- Study Area (Approximate)
- Preliminary Design
- Grading Limit
- Right-of-Way
- Woodland
- Wetland (unevaluated)
- Greenlands Core Area (Limits are approximate)
- Valleyland / Watercourse Corridor (Limits are approximate)
- Watercourse
- Ecological Land Classification (ELC)

(CUM1) Mineral Cultural Meadow Ecosite

(FOD7) Fresh - Moist Lowland Deciduous Forest Ecosite

(OA) Open Water

Regionally Significant Species

- Sandbar Willow and Rough Hedge-nettle (Various Locations)
- Purple-veined Willow-Herb
- White Cut Grass

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1905 Date: April 17, 2019	NAD83 - UTM Zone 17 Size: 11x17" **1:1,250**

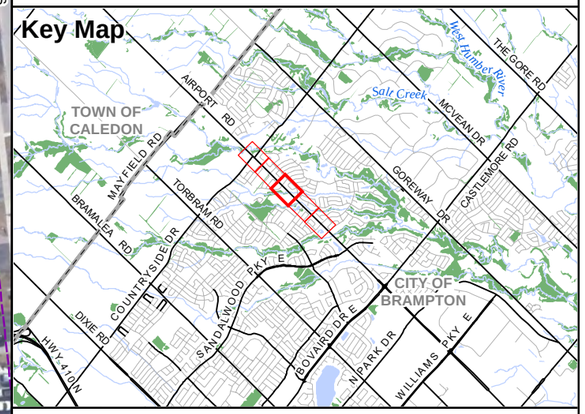
0 20 40 60 80 Metres

N

Map 6c

Airport Road EA

Preliminary Design



Legend

- Study Area (Approximate)
- Preliminary Design
- Grading Limit
- Right-of-Way
- Woodland
- Greenlands Core Area (Limits are approximate)
- Valleyland / Watercourse Corridor (Limits are approximate)
- Watercourse
- Ecological Land Classification (ELC)

(CUM1) Mineral Cultural Meadow Ecosite

(FOD7) Fresh - Moist Lowland Deciduous Forest Ecosite

Regionally Significant Species

- Sandbar Willow and Rough Hedge-nettle (Various Locations)
- Purple-veined Willow-Herb
- White Cut Grass

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1905 Date: April 17, 2019	NAD83 - UTM Zone 17 Size: 11x17" **1:1,250**

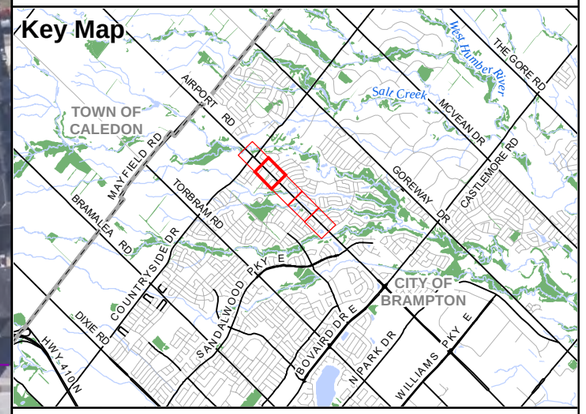
0 20 40 60 80 Metres

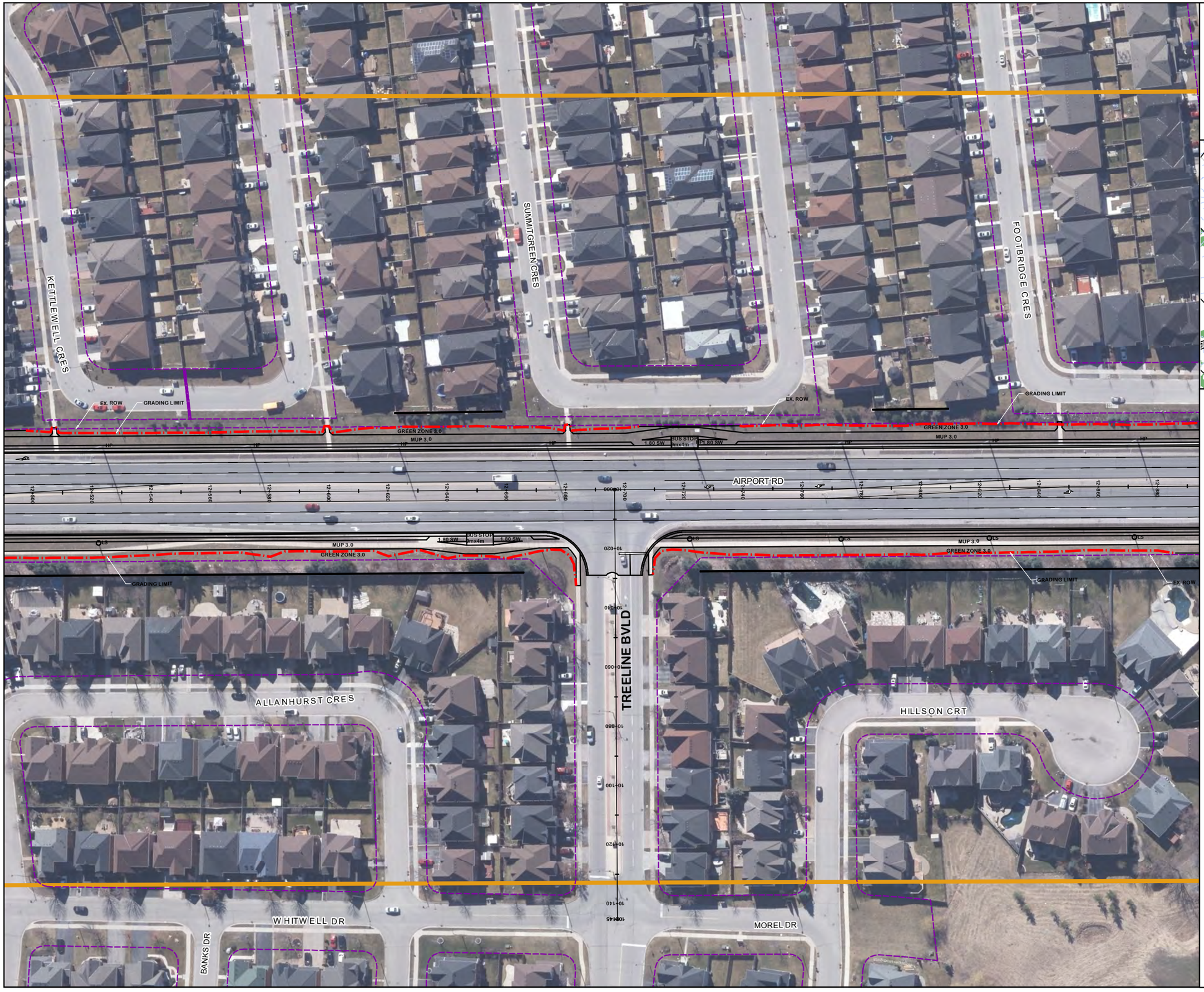
N

Map 6d

Airport Road EA

Preliminary Design





Legend

- Study Area (Approximate)
- Preliminary Design
- Grading Limit
- Right-of-Way
- Greenlands Core Area (Limits are approximate)
- Valleyland / Watercourse Corridor (Limits are approximate)

Regionally Significant Species

- Sandbar Willow and Rough Hedge-nettle (Various Locations)

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1905 Date: April 17, 2019	NAD83 - UTM Zone 17 Size: 11x17" **1:1,250**

0 20 40 60 80 Metres

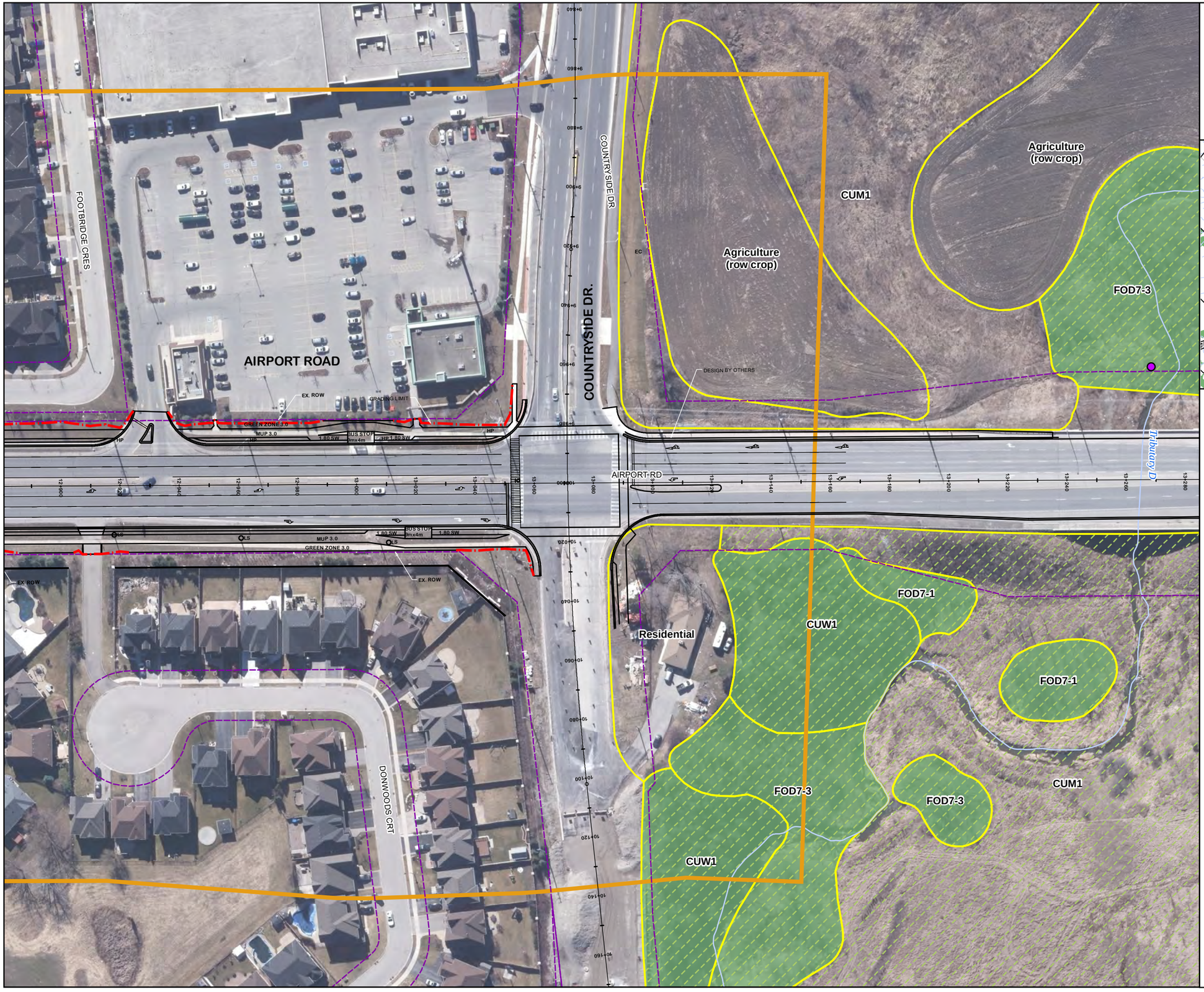
N

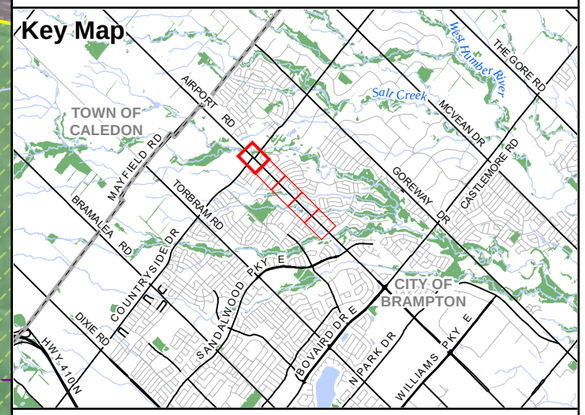
Path: X:\1905_AirportRoadEA\NRSI_1905_Map6A-e_PrelimDesign_2019_04_17_LEH.mxd

Map 6e

Airport Road EA

Preliminary Design





Legend

- Study Area (Approximate)
- Preliminary Design
- Grading Limit
- Right-of-Way
- Woodland
- Greenlands Core Area (Limits are approximate)
- Valleyland / Watercourse Corridor (Limits are approximate)
- Watercourse
- Ecological Land Classification (ELC)

(CUM1) Mineral Cultural Meadow Ecosite

(CUW1) Mineral Cultural Woodland Ecosite

(FOD7-1) Fresh - Moist White Elm Lowland Deciduous Forest Type

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

Regionally Significant Species

- Sandbar Willow and Rough Hedge-nettle (Various Locations)
- Purple-veined Willow-Herb

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

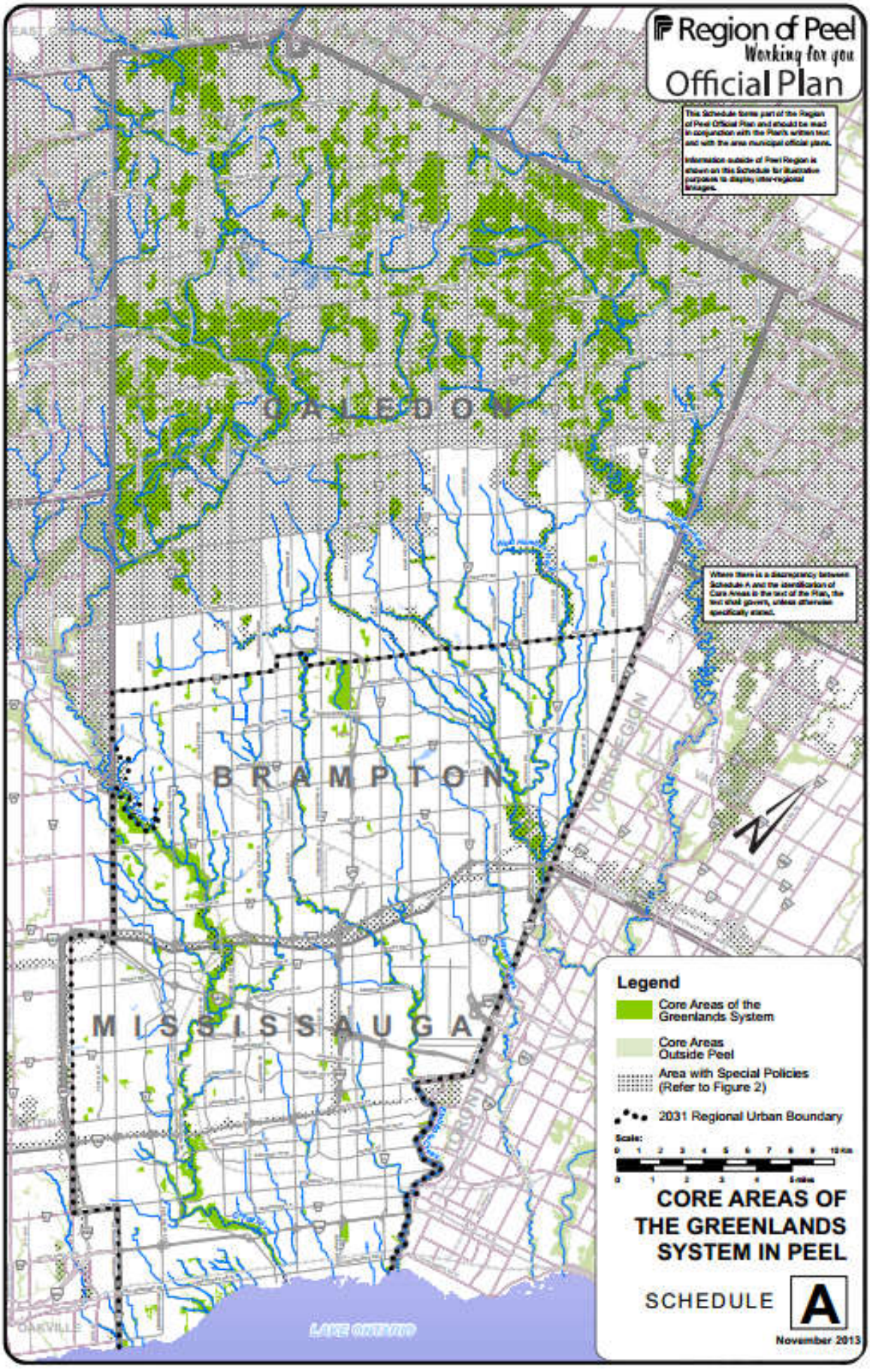
Project: 1905 Date: April 17, 2019	NAD83 - UTM Zone 17 Size: 11x17" **1:1,250**

0 20 40 60 80 Metres

N

APPENDIX I

Regional and City Official Plan Natural Heritage Mapping (Region of Peel 2016, City of Brampton 2015)


Region of Peel
Working for you
Official Plan
This Schedule forms part of the Region of Peel Official Plan and should be read in conjunction with the Plan's written text and with the area municipal official plans.
Information outside of Peel Region is shown on this Schedule for illustrative purposes to display inter-regional linkages.
Where there is a discrepancy between Schedule A and the identification of Core Areas in the text of the Plan, the text shall govern, unless otherwise specifically stated.
CALEDON
BRAMPTON
MISSISSAUGA
TORONTO REGION
Legend
Core Areas of the Greenlands System
Core Areas Outside Peel
Area with Special Policies (Refer to Figure 2)
2031 Regional Urban Boundary
Scale:
CORE AREAS OF THE GREENLANDS SYSTEM IN PEEL
SCHEDULE A
November 2013

Region of Peel
Working for you

Official Plan

This Figure is for illustrative purposes only. Changes may be made periodically to this Figure without requiring an amendment to this plan.

Information outside of Peel Region is shown on this Figure for illustrative purposes to display inter-regional linkages.

Legend

- 2031 Regional Urban Boundary
- River Valley Connection (Outside Greenbelt)
- Greenbelt Plan Area
- Lake Simcoe Protection Act Watershed Boundary
- Niagara Escarpment Plan Area (NEPA)
- Oak Ridges Moraine Conservation Plan Area (ORMCPA)
- Oak Ridges Moraine (geographic extent within Peel)
- Peel Parkway Belt West Plan Area (PWBPA)
- Urban Area
- Rural Settlement Boundary

Scale:

0 1 2 3 4 5 6 7 8 9 10 Km

0 1 2 3 4 5 miles

SELECTED AREAS OF PROVINCIAL INTEREST

FIGURE **2**

February 2016

Brampton

Our Brampton... Our Future

The Natural Heritage Features and Areas within the identified area may not be fully accurate. Further review and verification of these Natural Heritage Features and Areas will be undertaken as part of future planning processes or comprehensive environmental studies.

TOWN OF CALEDON

TOWN OF HALTON HILLS

CITY OF VAUGHAN

CITY OF MISSISSAUGA

CITY OF TORONTO

APPEALED TO THE OMB

The Natural Heritage Features and Areas within the identified area may not be fully accurate. Further review and verification of these Natural Heritage Features and Areas will be undertaken as part of future planning processes or comprehensive environmental studies.

1:70000

0 1 2 3 4 5

Kilometres

FLOWER CITY BRAMPTON.CA

LEGEND

- VALLEYLAND / WATERCOURSE CORRIDOR
- WOODLAND
- PROVINCIALLY SIGNIFICANT WETLAND
- LAKES AND PONDS
- OTHER WETLAND
- SPECIAL POLICY AREA
- ENVIRONMENTALLY SENSITIVE / SIGNIFICANT AREA
- PROVINCIAL GREENBELT / PROTECTED COUNTRYSIDE
- AREAS OF NATURAL AND SCIENTIFIC INTEREST - LIFE SCIENCE
- AREAS OF NATURAL AND SCIENTIFIC INTEREST - EARTH SCIENCE

Last Amended Date
Aug 10th, 2015

NOTES: WATERCOURSES AND TRIBUTARIES ARE SHOWN FOR CONTEXT PURPOSES

The boundaries and alignments of designations on this Schedule are approximate and are not to be scaled. This map forms part of the Official Plan of The City of Brampton and must be read in conjunction with the text,other Schedules and Secondary Plans. Mapping to support the implementation of the "Development, Interference with Wetlands, and Alterations to Shorelines and Watercourses Regulation" is not specifically reflected in this Schedule. Please refer to Appendix C to determine if a property may be affected by this Regulation. The Toronto and Region Conservation Authority and Credit Valley Conservation should be contacted for details regarding their respective requirements for the areas regulated under the said Regulation.

City of Brampton 2006 Official Plan September 2015 Office Consolidation.

Schedule D

NATURAL HERITAGE FEATURES AND AREAS

Brampton

Our Brampton... Our Future

TOWN OF CALEDON

TOWN OF HALTON HILLS

CITY OF VAUGHAN

CITY OF MISSISSAUGA

CITY OF TORONTO

HWY 410
MAYFIELD RD
COUNTRYSIDE DR
WANLESS DR
BOVAIRD DR W
BOVAIRD DR E
QUEEN ST W
QUEEN ST E
STEELES AVE W
STEELES AVE E
EMBLETON RD
EBENEZER RD
CASTLEMORE RD
WINSTON CHURCHILL BLVD
HERITAGE RD
MISSISSAUGA RD
CREDITVIEW RD
CHINGUACOUSY RD
TORBRAM RD
AIRPORT RD
HEART LAKE RD
DIXIE RD
BRAMALEA RD
KENNEDY RD
MAIN ST N
HURONTARIO ST
HUMBERWEST PKY
GOREWAY DR
THE GORE RD
CLARKWAY DR
REGIONAL RD NO. 50
COLERAINE DR
HWY 407
HWY 427
FINCH AVE

1:70000

0 1 2 3 4 5

Kilometres

FLOWER CITY BRAMPTON.CA

Legend

Toronto and Region Conservation Authority (TRCA) Regulation (Ontario Regulation 166/06) Area

This represents the area subject to Ontario Regulation 166/06: Development, Interference with Wetlands and Alterations to Shorelines and Watercourses. Note that the text of the Regulation takes precedence over the Regulation Limit mapping and that some regulated features may not appear on the Regulation Limit mapping, as therefore, the extent of the areas and features to be regulated will be confirmed through site visits and/or appropriate environmental studies. The Regulation Limit is a comparison of various information sources. Engineered floodplain mapping and estimated floodplain mapping were prepared by engineering consultants and assigned an allowance of up to 15 metres. Erosion Hazards were determined by TRCA and assigned an allowance of up to 15 metres. Shoreline Hazards were determined by TRCA and assigned an allowance of up to 15 metres. Provincially Significant Wetland (PSW), Locally Significant Wetland (LSW) and the Oak Ridges Moraine (ORM) wetland delineations were provided by the Ministry of Natural Resources. All other wetlands delineations were determined by using TRCA Ecological Land Classification (ELC) System mapping. PSW and ORM wetlands greater than 0.5 hectares in size were assigned an allowance of 120 metres in order to identify lands where development could interfere with the function of a wetland. LSW and ELC wetlands greater than 0.5 hectares in size were assigned an allowance of 30 metres. Please refer to Reference Manual for Determination of Regulation Limits (TRCA, 2005) or for more information, contact TRCA (416 - 661-6600).

Credit Valley Conservation Authority (CVC) Regulation (Ontario Regulation 160/06) Area

This represents the area subject to Ontario Regulation 160/06: Development, Interference with Wetlands and Alterations to Shorelines and Watercourses. Note that the text of the Regulation takes precedence over the Regulation Limit mapping and that some regulated features may not appear on the Regulation Limit mapping, as therefore, the extent of the areas and features to be regulated will be confirmed through site visits and/or appropriate environmental studies. The Regulation Limit mapping is a compilation of various information sources. Engineered and estimated floodplains, meander belt and estimated slope hazards, and Lake Ontario shorelines hazards mapping were prepared by engineering consultants and assigned an allowance of up to 15 metres. Provincially Significant Wetland (PSW) and Locally Significant Wetland (LSW) wetland delineations were provided by the Ministry of Natural Resources. All other wetlands delineations were determined by using CVC's Ecological Land Classification (ELC) System mapping. PSW and Oak Ridges Moraine (ORM) wetlands greater than 0.5 hectares in size were assigned an allowance of 120 metres in order to identify lands where development could interfere with the function of a wetland. LSW and ELC wetlands greater than 0.5 hectares in size were assigned an allowance of 30 metres. Please refer to Credit Valley Conservation Reference Manual for the Determination of Regulation Limits (September 2005) or for more information, contact CVC (905-670-1615).

Last Amended Date

Nov 1st, 2013

NOTES:

VALLEYLAND/WATERCOURSE CORRIDOR

WATERCOURSES AND TRIBUTARIES

Are shown for context purposes. The boundaries and alignments of these features are approximate and are not to be scaled.

This figure does not form part of the Official Plan of the City of Brampton.

City of Brampton 2006 Official Plan September 2015 Office Consolidation.

Appendix C

Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation Mapping

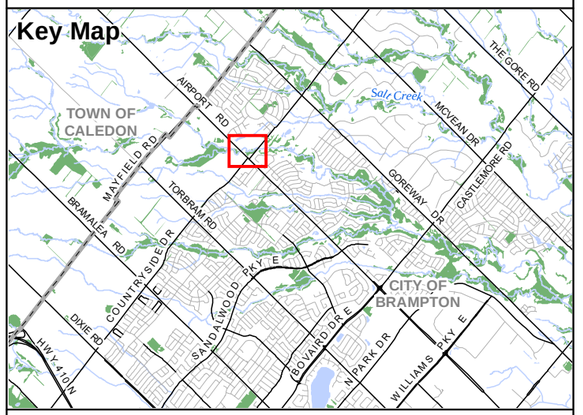
APPENDIX II

Toronto and Region Conservation Authority Background Information Mapping (TRCA 2017)

Map a

Airport Road EA

Background Information Map



Legend

- Permanent Watercourse

TRCA Natural Heritage Information

Natural Landcover

- Forest (NCF)
- Meadow (NCM)
- Successional (NCS)

Flora

- 2 - cut-leaved water-horehound *(Lycopus americanus)*
- 4 - lake-bank sedge *(Carex lacustris)*
- 6 - marsh bedstraw *(Galium palustre)*
- 18 - tussock sedge *(Carex stricta)*

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1905 Date: July 20, 2017	NAD83 - UTM Zone 17 Size: 11x17" **1:2,500**

0 40 80 120 Metres

N

600300 600450 600600 600750 600900

4848850 4848700 4848550 4848400

Path: X:\1905_AirportRoadEA\NRSI_1905_BackgroundInformation_3K_2017_07_20_KEF.mxd

601050 601200 601350 601500 601650

4848100 4847950 4847800 4847650

KETTLEWELL CRES
BROCK DR
BINNERY DR
TREELINE BLVD
CERRARD DR
UPSHALL DR
COGSWELL CRES
GRUBER DR
YELLOW AVENS BLVD
LINSTOCK DR
WHITWELL DR
RUFFORD DR
AIRPORT RD
SMALL CRT
KLONDIKE TRAIL
CASSINWAY RD
UNGAVA BAY RD
EAGLE PLAINS DR
NORTHFACE CRES
PERMAFROST DR
COLT LANE

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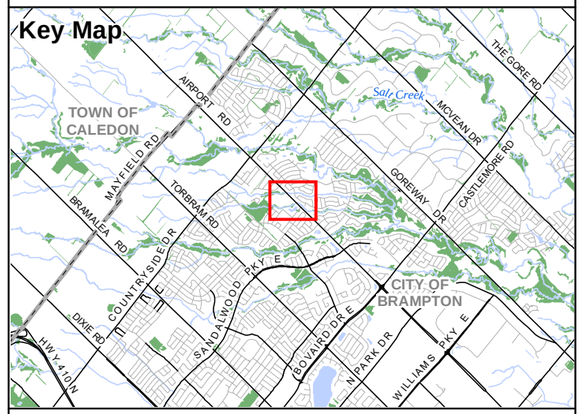
Map b

Airport Road EA

Background Information Map

Key Map



Legend

- Permanent Watercourse

TRCA Natural Heritage Information

Natural Landcover

- Forest (NCF)
- Meadow (NCM)
- Successional (NCS)
- Wetland (NSW)

Flora

- 1 - buttonbush *(Cephalanthus occidentalis)*
- 3 - hybrid swamp maple *(Acer x freemanii)*
- 5 - leafy pondweed *(Potamogeton foliosus)*
- 7 - ninebark *(Physocarpus opulifolius)*
- 8 - peach-leaved willow *(Salix amygdaloides)*
- 9 - red maple *(Acer rubrum)*
- 10 - retrorse sedge *(Carex retrorsa)*
- 11 - silky dogwood *(Cornus obliqua)*
- 12 - silver maple *(Acer saccharinum)*
- 13 - soft rush *(Juncus effusus)*
- 14 - square-stemmed monkey-flower *(Mimulus ringens)*
- 15 - swamp buttercup *(Ranunculus hispidus var. caricetorum)*
- 16 - tamarack *(Larix laricina)*
- 17 - Torrey's rush *(Juncus torreyi)*
- 19 - white cedar *(Thuja occidentalis)*
- 20 - white grass *(Leersia virginica)*
- 21 - white pine *(Pinus strobus)*
- 22 - white spruce *(Picea glauca)*

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1905
Date: July 20, 2017

NAD83 - UTM Zone 17
Size: 11x17"
1:2,500

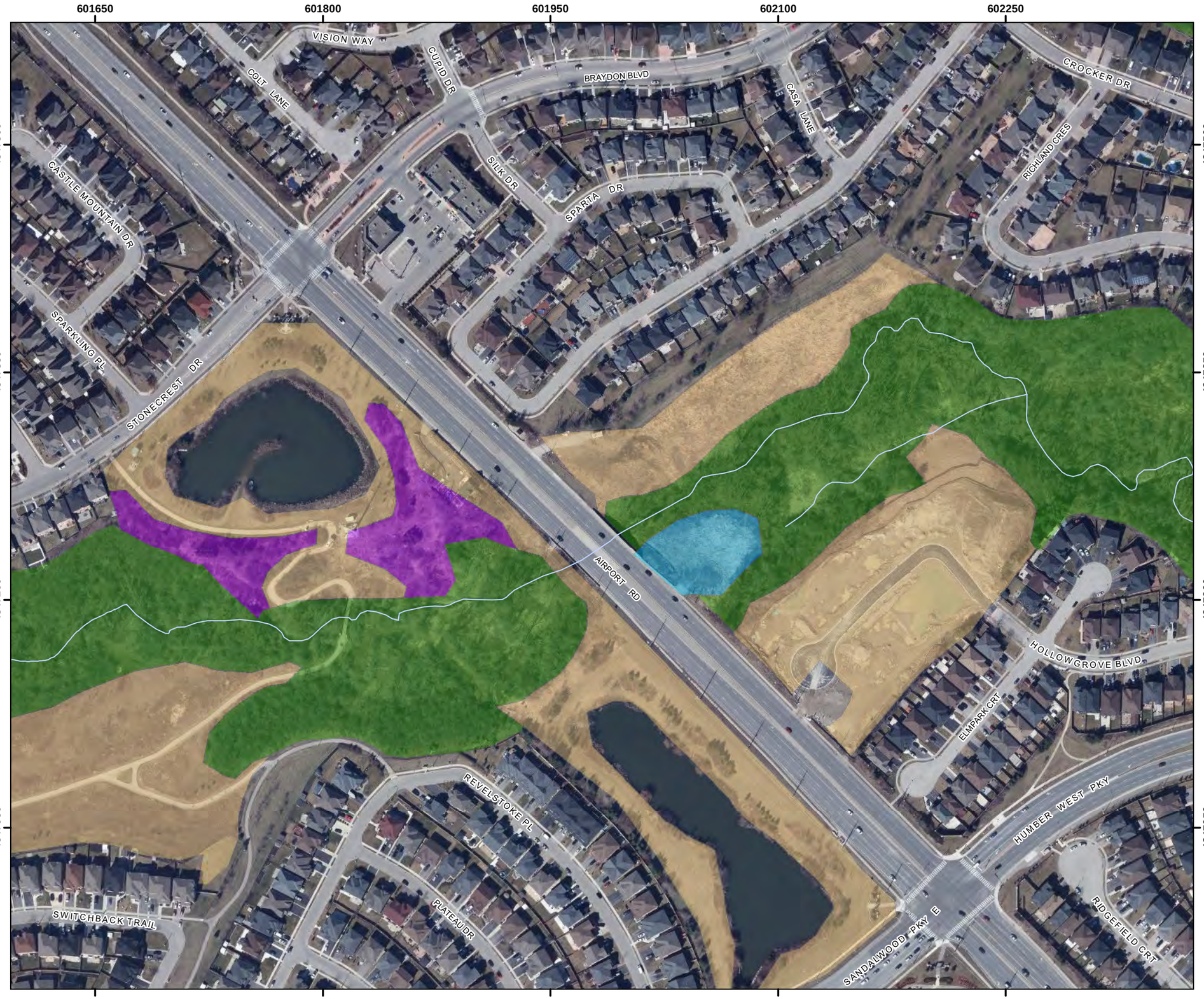
N

0 40 80 120 Metres

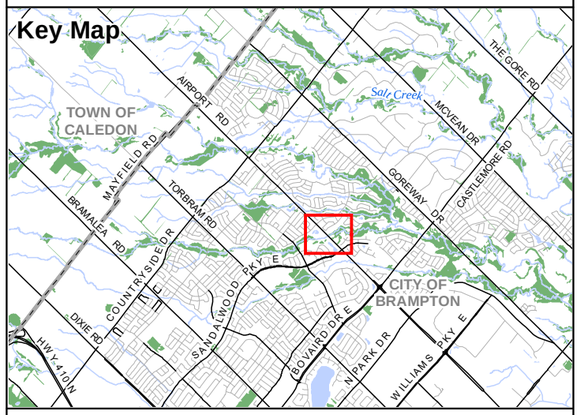
Map c

Airport Road EA

Background Information Map



Key Map



Legend

- Permanent Watercourse

TRCA Natural Heritage Information

Natural Landcover

- Forest (NCF)
- Meadow (NCM)
- Successional (NCS)
- Wetland (NSW)

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1905
Date: July 20, 2017

NAD83 - UTM Zone 17
Size: 11x17"
1:2,500

0 40 80 120 Metres

N

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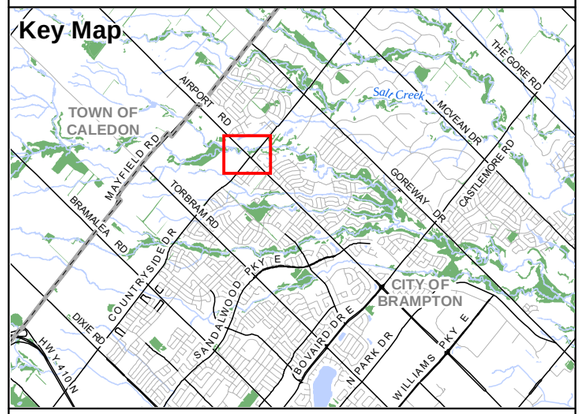
Map 1a

Airport Road EA

Fauna



Legend

- Fauna Observation (TRCA)
- Surveyed Tree or Shrub
- ROW
- Permanent Watercourse

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1905 Date: July 24, 2017	NAD83 - UTM Zone 17 Size: 11x17" **1:2,500**

0 40 80 120 Metres

N

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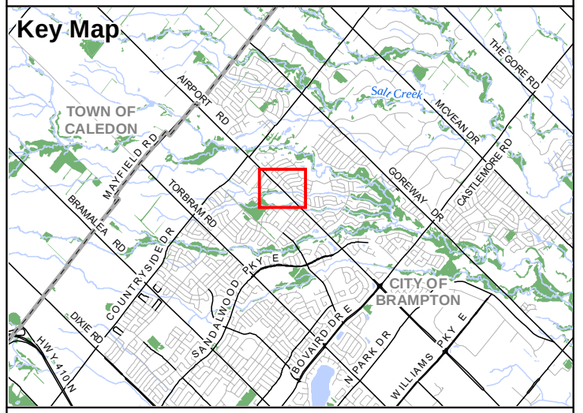
Map 1b

Airport Road EA

Fauna



Legend

- Fauna Observation (TRCA)
- Surveyed Tree or Shrub
- ROW
- Permanent Watercourse

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1905 Date: July 24, 2017	NAD83 - UTM Zone 17 Size: 11x17" **1:2,500**

0 40 80 120 Metres

N

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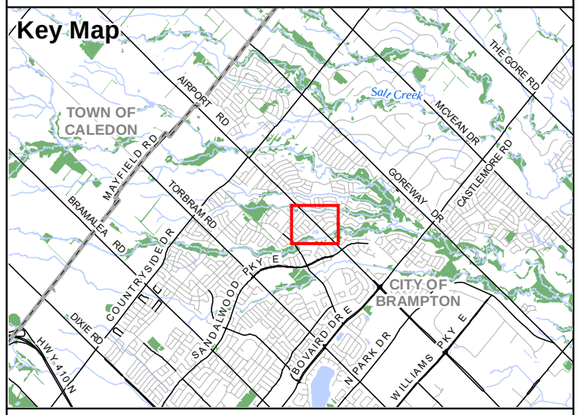
Map 1c

Airport Road EA

Fauna



Legend

- Fauna Observation (TRCA)
- Surveyed Tree or Shrub
- ROW
- Permanent Watercourse

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1905
Date: July 24, 2017

NAD83 - UTM Zone 17
Size: 11x17"
1:2,500

0 40 80 120 Metres

N

Path: X:\1905_AirportRoadEA\NRSI_1905_FaunaOverlay_3K_2017_07_24_GCS.mxd

LEGEND	
Species Code	Common Name
AMRE	American Redstart
AMTO	American Toad
AMWO	American Woodcock
BARS	Barn Swallow
BBCU	Black-billed Cuckoo
BEKI	Belted Kingfisher
BOBO	Bobolink
CHCR	"Chimney" Crayfish
COYE	Common Yellowthroat
EACO	Eastern Cottontail
EAKI	Eastern Kingbird
EAME	Eastern Meadowlark
ERMI	Ermine
GRCA	Gray Catbird
GRFR	Green Frog
INBU	Indigo Bunting
NOFL	Northern Flicker
NRWS	Northern Rough-winged Swallow
PORC	Porcupine
REVI	Red-eyed Vireo
RBGR	Rose-breasted Grosbeak
SAVS	Savannah Sparrow
SPSA	Spotted Sandpiper
TRES	Tree Swallow
WBNU	White-breasted Nuthatch
WISN	Wilson's Snipe
WOTH	Wood Thrush
WTDE	White-tailed Deer

APPENDIX III

Herpetofauna Species Reported From the Study Area and Vicinity

Appendix III
Reptile and Amphibian Species Reported From the Study Area

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	TRCA Status[5]	Ontario Reptile and Amphibian Atlas[6]	NRSI Observed
Turtles								
Chelydra serpentina serpentina	Snapping Turtle	S3	SC	SC	Schedule 1	L2	X	
Chrysemys picta marginata	Midland Painted Turtle	S5				L3	X	
Graptemys geographica	Northern Map Turtle	S3	SC	SC	Schedule 1	L2	X	
Trachemys scripta elegans	Red-eared Slider	SNA				L+	X	
Snakes								
Thamnophis sirtalis sirtalis	Eastern Gartersnake	S5				L4	X	
Salamanders								
Ambystoma maculatum	Spotted Salamander	S4				L1	X	
Plethodon cinereus	Eastern Red-backed Salamander	S5				L3	X	
Toads and Frogs								
Anaxyrus americanus	American Toad	S5				L4	X	
Hyla versicolor	Tetraploid Gray Treefrog	S5				L2	X	
Pseudacris triseriata pop. 2	Western Chorus Frog *(Great Lakes/St. Lawrence - Canadian Sh*	S3	NAR	T	Schedule 1	L2	X	
Pseudacris crucifer	Spring Peeper	S5				L2	X	
Lithobates clamitans melanota	Northern Green Frog	S5				L4	X	
Lithobates pipiens	Northern Leopard Frog	S5	NAR	NAR		L3	X	
Lithobates sylvatica	Wood Frog	S5				L2	X	
					Total	**34**	**14**	**0**

[1]MNRF 2014; [2]MNRF 2016; [3]COSEWIC 2016; [4]Government of Canada 2016; [5]Toronto Region Conservation Authority; [6]Ontario Nature 2013

Appendix III
Reptile and Amphibian Species Reported From the Study Area

Legend
SRANK
S1 Critically Imperiled
S2 Imperiled
S3 Vulnerable
S4 Apparently Secure
S5 Secure
SU Unrankable
SNA Unranked
SX Presumed Extirpated
SH Possibly Extirpated (Historical)
S#? Rank Uncertain
COSSARO
END Endangered
THR Threatened
SC Special Concern
NAR Not at Risk
DD Data Deficient
EXP Extirpated
COSEWIC
E Endangered
T Threatened
SC Special Concern
NAR Not at Risk
DD Data Deficient
XT Extirpated
SARA Schedule
Schedule 1 Officially Protected under SARA
TRCA
L5 Generally Secure
L4 Generally Secure (Rural), Of Concern (Urban)
L3 Generally Secure (Natural), Regional Concern
L2 Likely Rare, Regional Concern
L1 Rare, Regional Concern
LX Extirpated
L+ Exotic

APPENDIX IV

Plant Species Recorded Within the Study Area

Appendix IV
Vascular Plant Species Reported From the Study Area

Scientific Name	Common Name	CC	CW	Weed	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	Peel Region Rare (Kaiser 2001)	TRCA Rank[5]	NRSI Observed
SOURCE:		OLDHAM ET AL	OLDHAM ET AL	OLDHAM ET AL	MNR RARE 4th Ed. 2009	SARO List	SARA Registry	SARA Registry		TRCA 2008	
Pteridophytes	**Ferns & Allies**										
Equisetaceae	**Horsetail Family**										
Equisetum arvense	Field Horsetail	0	0		S5					L5	X
Gymnosperms	**Conifers**										
Cupressaceae	**Cypress Family**										
Thuja occidentalis	White Cedar	4	-3		S5					L4	X
Pinaceae	**Pine Family**										
Larix laricina	Tamarack	7	-3		S5					L3	X
Pinus nigra	Austrian Pine		-5	-1	SE2					L+	X
Pinus sylvestris	Scots Pine		5	-3	SE5					L+	X
Dicotyledons	**Dicots**										
Aceraceae	**Maple Family**										
Acer ginnala	Amur Maple		5	-2	SE1						X
Acer negundo	Manitoba Maple	0	-2		S5					L+?	X
Acer platanoides	Norway Maple		5	-3	SE5					L+	X
Acer X freemanii	Freeman's Maple									L4	X
Anacardiaceae	**Sumac or Cashew Family**										
Rhus hirta	Staghorn Sumac	1	5		S5					L5	X
Apiaceae	**Carrot or Parsley Family**										
Anthriscus sylvestris	Woodland Chervil		5	-2	SE4?					L+	X
Cicuta maculata	Spotted Water-hemlock	6	-5		S5					L5	X
Cryptotaenia canadensis	Honewort	5	0		S5					L5	X
Daucus carota	Wild Carrot		5	-2	SE5					L+	X
Pastinaca sativa	Wild Parsnip		5	-3	SE5					L+	X
Asclepiadaceae	**Milkweed Family**										
Asclepias syriaca	Common Milkweed	0	5		S5					L5	X
Asteraceae	**Composite or Aster Family**										
Arctium minus ssp. minus	Common Burdock		5	-2	SE5						X
Artemisia vulgaris	Common Mugwort		5	-1	SE5					L+	X
Bidens frondosa	Devil's Beggar-ticks	3	-3		S5					L5	X
Cichorium intybus	Chicory		5	-1	SE5					L+	X
Cirsium arvense	Canada Thistle		3	-1	SE5					L+	X
Cirsium vulgare	Bull Thistle		4	-1	SE5					L+	X
Erigeron philadelphicus ssp. philadelphicus	Philadelphia Fleabane	1	-3		S5					L5	X
Eupatorium maculatum ssp. maculatum	Spotted Joe-pye-weed	3	-5		S5						X
Inula helenium	Elecampane		5	-2	SE5					L+	X
Lapsana communis	Nipplewort		5	-2	SE5					L+	X
Onopordum acanthium	Scotch Thistle				SE4					L+	X
Solidago altissima var. altissima	Tall Goldenrod	1	3		S5					L5	X
Solidago canadensis	Canada Goldenrod	1	3		S5					L5	X
Solidago flexicaulis	Zig-zag Goldenrod	6	3		S5					L5	X
Sonchus arvensis ssp. arvensis	Field Sow-thistle				SE5					L+	X
Symphyotrichum ericoides var. ericoides	White Heath Aster				S5					L5	X
Symphyotrichum lanceolatum var. lanceolatum	Tall White Aster	3	-3		S5					L5	X
Symphyotrichum lateriflorum var. lateriflorum	Calico Aster	3	-2		S5					L5	X
Symphyotrichum novae-angliae	New England Aster	2	-3		S5					L5	X
Symphyotrichum pilosum var. pilosum	Hairy Aster	4	2		S5					L2	X
Symphyotrichum puniceum var. puniceum	Purple-stemmed Aster				S5					L5	X
Tussilago farfara	Coltsfoot		3	-2	SE5					L+	X

Appendix IV
Vascular Plant Species Reported From the Study Area

Scientific Name	Common Name	CC	CW	Weed	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	Peel Region Rare (Kaiser 2001)	TRCA Rank[5]	NRSI Observed
Balsaminaceae	**Touch-me-not Family**										
Impatiens capensis	Spotted Touch-me-not	4	-3		S5					L5	X
Betulaceae	**Birch Family**										
Alnus glutinosa	European Black Alder		-2	-2	SE4					L+	X
Boraginaceae	**Borage Family**										
Hackelia virginiana	Virginia Stickweed	5	1		S5					L5	X
Myosotis laxa	Smaller Forget-me-not	6	-5		S5					L4	X
Brassicaceae	**Mustard Family**										
Alliaria petiolata	Garlic Mustard		0	-3	SE5					L+	X
Barbarea vulgaris	Yellow Rocket		0	-1	SE5					L+	X
Berteroa incana	Hoary Alyssum		5	-3	SE5					L+	X
Hesperis matronalis	Dame's Rocket		5	-3	SE5					L+	X
Caprifoliaceae	**Honeysuckle Family**										
Lonicera tatarica	Tartarian Honeysuckle		3	-3	SE5					L+	X
Sambucus canadensis	Common Elderberry	5	-2		S5					L5	X
Viburnum lentago	Nannyberry	4	-1		S5					L5	X
Viburnum opulus	Guelder Rose		0	-1	SE4						X
Convolvulaceae	**Morning-glory Family**										
Convolvulus arvensis	Field Bindweed		5	-1	SE5					L+	X
Cornaceae	**Dogwood Family**										
Cornus foemina ssp. racemosa	Red Panicled Dogwood	2	-2		S5					L5	X
Cornus stolonifera	Red-osier Dogwood	2	-3		S5					L5	X
Cucurbitaceae	**Gourd Family**										
Echinocystis lobata	Prickly Cucumber	3	-2		S5					L5	X
Dipsacaceae	**Teasel Family**										
Dipsacus fullonum ssp. sylvestris	Wild Teasel		5	-1	SE5						X
Elaeagnaceae	**Oleaster Family**										
Elaeagnus angustifolia	Russian Olive		4	-1	SE3					L+	X
Fabaceae	**Pea Family**										
Amphicarpaea bracteata	Hog Peanut	4	0		S5					L5	X
Lotus corniculatus	Bird's-foot Trefoil		1	-2	SE5					L+	X
Melilotus alba	White Sweet-clover		3	-3	SE5						X
Melilotus officinalis	Yellow Sweet-clover		3	-1	SE5					L+	X
Robinia pseudo-acacia	Black Locust		4	-3	SE5						X
Vicia cracca	Tufted Vetch		5	-1	SE5					L+	X
Geraniaceae	**Geranium Family**										
Geranium robertianum	Herb Robert		5	-2	SE5					L+?	X
Grossulariaceae	**Currant Family**										
Ribes americanum	Wild Black Currant	4	-3		S5					L5	X
Ribes rubrum	Red Currant		5	-2	SE5					L+	X
Guttiferae	**St. John's-wort Family**										
Hypericum perforatum	Common St. John's-wort		5	-3	SE5					L+	X
Juglandaceae	**Walnut Family**										
Juglans nigra	Black Walnut	5	3		S4					L5	X

Appendix IV
Vascular Plant Species Reported From the Study Area

Scientific Name	Common Name	CC	CW	Weed	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	Peel Region Rare (Kaiser 2001)	TRCA Rank[5]	NRSI Observed
Lamiaceae	**Mint Family**										
Clinopodium vulgare	Wild Basil	4	5		S5					L5	X
Lycopus americanus	Cut-leaved Water-horehound	4	-5		S5					L4	X
Lycopus uniflorus	Northern Water-horehound	5	-5		S5					L4	X
Mentha arvensis ssp. borealis	American Wild Mint	3	-3		S5					L5	X
Monarda fistulosa	Wild Bergamot	6	3		S5					L5	X
Prunella vulgaris ssp. lanceolata	Heal-all	5	5		S5					L4 (L5)	X
Scutellaria lateriflora	Mad-dog Skullcap	5	-5		S5					L5	X
Stachys hispida	Rough Hedge-nettle	7	-4		S4S5				Rare	L3	X
Lythraceae	**Loosestrife Family**										
Lythrum salicaria	Purple Loosestrife		-5	-3	SE5					L+	X
Malvaceae	**Mallow Family**										
Malva moschata	Musk Mallow		5	-1	SE5					L+	X
Oleaceae	**Olive Family**										
Fraxinus americana	White Ash	4	3		S5					L5	X
Fraxinus pennsylvanica	Green Ash	3	-3		S5					L5	X
Onagraceae	**Evening-primrose Family**										
Circaea lutetiana ssp. canadensis	Yellowish Enchanter's Nightshade	3	3		S5						X
Epilobium coloratum	Purple-veined Willow-herb	3	-5		S5				Rare	L4	X
Epilobium hirsutum	Great Hairy Willow-herb		-4	-2	SE5					L+	X
Epilobium parviflorum	Sparse-flowered Willow-herb		3	-1	SE4					L+	X
Oxalidaceae	**Wood Sorrel Family**										
Oxalis stricta	Upright Yellow Wood-sorrel	0	3		S5					L5	X
Plantaginaceae	**Plantain Family**										
Plantago major	Common Plantain		-1	-1	SE5					L+	X
Polygonaceae	**Smartweed Family**										
Persicaria hydropiper	Water-pepper	4	-5		SE5					L+?	X
Rumex crispus	Curly-leaf Dock		-1	-2	SE5					L+	X
Primulaceae	**Primrose Family**										
Lysimachia ciliata	Fringed Loosestrife	4	-3		S5					L5	X
Ranunculaceae	**Buttercup Family**										
Anemone canadensis	Canada Anemone	3	-3		S5					L5	X
Ranunculus acris	Tall Buttercup		-2	-2	SE5					L+	X
Ranunculus hispidus var. caricetorum	Swamp Buttercup	5	-5		S5					L4	X
Thalictrum pubescens	Tall Meadow-rue	5	-2		S5					L5	X
Rosaceae	**Rose Family**										
Agrimonia gryposepala	Tall Hairy Agrimony	2	2		S5					L5	X
Crataegus species	Hawthorn species										X
Crataegus monogyna	English Hawthorn		5	-1	SE5					L+	X
Geum aleppicum	Yellow Avens	2	-1		S5					L4 (L5)	X
Geum canadense	White Avens	3	0		S5					L5	X
Geum laciniatum	Rough Avens		-3		S4					L4	X
Malus domestica	Apple										X
Prunus virginiana ssp. virginiana	Choke Cherry	2	1		S5					L5	X
Rubus idaeus ssp. idaeus	Red Raspberry				SE1					L+	X
Rubus setosus	Bristly Raspberry	8	-2		S4?						X
Rubiaceae	**Madder Family**										
Galium aparine	Cleavers	4	3		S5				Rare	L5	X
Galium mollugo	White Bedstraw		5	-2	SE5					L+	X

Appendix IV
Vascular Plant Species Reported From the Study Area

Scientific Name	Common Name	CC	CW	Weed	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	Peel Region Rare (Kaiser 2001)	TRCA Rank[5]	NRSI Observed
Salicaceae	**Willow Family**										
Populus balsamifera ssp. balsamifera	Balsam Poplar	4	-3		S5					L5	X
Populus deltoides ssp. deltoides	Eastern Cottonwood	4	-1		S5					L5	X
Populus tremuloides	Trembling Aspen	2	0		S5					L5	X
Salix alba var. vitellina	Weeping Willow				SU						X
Salix bebbiana	Long-beaked Willow	4	-4		S5					L4	X
Salix discolor	Pussy Willow	3	-3		S5					L4	X
Salix eriocephala	Heart-leaved Willow	4	-3		S5					L5	X
Salix exigua	Sandbar Willow	3	-5		S5				Rare		X
Salix fragilis	Crack Willow		-1	-3	SE5						X
Scrophulariaceae	**Figwort Family**										
Linaria vulgaris	Butter-and-eggs		5	-1	SE5					L+	X
Mimulus ringens	Square-stemmed Monkey-flower	6	-5		S5					L4	X
Verbascum thapsus	Common Mullein		5	-2	SE5					L+	X
Solanaceae	**Nightshade Family**										
Solanum dulcamara	Bitter Nightshade		0	-2	SE5					L+	X
Tiliaceae	**Linden Family**										
Tilia americana	American Basswood	4	3		S5					L5	X
Tilia cordata	Small Leaf Linden				SE1					L+	X
Ulmaceae	**Elm Family**										
Ulmus americana	White Elm	3	-2		S5					L5	X
Urticaceae	**Nettle Family**										
Laportea canadensis	Wood Nettle	6	-3		S5					L5	X
Urtica dioica ssp. gracilis	American Stinging Nettle	2	-1		S5					L5	X
Verbenaceae	**Vervain Family**										
Verbena hastata	Blue Vervain	4	-4		S5					L5	X
Verbena urticifolia	White Vervain	4	-1		S5					L5	X
Vitaceae	**Grape Family**										
Parthenocissus vitacea	Woodbine	3	3		S5					L5	X
Vitis riparia	Riverbank Grape	0	-2		S5					L5	X
Monocotyledons	**Monocots**										
Alismataceae	**Water-plantain Family**										
Sagittaria latifolia	Broad-leaved Arrowhead	4	-5		S5					L4	X
Cyperaceae	**Sedge Family**										
Carex vulpinoidea	Fox Sedge	3	-5		S5					L5	X
Schoenoplectus tabernaemontani	American Great Bulrush	5	-5		S5					L4	X
Scirpus atrovirens	Dark-green Bulrush	3	-5		S5					L5	X
Juncaceae	**Rush Family**										
Juncus tenuis	Path Rush	0	0		S5					L5	X
Liliaceae	**Lily Family**										
Hemerocallis fulva	Orange Day-lily		5	-3	SE5					L+	X

Appendix IV
Vascular Plant Species Reported From the Study Area

Scientific Name	Common Name	CC	CW	Weed	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	Peel Region Rare (Kaiser 2001)	TRCA Rank[5]	NRSI Observed
Poaceae	**Grass Family**										
Agrostis gigantea	Redtop		0	-2	SE5					L+	X
Bromus inermis ssp. inermis	Awnless Brome		5	-3	SE5						X
Bromus tectorum	Downy Chess		5	-2	SE5					L+	X
Dactylis glomerata	Orchard Grass		3	-1	SE5					L+	X
Echinochloa crusgalli	Common Barnyard Grass		-3	-1	SE5						X
Elymus repens	Quack Grass		3	-3	SE5					L+	X
Elymus virginicus var. virginicus	Virginia Wild Rye	5	-2		S5					L5	X
Glyceria striata	Fowl Meadow Grass	3	-5		S5					L5	X
Leersia oryzoides	Rice Cut Grass	3	-5		S5					L5	X
Leersia virginica	White Cut Grass	6	-3		S4				Rare	L4	X
Phalaris arundinacea	Reed Canary Grass	0	-4		S5					L+?	X
Phleum pratense	Timothy		3	-1	SE5					L+	X
Phragmites australis ssp. Australis	European Common Reed				SNA					L+	X
Poa pratensis ssp. pratensis	Kentucky Bluegrass	0	1		S5					L+	X
Setaria viridis	Green Foxtail			-1	SE5					L+	X
Typhaceae	**Cattail Family**										
Typha angustifolia	Narrow-leaved Cattail	3	-5		S5					L+	X
Typha latifolia	Broad-leaved Cattail	3	-5		S5					L4	X

[1]MNRF 2014; [2]MNRF 2016; [3]COSEWIC 2016; [4]Government of Canada 2016; [5]Toronto Region Conservation Authority 2008a

LEGEND
SRANK
S1 Critically Imperiled
S2 Imperiled
S3 Vulnerable
S4 Apparently Secure
S5 Secure
SU Unrankable
SNA Unranked
SX Presumed Extirpated
SH Possibly Extirpated (Historical)
S#? Rank Uncertain
TRCA L-Rank
L5 Generally Secure
L4 Generally Secure (Rural), Of Concern (Urban)
L3 Generally Secure (Natural), Regional Concern
L2 Likely Rare, Regional Concern
L1 Rare, Regional Concern
LX Extirpated
L+ Exotic

APPENDIX V

Species at Risk/Species of Conservation Concern Habitat Assessment

Appendix V. Federally and Provincially Significant Species Known from the Study Area and Vicinity

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	Habitat Preference[5,6]	Background Source	Suitable Habitat within Study Area	NRSI Observed
Vascular Flora									
Carex torta	Twisted Sedge	SX				At or near water's edge on island heads, sandy bars, low river banks and other areas that experience frequent floods, high stream velocity and ice scour	MNRF 2015a	No	No
Gleditsia triacanthos	Honey Locust	S2				Moist soils of river floodplains in mixed forests	MNRF 2015a	Yes	No
Birds									
Chaetura pelagica	Chimney Swift	S4B, S4N	THR	T	Schedule 1	Commonly found in urban areas near buildings; nests in hollow trees, crevices of rock cliffs, chimneys; highly gregarious; feeds over open water.	BSC et al. 2008	Yes (not in ROW)	No
Chordeiles minor	Common Nighthawk	S4B	SC	T	Schedule 1	Open ground; clearings in dense forests; ploughed fields; gravel beaches or barren areas with rocky soils; open woodlands; flat gravel roofs.	BSC et al. 2008	No	No
Contopus virens	Eastern Wood-pewee	S4B	SC	SC	--	Open, deciduous, mixed or coniferous forest; predominated by oak with little understory; forest clearings, edges; farm woodlots, parks.	BSC et al. 2008	Yes (not in ROW)	No
Dolichonyx oryzivorus	Bobolink	S4B	THR	T	--	Large, open expansive grasslands with dense ground cover; hayfields, meadows or fallow fields; marshes; requires tracts of grassland >50 ha.	BSC et al. 2008; TRCA 2017	Yes (not in ROW)	No
Hirundo rustica	Barn Swallow	S4B	THR	T	--	Farmlands or rural areas; cliffs, caves, rock niches; buildings or other man-made structures for nesting; open country near body of water.	BSC et al. 2008; TRCA 2017	Yes (not in ROW)	Yes
Hylocichla mustelina	Wood Thrush	S4B	SC	T	--	Undisturbed moist mature deciduous or mixed forest with deciduous sapling growth; near pond or swamp; hardwood forest edges; must have some trees higher than 12m.	BSC et al. 2008; TRCA 2017	Yes (not in ROW)	No
Riparia riparia	Bank Swallow	S4B	THR	T	--	Sand, clay or gravel river banks or steep riverbank cliffs; lakeshore bluffs of easily crumbled sand or gravel; gravel pits, road-cuts, grassland or cultivated fields that are close to water.	BSC et al. 2008	No	No

Appendix V. Federally and Provincially Significant Species Known from the Study Area and Vicinity

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	Habitat Preference[5,6]	Background Source	Suitable Habitat within Study Area	NRSI Observed
Sturnella magna	Eastern Meadowlark	S4B	THR	T	--	Open, grassy meadows, farmland, pastures, hayfields or grasslands with elevated singing perches; cultivated land and weedy areas with trees; old orchards with adjacent, open grassy areas >10 ha in size.	BSC et al. 2008; TRCA 2017	Yes (not in ROW)	No
Herpetofauna									
Chelydra serpentina serpentina	Snapping Turtle	S3	SC	SC	Schedule 1	Permanent, semi-permanent fresh water; marshes, swamps or bogs; rivers and streams with soft muddy banks or bottoms; often uses soft soil or clean dry sand on south-facing slopes for nest sites.	Ontario Nature 2015; MNRF 2017c	Yes	No
Emydoidea blandingii	Blanding's Turtle (*Great Lakes/St Lawrence pop.*)	S3	THR	T	Schedule 1	Shallow water marshes, bogs, ponds or swamps, or coves in larger lakes with soft muddy bottoms and aquatic vegetation; basks on logs, stumps, or banks.	Ontario Nature 2015	No	No
Graptemys geographica	Northern Map Turtle	S3	SC	SC	Schedule 1	Large bodies of water with soft bottoms, and aquatic vegetation; basks on logs or rocks or on beaches and grassy edges, will bask in groups; uses soft soil or clean dry sand for nest sites; may nest at some distance from water; home range size is larger for females (about 70ha) than males (about 30ha) and includes hibernation, basking, nesting and feeding areas; aquatic corridors (e.g. stream) are required for movement.	Ontario Nature 2015	No	No
Lampropeltis taylori triangulum	Eastern Milksnake	S4	NAR	SC	-	Farmlands, meadows, hardwood or aspen stands; pine forest with brushy or woody cover; river bottoms or bog woods; hides under logs, stones, or boards or in outbuildings.	Ontario Nature 2015	Yes	No
Pseudacris triseriata pop. 2	Western Chorus Frog *(Great Lakes/St. Lawrence - Canadian Shield Pop.)*	S3	NAR	T	Schedule 1	Roadside ditches or temporary ponds in fields; swamps or wet meadows; woodland or open country with cover and moisture; small ponds and temporary pools.	Ontario Nature 2015	Yes	No
Mammals									
Myotis leibii	Eastern Small-footed Myotis	S2S3	END			Roosts in caves, mines shafts, crevices or buildings that are in or near woodland; hibernates in cold dry caves or mines; maternity colonies in caves or buildings; forages in forests	Humphrey 2017	No	No

Appendix V. Federally and Provincially Significant Species Known from the Study Area and Vicinity

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	Habitat Preference[5,6]	Background Source	Suitable Habitat within Study Area	NRSI Observed
Myotis lucifuga	Little Brown Myotis	S4	END	E	Schedule 1	uses caves, quarries, tunnels, hollow trees or buildings for roosting; winters in humid caves; maternity sites in dark warm areas such as attics and barns; feeds primarily in wetlands, forest edges	EC 2015	Yes (not in ROW)	No
Myotis septentrionalis	Northern Myotis	S3	END	E	Schedule 1	hibernates during winter in mines or caves; roosts in houses, manmade structures but prefers hollow trees or under loose bark; hunts within forests, below canopy	EC 2015	Yes (not in ROW)	No
Perimyotis subflavus	Tri-colored Bat	S3?	END	E	Schedule 1	Open woods near water; roosts in trees, cliff crevices, buildings or caves; hibernates in damp, draft-free warm caves, mines or rock crevices	EC 2015	Yes (not in ROW)	No
Insects									
Arigomphus furcifer	Lilypad Clubtail	S3				Ponds, lakes, and slow streams with floating vegetation, often with submerged vegetation and low brushy shores, including bog lakes	MNRF 2015a	Yes (not in ROW)	No
Lestes eurinus	Amber-winged Spreadwing	S3				Ponds and small lakes	MNRF 2015a	Yes (not in ROW)	No
Fish									
Clinostomus elongatus	Redside Dace	S2	END	E	Schedule 3	Small, coolwater streams. Prefers quiet pools.	MNRF 2017c	Yes (contributing habitat)	No

[1]MNRF 2015a, [2]MNRF 2017a, [3]COSEWIC 2017, [4]Government of Canada 2017, [5]OMNR 2000, [6]Michigan Flora Online 2001

LEGEND
SRANK
S1 Critically Imperiled
S2 Imperiled
S3 Vulnerable
S4 Apparently Secure
S5 Secure
SNA Unranked
B Breeding
N Non-breeding
S#? Rank Uncertain
COSSARO/COSEWIC
END/E Endangered
THR/T Threatened
SC/SC Special Concern
NAR Not at Risk
SARA Schedule
Schedule 1 Officially Protected under SARA
Schedule 3 Special concern; may be reassessed for consideration for inclusion to Schedule 1

APPENDIX VI

Bird Species Reported From the Subject Property and Vicinity

Airport Road, Brampton Tree Preservation Plan
Tree Inventory Data

Tree Number	Common Name	Scientific Name	Native/ Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Comments
1	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	60	6.5	Improbable	Good	Codominant leaders; minor epicormic growth; minor dieback.
2	Scots Pine	*Pinus sylvestris*	Non-Native	1	31	4.0	Improbable	Good	Minor dieback.
3	Austrian Pine	*Pinus nigra*	Non-Native	1	49	4.0	Possible	Fair	Dead and broken branches to be pruned; codominant leaders; minor curling of branches.
4	Norway Maple	*Acer platanoides*	Non-Native	1	11	1.0	Improbable	Fair	Water sprouts; epicormic growth.
5	Norway Maple	*Acer platanoides*	Non-Native	1	19	3.0	Improbable	Good	Included bark.
6	Serbian Spruce	*Picea omorika*	Non-Native	1	13	2.0	Improbable	Fair	Dead lower branches.
7	Serbian Spruce	*Picea omorika*	Non-Native	1	12	2.0	Improbable	Good	Minor dieback.
8	Serbian Spruce	*Picea omorika*	Non-Native	1	12	2.0	Improbable	Good	Thinning.
9	Serbian Spruce	*Picea omorika*	Non-Native	1	13	1.5	Improbable	Good	Lower crown thinning.
10	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	11	2.5	Improbable	Good	Old pruning cuts with good compartmentalization.
11	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	12	3.0	Improbable	Fair	Moderate vigour.
12	Colorado Spruce	*Picea pungens*	Non-Native	1	13	1.0	Improbable	Excellent	Great form, good vigour.
13	Colorado Spruce	*Picea pungens*	Non-Native	1	14	1.5	Improbable	Fair	Dieback; dead lower branches.
14	Colorado Spruce	*Picea pungens*	Non-Native	1	15	2.0	Improbable	Good	Dying lower branches.
15	Colorado Spruce	*Picea pungens*	Non-Native	1	17	2.0	Improbable	Fair	Dead lower branches.
16	Colorado Spruce	*Picea pungens*	Non-Native	1	12	1.0	Improbable	Fair	Minor dieback in lower crown; top bent with heavy fruit set.
17	Colorado Spruce	*Picea pungens*	Non-Native	1	20	2.0	Improbable	Fair	Dead lower branches; unbalanced crown; minor vines.
18	Colorado Spruce	*Picea pungens*	Non-Native	1	23	2.0	Improbable	Fair	Dead lower branches.
19	Colorado Spruce	*Picea pungens*	Non-Native	1	17	1.5	Improbable	Fair	Dead leader; minor dieback.
20	Colorado Spruce	*Picea pungens*	Non-Native	1	25	3.0	Improbable	Good	Top bent with heavy fruit set.
21	Colorado Spruce	*Picea pungens*	Non-Native	1	23	2.5	Improbable	Good	Top bent with heavy fruit set.
22	Colorado Spruce	*Picea pungens*	Non-Native	1	21	2.0	Improbable	Fair	Dead lower branches.
23	Manitoba Maple	*Acer negundo*	Native	1	27	3.5	Probable	Fair	Codominant leaders, cracked vertically at branch union; water sprouts; potential root girdling; minor dieback; recommend removal.
24	Manitoba Maple	*Acer negundo*	Native	1	25	4.0	Improbable	Fair	Minor epicormic growth; minor dieback.
25	Manitoba Maple	*Acer negundo*	Native	1	32	5.0	Possible	Fair	Basal sprouts and epicormic growth; included bark.
26	Norway Maple	*Acer platanoides*	Non-Native	1	21	4.0	Improbable	Fair	Exposed root with bark wound; basal sprouts.
27	Manitoba Maple	*Acer negundo*	Native	2	19	3.5	Improbable	Fair	Codominant leaders; included bark; water sprouts; minor dieback.
28	Colorado Spruce	*Picea pungens*	Non-Native	1	18	1.5	Possible	Poor	Bottom half all dead branches; minor vine.
29	Colorado Spruce	*Picea pungens*	Non-Native	1	21	2.0	Improbable	Fair	Lower crown thinning.
30	Colorado Spruce	*Picea pungens*	Non-Native	1	15		Probable	Dead	Recently dead.
31	Colorado Spruce	*Picea pungens*	Non-Native	1	12	1.0	Probable	Very Poor	Nearly dead; topped; vines in crown; 95% dieback.
32	Colorado Spruce	*Picea pungens*	Non-Native	1	21	2.0	Improbable	Fair	Lower crown thinning; vine in lower crown; heavy fruit set.
33	Colorado Spruce	*Picea pungens*	Non-Native	1	16	1.5	Possible	Fair	Vines throughout crown; defoliation of lower branches.
34	Crimson King Norway Maple	*Acer platanoides 'Crimson King'*	Non-Native	1	24	3.5	Improbable	Fair	Wound on trunk with compartmentalization.
35	Colorado Spruce	*Picea pungens*	Non-Native	1	21	2.0	Improbable	Good	Lower crown thinning; heavy fruit set.
36	Colorado Spruce	*Picea pungens*	Non-Native	1	18	2.5	Improbable	Fair	Dying lower branches.
37	Colorado Spruce	*Picea pungens*	Non-Native	1	13	2.0	Possible	Poor	Crown thinning; chlorosis.
38	Colorado Spruce	*Picea pungens*	Non-Native	1	25	3.0	Improbable	Fair	Dead lower branches.
39	Colorado Spruce	*Picea pungens*	Non-Native	1	17	1.5	Improbable	Fair	Lower crown thinning; 1 dead branch.
40	Crimson King Norway Maple	*Acer platanoides 'Crimson King'*	Non-Native	1	24	3.0	Improbable	Fair	Minor vertical crack; minor water sprout; leaf scorch on one branch.

Airport Road, Brampton Tree Preservation Plan
Tree Inventory Data

Tree Number	Common Name	Scientific Name	Native/ Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Comments
41	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	28	5.0	Improbable	Good	Exposed girdling root; improper pruning cuts over backyard.
42	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	15	4.0	Improbable	Good	Minor included bark; minor epicormic growth.
43	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	3	23	4.0	Improbable	Fair	Included bark; 2 dead lower branches.
44	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	22	5.5	Improbable	Fair	Minor dieback; included bark; minor eroding around base.
45	Colorado Spruce	*Picea pungens*	Non-Native	1	21	2.5	Improbable	Good	Heavy fruit set; good form.
46	Colorado Spruce	*Picea pungens*	Non-Native	1	19	1.5	Improbable	Fair	Lower crown thinning.
47	Colorado Spruce	*Picea pungens*	Non-Native	1	20	2.0	Improbable	Good	Heavy fruit set.
48	Colorado Spruce	*Picea pungens*	Non-Native	1	21	2.0	Improbable	Good	Heavy fruit set.
49	Colorado Spruce	*Picea pungens*	Non-Native	1	24	2.0	Improbable	Good	Top bent with heavy fruit set.
50	Colorado Spruce	*Picea pungens*	Non-Native	1	20	2.0	Improbable	Good	Heavy fruit set.
51	Colorado Spruce	*Picea pungens*	Non-Native	1	21	2.0	Possible	Fair	Topped.
52	Colorado Spruce	*Picea pungens*	Non-Native	1	17	1.5	Possible	Fair	Crown thinning.
53	White Ash	*Fraxinus americana*	Native	5	18	3.5	Probable	Very Poor	70% dieback; EAB exit holes observed; epicormic growth.
54	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	3	27	4.5	Possible	Fair	Included bark; minor dieback.
55	Manitoba Maple	*Acer negundo*	Native	4	17	3.0	Possible	Fair	Codominant stems.
56	Norway Maple	*Acer platanoides*	Non-Native	1	23	2.5	Improbable	Fair	Vertical stem crack; cut basal sprouts.
57	Norway Maple	*Acer platanoides*	Non-Native	1	22	3.0	Possible	Fair	Cut basal sprouts; bark wounds.
58	Colorado Spruce	*Picea pungens*	Non-Native	1	19	1.5	Improbable	Excellent	
59	Colorado Spruce	*Picea pungens*	Non-Native	1	24	2.0	Improbable	Fair	Top bent with heavy fruit set.
60	Colorado Spruce	*Picea pungens*	Non-Native	1	19	1.5	Possible	Fair	Topped; minor chlorosis.
61	Colorado Spruce	*Picea pungens*	Non-Native	1	23	2.0	Improbable	Good	Recent small pruning cuts.
62	Norway Maple	*Acer platanoides*	Non-Native	1	20	2.5	Improbable	Fair	Exposed roots; basal sprouts in both Crimson King and reverted green; vertical crack.
63	Colorado Spruce	*Picea pungens*	Non-Native	1	19	2.0	Improbable	Good	Top bent with heavy fruit set.
64	Colorado Spruce	*Picea pungens*	Non-Native	1	21	2.0	Improbable	Good	Top bent with heavy fruit set; lower crown thinning.
65	Colorado Spruce	*Picea pungens*	Non-Native	1	24	2.0	Improbable	Good	Top bent with heavy fruit set; lower crown thinning.
66	Crabapple	*Malus sp.*	Non-Native	3	14	2.5	Improbable	Good	
67	Crabapple	*Malus sp.*	Non-Native	1	19	2.5	Improbable	Fair	Blight.
68	Crabapple	*Malus sp.*	Non-Native	1	21	2.0	Improbable	Fair	Water sprouts; old pruning cuts; dense crown.
69	Colorado Spruce	*Picea pungens*	Non-Native	1	16	1.0	Improbable	Fair	Epicormic growth.
70	Norway Maple	*Acer platanoides*	Non-Native	1	15	2.0	Improbable	Good	
71	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	12	2.5	Improbable	Fair	Epicormic growth; thin crown.
72	Norway Maple	*Acer platanoides*	Non-Native	1	24	3.0	Improbable	Fair	Somewhat open crown; girdling root.
73	Crabapple	*Malus sp.*	Non-Native	1	11	2.5	Improbable	Fair	Spreading crown; included bark.
74	Crabapple	*Malus sp.*	Non-Native	2	13	2.5	Improbable	Fair	Codominant stems with included bark.
75	Crabapple	*Malus sp.*	Non-Native	1	26	3.0	Improbable	Fair	Included bark; minor epicormic growth.
76	Norway Maple	*Acer platanoides*	Non-Native	1	19	3.0	Improbable	Fair	Codominant leaders.
77	White Spruce	*Picea glauca*	Native	1	13	1.0	Possible	Good	Crooked stem.
78	Colorado Spruce	*Picea pungens*	Non-Native	1	23	2.5	Improbable	Good	Heavy fruit set.
79	Colorado Spruce	*Picea pungens*	Non-Native	1	20	2.5	Improbable	Good	Heavy fruit set.
80	Norway Maple	*Acer platanoides*	Non-Native	1	25	3.0	Improbable	Good	
81	Colorado Spruce	*Picea pungens*	Non-Native	1	22	2.0	Improbable	Good	Lower crown thinning.
82	Colorado Spruce	*Picea pungens*	Non-Native	1	28	2.5	Improbable	Good	Top bent with heavy fruit set.
83	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	3	24	5.5	Improbable	Fair	Codominant stems with included bark; minor thinning.
84	Norway Maple	*Acer platanoides*	Non-Native	1	24	3.0	Improbable	Good	
85	Norway Maple	*Acer platanoides*	Non-Native	1	25	3.0	Improbable	Good	

Airport Road, Brampton Tree Preservation Plan
Tree Inventory Data

Tree Number	Common Name	Scientific Name	Native/ Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Comments
86	Norway Maple	*Acer platanoides*	Non-Native	1	24	2.5	Improbable	Good	1 small epicormic shoot.
87	Colorado Spruce	*Picea pungens*	Non-Native	1	21	3.0	Improbable	Good	Heavy fruit set.
88	Colorado Spruce	*Picea pungens*	Non-Native	1	23	2.0	Improbable	Good	Heavy fruit set; lower crown thinning.
89	Colorado Spruce	*Picea pungens*	Non-Native	1	18	2.0	Improbable	Good	Heavy fruit set.
90	Colorado Spruce	*Picea pungens*	Non-Native	1	24	2.5	Improbable	Excellent	Top bent with heavy fruit set.
91	Colorado Spruce	*Picea pungens*	Non-Native	1	18	1.0	Improbable	Good	Nearly columnar.
92	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	28	4.0	Improbable	Fair	Minor dieback; small girdling root.
93	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	20	3.5	Improbable	Fair	Minor dieback; basal sprouts; large lateral branch; included bark.
94	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	24	3.0	Improbable	Fair	Minor dieback; basal sprout.
95	Colorado Spruce	*Picea pungens*	Non-Native	1	26	2.0	Possible	Fair	Dead leader.
96	Colorado Spruce	*Picea pungens*	Non-Native	1	19	2.0	Improbable	Good	Lower crown thinning; top bent with heavy fruit set.
97	Colorado Spruce	*Picea pungens*	Non-Native	1	22	2.0	Improbable	Fair	Irregular crown; heavy fruit set.
98	Colorado Spruce	*Picea pungens*	Non-Native	1	22	2.5	Possible	Fair	Dead top.
99	Colorado Spruce	*Picea pungens*	Non-Native	1	16	2.0	Improbable	Fair	Thinning.
100	Colorado Spruce	*Picea pungens*	Non-Native	1	20	3.0	Improbable	Fair	Pruned lower branches; small fruiting body.
101	Norway Maple	*Acer platanoides*	Non-Native	1	23	3.0	Improbable	Fair	Lots of basal sprouts, some with powdery mildew.
102	Norway Maple	*Acer platanoides*	Non-Native	1	26	3.0	Improbable	Fair	Vertical stem crack with sap leaking; 1 dead branch; exposed roots.
103	Crimson King Norway Maple	*Acer platanoides 'Crimson King'*	Non-Native	1	26	3.0	Improbable	Good	Dense crown.
104	Colorado Spruce	*Picea pungens*	Non-Native	1	31	2.0	Improbable	Fair	Topped.
105	Colorado Spruce	*Picea pungens*	Non-Native	1	18	2.5	Improbable	Fair	Dead lower branches.
106	Colorado Spruce	*Picea pungens*	Non-Native	1	20	2.0	Improbable	Fair	Dead lower branches.
107	Colorado Spruce	*Picea pungens*	Non-Native	1	16	2.5	Improbable	Fair	Dead lower branches.
108	Colorado Spruce	*Picea pungens*	Non-Native	1	18	2.0	Improbable	Fair	Dead lower branches.
109	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	30	4.0	Improbable	Fair	Potential root girdling; minor epicormic growth.
110	Colorado Spruce	*Picea pungens*	Non-Native	1	24	2.5	Improbable	Excellent	Roots may be restricted by landscape fabric.
111	Colorado Spruce	*Picea pungens*	Non-Native	1	25	2.5	Improbable	Good	
112	Colorado Spruce	*Picea pungens*	Non-Native	1	17	2.0	Improbable	Good	Thinning.
113	Colorado Spruce	*Picea pungens*	Non-Native	1	24	2.0	Improbable	Good	Vine in crown; lower crown thinning.
114	Colorado Spruce	*Picea pungens*	Non-Native	1	23	2.0	Improbable	Fair	Topped; thinning.
115	Colorado Spruce	*Picea pungens*	Non-Native	1	21	1.5	Improbable	Good	Vine in crown; heavy seed set.
116	Red Oak	*Quercus rubra*	Native	1	24	3.5	Improbable	Good	Minor dieback.
117	Japanese Silk Lilac	*Syringa reticulata*	Non-Native	1	10	1.0	Improbable	Good	Potential root girdling.
118	Red Oak	*Quercus rubra*	Native	1	24	3.5	Improbable	Good	Minor leaf necrosis and insect defoliation.
119	Red Oak	*Quercus rubra*	Native	1	17	1.5	Improbable	Good	Minor dieback.
120	Manitoba Maple	*Acer negundo*	Native	3	11	3.0	Possible	Fair	Dieback.
121	White Spruce	*Picea glauca*	Native	1	16	2.0	Improbable	Fair	Thinning.
122	White Spruce	*Picea glauca*	Native	1	14	2.0	Improbable	Good	Thinning.
123	White Spruce	*Picea glauca*	Native	1	17	2.0	Improbable	Good	Thinning.
124	White Spruce	*Picea glauca*	Native	1	16	2.0	Improbable	Fair	Thinning.
125	White Spruce	*Picea glauca*	Native	1	12	1.5	Improbable	Fair	Lower crown thinning.
126	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	26	4.0	Improbable	Good	Minor dieback.
127	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	26	4.0	Improbable	Fair	Minor dieback.
128	Manitoba Maple	*Acer negundo*	Native	2	26	4.0	Possible	Fair	Codominant stems with included bark; history of branch failure.
129	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	26	4.5	Improbable	Good	Minor dieback.
130	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	27	4.0	Improbable	Fair	Minor crown thinning.

Airport Road, Brampton Tree Preservation Plan
Tree Inventory Data

Tree Number	Common Name	Scientific Name	Native/ Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Comments
131	Austrian Pine	*Pinus nigra*	Non-Native	1	24	3.0	Improbable	Fair	Minor dieback.
132	Austrian Pine	*Pinus nigra*	Non-Native	1	22	2.0	Improbable	Fair	Crown thinning; sapsucker holes.
133	Austrian Pine	*Pinus nigra*	Non-Native	1	23	2.5	Improbable	Fair	Pruned lower branches; healthy.
134	Austrian Pine	*Pinus nigra*	Non-Native	1	21	2.5	Possible	Fair	Heavy thinning in lower crown; sapsucker holes.
135	Austrian Pine	*Pinus nigra*	Non-Native	3	18	3.0	Improbable	Fair	Topped low; three large stems codominant, dead recent growth.
136	Austrian Pine	*Pinus nigra*	Non-Native	1	28	3.0	Improbable	Fair	New growth browning on lower branches.
137	Freeman's Maple	*Acer X freemanii*	Native	1	21	2.5	Improbable	Fair	Epicormic growth; water sprouts.
138	Colorado Spruce	*Picea pungens*	Non-Native	1	19	2.0	Improbable	Fair	Lower branches thinning.
139	Colorado Spruce	*Picea pungens*	Non-Native	1	23	2.0	Improbable	Fair	Pruned lower branches.
140	Colorado Spruce	*Picea pungens*	Non-Native	1	24	2.5	Possible	Fair	Topped.
141	Colorado Spruce	*Picea pungens*	Non-Native	1	17	1.5	Improbable	Poor	Pruned lower branches; topped.
142	Colorado Spruce	*Picea pungens*	Non-Native	1	15	2.0	Improbable	Good	Thinning; minor included bark at base.
143	Colorado Spruce	*Picea pungens*	Non-Native	1	15	2.0	Improbable	Good	Thinning.
144	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	25	4.0	Improbable	Good	Minor epicormic growth.
145	Colorado Spruce	*Picea pungens*	Non-Native	1	17	2.0	Improbable	Good	Thinning.
146	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	21	3.0	Improbable	Excellent	No apparent problems.
147	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	21	3.0	Improbable	Good	Very minor dieback.
148	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	29	4.0	Improbable	Fair	Minor dieback.
149	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	22	3.0	Improbable	Fair	Very minor dieback.
150	White Spruce	*Picea glauca*	Native	1	14	2.0	Improbable	Fair	Minor dieback.
151	White Spruce	*Picea glauca*	Native	1	15	2.0	Possible	Poor	Dieback; dead branches.
152	Silver Maple	*Acer saccharinum*	Native	1	11	2.0	Improbable	Fair	Minor leaf necrosis; minor dieback.
153	Silver Maple	*Acer saccharinum*	Native	1	16	2.5	Possible	Fair	Many basal sprouts that have been cut; stem wound; minor dieback.
154	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	21	3.5	Improbable	Fair	Minor dieback; minor epicormic growth.
155	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	23	3.5	Improbable	Fair	Minor dieback.
156	Norway Spruce	*Picea abies*	Non-Native	1	19	2.0	Possible	Poor	Defoliation.
157	Norway Spruce	*Picea abies*	Non-Native	1	21	3.0	Improbable	Fair	Dieback.
158	Norway Spruce	*Picea abies*	Non-Native	2	19	2.5	Improbable	Fair	Irregular crown.
159	White Spruce	*Picea glauca*	Native	1	17	2.5	Improbable	Excellent	No apparent problems.
160	Austrian Pine	*Pinus nigra*	Non-Native	1	25	2.5	Improbable	Fair	Crooked stem; sunken part of stem.
161	Austrian Pine	*Pinus nigra*	Non-Native	1	24	2.5	Improbable	Fair	Dieback; curling branches; pruned lower branches; codominant leaders.
162	Austrian Pine	*Pinus nigra*	Non-Native	1	23	2.5	Improbable	Fair	Dieback; curling branches; pruned lower branches. String in trunk, compartmentalized well.
163	Austrian Pine	*Pinus nigra*	Non-Native	1	22	2.5	Improbable	Fair	Dieback; curling branches; pruned lower branches.
164	Austrian Pine	*Pinus nigra*	Non-Native	1	26	2.0	Improbable	Good	
165	Austrian Pine	*Pinus nigra*	Non-Native	1	24	2.5	Improbable	Fair	Dieback; curling branches.
166	Silver Maple	*Acer saccharinum*	Native	1	26	3.0	Improbable	Fair	Basal sprouts and epicormic growth; flaking bark.
167	Colorado Spruce	*Picea pungens*	Non-Native	1	26	2.0	Improbable	Fair	Thinning; dead lower branches.
168	Colorado Spruce	*Picea pungens*	Non-Native	1	18	2.0	Improbable	Good	Crooked stem.
169	Colorado Spruce	*Picea pungens*	Non-Native	1	19	2.0	Improbable	Fair	Thinning; dead lower branches.
170	Colorado Spruce	*Picea pungens*	Non-Native	1	22	3.0	Improbable	Fair	Thinning; dead lower branches.
171	Colorado Spruce	*Picea pungens*	Non-Native	1	23	3.0	Improbable	Fair	Thinning; dead lower branches.
172	Colorado Spruce	*Picea pungens*	Non-Native	1	17	2.0	Improbable	Fair	Chlorosis.
173	Colorado Spruce	*Picea pungens*	Non-Native	1	28	3.0	Improbable	Fair	Topped; heavy fruit set.
174	Silver Maple	*Acer saccharinum*	Native	1	31	4.5	Improbable	Fair	Branch stubs compartmentalized; old stem wound; girdling root; included bark.

Airport Road, Brampton Tree Preservation Plan
Tree Inventory Data

Tree Number	Common Name	Scientific Name	Native/ Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Comments
175	Silver Maple	*Acer saccharinum*	Native	1	27	5.0	Improbable	Fair	Broken branch; epicormic growth; asymetrical crown to west.
176	White Spruce	*Picea glauca*	Native	1	26	2.5	Improbable	Good	Thinning.
177	Norway Spruce	*Picea abies*	Non-Native	1	23	2.5	Possible	Poor	Major defoliation.
178	Norway Spruce	*Picea abies*	Non-Native	1	18	2.5	Improbable	Good	
179	Norway Spruce	*Picea abies*	Non-Native	1	27	2.5	Improbable	Fair	Dead lower branches; thinning.
180	White Spruce	*Picea glauca*	Native	1	12	2.0	Improbable	Excellent	
181	Norway Spruce	*Picea abies*	Non-Native	1	18	2.5	Improbable	Fair	Dead lower branches; wire in stem.
182	Norway Spruce	*Picea abies*	Non-Native	1	23	2.5	Improbable	Good	Dead lower branches.
183	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	24	3.5	Improbable	Good	Minor included bark.
184	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	31	4.5	Improbable	Good	Exposed roots.
185	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	27	3.5	Improbable	Good	Minor dieback.
186	Austrian Pine	*Pinus nigra*	Non-Native	1	24	2.0	Improbable	Good	Recent pruning cuts.
187	Austrian Pine	*Pinus nigra*	Non-Native	1	19	1.5	Improbable	Good	Recent pruning cuts.
188	Austrian Pine	*Pinus nigra*	Non-Native	1	22	3.0	Possible	Poor	Topped; unbalanced; dieback, curling branches suggesting diplodia tip blight.
189	Austrian Pine	*Pinus nigra*	Non-Native	1	23	3.0	Improbable	Fair	Dead curling branches, suggesting diplodia tip blight; minor lean south.
190	Austrian Pine	*Pinus nigra*	Non-Native	1	24	3.0	Possible	Fair	Codominant leaders; leaking sap.
191	Speckled Alder	*Alnus incana spp. rugosa*	Native	5	20	3.5	Improbable	Good	
192	Speckled Alder	*Alnus incana spp. rugosa*	Native	3	11	3.0	Improbable	Good	
193	Speckled Alder	*Alnus incana spp. rugosa*	Native	2	13	3.0	Possible	Poor	Codominant leaders; minor dieback; included bark.
194	Speckled Alder	*Alnus incana spp. rugosa*	Native	4	11	3.0	Improbable	Fair	Included bark at base; unbalanced crown.
195	Manitoba Maple	*Acer negundo*	Native	4	11	3.5	Improbable	Fair	
196	Austrian Pine	*Pinus nigra*	Non-Native	1	23	3.0	Improbable	Fair	Dead lower branches; branches and needles curling when dead, suggesting diplodia tip blight.
197	Austrian Pine	*Pinus nigra*	Non-Native	1	21	3.0	Improbable	Fair	Dead lower branches; branches and needles curling when dead, suggesting diplodia tip blight.
198	Austrian Pine	*Pinus nigra*	Non-Native	2	16	2.5	Possible	Fair	Codominant stems.
199	Black Willow	*Salix nigra*	Native	2	11	2.5	Improbable	Fair	Codominant leaders with included bark; dieback.
200	Black Willow	*Salix nigra*	Native	4	28	6.0	Possible	Fair	2 broken branches; water sprouts.
201	European Larch	*Larix decidua*	Non-Native	1		1.5	Possible	Poor	40% dieback; dead branches throughout.
202	Speckled Alder	*Alnus incana spp. rugosa*	Native	3	14	4.0	Improbable	Fair	Codominant leaders; dieback.
203	Speckled Alder	*Alnus incana spp. rugosa*	Native	1	17	2.5	Improbable	Good	Very minor dieback.
204	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	19	3.0	Improbable	Fair	Some leaf deformation at tips.
205	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	22	4.0	Improbable	Fair	Minor dieback; potential root girdling.
206	White Spruce	*Picea glauca*	Native	1	15	2.5	Improbable	Poor	Dieback; dead branches; vines.
207	Norway Spruce	*Picea abies*	Non-Native	1	21	2.0	Improbable	Good	Vine in crown.
208	White Spruce	*Picea glauca*	Native	1	11	2.5	Improbable	Poor	Branches in bottom half dead; minor vines.
209	White Spruce	*Picea glauca*	Native	1	17	1.5	Improbable	Good	Vine throughout crown; lower branches thinning.
210	White Spruce	*Picea glauca*	Native	1	17	3.0	Improbable	Good	Thinning; minor vines.
211	White Spruce	*Picea glauca*	Native	1	13	1.5	Possible	Poor	Topped; lower crown thinning.
212	White Spruce	*Picea glauca*	Native	1	18	2.0	Improbable	Good	Lower crown thinning.
213	Amur Maple	*Acer ginnala*	Non-Native	1	11	3.0	Improbable	Fair	Codominant leaders; dieback; minor included bark.
214	Norway Spruce	*Picea abies*	Non-Native	1	27	3.5	Improbable	Good	Lower crown thinning; strong taper.
215	Serbian Spruce	*Picea omorika*	Non-Native	1	10	2.0	Improbable	Fair	Slightly suppressed, slightly asymetrical crown.
216	Serbian Spruce	*Picea omorika*	Non-Native	1	13	1.5	Improbable	Fair	Minor chlorosis on lower branch; thin lower crown.
217	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	21	3.5	Improbable	Good	1 dead lower branch.
218	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	22	4.0	Improbable	Good	Exposed roots.

Airport Road, Brampton Tree Preservation Plan
Tree Inventory Data

Tree Number	Common Name	Scientific Name	Native/ Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Comments
219	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	18	3.5	Improbable	Good	Minor dieback.
220	Silver Maple	*Acer saccharinum*	Native	1	31	5.0	Improbable	Fair	Minor leaf necrosis in lower crown; old pruning cut on low stem.
221	Colorado Spruce	*Picea pungens*	Non-Native	1	17	3.5	Improbable	Fair	Thinning; increased seed production.
222	Norway Spruce	*Picea abies*	Non-Native	1	26	2.5	Improbable	Good	
223	Norway Spruce	*Picea abies*	Non-Native	1	17	2.5	Improbable	Fair	Dead and dying lower branches.
224	Norway Spruce	*Picea abies*	Non-Native	1	27	3.0	Improbable	Fair	Dead and dying lower branches; pruned base.
225	Norway Spruce	*Picea abies*	Non-Native	1	26	3.0	Improbable	Good	Crown mixed with neighbour.
226	Norway Spruce	*Picea abies*	Non-Native	1	26	3.0	Improbable	Good	
227	White Spruce	*Picea glauca*	Native	1	16	3.0	Improbable	Fair	Dead and dying lower branches; pruned base.
228	Amur Maple	*Acer ginnala*	Non-Native	1	11	3.0	Possible	Fair	Codominant leaders; dieback; epicormic growth.
229	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	21	3.5	Improbable	Good	Exposed roots; few dead branches.
230	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	23	3.5	Improbable	Fair	Dieback; signs of pruning.
231	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	25	3.5	Improbable	Good	Exposed roots; old pruning cuts with woundwood.
232	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	20	3.0	Improbable	Fair	Dieback; signs of regular pruning; topped.
233	Serbian Spruce	*Picea omorika*	Non-Native	1	12	1.5	Improbable	Fair	Heavy fruit set.
234	Serbian Spruce	*Picea omorika*	Non-Native	1	11	1.5	Improbable	Fair	Crooked top; nest in crown; minor thinning.
235	Serbian Spruce	*Picea omorika*	Non-Native	1	15	2.5	Improbable	Fair	Dead lower branches; minor vines.
236	Serbian Spruce	*Picea omorika*	Non-Native	1	15	2.0	Improbable	Fair	Codominant leaders resultin g in poor form.
237	Serbian Spruce	*Picea omorika*	Non-Native	1	14	2.5	Improbable	Fair	Dead lower branches.
238	Serbian Spruce	*Picea omorika*	Non-Native	1	12	2.0	Improbable	Fair	Dead lower branches.
239	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	25	3.5	Improbable	Good	Minor stem wound; minor crown thinning.
240	English Oak	*Quercus robur*	Non-Native	1	18	1.0	Improbable	Good	Minor dieback; minor epicormic growth.
241	English Oak	*Quercus robur*	Non-Native	4	16	1.0	Improbable	Good	Minor dieback.
242	English Oak	*Quercus robur*	Non-Native	4	16	1.0	Improbable	Good	Codominant leaders.
243	Common Pear	*Pyrus communis*	Non-Native	1	14	2.0	Improbable	Fair	Root suckers; rust (leaf spots).
244	Colorado Spruce	*Picea pungens*	Non-Native	1	14	2.0	Improbable	Excellent	No apparent problems.
245	Colorado Spruce	*Picea pungens*	Non-Native	1	13	2.0	Improbable	Excellent	No apparent problems.
246	White Spruce	*Picea glauca*	Native	1	16	2.5	Improbable	Fair	An ailment of buds.
247	Colorado Spruce	*Picea pungens*	Non-Native	1	16	2.5	Improbable	Excellent	No apparent problems.
248	Colorado Spruce	*Picea pungens*	Non-Native	1	14	2.0	Improbable	Good	Minor thinning.
249	Common Pear	*Pyrus communis*	Non-Native	1	13	2.5	Improbable	Fair	Many root suckers, exhibiting properties of the rootstock; rust (leaf spots).
250	Norway Maple	*Acer platanoides*	Non-Native	1	13	2.0	Improbable	Good	Potential root girdling.
251	Norway Spruce	*Picea abies*	Non-Native	1	26	3.0	Improbable	Good	Thin crown.
252	Norway Spruce	*Picea abies*	Non-Native	1	19	3.0	Improbable	Fair	Thinning; minor dieback; planted on slope.
253	Norway Spruce	*Picea abies*	Non-Native	1	17	2.5	Improbable	Good	Minor thinning; planted on top of slope.
254	White Spruce	*Picea glauca*	Native	1	17	2.0	Improbable	Good	Minor thinning.
255	White Spruce	*Picea glauca*	Native	1	22	2.5	Improbable	Excellent	
256	White Spruce	*Picea glauca*	Native	1	13	2.0	Improbable	Fair	Somewhat thin crown.
257	Colorado Spruce	*Picea pungens*	Non-Native	1	22	2.0	Improbable	Excellent	
258	Colorado Spruce	*Picea pungens*	Non-Native	1	14	2.0	Improbable	Good	Minor thinning; becoming girdled by old bracers, entire circumference.
259	Colorado Spruce	*Picea pungens*	Non-Native	1	15	2.0	Improbable	Good	Thinning.
260	White Spruce	*Picea glauca*	Native	2	18	2.5	Possible	Fair	Primary stem topped.
261	White Spruce	*Picea glauca*	Native	1	14	2.0	Improbable	Good	Planted on slope with minor erosion; minor thinning; healthy at base.
262	White Spruce	*Picea glauca*	Native	1	15	2.5	Improbable	Good	Heavy fruit set.
263	White Spruce	*Picea glauca*	Native	1	19	3.0	Improbable	Fair	Minor dieback; minor thinning.

Airport Road, Brampton Tree Preservation Plan
Tree Inventory Data

Tree Number	Common Name	Scientific Name	Native/ Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Comments
264	White Spruce	*Picea glauca*	Native	2	15	2.0	Possible	Fair	Crooked stems.
265	White Spruce	*Picea glauca*	Native	1	21	2.5	Improbable	Good	Lower crown thinning; slight lean.
266	European Mountain-Ash	*Sorbus aucuparia*	Non-Native	1	11	2.0	Improbable	Good	Healthy crown; debris on sloped base; minor exposed roots.
267	Colorado Spruce	*Picea pungens*	Non-Native	1	18	3.0	Improbable	Good	Minor vines; minor thinning.
268	Colorado Spruce	*Picea pungens*	Non-Native	1	11	1.5	Improbable	Good	Good form; vine in crown.
269	Colorado Spruce	*Picea pungens*	Non-Native	1	20	2.0	Improbable	Good	
270	Colorado Spruce	*Picea pungens*	Non-Native	1	19	2.0	Improbable	Good	Bare soil at base; thinning.
271	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	12	3.0	Improbable	Fair	Old pruning cuts only partially closed.
272	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	14	3.0	Improbable	Good	Pruned water sprouts at base.
273	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	16	3.0	Improbable	Good	Pronounced root flare; good vigour.
274	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	17	3.0	Improbable	Good	Slightly exposed roots; bare soil vulnerable to erosion around base.
275	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	11	2.5	Improbable	Good	Minor epicormic growth.
276	Colorado Spruce	*Picea pungens*	Non-Native	1	12	1.0	Improbable	Good	Slight lean; narrow upper crown.
277	White Spruce	*Picea glauca*	Native	1	11	1.0	Improbable	Good	Minor thinning.
278	Colorado Spruce	*Picea pungens*	Non-Native	1	15	2.0	Improbable	Excellent	
279	Norway Maple	*Acer platanoides*	Non-Native	1	13	2.0	Possible	Good	Exposed roots with injuries; tight branch angles with included bark.
280	Norway Maple	*Acer platanoides*	Non-Native	1	14	2.5	Improbable	Good	Minor damage to surface root; Christmas lights in crown.
281	Colorado Spruce	*Picea pungens*	Non-Native	1	11	1.0	Improbable	Excellent	No apparent problems.
282	White Spruce	*Picea glauca*	Native	1	10	2.0	Improbable	Good	Heavy fruit set.
283	Norway Maple	*Acer platanoides*	Non-Native	1	11	1.5	Improbable	Fair	Eroding around east side of flare.
284	Austrian Pine	*Pinus nigra*	Non-Native	1	15	2.0	Improbable	Good	Sap running.
285	Austrian Pine	*Pinus nigra*	Non-Native	1	17	1.5	Improbable	Good	Minor dieback.
286	White Spruce	*Picea glauca*	Native	1	13	2.0	Improbable	Excellent	
287	Manitoba Maple	*Acer negundo*	Native	2	13	3.5	Possible	Poor	Dead epicormic growth; codominant leaders; included bark; poor structure.
288	Norway Maple	*Acer platanoides*	Non-Native	1	12	2.0	Improbable	Good	Root flare under mulch.
289	White Spruce	*Picea glauca*	Native	1	11	2.0	Improbable	Fair	Minor dieback; minor thinning.
290	Colorado Spruce	*Picea pungens*	Non-Native	1	11	1.0	Improbable	Fair	Crown thinning.
291	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-Native	1	11	2.0	Improbable	Good	Minor damage to bark.
292	Norway Maple	*Acer platanoides*	Non-Native	1	10	2.0	Improbable	Good	Exposed damaged roots in mowed lawn. Proper use of mulch at base.
293	Norway Maple	*Acer platanoides*	Non-Native	1	14	2.5	Improbable	Good	Root flare under mulch.
294	White Spruce	*Picea glauca*	Native	1	14	1.5	Improbable	Good	
295	White Spruce	*Picea glauca*	Native	1	13	2.0	Improbable	Good	Minor dieback; minor thinning.
296	White Spruce	*Picea glauca*	Native	1	13	2.0	Improbable	Fair	Minor thinning; minor dieback. Old tree guard enveloped by trunk, transpiration above appears uninhibited.
297	Norway Maple	*Acer platanoides*	Non-Native	1	11	2.0	Improbable	Good	Vertical crack in stem.
298	Norway Maple	*Acer platanoides*	Non-Native	1	11	2.0	Improbable	Good	Exposed damaged roots in mowed lawn. Proper use of mulch at base.
299	Norway Maple	*Acer platanoides*	Non-Native	1	14	2.5	Improbable	Good	Root flare under mulch.
300	Norway Maple	*Acer platanoides*	Non-Native	1	13	2.0	Improbable	Good	Root flare under mulch.
301	White Spruce	*Picea glauca*	Native	1	11	1.5	Improbable	Good	Minor thinning; minor dieback. Old tree guard enveloped by trunk, transpiration above appears uninhibited.

Airport Road, Brampton Tree Preservation Plan
Tree Inventory Data

Tree Number	Common Name	Scientific Name	Native/ Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Comments
302	White Spruce	*Picea glauca*	Native	1	13	1.5	Improbable	Good	Minor thinning; minor dieback.
303	Norway Maple	*Acer platanoides*	Non-Native	1	11	2.0	Improbable	Good	Exposed damaged roots in mowed lawn. Proper use of mulch at base.
304	Norway Maple	*Acer platanoides*	Non-Native	1	14	2.0	Improbable	Good	Vertical seam with good compartmentalization.
305	White Spruce	*Picea glauca*	Native	1	12	1.5	Improbable	Good	Minor thinning; minor dieback.
306	Norway Maple	*Acer platanoides*	Non-Native	1	11	2.0	Improbable	Good	Minor insect defoliation; included bark.
307	Norway Maple	*Acer platanoides*	Non-Native	1	10	2.0	Improbable	Good	Minor insect defoliation.
308	Norway Maple	*Acer platanoides*	Non-Native	1	11	2.0	Improbable	Good	Minor leaf scorch.
309	Manitoba Maple	*Acer negundo*	Native	1	16	4.5	Improbable	Fair	Codominant leaders; included bark; vines; minor dieback.
310	Black Locust	*Robinia pseudoacacia*	Non-Native	2	21	5.0	Improbable	Fair	Dieback; codominant leaders; included bark.
311	Manitoba Maple	*Acer negundo*	Native	3	11	4.0	Improbable	Fair	Unbalanced crown; minor dieback.
312	Bur Oak	*Quercus macrocarpa*	Native	1	14	2.0	Improbable	Good	Dead minor epicormic growth.
313	Freeman's Maple	*Acer X freemanii*	Native	1	11	2.0	Improbable	Good	Exposed roots with lawnmower injuries; 1 tight branch angle.
314	Japanese Silk Lilac	*Syringa reticulata*	Non-Native	1	10	1.5	Improbable	Good	Poor branching form; unique peeling bark.
315	White Spruce	*Picea glauca*	Native	1	11	1.5	Improbable	Good	Small second leader from base.
316	White Spruce	*Picea glauca*	Native	1	14	1.5	Improbable	Good	Minor thinning.
317	Colorado Spruce	*Picea pungens*	Non-Native	1	12	2.0	Improbable	Good	Minor thinning.
318	Freeman's Maple	*Acer X freemanii*	Native	1	13	2.5	Improbable	Good	Minor vertical cracks.
319	Silver Maple	*Acer saccharinum*	Native	1	10	1.5	Improbable	Good	Exposed roots with lawnmower injuries; stem wound.
320	Freeman's Maple	*Acer X freemanii*	Native	1	10	2.0	Improbable	Fair	Healthy crown; significant damage to trunk, good compartmentalization.
321	Eastern White Pine	*Pinus strobus*	Native	1	11	2.0	Improbable	Fair	Crooked stem.
322	Colorado Spruce	*Picea pungens*	Non-Native	1	14	2.0	Improbable	Good	Limited new growth.
323	Colorado Spruce	*Picea pungens*	Non-Native	1	12	2.0	Improbable	Good	Limited new growth.
324	Eastern White Pine	*Pinus strobus*	Native	1	10	2.5	Improbable	Excellent	No apparent problems.
325	Eastern White Pine	*Pinus strobus*	Native	1	10	2.0	Improbable	Good	Crooked stem.
326	Colorado Spruce	*Picea pungens*	Non-Native	1	11	1.5	Improbable	Excellent	No apparent problems.
327	Colorado Spruce	*Picea pungens*	Non-Native	1	11	1.0	Improbable	Good	
328	Austrian Pine	*Pinus nigra*	Non-Native	1	13	2.0	Improbable	Excellent	
329	Austrian Pine	*Pinus nigra*	Non-Native	1	16	2.5	Improbable	Excellent	No apparent problems.
330	Colorado Spruce	*Picea pungens*	Non-Native	1	11	1.5	Improbable	Excellent	
331	Colorado Spruce	*Picea pungens*	Non-Native	1	12	1.0	Improbable	Excellent	
332	Colorado Spruce	*Picea pungens*	Non-Native	1	13	1.5	Improbable	Excellent	
333	Eastern White Cedar	*Thuja occidentalis*	Native	1	12	2.0	Improbable	Good	Minor dieback.
334	Eastern White Cedar	*Thuja occidentalis*	Native	1	13	2.0	Improbable	Excellent	No apparent problems.
335	Eastern White Cedar	*Thuja occidentalis*	Native	1	12	2.0	Improbable	Excellent	No apparent problems.
336	Colorado Spruce	*Picea pungens*	Non-Native	1	11	1.0	Improbable	Fair	Irregular crown.
337	Colorado Spruce	*Picea pungens*	Non-Native	1	12	1.0	Possible	Fair	Topped at one time, codominant leaders.
338	Colorado Spruce	*Picea pungens*	Non-Native	1	10	2.0	Improbable	Excellent	No apparent problems.
339	Colorado Spruce	*Picea pungens*	Non-Native	1	12	2.0	Improbable	Good	Minor dieback.
340	Colorado Spruce	*Picea pungens*	Non-Native	1	12	1.5	Improbable	Good	Minor dieback.
341	Freeman's Maple	*Acer X freemanii*	Native	1	13	2.0	Improbable	Good	Pruned water sprouts.
342	Colorado Spruce	*Picea pungens*	Non-Native	1	12	1.5	Improbable	Fair	Dieback.
343	Colorado Spruce	*Picea pungens*	Non-Native	1	13	1.5	Improbable	Fair	Dieback.
344	Colorado Spruce	*Picea pungens*	Non-Native	1	12	1.5	Improbable	Excellent	No apparent problems.
345	Freeman's Maple	*Acer X freemanii*	Native	1	15	2.5	Improbable	Good	Minor vertical crack on trunk; healthy crown, good structure.

Airport Road, Brampton Tree Preservation Plan
Tree Inventory Data

Tree Number	Common Name	Scientific Name	Native/ Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Comments
346	White Spruce	*Picea glauca*	Native	1	15	1.5	Improbable	Fair	Minor dieback.
347	Norway Spruce	*Picea abies*	Non-Native	1	12	1.5	Improbable	Poor	Significant defoliation.
348	White Spruce	*Picea glauca*	Native	1	14	2.0	Improbable	Excellent	
349	Colorado Spruce	*Picea pungens*	Non-Native	1	12	2.0	Improbable	Good	Minor thinning.
350	Colorado Spruce	*Picea pungens*	Non-Native	1	13	1.5	Improbable	Good	Minor leaf chlorosis.
351	Colorado Spruce	*Picea pungens*	Non-Native	1	13	2.0	Possible	Poor	40% dieback, root flare partly covered by mulch.
352	Bur Oak	*Quercus macrocarpa*	Native	1	17	2.5	Improbable	Fair	Leaf deformation (curling); mulched too deply.
353	Colorado Spruce	*Picea pungens*	Non-Native	1	14	2.0	Improbable	Fair	Yellowing of older needles; minor dieback.
354	Colorado Spruce	*Picea pungens*	Non-Native	1	14	1.5	Improbable	Fair	Thin crown; foliar chlorosis.
355	Colorado Spruce	*Picea pungens*	Non-Native	1	14	1.5	Improbable	Good	Thin crown.
356	Bur Oak	*Quercus macrocarpa*	Native	1	12	2.0	Improbable	Poor	Minor epicormic growth; minor dieback; root flare partly covered by mulch.
357	Colorado Spruce	*Picea pungens*	Non-Native	1	12	1.5	Improbable	Good	Thin crown.
358	Colorado Spruce	*Picea pungens*	Non-Native	1	11	2.0	Improbable	Poor	Older needles yellowing; dieback.
359	Colorado Spruce	*Picea pungens*	Non-Native	1	13	2.0	Improbable	Good	Older needles yellowing.
360	Bur Oak	*Quercus macrocarpa*	Native	1	13	2.0	Improbable	Fair	Leaf necrosis; minor epicormic growth.
361	Colorado Spruce	*Picea pungens*	Non-Native	1	14	2.0	Improbable	Excellent	No apparent problems.
362	Freeman's Maple	*Acer X freemanii*	Native	1	15	2.5	Improbable	Good	Root flare partly covered by mulch.
363	Freeman's Maple	*Acer X freemanii*	Native	1	17	2.5	Improbable	Good	Minor dieback; root flare partly covered by mulch.
364	Bur Oak	*Quercus macrocarpa*	Native	1	13	2.0	Improbable	Fair	Leaf scorch; minor dieback; root flare covered by mulch.
365	Bur Oak	*Quercus macrocarpa*	Native	1	19	3.0	Improbable	Good	Minor dieback; root flare covered by mulch.
366	Sugar Maple	*Acer saccharum ssp. saccharum*	Native	1	88	7.0	Possible	Poor	Main stem dead; chlorosis; possible habitat tree; fence through stem.
367	Sugar Maple	*Acer saccharum ssp. saccharum*	Native	1	66	6.0	Possible	Poor	Basal rot; 1 main stem dead; chlorosis; possible habitat tree.
368	Sugar Maple	*Acer saccharum ssp. saccharum*	Native	1	58	4.5	Probable	Very Poor	Root rot, fruiting bodies; main stem dead; chlorosis.

APPENDIX VII

Mammal Species Reported From the Study Area and Vicinity

Appendix VII
Bird Species Reported From the Study Area

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	TRCA Status[5]	OBBA[6] 17PJ04	NRSI Observed
Anatidae	**Ducks, Geese & Swans**							
Branta canadensis	Canada Goose	S5				L5	CO	CO
Aix sponsa	Wood Duck	S5				L4	PR	
Anas platyrhynchos	Mallard	S5				L5	CO	CO
Lophodytes cucullatus	Hooded Merganser	S5B, S5N				L3	PR	
Phasianidae	**Partridges, Grouse & Turkeys**							
Phasianus colchicus	Ring-necked Pheasant	SNA				L+	PO	
Bonasa umbellus	Ruffed Grouse	S4				L2	PR	
Meleagris gallopavo	Wild Turkey	S5				L3	PO	
Columbidae	**Pigeons & Doves**							
Columba livia	Rock Pigeon	SNA				L+	CO	X
Zenaida macroura	Mourning Dove	S5				L5	CO	PR
Cuculiformes	**Cuckoos & Anis**							
Coccyzus americanus	Yellow-billed Cuckoo	S4B				L3	CO	
Coccyzus erythropthalmus	Black-billed Cuckoo	S5B				L3	CO	
Caprimulgidae	**Goatsuckers**							
Chordeiles minor	Common Nighthawk	S4B	SC	T	Schedule 1	L3	PO	
Apodidae	**Swifts**							
Chaetura pelagica	Chimney Swift	S4B, S4N	THR	T	Schedule 1	L4	PR	
Trochilidae	**Hummingbirds**							
Archilochus colubris	Ruby-throated Hummingbird	S5B				L4	PO	
Rallidae	**Railes, Gallinules & Coots**							
Porzana carolina	Sora	S4B				L3	PO	
Charadriidae	**Plovers**							
Charadrius vociferus	Killdeer	S5B, S5N				L5	CO	PO
Laridae	**Gulls, Terns & Skimmers**							
Larus delawarensis	Ring-billed Gull	S5B, S4N				L4		X
Scolopacidae	**Waders**							
Gallinago delicata	Wilson's Snipe	S5B				L3	PO	
Scolopax minor	American Woodcock	S4B				L3	PR	
Actitis macularia	Spotted Sandpiper	S5				L4	CO	

Appendix VII
Bird Species Reported From the Study Area

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	TRCA Status[5]	OBBA[6] 17PJ04	NRSI Observed
Ardeidae	**Herons & Bitterns**							
Ardea herodias	Great Blue Heron	S4B				L3	PO	X
Butorides virescens	Green Heron	S4B				L4	PR	
Cathartidae	**Vultures**							
Cathartes aura	Turkey Vulture	S5B				L4	PO	
Accipitridae	**Hawks, Kites, Eagles & Allies**							
Circus cyaneus	Northern Harrier	S4B	NAR	NAR		L3	PO	
Accipiter striatus	Sharp-shinned Hawk	S5	NAR			L3	PR	
Accipiter cooperii	Cooper's Hawk	S4	NAR	NAR		L4	CO	
Buteo jamaicensis	Red-tailed Hawk	S5	NAR	NAR		L5	CO	PO
Strigidae	**Typical Owls**							
Megascops asio	Eastern Screech-Owl	S4	NAR	NAR		L4	CO	
Bubo virgianus	Great Horned Owl	S4				L4	CO	
Asio otus	Long-eared Owl	S4				L3	CO	
Alcedinidae	**Kingfishers**							
Megaceryle alcyon	Belted Kingfisher	S4B				L4	CO	
Picidae	**Woodpeckers**							
Sphyrapicus varius	Yellow-bellied Sapsucker	S5B				L3	PR	
Picoides pubescens	Downy Woodpecker	S5				L5	CO	
Picoides villosus	Hairy Woodpecker	S5				L4	CO	
Colaptes auratus	Northern Flicker	S4B				L4	CO	
Dryocopus pileatus	Pileated Woodpecker	S5				L3	CO	
Falconidae	**Caracaras & Falcons**							
Falco sparverius	American Kestrel	S4				L4	CO	
Tyrannidae	**Tyrant Flycatchers**							
Contopus virens	Eastern Wood-Pewee	S4B	SC	SC		L4	CO	
Empidonax alnorum	Alder Flycatcher	S5B				L4	PR	
Empidonax traillii	Willow Flycatcher	S5B				L4	CO	PR
Empidonax minimus	Least Flycatcher	S4B				L4	PR	
Sayornis phoebe	Eastern Phoebe	S5B				L5	CO	PO
Myiarchus crinitus	Great Crested Flycatcher	S4B				L4	CO	PO
Tyrannus tyrannus	Eastern Kingbird	S4B				L4	CO	PR
	Flycatcher Species							PO
Vireonidae	**Vireos**							
Vireo solitarius	Blue-headed Vireo	S5B				L3	PO	
Vireo gilvis	Warbling Vireo	S5B				L5	CO	PR
Vireo olivaceus	Red-eyed Vireo	S5B				L4	CO	

Appendix VII
Bird Species Reported From the Study Area

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	TRCA Status[5]	OBBA[6] 17PJ04	NRSI Observed
Corvidae	**Crows & Jays**							
Cyanocitta cristata	Blue Jay	S5				L5	CO	PR
Corvus brachyrhynchos	American Crow	S5B				L5	CO	
Alaudidae	**Larks**							
Eremophila alpestris	Horned Lark	S5B				L4	CO	
Hirundinidae	**Swallows**							
Progne subis	Purple Martin	S4B				L4	PO	
Tachycineta bicolor	Tree Swallow	S4B				L4	CO	
Stelgidopteryx serripennis	Northern Rough-winged Swallow	S4B				L4	CO	
Riparia riparia	Bank Swallow	S4B	THR	T		L4	CO	
Petrochelidon pyrrhonota	Cliff Swallow	S4B				L4	CO	CO
Hirundo rustica	Barn Swallow	S4B	THR	T		L4	CO	PR
Paridae	**Chickadees & Titmice**							
Poecile atricapillus	Black-capped Chickadee	S5				L5	CO	PR
Sittidae	**Nuthatches**							
Sitta canadensis	Red-breasted Nuthatch	S5				L4	CO	
Sitta carolinensis	White-breasted Nuthatch	S5				L4	CO	
Certhiidae	**Creepers**							
Certhia americana	Brown Creeper	S5B				L3	PR	
Troglodytidae	**Wrens**							
Troglodytes aedon	House Wren	S5B				L5	CO	
Troglodytes hiemalis	Winter Wren	S5B				L3	PO	
Cistothorus platensis	Sedge Wren	S4B	NAR	NAR		L3	PR	
Polioptilidae	**Gnatcatchers**							
Polioptila caerulea	Blue-gray Gnatcatcher	S4B				L4	CO	
Regulidae	**Kinglets**							
Regulus satrapa	Golden-crowned Kinglet	S5B				L3	PO	
Mussciciapidae	**Old worlk Flycatchers**							
Turdidae	**Thrushes**							
Catharus fuscescens	Veery	S4B				L3	CO	
Hylocichla mustelina	Wood Thrush	S4B	SC	T		L3	CO	
Turdus migratorius	American Robin	S5B				L5	CO	CO

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Bird Species Reported From the Study Area

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	TRCA Status[5]	OBBA[6] 17PJ04	NRSI Observed
Mimidae	**Mockingbirds, Thrashers & Allies**							
Dumetella carolinensis	Gray Catbird	S4B				L4	CO	PR
Toxostoma rufum	Brown Thrasher	S4B				L3	CO	
Mimus polyglottos	Northern Mockingbird	S4				L5	CO	
Sturnidae	**Starlings**							
Sturnus vulgaris	European Starling	SNA				L+	CO	CO
Bombycillidae	**Waxwings**							
Bombycilla cedrorum	Cedar Waxwing	S5B				L5	CO	PR
Passeridae	**Old World Sparrows**							
Passer domesticus	House Sparrow	SNA				L+	CO	PR
Fringillidae	**Finches & Allies**							
Carpodacus mexicanus	House Finch	SNA				L+	CO	PO
Carpodacus purpureus	Purple Finch	S4B				L4	PO	
Spinus tristis	American Goldfinch	S5B				L5	CO	PR
Parulidae	**Wood Warblers**							
Seiurus aurocapillus	Ovenbird	S4B				L3	PR	
Oreothlypis ruficapilla	Nashville Warbler	S5B				L3	PO	
Geothylpis philadelphia	Mourning Warbler	S4B				L3	CO	
Geothylpis trichas	Common Yellowthroat	S5B				L4	CO	PO
Setophaga citrina	Hooded Warbler	S4B	NAR	NAR	Schedule 1	L3	PO	
Setophaga ruticilla	American Redstart	S5B				L4	CO	
Setophaga petechia	Yellow Warbler	S5B				L5	CO	PR
Setophaga pensylvanica	Chestnut-sided Warbler	S5B				L3	PO	
Setophaga pinus	Pine Warbler	S5B				L3	PR	
Emberizidae	**New World Sparrows & Allies**							
Pipilo erythrophthalmus	Eastern Towhee	S4B				L3	CO	
Spizella passerina	Chipping Sparrow	S5B				L5	CO	
Spizella pallida	Clay-colored Sparrow	S4B				L3	CO	
Spizella pusilla	Field Sparrow	S4B				L4	CO	
Pooecetes gramineus	Vesper Sparrow	S4B				L3	PR	
Passerculus sandwichensis	Savannah Sparrow	S4B				L4	CO	
Ammodramus savannarum	Grasshopper Sparrow	S4B	SC	SC		L2	PO	
Melospiza melodia	Song Sparrow	S5B				L5	CO	PR
Melospiza georgiana	Swamp Sparrow	S5B				L4	PR	
Zonotrichia albicollis	White-throated Sparrow	S5B				L3	PR	

Appendix VII
Bird Species Reported From the Study Area

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	TRCA Status[5]	OBBA[6] 17PJ04	NRSI Observed
Cardinalidae	**Cardinals, Grosbeaks & Allies**							
Piranga olivacea	Scarlet Tanager	S4B				L3	PO	
Cardinalis cardinalis	Northern Cardinal	S5				L5	CO	PR
Pheucticus ludovicianus	Rose-breasted Grosbeak	S4B				L4	CO	
Passerina cyanea	Indigo Bunting	S4B				L4	CO	
Icteridae	**Blackbirds**							
Dolichonyx oryzivorus	Bobolink	S4B	THR	T	No Schedule	L3	CO	
Agelaius phoeniceus	Red-winged Blackbird	S4				L5	CO	CO
Sturnella magna	Eastern Meadowlark	S4B	THR	T	No Schedule	L4	CO	
Quiscalus quiscula	Common Grackle	S5B				L5	CO	PR
Molothrus ater	Brown-headed Cowbird	S4B				L5	CO	PR
Icterus spurius	Orchard Oriole	S4B				L5	CO	
Icterus galbula	Baltimore Oriole	S4B				L5	CO	PO
		Total					**106**	**33**

[1]MNRF 2014; [2]MNRF 2016; [3]COSEWIC 2016; [4]Government of Canada 2016; [5]Toronto Region Conservation Authority 2008b; [6]Cadman et al. 2007

Appendix VII
Bird Species Reported From the Study Area

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	TRCA Status[5]	OBBA[6] 17PJ04	NRSI Observed
LEGEND								
SRANK								
S1 Critically Imperiled								
S2 Imperiled								
S3 Vulnerable								
S4 Apparently Secure								
S5 Secure								
SU Unrankable								
SNA Unranked								
SX Presumed Extirpated								
SH Possibly Extirpated (Historical)								
S#? Rank Uncertain								
COSSARO								
END Endangered								
THR Threatened								
SC Special Concern								
NAR Not at Risk								
DD Data Deficient								
EXP Extirpated								
COSEWIC								
E Endangered								
T Threatened								
SC Special Concern								
NAR Not at Risk								
DD Data Deficient								
XT Extirpated								
SARA Schedule								
Schedule 1 Officially Protected under SARA								
TRCA								
L5 Generally Secure								
L4 Generally Secure (Rural), Of Concern (Urban)								
L3 Generally Secure (Natural), Regional Concern								
L2 Likely Rare, Regional Concern								
L1 Rare, Regional Concern								
LX Extirpated								
L+ Exotic								
Breeding Evidence Codes								
OB Observed								
PO Possible								
PR Probable								
CO Confirmed								

APPENDIX VIII

Aquatic Habitat Photolog

Tributary B to the West Humber River – Upstream of Airport Road

Photo 1 – Pool of standing water at upstream extent of reach

Photo 2 – Channel with limited water facing downstream towards Airport Road

Photo 3 – Phragmites lined pool and channel upstream of Airport Road

Photo 4 – Vegetation within channel at culvert under Airport Road

Tributary B to the West Humber River – Downstream of Airport Road

Photo 5 – Pool immediately downstream of culvert under Airport Road

Photo 6 – Culvert and Pool feature facing upstream towards Airport Road

Photo 7 – Facing upstream towards culvert, parallel to Airport Road

Photo 8 – Facing downstream showing run changing to riffle feature

Photo 9 – Created channel with cobble and riffle feature, downstream of Airport Road

Photo 10 – Substrates within riffle feature downstream of Airport Road

Tributary C to the West Humber River – Upstream of Airport Road

Photo 11 – Facing upstream from upper extent of reach showing dry channel

Photo 12 – Facing downstream from upper extent of reach

Photo 13 – Facing downstream towards culvert under Airport Road

Photo 14 – Vegetation within channel at culvert under Airport Road

Tributary C to the West Humber River – Downstream of Airport Road

Photo 15 – Phragmites/Cattail lined pool immediately downstream of Airport Road

Photo 16 – Cobble and dense vegetation within pool immediately downstream of Airport Road

Photo 17 – Facing towards Airport Road downstream of the culvert (flowing channel)

Photo 18 – Facing downstream within reach assessed

Photo 19 – Facing upstream towards Airport Road from downstream reach extent

APPENDIX IX

Ontario Ministry of Natural Resources and Forestry Background Information Response

Ministry of
Natural Resources
and Forestry
Aurora District Office
50 Bloomington Road
Aurora, Ontario L4G 0L8

Ministère des
Richesses naturelles
et des Forêts

Telephone: (905) 713-7400
Facsimile: (905) 713-7361

Ontario

August 1, 2017

Ryan Archer
Natural Resource Solutions Inc.
225 Labrador Drive, Unit 1
Waterloo, ON N2K 4M8
519-725-2227
rarcher@nrsi.on.ca

Re: Request for Information for Airport Road Improvements, City of Brampton, Regional Municipality of Peel

Dear Mr. Archer,

In your email dated June 8, 2017 you requested information on Fish Dot Data and Species at Risk occurring on or adjacent to Airport Road, between Stonecrest Drive/Braydon Boulevard and Countryside Drive, Brampton, Ontario. There are Species at Risk recorded for your study area. As of the date of this letter, MNRF has records of:

- REDSIDE DACE (Endangered)

Additionally, the species listed below have the potential to occur in your study area and may require further assessment or field studies to determine presence:

- SNAPPING TURTLE (Special Concern)
- WOOD THRUSH (Special Concern)

The species listed above may receive protection under the *Endangered Species Act, 2007* (ESA) and thus, an approval from MNRF may be required if the work you are proposing could cause harm to these species or their habitats. If the Species at Risk in Ontario List is amended, additional species may be listed and protected under the ESA or the status and protection levels of currently listed species may change.

Please be advised that two tributaries of the West Humber River (between Yellow Aven Boulevard/Brock Drive and Eagle Plains Drive) are within your projects' limits, and are contributing habitat to Redside Dace (endangered). MNRF is responsible for protecting this habitat under Ontario's Endangered Species Act, 2007. As defined under Ontario Regulation 242/08 (Section 29.1), the regulated habitat of Redside Dace includes contributing features which are streams, permanent or intermittent headwater drainage features, groundwater discharge areas or wetlands that augment or maintain the base flow, coarse sediment supply or surface water quality of areas currently known to be occupied by Redside Dace or areas which provide an opportunity for Redside Dace recovery / recolonization.

Please provide further details related to any proposed activities on your subject property. MNRF will provide advice related to contributing habitat features that may require further assessment in order to determine the extent of the habitat regulation applying to your subject area / property.

Additional natural heritage information including information on wetlands and Areas of Natural and Scientific Interest (ANSIs) can be obtained through Land Information Ontario (LIO).

We require more detailed information on the proposed project in order to assess the impacts of the works on Species at Risk. ***When project details have been determined***, please fill out an Information Gathering Form (IGF) for any *threatened* or *endangered* species listed in the provided letter and submit it to our office (to ESA.Aurora@ontario.ca). The IGF can be found here (along with its associated guide). Please include detailed descriptions of the undertakings such as proposed timing and phasing of the project and details on what is required at each phase.

All sections and tables should be filled out in their entirety – incomplete forms will be returned and may delay the review process. Any applicable supplemental information that will assist with the review process should also be submitted with the IGF (e.g. field survey results, site plan/drawings, ELC mapping, etc.). Please note that forms are reviewed in the order in which they are received by MNRF and we will contact you with our response once the review is complete.

Absence of information provided by MNRF for a given geographic area, or lack of current information for a given area or element, does not categorically mean the absence of sensitive species or features. Many areas in Ontario have never been surveyed and new plant and animal species records are still being discovered for many localities. For these reasons, the MNRF cannot provide a definitive statement on the presence, absence or condition of biological elements in any part of Ontario. If development or site alteration is proposed, surveys by a qualified professional may need to be undertaken in the future to confirm presence or absence of sensitive species or features.

This Species at Risk information is highly sensitive and is not intended for any person or project unrelated to this undertaking. Please do not include any specific information in reports that will be available for public record. As you complete your fieldwork in these areas, please report all information related to any Species at Risk to our office. This will assist with updating our database and facilitate early consultation regarding your project.

If you have any questions or comments, please do not hesitate to contact ESA.aurora@ontario.ca.

Sincerely,

Brianne Brothers

Brianne Brothers
Integrated Resource Management Technical Specialist
Ontario Ministry of Natural Resources and Forestry, Aurora District

APPENDIX X

Significant Wildlife Habitat Assessment

Appendix X. Significant Wildlife Habitat Assessment Tables

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Subject Properties
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Waterfowl Stopover and Staging Areas (Terrestrial)					
Rationale: Habitat important to migrating waterfowl.	American Black Duck Wood Duck Green-winged Teal Blue-winged Teal Mallard Northern Pintail Northern Shoveler American Wigeon Gadwall	CUM1 CUT1 - Plus evidence of annual spring flooding from melt water or run-off within these Ecosites.	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 (CAs) • 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 area of the flooded field ecosite habitat plus a 100-300m radius buffer dependent on local site conditions and adjacent land use is the significant wildlife habitat[cxlviii]. • 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). • SWHMiST[cxlix] Index #7 provides development effects and mitigation measures.	Suitable habitat not present within the study area **Not SWH**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Subject Properties
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Waterfowl Stopover and Staging Areas (Aquatic)					
Rationale: 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.	Canada Goose Cackling Goose Snow Goose American Black Duck Northern Pintail Northern Shoveler American Wigeon Gadwall Green-winged Teal Blue-winged Teal Hooded Merganser Common Merganser Lesser Scaup Greater Scaup Long-tailed Duck Surf Scoter White-winged Scoter Black Scoter Ring-necked Duck Common Goldeneye Bufflehead Redhead Ruddy Duck Red-breasted Merganser Brant Canvasback	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). Information Sources • 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[i] or more of listed species for 7 days[i], 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 K[cxlix] 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). • SWHMiST[cxlix] Index #7 provides development effects and mitigation measures.	Suitable habitat not present within the study area **Not SWH**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Subject Properties
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Shorebird Migratory Stopover Area					
Rationale: High quality shorebird stopover habitat is extremely rare and typically has a long history of use.	Greater Yellowlegs Lesser Yellowlegs Marbled Godwit Hudsonian Godwit Black-bellied Plover American Golden-Plover Semipalmated Plover Solitary Sandpiper Spotted Sandpiper Semipalmated Sandpiper Pectoral Sandpiper White-rumped Sandpiper Baird's Sandpiper Least Sandpiper Purple Sandpiper Stilt Sandpiper Short-billed Dowitcher Red-necked Phalarope Whimbrel Ruddy Turnstone Sanderling Dunlin Whimbrel	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. Information Sources • Western hemisphere shorebird reserve network. • Canadian Wildlife Service (CWS) Ontario Shorebird Survey. • Bird Studies Canada • Ontario Nature • Local birders and naturalist clubs • Natural Heritage Information Center (NHIC) Shorebird Migratory Concentration Area	Studies confirming: • Presence of 3 or more of listed species and > 1000 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 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] • SWHMiST[cxlix] Index #8 provides development effects and mitigation measures.	Suitable habitat not present within the study area **Not SWH**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Subject Properties
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Raptor Wintering Area					
Rational: Sites used by multiple species, a high number of individuals and used annually are most significant	Rough-legged Hawk Red-tailed Hawk Northern Harrier American Kestrel Snowy Owl Special Concern: Short-eared Owl Bald Eagle	Hawks/Owls: 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	The habitat provides a combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors. Raptor wintering 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, large trees and snags available for roosting Information Sources • OMNRF Ecologist or Biologist • Field Natural Clubs • Natural Heritage Information Center (NHIC) Raptor Winter Concentration Area • Data from Bird Studies Canada • Reports and other information available from Conservation Authorities CAs.	Studies confirm the use of these habitats by: • One or more Short-eared Owls or; One or more Bald Eagles or; At least 10 individuals and two listed hawk/owl species • 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 • The habitat area for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMiST[cxlix] Index #10 and #11 provides development effects and mitigation measures.	Suitable habitat not present within the study area **Not SWH**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Subject Properties
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Bat Hibernacula					
Rationale Bat hibernacula are rare habitats in 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. Information Sources • OMNRF for possible locations and contact for local experts • Natural Heritage Information Center (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 habitat area includes a 200m radius around the entrance of the hibernaculum[cxlviii, ccvii] for most. • 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] • SWHMiST[cxlix] Index #1 provides development effects and mitigation measures.	Suitable habitat not present within the study area **Not SWH**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Subject Properties
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Bat Maternity Colonies					
Rationale: Known locations of forested bat maternity colonies is 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] Information Sources • 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] • SWHMiS T[cxlix] Index #12 provides development effects and mitigation measures.	Suitable forest habitat exists within the study area. However it is far enough removed from the ROW that impacts are not anticipated. **Candidate SWH (outside ROW)**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Subject Properties
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Bat Migratory Stopover Area					
	Hoary Bat Eastern Red Bat Silver-haired Bat	No specified 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 migrations concentrate these species of bats at stopover areas. The location and characteristics of stopover habitats are generally unknown. Information Sources • OMNR for possible locations and contact for local experts • University of Waterloo, Biology Department	Long Point has been identified as a significant stopover 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. • SWHDSS[cxlix] Index #38 provides development effects and mitigation measures	Suitable habitat not present within the study area **Not SWH**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Subject Properties
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Turtle Wintering Area					
Rationale: Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant	Midland Painted Turtle Special Concern: 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. Information Sources • EIS studies carried out by Conservation Authorities. • Local field naturalists and experts, as well as university herpetologists may also know where to find some of these sites. • OMNRF ecologist or biologist • Natural Heritage Information Center (NHIC)	• Presence of 5 over-wintering Midland Painted Turtles is significant. • One or more Northern Map Turtle or Snapping Turtle over-wintering within a wetland is significant. • 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]. • SWHMiST[cxlix] Index #28 provides development effects and mitigation measures for turtle wintering habitat.	A suitable overwintering pond exists within the study area. However it is far enough removed from the ROW that impacts are not anticipated. **Candidate SWH (outside ROW)**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Subject Properties
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Snake Hibernaculum					
Rationale: Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant	Snakes: Eastern Gartersnake Northern Watersnake Northern Red-bellied Snake Northern Brownsnake Smooth Green Snake Northern Ring-necked Snake Special Concern: Milksnake Eastern Ribbonsnake Lizard: Special Concern (Southern Shield population): Five-lined Skink	For all snakes, habitat may be found in any ecosite other than very wet ones. Talus, Rock Barren, Crevice and 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 Five-lined Skink, ELC Community Series of FOD and FOM and Ecosites: FOC1 FOC3	• For snakes, hibernation takes place in sites located below frost lines in burrows, rock crevices and other natural locations. The existence of features that go below the frost line; such as rock piles or slopes, old stone fences, and abandoned crumbling foundations assist in identifying candidate SWH. • 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. • Five-lined skink prefer mixed forests with rock outcrop openings providing cover rock overlaying granite bedrock with fissures cciii. Information Sources • 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 from CAs. • Local Field naturalists and experts, as well as university herpetologists may also know where to find some of these sites. clubs • Natural Heritage Information Center (NHIC) • OMNRF ecologist or biologist may be aware of locations of wintering skinks	Studies confirming: • Presence of snake hibernacula used by a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. • Congregations of a minimum of five individuals of a snake sp. or; 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). • Note: If there are Special Concern Species present, then site is SWH • Note: 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 feature in which the hibernacula is located plus a 30m buffer is the SWH[i] • SWHMiST[cxlix] Index #13 provides development effects and mitigation measures for snake hibernacula. • Presence of any active hibernaculum for skink is significant. • SWHMiST[cxlix] Index #37 provides development effects and mitigation measures for five-lined skink wintering habitat.	The ROW embankments adjacent to watercourse crossings have the potential to provide access to hibernacula. However, no snakes were observed within or adjacent to the ROW during site investigations. **Not SWH**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Subject Properties
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Colonially - Nesting Bird Breeding Habitat (Bank and Cliff)					
Rationale: 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 populations are declining in Ontario.	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. Information Sources • Reports and other information available from CAs • Ontario Breeding Bird Atlas [ccv] • Bird Studies Canada; *NatureCounts* http://www.birdscanada.org/birdmon/ • Field Naturalist clubs	Studies confirming: • Presence of 1 or more nesting sites with 8[cxlvix] or 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[ccvii] • 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] • SWHMiST[cxlix] Index #4 provides development effects and mitigation measures	Suitable habitat not present within the study area **Not SWH**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Subject Properties
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Colonially - Nesting Bird Breeding Habitat (Tree/Shrubs)					
Rationale: Large Colonies are important to local bird population, typically sites are only known colony in area and are used annually.	Great Blue Heron Black-crowned Night-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 15m from ground, near the top of the tree. Information Sources • Ontario Breeding Bird Atlas[ccv], colonial nest records. • Ontario Heronry Inventory 1991 available from Bird Studies Canada or NHIC (OMNR). • NHIC Mixed Wader Nesting Colony • Aerial photographs can help identify large heronries • Reports and other information available from CAs • MNRF District Offices • Local naturalist clubs	Studies confirming: • Presence of 5[l] or more active nests of Great Blue Heron or other listed species. • The habitat extends from 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 • SWHMiST[cxlix] Index #5 provides development effects and mitigation measures.	Suitable habitat not present within the study area **Not SWH**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Subject Properties
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Colonially - Nesting Bird Breeding Habitat (Ground)					
Rationale: Colonies are important to local bird populations, typically sites are only known colony in area and are used annually.	Herring Gull Great Black-backed Gull Little Gull Ring-billed Gull Common Tern Caspian Tern Brewer's Blackbird	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. Information Sources • Ontario Breeding Bird Atlas[ccv], rare/colonial species records. • Canadian Wildlife Service • Reports and other information available from CAs • Natural Heritage Information Center (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[i]. • 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 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, ccvii] • Studies would be done during May/June when actively nesting. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMiST[cxlix] Index #6 provides development effects and mitigation measures.	Suitable habitat not present within the study area **Not SWH**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Subject Properties
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Migratory Butterfly Stopover Areas					
Rationale: Butterfly stopovers areas are extremely rare habitats and are biologically important for butterfly species that migrate south for the winter.	Painted Lady Red Admiral Special Concern: Monarch	Combination of ELC Community Series: Need to have present one Community Series from each landclass: Field: CUM CUS CUT Forest: FOC FOM FOD CUP Anecdotally, a candidate sight 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 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]. Information Sources • OMNRF (NHIC) • Agriculture Canada in Ottawa may have list of butterfly experts. • Field Naturalist Clubs • Toronto Entomologists Association • Conservation Authorities	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]. • Observational studies are to be completed and need to be done frequently during the migration period to estimate MUD • MUD of >5000 or >3000 with the presence of Painted Ladies or Red Admiral's is to be considered significant. • SWHMiST[cxlix] Index #16 provides development effects and mitigation measures.	The study area is not located within 5km of Lake Ontario. **Not SWH**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Subject Properties
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Landbird Migratory Stopover Areas					
Rationale: Sites with a high diversity of species as well as high number 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 need to be >10 ha[i] in size and within 5km [iv, v, vi, vii, viii, ix, x, xi, xii, xiii, xiv, xv] of Lake Ontario. • If multiple woodlands are located along the shoreline, those woodlands <2km from 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 Ontario are Candidate SWH[cxlviii]. Information Sources • Bird Studies Canada • Ontario Nature • Local birders and 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 dates. 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] • SWHMiST[cxlix] Index #9 provides development effects and mitigation measures.	The study area is not located within 5km of Lake Ontario. **Not SWH**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Subject Properties
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Deer Winter Congregation Areas					
Rationale: Deer movement during winter in the southern areas of Ecoregion 6E 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 50ha may also be used.	• Woodlots will typically be >100 ha in size. Woodlots <100ha may be considered as significant based on MNRF studies or assessment. • Deer movement during winter in the southern areas of Eco-region 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands[cxlviii]. • If deer are constrained by snow depth refer to the Deer Yarding Area habitat within Table 1.1 of this Schedule. • 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[ccxxiv]. • Woodlots with high densities of deer due to artificial feeding are not significant. Information Sources • 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 MNR[i]. • 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]. • If a SWH is determined for Deer Wintering Area of if a proposed development is within Stratum II yarding area then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. • SWHMiST[cxlix] Index #2 provides development effects and mitigation measures.	No deer overwintering habitat has been mapped within several kilometers of the study area by the MNRF **Not SWH**

Appendix X. Significant Wildlife Habitat Assessment Tables

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 7E.

Rare Vegetation Community[1]	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes[1]	Habitat Description[1]	Detailed Information and Sources[1]	Defining Criteria[1]	Assessment Details
Cliff 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 District • Natural Heritage Information Center (NHIC) has location information on their website • Local naturalist clubs • Conservation Authorities	• Confirm any ELC Vegetation Type for Cliffs or Talus Slopes[lxxviii] • SWHMiST[cxlix] Index #21 provides development effects and mitigation measures.	Vegetation community type not present within the study area. **Not SWH**

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 7E.

Rare Vegetation Community[1]	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes[1]	Habitat Description[1]	Detailed Information and Sources[1]	Defining Criteria[1]	Assessment Details
Sand Barrens					
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%.	Any sand barren area, >0.5ha in size. Information Sources • OMNRF Districts. • Natural Heritage Information Center (NHIC) has location information 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]. • SWHMiST[cxlix] Index #20 provides development effects and mitigation measures.	Vegetation community type not present within the study area. **Not SWH**

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 7E.

Rare Vegetation Community[1]	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes[1]	Habitat Description[1]	Detailed Information and Sources[1]	Defining Criteria[1]	Assessment Details
Alvar					
Rationale: Alvars are extremely rare habitats in Ecoregion 6E. Most alvars in Ontario are in Ecoregion 6E and 7E. Alvars in 6E are small and highly localized just north of the Palaeozoic-Precambrian contact.	ALO1 ALS1 ALT1 FOC1 FOC2 CUM2 CUS2 CUT2-1 CUW2 Five Alvar Indicator Species: 1) Carex crawei 2) Panicum philadelphicum 3) Eleochairs compressa 4) Scutellaria parvula 5) Trichostema branchiatum These indicator species are very specific to Alvars within Ecoregion 6E	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 zoo geographically 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]. Information Sources • Alvars of Ontario (2000), Federation of Ontario Naturalists[lxxvi]. • Ontario Nature – Conserving Great Lakes Alvars[ccviii]. • Natural Heritage Information Center (NHIC) has location information on their website • Field Naturalist clubs • Conservation Authorities	Field studies 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 are exotics sp.). • The alvar must be in excellent condition and fit in with surrounding landscape with few conflicting land uses[lxxv]. • SWHMiST[cxlix] Index #17 provides development effects and mitigation measures.	Vegetation community type not present within the study area. **Not SWH**

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 7E.

Rare Vegetation Community[1]	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes[1]	Habitat Description[1]	Detailed Information and Sources[1]	Defining Criteria[1]	Assessment Details
Old Growth Forest					
Rationale: Due to historic logging practices, extensive old growth forest is rare in the Ecoregion. Interior habitat provided by old growth forests is required by many wildlife species.	Forest Community Series: FOD FOC FOM SWD SWC 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 Stands areas 30ha or greater in size or with at least 10 ha interior habitat assuming 100m buffer at edge of forest Í. Information Sources • OMNRF Forest Resource Inventory mapping • OMNRF Forester, Ecologist or Biologist • Field Local naturalist clubs • Conservation Authorities • Sustainable Forestry License (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] • The area of Forest Ecosites combined to make up the stand is the SWH. • Determine ELC Vegetation Type for forest stand[lxxviii] • SWHDSS[cxlix] Index #23 provides development effects and mitigation measures.	Vegetation community type not present within the study area. **Not SWH**

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 7E.

Rare Vegetation Community[1]	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes[1]	Habitat Description[1]	Detailed Information and Sources[1]	Defining Criteria[1]	Assessment Details
Savannah					
Rationale: Savannahs are extremely rare habitats in Ontario.	TPS1 TPS2 TPW1 TPW2 CUS2	A Savannah is a tallgrass prairie habitat that has tree cover between 25 – 60%.	• No minimum size to site Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. Information Sources • Natural Heritage Information Center (NHIC) has location information on their website • OMNRF Ecologists • Field naturalists clubs • Conservation Authorities	Field studies confirm one or more of the Savannah indicator species listed in[lxxv] Appendix N should be present. Note: Savannah plant spp. list from Ecoregion 6E 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 sp.). • SWHMiST[cxlix] Index #18 provides development effects and mitigation measures.	Vegetation community type not present within the subject property. **Not SWH**

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 7E.

Rare Vegetation Community[1]	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes[1]	Habitat Description[1]	Detailed Information and Sources[1]	Defining Criteria[1]	Assessment Details
Tallgrass Prairie					
Rationale: 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.	• No minimum size to site Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. Information Sources • OMNR Districts • Natural Heritage Information Center (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. Note: Prairie plant spp. list from Ecoregion 6E 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). • SWHMiST[cxlix] Index #19 provides development effects and mitigation measures.	Vegetation community type not present within the study area. **Not SWH**

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 7E.

Rare Vegetation Community[1]	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes[1]	Habitat Description[1]	Detailed Information and Sources[1]	Defining Criteria[1]	Assessment Details
Other Rare Vegetation Communities					
Rationale: 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 OMNR/NHIC will have up to date listing for rare vegetation communities. Information Sources • Natural Heritage Information Center (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. • SWHMiST[cxlix] Index #37 provides development effects and mitigation measures.	Rare vegetation community types not present within the study area. **Not SWH**

Appendix X. Significant Wildlife Habitat Assessment Tables

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Waterfowl Nesting Area					
Rationale: Important to local waterfowl populations, sites with greatest number of species and highest number of individuals are significant.	American Black Duck Northern Pintail Northern Shoveler Gadwall Blue-winged Teal Green-winged Teal Wood Duck Hooded Merganser Mallard	All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SWT1 SWT2 SWD1 SWD2 SWD3 SWD4 Note: includes adjacency to Provincially Significant Wetlands	A waterfowl nesting area extends 120m[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 120m of each individual wetland where waterfowl nesting is known to occur[cxlix]. • Upland areas should be at least 120m wide so that predators such as raccoons, skunks, and foxes have difficulty finding nests. • Wood Ducks and Hooded Mergansers utilize large diameter trees (>40cm dbh) in woodlands for cavity nest sites. Information Sources • 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 CAs	Studies confirmed: • Presence of 3 or more nesting pairs for listed species excluding Mallards, or • Presence of 10 or more nesting pairs for listed species including Mallards. • 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 120m[cxlviii] from the wetland and will provide enough habitat for waterfowl to successfully nest. • SWHMiST[cxlix] Index #25 provides development effects and mitigation measures.	Suitable habitat not present within the study area **Not SWH**

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Bald Eagle and Osprey Nesting, Foraging and Perching Habitat					
Rationale: Nest sites are fairly uncommon in Eco-region 6E are used annually by these species. Many suitable nesting locations may be lost due to increasing shoreline development pressures and scarcity of habitat.	Osprey Special Concern: 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). Information Sources • Natural Heritage Information Center (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 Districts • Sustainable Forestry License (SFL) companies will identify additional nesting locations through field operations. • Check the Ontario Breeding Bird Atlas[ccv] or Rare Breeding Birds in Ontario for species documented • Reports and other information available from CAs. • 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 300m radius around the nest or the contiguous woodland stand is the SWHccvii, maintaining undisturbed shorelines with large trees within this area is important[cxlviii]. • For a Bald Eagle the active nest and a 400-800m radius around the nest is the SWH[cvi], ccvii. Area of the habitat from 400-800m is dependent 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] • SWHMiST[cxlix] Index #26 provides development effects and mitigation measures	Suitable habitat not present within the study area **Not SWH**

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Woodland Raptor Nesting Habitat					
Rationale: Nests sites for these species are rarely identified; these area sensitive habitats and are often used annually by these species.	Northern Goshawk Cooper's Hawk Sharp-shinned Hawk Red-shouldered Hawk Barred Owl Broad-winged 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 >10ha 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 Cooper's 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. Information Sources • OMNRF • Check the Ontario Breeding Bird Atlas[ccv] or Rare Breeding Birds in Ontario for species documented. • Check data from Bird Studies Canada • Reports and other information available from CAs	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 28ha area of habitat is the SWH[ccvii]. • 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. • SWHMiST[cxlix] Index #27 provides development effects and mitigation measures.	Suitable habitat not present within the study area **Not SWH**

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Turtle Nesting Area					
Rationale: These habitats are rare and when identified will often be the only breeding site for local populations of turtles	Midland Painted Turtle Special Concern: Northern Map Turtle Snapping Turtle	Exposed mineral soil (sand or gravel) areas adjacent (<100m)[cxlviii] or within the following ELC Ecosites: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 BOO1 FEO1	• 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. Information Sources • 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 Center (NHIC) • Field Naturalist clubs and landowners	Studies confirm: • Presence of 5 or more nesting Midland Painted Turtles • One or more Northern Map Turtle or Snapping Turtle nesting is a SWH[i] • 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 dependent 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[cxlix]. • 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. • SWHMiST[cxlix] Index #28 provides development effects and mitigation measures for turtle nesting habitat.	Suitable habitat not present within the study area **Not SWH**

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Seeps and Springs					
Rationale: Seeps/Springs are typical of headwater areas and are often at the source of coldwater streams.	Wild Turkey Ruffed Grouse Spruce Grouse White-tailed Deer Salamander spp.	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] Information Sources • Topographical Map • Thermography • Hydrological surveys conducted by CAs 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 seeps/springs should be considered SWH. • The area of a ELC forest 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[cxlviii] • SWHMiST[cxlix] Index #30 provides development effects and mitigation measures	The study area is not located in a headwaters area. No seeps or springs were observed. **Not SWH**

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Amphibian Breeding Habitat (Woodland)					
Rationale: These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations.	Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Western Chorus Frog Wood Frog	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD 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) >500m^2 (about 25m diameter) [ccvii] within or adjacent (within 120m) to a woodland (no minimum size)[clxxxii, lxiii, lxv, lxvi, lxvii, lxviii, lxix, lxx] 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] Information Sources • 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 District • OMNRF 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)[lxxi] or 2 or more of the listed frog species with Call Level Codes of 3. • 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 woodland/wetlands. • The habitat is the woodland 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 the be included in the habitat. • SWHMiST[cxlix] Index #14 provides development effects and mitigation measures.	Suitable wetland habitat exists within the study area. However it is far enough removed from the study area ROW that impacts are not anticipated. **Candidate SWH (outside ROW)**

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Amphibian Breeding Habitat (Wetland)					
Rationale: These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Tree frog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	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)[ccvii] 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[clxxxiv]. • 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. Information Sources • 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 CAs.	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 and with at least 20 individuals (adults or eggs masses)[lxxi, lxxiii], 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 spring March to 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. • SWHMiST[cxlix] Index #15 provides development effects and mitigation measures.	Suitable habitat not present within the study area **Not SWH**

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
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.	Yellow-Bellied Sapsucker Red-breasted Nuthatch Veery Blue-headed Vireo Northern Parula Black-throated Green Warbler Blackburnian Warbler Black-throated Blue Warbler Ovenbird Scarlet Tanager Winter Wren Special Concern: Cerulean Warbler Canada 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, cxxv, cxxvi, cxxxvii, cxxxviii, cxxxix, cxl, cxli, cxlii, cxliii, cxliv, cxlv, cxlvi, cl, cli, clii, cliii, cliv, clv, clvii, clviii, clix] • Interior forest habitats are at least 200m from forest edge habitat. Information Sources • Local bird 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 greatest value to interior species • Reports and other information available from CAs.	• 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] • SWHMiST[cxlix] Index #34 provides development effects and mitigation measures.	Suitable habitat not present within the study area **Not SWH**

Appendix X. Significant Wildlife Habitat Assessment Tables

Table 4. Characteristics of Habitat for Species of Conservation Concern for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Marsh Bird Breeding Habitat					
Rationale: Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes.	American Bittern Virginia Rail Sora Common Gallinule American Coot Pied-billed Grebe Marsh Wren Sedge Wren Common Loon Sandhill Crane Green Heron Trumpeter Swan Special Concern: Black Tern Yellow Rail	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SAS1 SAM1 SAF1 FEO1 BOO1 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. Information Sources • Contact OMNRF, wetland evaluations are a good source of information. • Field naturalist clubs • Natural Heritage Information Center (NHIC) Records • Reports and other information available from CAs. • Ontario Breeding Bird Atlas[ccv]	Studies confirm: • Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren or 1 pair of Sandhill Cranes; or breeding by any combination of 5 or more of the listed species[j]. • Note: any wetland with breeding of 1 or more Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is SWH[j]. • 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"[ccxi]. • SWHMiST[cxlix] Index #35 provides development effects and mitigation measures	Suitable habitat not present within the study area **Not SWH**

Table 4. Characteristics of Habitat for Species of Conservation Concern for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Open Country Bird Breeding Habitat					
Rationale: 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.	Upland Sandpiper Grasshopper Sparrow Vesper Sparrow Northern Harrier Savannah Sparrow Special Concern: 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)[i]. 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. Information Sources • Agricultural land classification maps, Ministry of Agriculture. • Ask local birders • Ontario Breeding Bird Atlas[ccv] • Reports and other information available from CAs.	Field Studies confirm: • Presence of nesting or breeding of 2 or more of the listed species. • A field with 1 or more breeding Short-eared Owl 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]. • SWHMiST[cxlix] Index #32 provides development effects and mitigation measures.	Suitable habitat not present within the study area **Not SWH**

Table 4. Characteristics of Habitat for Species of Conservation Concern for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: 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.: Field Sparrow Black-billed Cuckoo Eastern Towhee Willow Flycatcher Special Concern: Yellow-breasted Chat Golden-winged Warbler	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[cbxiv] 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)[i]. Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species [cbxiii]. 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[ccv] • Reports and other information available from CAs	Field Studies confirm: • Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species[i]. • A field with breeding Yellow-breasted Chat or Golden-winged Warbler is to be considered as Significant Wildlife Habitat. • 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] • SWHMiST[cxlix] Index #33 provides development effects and mitigation measures.	Suitable habitat not present within the study area **Not SWH**

Table 4. Characteristics of Habitat for Species of Conservation Concern for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: 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	Wet meadow and edges of shallow marshes (no minimum size) identified 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 marsh meadow 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 during in temporary or permanent water Note the presence of burrows or chemistry are often the only indicator of presence, observance or collection of individuals is very difficult[cci] • SWHMiST[cxlix] Index #36 provides development effects and mitigation measures.	Terrestrial crayfish habitat was previously documented in the study area, but located well outside of (approximately 100m from) the Airport Road ROW. No crayfish chimneys were observed within or immediately adjacent to the ROW, or elsewhere within the study area, during NRSI surveys. **Confirmed SWH (outside ROW)**

Table 4. Characteristics of Habitat for Species of Conservation Concern for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Special Concern and Rare Wildlife Species					
Rationale: 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.	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]. Information Sources • Natural Heritage Information Centre (NHIC) will have the 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[ccv] • 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 to be easily mapped and cover an important life stage component for a species e.g. specific nesting habitat or foraging habitat. • SWHMiST[cxlix] Index #37 provides development effects and mitigation measures.	Suitable movement habitat for the SCC Snapping Turtle exists within the study area; see the SAR habitat screening table for SCC, although no Snapping Turtles were observed during field investigations. SCC habitat is also present for Amber-winged Spreadwing, Lilypad Clubtail, Western Chorus Frog and Wood Thrush, but is sufficiently removed from the ROW that no impacts are anticipated. **Candidate SWH for Snapping Turtle Habitat within ROW**

Appendix X. Significant Wildlife Habitat Assessment Tables

Table 5. Characteristics of Animal Movement Corridors for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Amphibian Movement Corridors					
Rationale: Movement corridors for amphibians moving from their terrestrial habitat to breeding habitat can be extremely important for local populations.	Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	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]. Information Sources • MNRF District Office • Natural Heritage Information Center NHIC • Reports and other information available from CAs • 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. Cooridors 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]. • SWHMiST[cxlix] Index #40 provides development effects and mitigation measures.	The study area contains suitable movement corridor conditions for amphibians, which may travel between wetland and upland features upstream/downstream of the study area watercourse reaches. **Candidate SWH**