# New Watermain South of Williams Parkway: Schedule B Class Environmental Assessment

## Natural Features Impact Report

FES1124201701TOR | 4

December 3, 2020

**Region of Peel**

# New Watermain South of Williams Parkway: Schedule B Class Environmental Assessment

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# Acronyms and Abbreviations

| | |
|---|---|
| < | less than |
| °C | degree(s) Celsius |
| ANSI | Area of Natural or Scientific Interest |
| BF | Beaufort Scale |
| COSEWIC | Committee on the Status of Endangered Wildlife in Canada |
| COSSARO | Committee on the Status of Species at Risk in Ontario |
| DFO | Fisheries and Oceans Canada |
| EA | Environmental Assessment |
| ELC | Ecological Land Classification |
| ESA | Endangered Species Act |
| GIS | geographic information systems |
| $km^2$ | square kilometre(s) |
| LIO | Lands Information Database |
| M | metre(s) |
| MECP | Ministry of the Environment, Conservation and Parks |
| MNRF | Ministry of Natural Resources and Forestry |
| NHIC | Natural Heritage Information Centre |
| OBBA | Ontario Breeding Bird Atlas |
| ORAA | Ontario Reptile and Amphibian Atlas |
| PSW | Provincially Significant Wetland |
| ROW | Right of Way |
| SAR | Species at Risk |
| *SARA* | *Species at Risk Act, 2002* |
| TRCA | Toronto and Region Conservation Authority |

# 1. Introduction

## 1.1 Project Summary

The Region of Peel has initiated a Class Environmental Assessment (EA) Study for a new 750-millimetre (mm) Feedermain to bring additional capacity to Brampton's downtown core. Jacobs is conducting a natural features assessment to support the EA of the new 750 mm Feedermain. Because the project includes installing a new 750 mm Feedermain potentially proximal to natural features, a natural heritage investigation is required to evaluate the alternatives for the Feedermain alignments and to make recommendations for impact mitigation at the preferred location.

The project location occurs within the City of Brampton and is bordered by Williams Parkway and Queen Street to the north and south, respectively, and by Main Street and Kennedy Road South to the west and east, respectively (Study Area) (Figure 1). The main natural feature of interest is Etobicoke Creek, which flows southeasterly through the Study Area. The Etobicoke Creek Recreational Trail system is adjacent to Etobicoke Creek and within the Study Area.

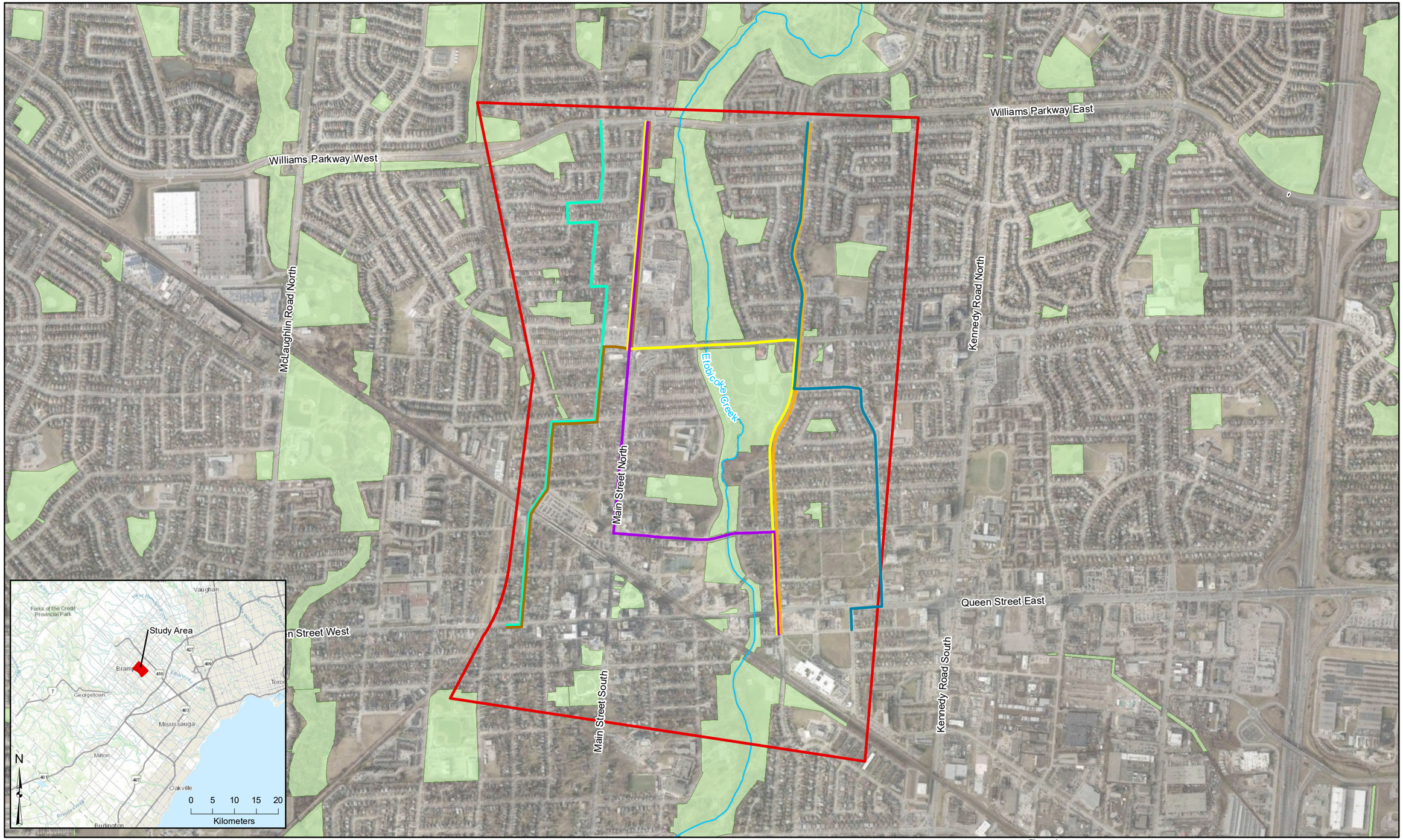
The environmental sensitivities present within the Study Area, as determined by a records review and site visits, are documented in the Natural Features Assessment Report (dated March 2, 2019) along with information on the background search, existing site conditions, and next steps. A Shortlist of Alternatives has been provided which include Alternatives 2A, 2B, 4B, 4C, 4D and 5 (Figure 1) which has been developed from the Long List of Alternatives. The basis of the Natural Features Impact Report is to carry over the information from the Natural Features Assessment Report and to provide an impact assessment analysis of the Shortlist of Alternatives and how these Alternatives may have adverse effects on natural features. As well, this report will provide recommendations on general mitigation which should be implemented at the Detailed Design stage. It should be noted that mitigation should be further refined once the EA is approved and the project proceeds with design. This report will also discuss the likely natural environment permitting which will be required and next steps.

Table 1-1 provides information on the Shortlist of Alternatives and Figure 1 represents the proposed watermain alignment routes.

Table 1-1 Shortlist of Alternatives

| Alternative | Description |
|---|---|
| **2A** | Route alignment along Centre Street Right of Way (ROW). Avoids work near Etobicoke Creek. |
| **2B** | Route alignment along Centre Street and Beech Street ROW. Avoids work near Etobicoke Creek. |
| **4B** | Route alignment along Main Street, Vodden Street and Centre Street ROW. Etobicoke Creek crossing is required. |
| **4C** | Route alignment along Main Street ROW and residential streets, west of Main Street. |
| **4D** | Route alignment along Main Street, Church Street and Centre Street ROW. Etobicoke Creek crossing is required. |
| **5** | Route alignment follows smaller residential streets, west of Main Street. |

Figure 1 Study Area




Notes:
1. Aerial Source: City of Brampton, 2018.
2. Watercourse Source: Land Information Ontario.
3. Parks Source: City of Brampton, 2016.

**Figure 1**
Study Area
Natural Features Impact Report
*New Watermain to Service Downtown Brampton: Schedule B Class Environmental Assessment*
*Region of Peel*
*Brampton, Ontario*

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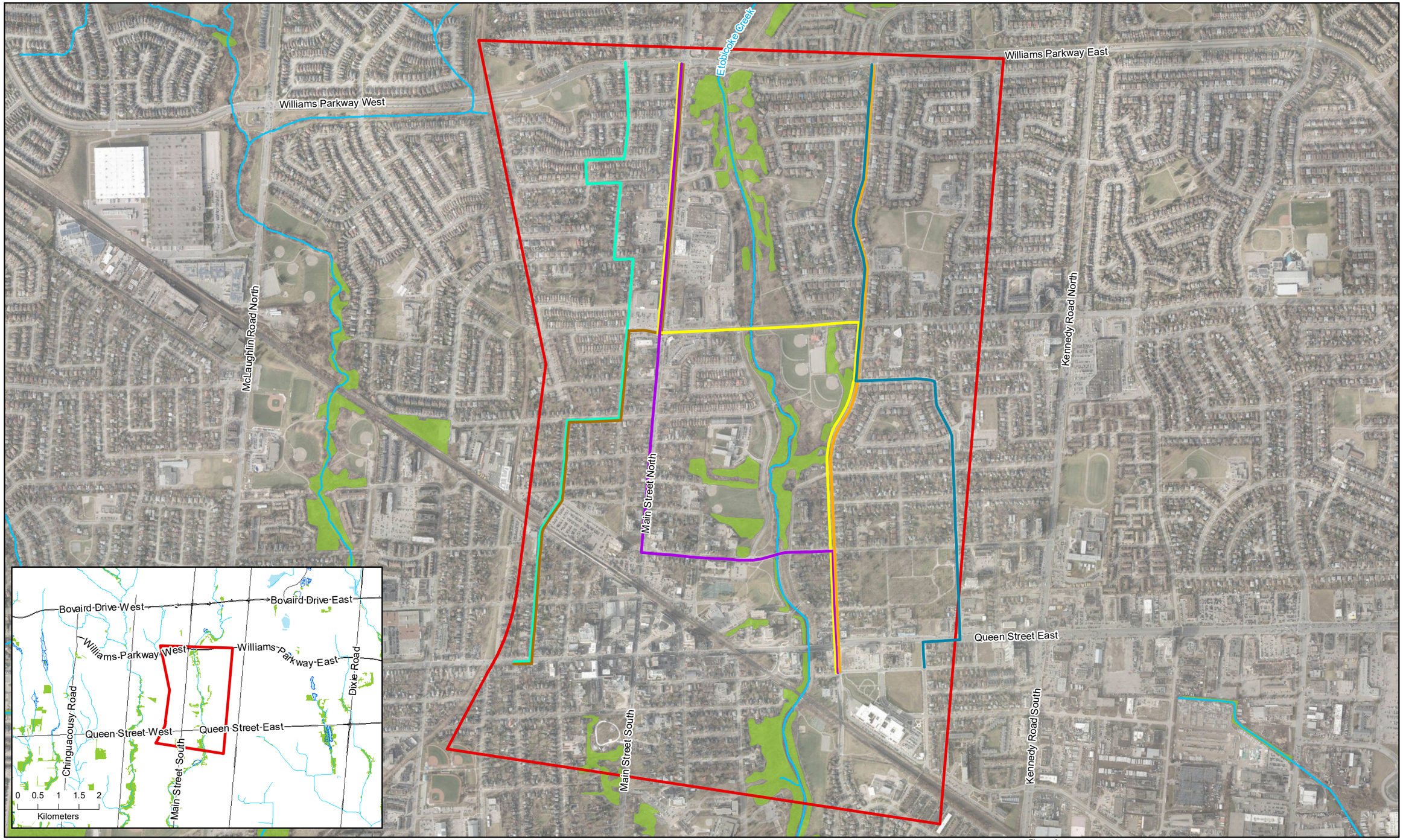
# 2. Background Information Records Review

Available online background data were accessed on August 7, 2019, and agency consultation (Appendix A) was implemented to retrieve additional natural heritage information for the Study Area, including the following, with a focus on natural areas proximal to Etobicoke Creek:

- Region of Peel Official Plan (Region of Peel 2018). City of Brampton Official Plan (City of Brampton 2006)
- Ministry of Natural Resources and Forestry (MNRF) - Lands Information Ontario (LIO) datasets – Figure 2a
- Geographical Information Systems (GIS) downloaded from Toronto and Region Conservation Authority (TRCA) – Figure 2b
- MNRF's Natural Heritage Information Centre (NHIC) (MNRF 2019)
- Ontario Breeding Bird Atlas (OBBA) data (Bird Studies Canada 2009)
- Consultation with the agencies via teleconference and email with both the Ministry of the Environment, Conservation and Parks (MECP) and TRCA, (Appendix A)
- Etobicoke and Mimico Creeks Watersheds Technical Update Report (TRCA 2010)
- Etobicoke Creek, The Aquatic Ecosystem (TRCA 2006).
- Ontario Reptile and Amphibian Atlas (Ontario Nature 2019)

Appendix B provides the results of the NHIC and OBBA query.

Figure 2a Natural Heritage Boundary – Land Information Ontario (LIO) Background Data




Notes:
1. Aerial Source: City of Brampton, 2018.
2. Natural Areas: Land Information Ontario.
3. No Areas of Natural and Scientific Interest (ANSI) are located within the current map extent.
4. LIO: Land Information Ontario.

**Figure 2a**
LIO Background Data
Natural Features Impact Report
*New Watermain to Service Downtown Brampton: Schedule B Class Environmental Assessment*
*Region of Peel*
*Brampton, Ontarioo*

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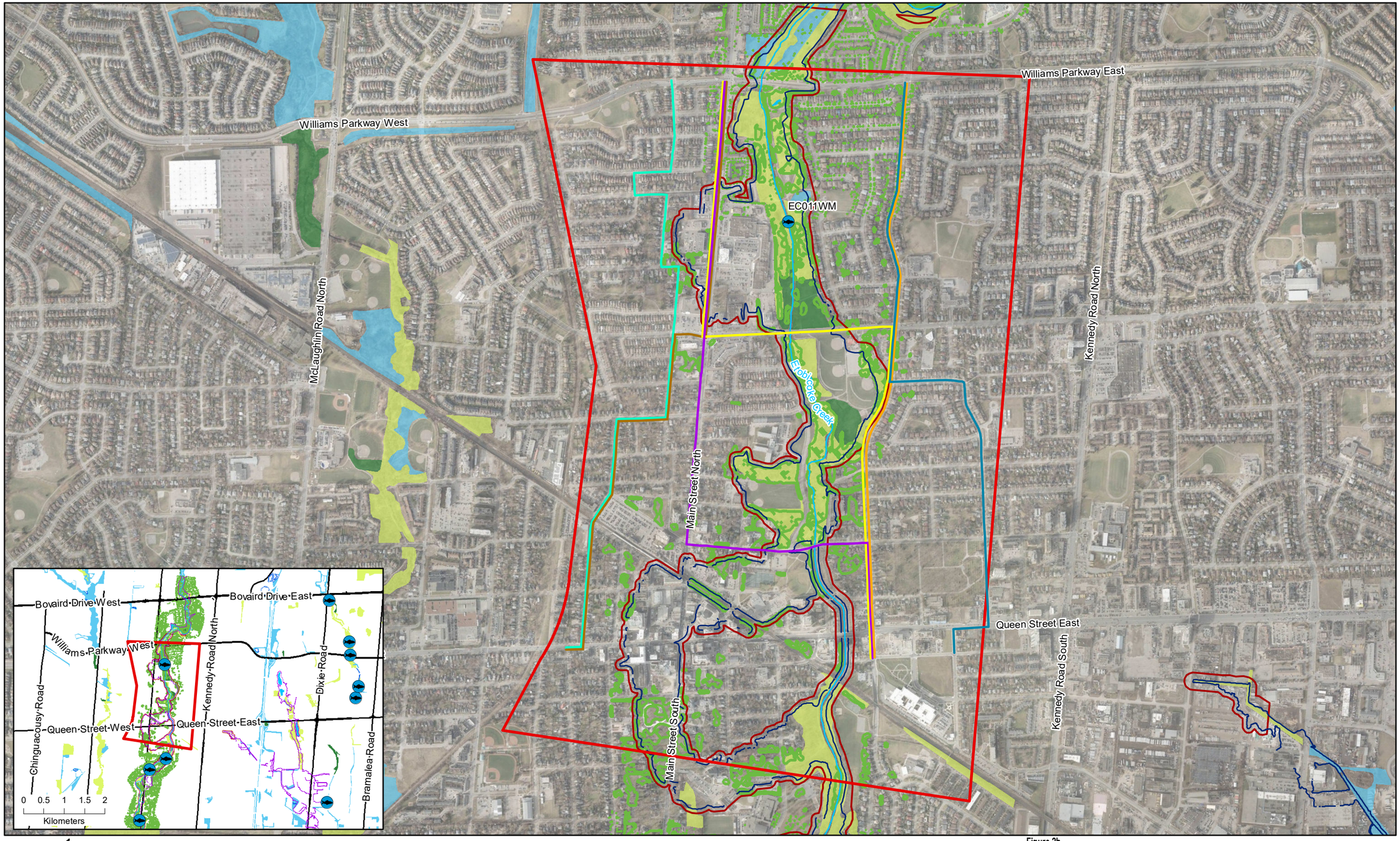
Figure 2b Natural Heritage Boundary – TRCA Background Data




Notes:
1. Aerial Source: City of Brampton, 2018.
2. Natural Features, Floodline and Regulation Limits are from Toronto Region Conservation Authority.

**Figure 2b**
TRCA Background Data
Natural Features Impact Report
*New Watermain to Service Downtown Brampton: Schedule B Class Environmental Assessment*
*Region of Peel*
*Brampton, Ontarioo*

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## 2.1 Physiography, Soils, Hydrogeology

The Study Area occurs within the Peel Plain physiographic region (Chapman and Putnam 1984). The Peel Plain is described as a flat area covered in a thin layer of silt and clay (TRCA 2010). Etobicoke Creek's geology generally consists of sediment infilling of a fluvial valley system (known as the Laurentian Channel) in the older bedrock surface (TRCA 2010). Sediment thickness ranges from zero (bedrock outcrop) to about 270 metres (m) within the Laurentian Channel (TRCA 2010). Surficial geology within the Study Area is dominated by low permeability clay, resulting in low groundwater recharge (less than 100 millimetres per year) (TRCA 2019).

## 2.2 Designated Natural Areas

Etobicoke creek and surrounding riparian areas are designated as Valleyland/Watercourse Corridor within Schedule D of the Official Plan and as both Conservation Area and Community Park within Schedule E (City of Brampton 2006).

Upon review of MNRF's LIO data sets and online Make a Natural Heritage Map utility (MNRF 2019b), no Life Science or Earth Science Areas of Natural or Scientific Interest (ANSIs) occur within the Study Area. However, Etobicoke Creek and surrounding riparian area are within the Greenbelt boundary (MNRF 2019c) and considered part of the Natural Heritage System (City of Brampton 2019). No wetlands, including Provincially Significant Wetlands (PSW), were identified within the Study Area, based on the background desktop review.

## 2.3 Vegetation and Vegetation Communities

TRCA carries out vegetative inventories within the Etobicoke Creek watershed. TRCA Ecological Land Classification (ELC) data were analyzed. Identified vegetation communities are primarily located along the Etobicoke Creek riparian and valleyland habitat. Major upland and valleyland ecosites occur adjacent to the creek, whereas residential, urban, and parkland areas occur nearby. Vegetation communities, species, and field work methodology are discussed further within Section 3 and illustrated on Figure 3.

## 2.4 Wildlife and Wildlife Habitat

Background data obtained for wildlife included an OBBA review, which provided information on avifauna occurrences based on an area of 1 square kilometre ($km^2$). The second OBBA atlas was used, which includes data collected from 2001 to 2005, as well as the online Ontario Reptile and Amphibian Atlas (ORAA) (Ontario Nature 2019a). Additionally, an updated TRCA fauna data set and GIS digital layer were provided by TRCA and reviewed.

## 2.5 Toronto and Region Conservation Authority Regulated Areas

The majority of the Study Area proximal to Etobicoke Creek occurs within the TRCA Regulated Area and Floodline Boundary (Figure 2b); as such, the lands are governed in accordance with *Ontario Regulation 166/06*. TRCA regulates areas where development could be subject to flooding, erosion, or dynamic beaches, and where interference with wetlands and alterations to shorelines and watercourses is possible.

## 2.6 Natural Heritage Information Centre Records, Toronto and Region Conservation Authority, and Species at Risk Screening

Species at Risk (SAR) within Ontario are primarily protected under the *Endangered Species Act, (ESA, 2007)*, which is administered by the MECP. Species are ranked, as follows:

1) Endangered
2) Threatened
3) Special Concern
4) Extirpated

Endangered, Threatened and Extirpated species are provided formal protection under the *ESA*.

Aquatic species (fish and mussels) are also afforded additional protection federally, as administered by Fisheries and Oceans Canada (DFO), under the *Species at Risk Act, 2002* (*SARA*). Up-to-date SAR lists are provided by the Committee on the Status of Species at Risk in Ontario (COSSARO), the Species at Risk in Ontario (SARO) list, and the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) *SARA* List.

The NHIC provides current and historical data on SAR and natural feature occurrences within the province. The data platform is managed by the MNRF, providing information within 1-km$^2$ areas.

NHIC areas within the Study Area, 17NJ9838, 17NJ9938, 17PJ0038, 17NJ9937, 17PJ0037, 17PJ0138, and 17PJ0137 were investigated for background natural features.

Based on the results of the NHIC search, the following SAR may potentially occur within the Study Area:

- *Redside Dace (*Clinostomus elongatus*)
- Eastern Wood-pewee *(Contopus virens)*

MECP was consulted on SAR presence (Appendix A). According to the MECP, the following species may potentially occur near the Study Area.

- Bank Swallow (*Riparia riparia*)
- Barn Swallow (*Hirundo rustica*)
- Butternut (*Juglans cinereal*)
- Chimney Swift (*Chaetura pelagica*)
- Peregrine Falcon (*Falco peregrinus*)
- Snapping Turtle (*Chelydra serpentine*)
- Eastern Small-footed Myotis (*Myotis leibii*)
- Little Brown Myotis (*Myotis lucifugus*)
- Northern Myotis (*Myotis septentrionalis*)
- Tri-colored Bat (*Perimyotis subflavus*)

No SAR or locally rare species were indicated by TRCA databases.

*Redside Dace is extirpated from Etobicoke Creek (TRCA 2006) and the NHIC occurrence was in the year, 1985.

## 2.7 Ontario Breeding Bird Atlas Species at Risk Results

The OBBA provides data on avifauna species within Ontario, including species documented sightings, status, range, habitat information, and survey protocols. The Study Area occurs within a 10-km$^2$ OBBA area: 17NJ93

and 17PJ03; Region #10, Halton-Peel-Dufferin; and Region #12, Toronto, based on the OBBA query conducted on August 8, 2019 (second atlas 2001–2005).

Based on the OBBA search, SAR that may occur within the Study Area are identified within Table 2-1.

Table 2-1 List of Significant Species

| Common Name[a] | Preferred Habitat[b] | NHIC[c] | COSEWIC[d] | COSSARO[e] |
|---|---|---|---|---|
| **Birds** | | | | |
| Acadian Flycatcher (*Empidonax virescens*) | Mature, deciduous woodlands, riparian woodlands and swamp woodlands. Nesting typically occurs within lower branches of a beech or maple tree. | S2S3B | Endangered | Endangered |
| Bank Swallow (*Riparia riparia*) | Steep banks, lakeshore bluffs and open areas. Nesting occurs within steep features such as cliffs and stockpiles, within fine-medium sand. | S4B | Threatened | Threatened |
| Barn Swallow (*Hirundo rustica*) | Open rural and urban areas, where bridges, culverts and buildings are located proximal to waterbodies. Nesting occurs on erected structures. | S4B | Threatened | Threatened |
| Bobolink (*Dolichonyx oryzivorus*) | Tall, grassy meadows, ditches and hayfields, and croplands. Nesting occurs on the ground, typically within hayfields. | S4B | Threatened | Threatened |
| Canada Warbler (*Cardellina canadensis*) | Wet, low-lying areas of mixed forest with a dense understory. Nesting occurs on mossy hummock or upturned roots or stumps. | S4B | Threatened | Special Concern |
| Cerulean Warbler (*Setophaga cerulea*) | Mature deciduous forests. They prefer oaks, hickories, and maples for nesting opportunity. | S3B | Endangered | Threatened |
| Chimney Swift (*Chaetura pelagica*) | Forages over cities and towns. They roost and nest within chimneys, sometimes within tree cavities. | S4B, S4N | Threatened | Threatened |
| Common Nighthawk (*Chordeiles minor*) | Forest openings, rock outcrops, and fields with sparse cover or bare patches. Nesting occurs on bare ground. | S4B | Special Concern | Special Concern |
| Eastern Meadowlark (*Sturnella magna*) | Grassy meadows and pastures. Nesting occurs on a scrape or depression on the ground. | S4B | Threatened | Threatened |
| Eastern Wood-pewee (*Contopus virens*) | Mid canopy forager within deciduous or mixed forests. They prefer forested areas with limited groundcover vegetation. | S4B | Special Concern | Special Concern |

| Common Name[a] | Preferred Habitat[b] | NHIC[c] | COSEWIC[d] | COSSARO[e] |
|---|---|---|---|---|
| | Nesting occurs on the branches of deciduous trees. | | | |
| Grasshopper Sparrow (*Ammodramus savannarum*) | Grasslands, prairies, hayfields, and open pastures with little to no scrub cover. Nesting occurs on ground. | S4B | Special Concern | Special Concern |
| Golden-winged Warbler (*Vermivora chrysoptera*) | Moist, shrubby fields, forest edges, and successional, new growth. Nesting occurs on the ground. | S4B | Threatened | Special Concern |
| Henslow's Sparrow (*Ammodramus henslowii*) | Large, flat fields with no woody plants, and with tall, dense grass, a dense litter layer, and standing dead vegetation. Nesting occurs on the ground. | SHB | Endangered | Endangered |
| Least Bittern (*Ixobrychus exilis*) | Freshwater marshes with dense, emergent vegetation, including *Typha spp*. Nesting occurs on top of bent marsh vegetation. | S4B | Threatened | Threatened |
| Louisiana Waterthrush (*Parkesia motacilla*) | Mature, deciduous and mixed forests along streams as well as swamps and bottomland forests. Nesting typically occurs in crevices along streambanks. | S3B | Threatened | Threatened |
| Northern Bobwhite (*Colinus virginianus*) | Agricultural fields, grasslands, and young pine-hardwood forests. Nesting occurs on the ground or in low vegetation. | S1 | Endangered | Endangered |
| Olive-sided Flycatcher (*Contopus cooperi*) | Clearing or edges of coniferous forests near water. Nesting occurs near water. | S4B | Special Concern | Special Concern |
| Peregrine Falcon (*Falco peregrinus*) | Lakeshores, river valleys, river mouths, urban areas and open fields. Nesting occurs on rocky cliffs or cutbanks. | S3B | Special Concern | Special Concern |
| Red-headed Woodpecker (*Melanerpes erythrocephalus*) | Open, deciduous woodlands. They prefer oak stands, urban parks, and river edges. Nesting occurs within cavities of a dead tree. | S4B | Endangered | Special Concern |
| Short-eared Owl (*Asio flammeus*) | Large, open areas with low vegetation such as prairie and meadows. Nesting occurs on ground among low vegetation. | S2N, S4B | Special Concern | Special Concern |
| Eastern Whip-poor-will (*Antrostomus vociferus*) | Dry, deciduous or mixed forests with little underbrush near open areas. Nesting occurs on ground. | S4B | Threatened | Threatened |

| Common Name[a] | Preferred Habitat[b] | NHIC[c] | COSEWIC[d] | COSSARO[e] |
|---|---|---|---|---|
| Wood Thrush (*Hylocichla mustelina*) | Large, mature deciduous and mixed forests. They prefer maple and beech species. Nesting occurs within understory on seedlings or saplings. | S4B | Threatened | Special Concern |
| Yellow-breasted Chat (*Icteria virens*) | Dense, shrubby habitat such as forest edges, riparian habitats, and agricultural fields. Nesting occurs in low, dense vegetation. | S1B | Endangered | Endangered |
| **Herptiles** | | | | |
| Snapping Turtle (*Chelydra serpentina*) | Snapping turtle prefers shallow water with mud substrate and leaf litter. Overwintering nesting occurs within sand and gravel areas of streams, but they will use constructed structures, such as roads with gravel shoulders. | S4 | Special Concern | Special Concern |
| **Mammals** | | | | |
| Eastern Small-footed Myotis (*Myotis leibii*) | Roost under rocks, outcrops, or bridges as well as in caves and hollow trees. They prefer snag trees of maple and oak. | S2S3 | Not at Risk | Endangered |
| Little Brown Myotis (*Myotis lucifugus*) | Wooded areas especially near water. They roost within tree cavities and under loose bark, foraging over water and in open areas between water and forest. They prefer snag trees of maple and oak. | S3 | Endangered | Endangered |
| Northern Myotis (*Myotis septentrionalis*) | Roost in tree crevices, hallows, and under loose bark in forested areas. They hunt along forest edges, preferring maple and oak snag trees. | S3 | Endangered | Endangered |
| Tri-colored Bat (*Perimyotis subflavus*) | Roost within live and dead foliage or within and below the canopy leaf litter. Oak and maple trees are important roosting species. They often forage over riparian corridors, water, and within forest canopy gaps. | S3? | Endangered | Endangered |

| Common Name[a] | Preferred Habitat[b] | NHIC[c] | COSEWIC[d] | COSSARO[e] |
|---|---|---|---|---|
| **Fish** | | | | |
| Redside Dace (*Clinostomus elongatus*) | Pools and slow-moving sections of relatively small (<10 m width), clear, cool, streams with sand or gravel bottoms, riffle/pool habitat and overhanging vegetation. They are sensitive to turbidity and removal of riparian vegetation and are presently restricted to relatively undisturbed headwaters of many streams where it was once widespread. Preferred water temperature range of 14–23°C. | S2 | Endangered | Endangered |
| **Vegetation** | | | | |
| Butternut (*Juglans cinerea*) | Butternut is shade intolerant and usually grows at forest edges and near water. It can be mistaken for walnut species, and hybridization occurs. | S2? | Endangered | Endangered |

Sources:

[a] Recorded within NHIC 1-km$^2$ areas: 17NJ9838, 17NJ9938, 17PJ0038, 17NJ9937, 17PJ0037, 17PJ0138, 17PJ0137, Region No. 12, Toronto, OBBA 10 km$^2$ areas: 17NJ93 and 17PJ03 and consultation with MECP (Appendix A).

[b] Preferred habitat (Bezener 2000), (Kershaw 2001), (Ontario Nature 2019), (Government of Ontario 2019) (Cornell Lab of Ornithology 2019)

[c] NHIC S rank

[d] COSEWIC status (Government of Canada 2019)

[e] COSSARO status (Government of Ontario 2019)

Notes:

The N and B after the ranking indicates conservation status at specific times of the year, such as breeding (B) and nonbreeding (N).

< = less than

°C = degree(s) Celsius

S = NHIC subnational rank

S1 = extremely rare in Ontario

S2 = very rare in Ontario

S2S3 = rare but insufficient information exists to accurately assign a single rank

S3 = vulnerable (restricted range with few populations)

S4 = apparently secure (uncommon but not rare; some cause for long-term concern)

? = Some information may be unknown as per NHIC's data

## 2.8 Aquatic Habitat

The Etobicoke Creek watershed is located on the northern shore of Lake Ontario, within the western limits of TRCA jurisdiction. Etobicoke Creek drains an area of approximately 211 km$^2$ and covers the Regional Municipality of Peel and the local municipalities of Mississauga, Brampton, Caledon, and Toronto. Etobicoke Creek originates in the southwestern portion of the Town of Caledon in the area of Old School Road and Mississauga Road, and it contains approximately 273 kilometres of watercourses from the headwaters to the confluence with Lake Ontario. Etobicoke Creek can be divided into four subwatershed basins: Upper Etobicoke, Little Etobicoke, Lower Etobicoke, and Spring Creek (TRCA 2006).

The lower portion of the Upper Etobicoke Creek Subwatershed occurs within the Study Area and is classed as Intermediate Riverine Warmwater habitat (TRCA 2006). This subwatershed reach is largely composed of tolerant, warm-water species, consisting of those species found in the lower Etobicoke Creek (TRCA 2006). Contrary to the background desktop search and the NHIC, no SAR are known to occur within Etobicoke Creek, within the Study Area.

TRCA has conducted fish sampling at numerous locations within Etobicoke Creek. Station EC011WM occurs within the Study Area (Figure 2b) and was sampled by TRCA in 2001, 2004, 2007, 2010, 2013, and 2016. The following species were identified:

- Blacknose Dace (*Rhinichthys atratulus*)
- Creek Chub (*Semotilus atromaculatus*)
- Johnny Darter (*Etheostoma nigrum*)
- Longnose Dace (*Rhinichthys cataractae*)
- White Sucker (*Catostomus commersonii*)
- Bluntnose Minnow (*Pimephales notatus*)
- *Cyprinids*
- Central Stoneroller (*Campostoma anomalum*)
- Common Shiner (*Luxilus cornutus*)

No SAR were identified by TRCA within the Study Area.

### 2.8.1 Department of Fisheries and Oceans

DFO has online mapping tools that provide distribution records for aquatic SAR and critical habitat. Based on an online query on August 7, 2019, no federally listed SAR, fish, mussels, or critical habitat occur within Etobicoke Creek reaches within the Study Area (DFO 2019).

# 3. Existing Conditions

## 3.1 Field Methodology

CH2M HILL Canada Limited (now Jacobs Engineering Group Inc. [Jacobs]) staff used the results of the Background Review listed in Section 2, coupled with air photo interpretation and TRCA spatial data, to scope and plan site-specific field surveys during the growing season which addressed data gaps on terrestrial and aquatic resources and features, where possible. A focus of the field surveys included natural features within the Study Area proximal to Etobicoke Creek and included the proposed Alternatives 4B and 4D which would require crossing Etobicoke Creek.

Table 3-1 provides the dates, staff, and type of surveys conducted by Jacobs.

Table 3-1 Survey Dates, Types, and Surveyors

| Survey Date(s) | Weather Conditions | Survey Type(s) | Jacobs' Surveyor(s) |
|---|---|---|---|
| August 2, 2019 | Sunny, 24°C, light breeze, BF 2 | Incidental site visit | Christopher Flesher |
| August 8, 2019 | Overcast, thunder showers beginning of afternoon. 24°C, moderate breeze, BF 4 | ELC, incidental wildlife, targeted SAR, amphibian | Christopher Flesher |
| August 22, 2019 | Sunny, 17°C, light air, BF 1 | ELC, incidental wildlife, bat habitat assessment, targeted SAR, Etobicoke Creek assessment | Christopher Flesher, Crystal Kelly |
| September 3, 2019 | Sunny; 22°C; light breeze, BF 2 | ELC, incidental wildlife, nightjar and amphibian, bat habitat assessment, targeted SAR, Etobicoke Creek assessment | Crystal Kelly |
| September 24, 2019 | Mix sun and cloud, 20°C, light air, BF 1 | Targeted SAR, Etobicoke Creek assessment | Christopher Flesher |

Note:
BF = Beaufort Scale

### 3.1.1 Vegetation and Vegetative Communities

The vegetative communities within the Study Area were originally assessed using air photo interpretation coupled with a review of agency background data provided by TRCA. Data were assessed to define the extent of ecological boundaries and overall ecosystem function. The data were also used to plan and carry out ELC surveys, using techniques from the *Ecological Land Classification for Southern Ontario* (Lee et al. 1998). Individual flora species names follow NHIC nomenclature. Jacobs carried out additional ELC ecosite surveys, including assessment of potential wetlands within the Study Area to update existing data. Photos of various ecological communities are provided in Appendix D.

### 3.1.2 Wildlife and Wildlife Habitat

Numerous targeted and incidental wildlife surveys were conducted for specific species. Jacobs assessed the presence of suitable and significant wildlife habitats. Background information from the MECP, MNRF, NHIC, TRCA, and OBBA was used to initially scope the field investigations. The Study Area experiences noise typical for an urban environment, including vehicle traffic from the adjacent busy roads and nearby construction activities, which may have reduced wildlife overheard during the surveys.

### 3.1.3 Wildlife Surveys

As discussed in Section 2.4.1, consultation with MECP determined that Endangered at-risk bat species may occur near the site, including the Eastern Small-footed Myotis, Little Brown Myotis, Northern Myotis and Tri-colored Bat (Appendix A). Jacobs staff carried out a scoped bat habitat assessment. Surveys were completed to collect information on the presence of trees with snag characteristics that may provide attractive roosting opportunities for at-risk bat species, which include the following:

- Exfoliating bark
- Decay class
- Loose bark
- Knots
- Cavities
- Cracks

Jacobs followed components from the *Survey Protocol for Species at Risk Bats within Treed Habitats Little Brown Myotis, Northern Myotis & Tri-Colored Bat* (MNRF 2017).

Other incidental wildlife surveys were carried out using protocols adopted from MNRF's *1998 Wildlife Monitoring Programs and Inventory Techniques for Ontario* when possible. Wildlife/mammals were identified by direct observations, tracks, and scat or droppings.

### 3.1.4 Bird Surveys

Jacobs carried out pedestrian bird surveys, transecting features within the Study Area during chorus hours and under calm conditions, outside of the breeding bird season. Pedestrian surveys were primarily carried out along the Etobicoke Creek Recreational Trail systems, but riparian, meadow, and forest ecological communities were also inventoried. Species were documented visually by sight, song, or call, or some combination of these. Phishing and squeaking techniques were used to attract birds for identification purposes. Surveys were completed adopting protocols drafted by Bird Studies Canada (Bird Studies Canada 2019) and the Marsh Monitoring Program (Bird Studies Canada 1995).

Jacobs conducted crepuscular surveys, targeting potentially suitable nightjar habitat. Portions of the *Bird Studies Canada, Canadian Nightjar Survey Protocol DRAFT – April 2016* was followed for the nightjar survey completion. Surveys were completed during calm conditions and following a full moon.

Several pedestrian and vehicle bridges cross Etobicoke Creek within the Study Area (Figure 1). These types of structures are known to provide nesting opportunities for Barn Swallow, which is a Threatened species listed under SARO. As a result, Jacobs completed nest searches on the underside of these structures, following Bird Studies Canada's techniques to determine whether Barn Swallow nests were present.

### 3.1.5 Herptiles

An amphibian evening and morning survey was completed within the Etobicoke Creek Recreational Trail system's riparian habitat in areas along the Etobicoke Creek, forested communities, and wildlife corridors (that is, between upland and riparian habitat), within the Study Area.

### 3.1.6 Aquatic Habitat and Fisheries

An aquatic habitat assessment was conducted of Etobicoke Creek within the Study Area. Physical assessment of the creek included documenting the following observations:

- Fish and fish habitat conditions
- Fish passage potential and barriers
- General habitat conditions, including channel substrate
- Bank condition and erosion
- Bank stabilization (placement of armour stone, rip-rap)
- Flow characteristics
- In-stream aquatic vegetation and cover

## 3.2 Results

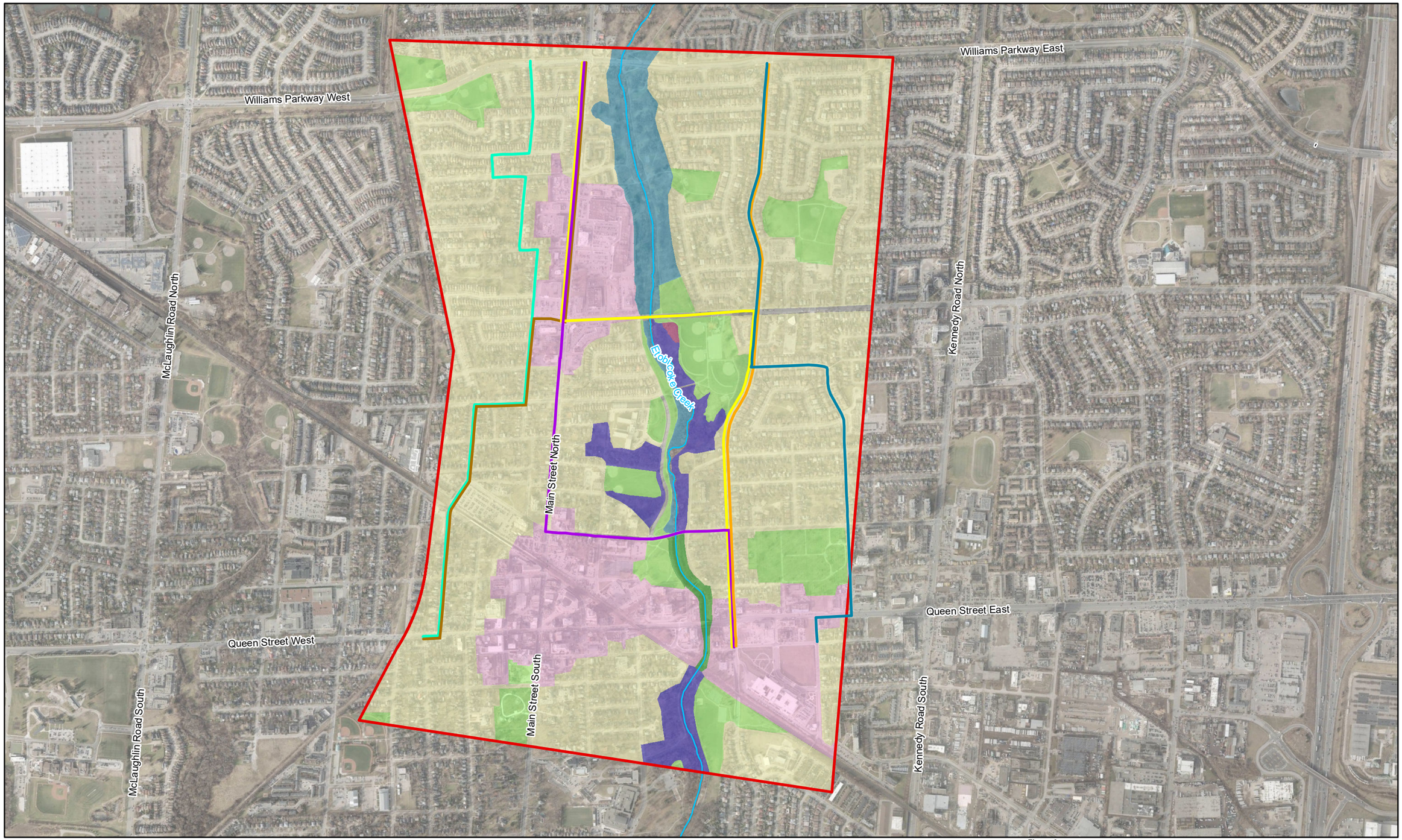
### 3.2.1 Vegetation and Vegetative Communities

A full list of flora species documented during field surveys within the Study Area can be found in Appendix C. No locally rare flora species were observed.

The following five ELC communities were identified within the Study Area during field investigations. Several areas within the Study Area include residential and commercial lands that were not accessible, because of private property restrictions. Individual ecological community photos can be viewed in Appendix D.

1) FOD 7-3 Fresh – Moist Willow Lowland Deciduous Forest
2) FOD 7-5 Fresh – Moist Black Walnut Lowland Deciduous Forest
3) FOD 7 Fresh – Moist Lowland Deciduous Forest
4) FOD 3-1 Dry – Fresh Poplar Deciduous Forest
5) Parkland

Figure 3 Ecological Land Classification




Notes:
1. Aerial Source: City of Brampton, 2018.

**Figure 3**
Ecological Land Classification (ELC)
Natural Features Impact Report
*New Watermain to Service Downtown Brampton: Schedule B Class Environmental Assessment*
*Region of Peel*
*Brampton, Ontarioo*

Jacobs

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**FOD 7-3 Fresh – Moist Willow Lowland Deciduous Forest**

This community is located along the riparian areas of Etobicoke Creek north of Vodden Street East to Williams Parkway and along the left bank of Etobicoke Creek south of Vodden Street East to Church Street. The FOD7-3 community contains thin strips of forested land surrounded by urban environments and parkland with adjacent well-used pedestrian pathways. *Salix spp*., particularly Weeping Willow (*Salix babylonica*), and Manitoba Maple (*Acer negundo*) dominate the canopy with Black Walnut (*Juglans nigra)* as a secondary species. Black Walnut also dominates the subcanopy with many successional trees noted. Manitoba Maple and *Salix spp*. are prevalent throughout the subcanopy as well. Grasses, particularly Smooth Brome (*Bromus inermis*) and Reed Canary Grass (*Phalaris arundinacea*) and *Phragmites sp*. are the dominant groundcover, with several patches of *Solidago sp*. occurring.

**Canopy**

- Weeping Willow
- *Salix spp.*
- Manitoba Maple
- Black Walnut
- Red Pine (*Pinus resinosa*)
- Black Locust (*Robinia pseudoacacia*)
- Rock Elm (*Ulmus thomasii*)
- Balsam Poplar (*Populus balsamifera*)
- Sugar Maple (*Acer saccharum*)
- Yellow Birch (*Betula alleghaniensis*)
- American Elm (*Ulmus Americana*)
- Silver Maple (*Acer saccharinum*)
- Paper Birch (*Betula papyrifera*)
- Trembling Aspen (*Populus tremuloides*)
- *Ulmus sp.*

**Subcanopy**

- Black Walnut
- *Salix spp.*
- Manitoba Maple
- Shagbark Hickory (*Carya ovata)*
- Common Hawthorn (*Crataegus monogyna*)
- Common Buckthorn (*Rhamnus cathartica*)
- American Mountain-ash (*Sorbus americana*)
- American Basswood (*Tilia americana*)
- Wild Mock-cucumber (*Echinocystis lobate*)
- Northern Red Oak (*Quercus rubra*)
- Highbush Cranberry (*Viburnum opulus ssp. trilobum*)
- Riverbank Grape (*Vitis riparia*)
- Speckled Alder (*Alnus incana*)

**Ground**

- *Bromus spp.*
- Smooth Brome
- *Solidago sp.*
- Reed Canary Grass
- *Phragmites sp.*

- Purple Loosestrife (*Lythrum salicaria*)
- Spotted Joe Pye Weed (*Eutrochium maculatum var. maculatum*)
- Virginia Creeper (*Parthenocissus quinquefolia*)
- Woolly Blue Violet (*Viola sororia*)
- Common Burdock (*Arctium minus*)
- Spotted Jewelweed (*Impatiens capensis*)
- Tall Meadow-rue (*Thalictrum pubescens*)
- European Euonymus (*Euonymus europaeus*)
- Staghorn Sumac (*Rhus typhina*)
- Eastern Cottonwood (*Populus deltoides ssp. deltoides*)
- Common Teasel (*Dipsacus fullonum*)
- Common Milkweed (*Asclepias syriaca*)
- Wild Carrot (*Daucus carota*)
- Garden Bird's-foot Trefoil (*Lotus corniculatus*)
- Showy Sunflower (Helianthus laetiflorus)
- Thistle (*Cirsium sp.*)
- Wild Mock-cucumber
- Riverbank Grape

**FOD 7-5 Fresh – Moist Black Walnut Lowland Deciduous Forest**

This community is located along the right bank of Etobicoke Creek from Vodden Street East to Church Street East, as well as the riparian areas south of the train tracks adjacent to Centennial Park. Black Walnut and Manitoba Maple are the dominant canopy cover, except in the northern corner of Duggan Park where Silver Maple is more dominant than Manitoba Maple. Black Walnut and Common Buckthorn dominate the subcanopy. Reed Canary Grass, *Phragmites sp*. and *Solidago sp*. are dominant throughout most of the groundcover, though several patches under the canopy include Virginia Creeper.

**Canopy**

- Black Walnut
- Manitoba Maple
- Silver Maple
- Eastern White Pine
- *Ulmus sp.*
- Trembling Aspen
- White Spruce (*Picea glauca)*
- *Salix spp.*
- Norway Maple
- White Oak (*Quercus alba*)
- Peach-leaved Willow (*Salix amygdaloides*)

**Sub-canopy**

- Black Walnut
- Riverbank Grape
- Common Buckthorn
- Staghorn Sumac
- Manitoba Maple
- European Euonymus
- Speckled Alder
- American Basswood

- *Salix spp.*

**Ground**

- *Solidago sp.*
- Virginia Creeper
- Purple Loosestrife
- Common Burdock
- Garlic Mustard (*Alliaria petiolate*)
- Showy Sunflower
- Reed Canary Grass
- *Phragmites sp.*
- Grasses

**FOD 7 Fresh-Moist – Lowland Deciduous Forest**

This community represents a highly disturbed area south of Church Street East that extends to the train tracks adjacent to Centennial Park. Here, Etobicoke Creek runs through a concrete channel. Banks are steep surrounding the channel and largely consist of non-native species. Common Buckthorn, Norway Maple (*Acer platanoides*) and *Ulmus sp*. dominate the canopy. Common Buckthorn dominates the subcanopy. Grasses, including Smooth Brome, Reed Canary Grass and *Phragmites sp.* dominate the subcanopy.

**Canopy**

- Common Buckthorn
- Norway Maple
- *Ulmus sp.*
- Crabapple (*Malus sp.*)
- Manitoba Maple
- Black Locust
- Black Walnut
- *Salix spp.*
- White Ash (*Fraxinus americana*)
- Silver Maple
- American Mountain-ash
- White Spruce
- White Oak
- Eastern Cottonwood

**Subcanopy**

- Common Buckthorn
- American Basswood
- Staghorn Sumac
- Riverbank Grape
- Manitoba Maple
- Norway Maple

**Ground Cover**

- Smooth Brome
- Reed Canary Grass
- *Brome spp.*

- Grasses
- Virginia Creeper
- Purple Loosestrife
- *Phragmites sp.*
- Common Burdock
- Common Dandelion (*Taraxacum officinale*)
- Garlic Mustard
- Thistle
- Common Milkweed
- Wild Carrot
- *Solidago sp.*
- Tall Beggarticks (*Bidens vulgate)*

**FOD 3-1 Dry – Fresh Poplar Deciduous Forest**

This community is located within the northwest corner of Duggan Park. It is immediately adjacent to the Etobicoke Creek Recreational Trail. Large-toothed Aspen (*Populus grandidentata*), Eastern Cottonwood, and Trembling Aspen are the dominant canopy species. Staghorn sumac dominates the subcanopy, and grasses dominate the groundcover.

**Canopy**

- Large-toothed Aspen
- Eastern Cottonwood
- Trembling Aspen
- Paper Birch
- Black Walnut
- Eastern White Pine (*Pinus strobus*)
- Eastern White Cedar (*Thuja occidentalis*)
- Norway Maple

**Subcanopy**

- Staghorn Sumac
- Black Walnut

**Ground**

- Wild Carrot
- Wild Parsnip (*Pastinaca sativa*)
- Grasses

**Parkland**

There are several parks along Etobicoke Creek with similar habitat that largely feature open areas with several large trees and groundcover consisting of Kentucky Bluegrass (*Poa pratensis ssp. pratensis*). Parks in the area are well used by the public and connected by the Etobicoke Creek Recreational Trail.

The southern end of Calvert Park features several Maple species including Silver Maple, Norway Maple, Manitoba Maple, Red Maple (*Acer rubrum*), as well as five Northern Catalpa (*Catalpa speciosa*) and three young Choke Cherry (*Prunus virginiana*) trees, many of which were likely planted.

The thin parkland east of Ken Whillans Drive features several large, mature Black Walnut and Weeping Willow as well as Sugar Maple, Silver Maple, Norway Maple, Mountain Maple (*Acer spicatum*), White Spruce, Staghorn Sumac, and Common Buckthorn. Additionally, fronting Church Street is an ornamental garden with young, planted maple trees.

Duggan Park features three baseball diamonds, a parking lot, dog park, and an outdoor recreational playground. The trees here are mostly young, planted Silver Maple and Freemans's Maple (*Acer x freemanii*). Several *Salix sp.*, Black Walnut, and Manitoba Maple are also present adjacent to the playground, where Reed Canary Grass, *Phragmites sp*. and *Solidago spp.* are the dominant groundcover.

Rosalea Park features large Norway Maples, Black Walnut and Black Locust trees, as well as several young, planted trees, including White Oak, and Silver Maple.

Centennial Park includes a tennis court, two soccer fields, a playground, and a parking lot. Several young trees are planted, including Eastern Hemlock (*Tsuga canadensis*), Northern Red Oak, White Spruce, White Oak, Silver Maple, Red Maple, Red Pine, Black Locust, and Northern Catalpa.

### 3.2.2 Wildlife

A list of fauna species identified within the Study Area based on the results of the field surveys is presented in Appendix C.

**Bats**

A scoped bat habitat assessment was carried out within the Study Area. Searches were conducted of *Quercus sp., Acer sp.* and other trees (for example, Shagbark Hickory, and Birch trees), which naturally contain snag features and exfoliating bark that could provide roosting habitat for bats. Trees with the following characteristics provide opportunity for these species:

- Exfoliating bark
- Decay class
- Loose bark
- Knots
- Cavities
- Cracks

Upon the preliminary investigation, no snags were identified within the Study Area. However, some small-diameter native Maple trees were observed within the parkland north of Vodden Street East. Although, these maple trees do not currently contain snag features, over time, they may provide roosting opportunities for at-risk bats. Additionally, the Tri-colored bat will opportunistically roost within leaves and foliage (dead and alive), primarily from Oak trees, but also from Maple trees, and therefore does not require true snag features like the other bats listed within Section 2.4.2 (MNRF 2017). The Maple trees within the Study Area may provide marginal habitat for the Tri-colored bat and may decay in the future, providing roosting opportunity for other at-risk bats. Bats were not incidentally, visually observed or overheard during field surveys.

**Mammals, Nymphalidae, Avifauna, and Herptiles**

An evening and morning amphibian survey was conducted across the Study Area. American Toad (*Anaxyrus americanus*) was heard with overlapping calls at every station. Additionally, a nightjar survey was completed, in which two Common Nighthawks (*Chordeiles minor*)—a Special Concern species—were observed foraging over Etobicoke Creek; however, this occurred south of the Study Area. One Black-crowned Night Heron (*Nycticorax nycticorax*) was observed at the pedestrian bridge within Duggan Park, a species considered provincially

vulnerable as per the NHIC. Incidental observations for mammals and birds were carried out. Monarch (*Danaus plexippus*) a Special Concern species was observed within the FOD7-3 community, slightly north of Alternative 4B. Canada Warbler a Special Concern species was observed within the FOD7-5 community, within the southern limits of the Study Area. Targeted searches were conducted for possible Barn Swallow nests, and searches were made under bridge crossings that span Etobicoke Creek; however, neither this species nor its nests were observed. A complete list of species can be found within Appendix C.

### 3.2.3 Aquatic Habitat and Fisheries

Aquatic habitat field surveys were conducted to inventory existing conditions within Etobicoke Creek. The creek was transected on both banks within the Study Area. Figure 4 provides details of physical creek observations collected.

The following section describes the aquatic habitat assessment completed within Etobicoke Creek. Photographs from the surveys can be found in Appendix D.

Figures 4a-4g. Etobicoke Creek Aquatic Habitat Assessment


Notes:
1. Aerial Source: City of Brampton, 2018.

**Figure 4a**
Etobicoke Creek Aquatic Habitat Assessment
Natural Features Impact Report
*New Watermain to Service Downtown Brampton: Schedule B Class Environmental Assessment*
*Region of Peel*
*Brampton, Ontarioo*

Jacobs

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Notes:
1. Aerial Source: City of Brampton, 2018.

**Figure 4b**
Etobicoke Creek Aquatic Habitat Assessment
Natural Features Impact Report
*New Watermain to Service Downtown Brampton: Schedule B Class Environmental Assessment*
*Region of Peel*
*Brampton, Ontarioo*

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Notes:
1. Aerial Source: City of Brampton, 2018.

**Figure 4c**
Etobicoke Creek Aquatic Habitat Assessment
Natural Features Impact Report
*New Watermain to Service Downtown Brampton: Schedule B Class Environmental Assessment*
*Region of Peel*
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Notes:
1. Aerial Source: City of Brampton, 2018.

**Figure 4d**
Etobicoke Creek Aquatic Habitat Assessment
Natural Features Impact Report
*New Watermain to Service Downtown Brampton: Schedule B Class Environmental Assessment*
*Region of Peel*
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Notes:
1. Aerial Source: City of Brampton, 2018.

**Figure 4e**
Etobicoke Creek Aquatic Habitat Assessment
Natural Features Impact Report
*New Watermain to Service Downtown Brampton: Schedule B Class Environmental Assessment*
*Region of Peel*
*Brampton, Ontarioo*

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Notes:
1. Aerial Source: City of Brampton, 2018.

**Figure 4f**
Etobicoke Creek Aquatic Habitat Assessment
Natural Features Impact Report
*New Watermain to Service Downtown Brampton: Schedule B Class Environmental Assessment*
*Region of Peel*
*Brampton, Ontarioo*

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Notes:
1. Aerial Source: City of Brampton, 2018.

**Figure 4g**
Etobicoke Creek Aquatic Habitat Assessment
Natural Features Impact Report
*New Watermain to Service Downtown Brampton: Schedule B Class Environmental Assessment*
*Region of Peel*
*Brampton, Ontarioo*

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#### 3.2.3.1 Etobicoke Creek from Williams Parkway to Pedestrian Bridge 1

A total of three slow-moving pools occurs within this transect. Between pools riffle habitat with a small reach of run habitat upstream of the pedestrian bridge occurs. Generally, the stream morphology follows a pool-to-riffle sequence. This transect of Etobicoke Creek is predominantly straight with few meanders. Substrate within the transect consists of cobble with pebble. Trees overhang the banks, which gently slope towards the creek.

#### 3.2.3.2 Pedestrian Bridge 1 to Vodden Street East

A total of two slow-moving pools occurs within this transect. Downstream of the pedestrian bridge features a series of alternating riffles and runs before flowing into a large pool followed by a short riffle, run, and pool sequence upstream of an outfall. At the outfall, a small riffle of cobble is present before flowing into a large pool upstream of the Vodden Street East bridge. Beneath the Vodden Street East bridge is a riffle and in-stream cobble sandbar. Upstream of the Vodden Street East bridge, banks are eroded with slight undercutting to the outfall. A retaining wall is present on the right bank beneath the Vodden Street East bridge. This transect of Etobicoke Creek is predominantly straight with few meanders. Substrate within the transect consists of cobble with pebble and trace boulders. Trees overhang the northern portion dominated by runs, whereas grasses overhang the southern portion dominated by pools.

#### 3.2.3.3 Etobicoke Creek from Vodden Street East to Pedestrian Bridge 2

Three slow-moving pools occur within this transect. A pool flows into a run downstream of the Vodden Street East bridge. Here, the creek sharply meanders with pool and riffle habitat followed by run habitat to the pedestrian bridge. Cobble and boulder erosion controls are present along the right bank of the meander. As well, cobble erosion controls are located along both banks of the run at the pedestrian bridge.

#### 3.2.3.4 Etobicoke Creek from Pedestrian Bridge 2 to Church Street

Eight slow-moving pools occur within this transect. Erosion controls, including areas with armour stone and boulders, occurs upstream and downstream of Pedestrian Bridge 2. Run habitat flows into a pool downstream of the pedestrian bridge. Here the creek sharply meanders with run habitat flowing around a treed island. Downstream of the island features two more runs alternating with pools, then alternating pool and riffle habitat. A concrete channel and benching begin with run habitat immediately upstream of Church Street. Substrate is cobble with pebble and trace boulders. Trees overhang the creek along this transect.

#### 3.2.3.5 Etobicoke Creek from to Church Street to Pedestrian Bridge 3

This transect is nearly entirely run habitat except for a small riffle south of Queens Street. It features a meandering anthropogenic concrete channel with benching and concrete banks. A small weir is also present downstream of Scott Street. Based on flows and depth of the weir as determined during field surveys, the weir does not appear to be a fish barrier but may impede non-jumping fish during periods of low flow.

#### 3.2.3.6 Etobicoke Creek from Pedestrian Bridge 3 to Southern Limit of Study Area.

At Pedestrian Bridge 3, a weir occurs with an approximate depth of 1.5 m, where the anthropogenic created concrete channel ends. This weir may pose as a fish barrier for certain non-jumping species. The weir flows into a pool followed by a riffle and another pool. Banks here slope gently to the creek. Concrete padding is present around the pool, and the substrate features cobble and pebble. Trees overhang the banks.

#### 3.2.3.7 Storm Sewer Outlet Channels

A total of three outfalls occurs within the Study Area (Figure 4).

# 4. Species at Risk Summary

## 4.1 Species at Risk (SAR) Screening and Determinations Made

Table 4-1 provides information on SAR data retrieved from MECP and available online data, including information provided by the NHIC, OBBA, and ORAA. The occurrence or likelihood of occurrence for SAR within the Study Area and within 120 m of adjacent lands is also discussed.

Table 4-1. Evaluation of Background Species at Risk Data and Determinations Made

| Common Name | Determination Made Based on Field Observations | Occurrence Onsite | Likelihood of Occurrence |
|---|---|---|---|
| **Birds** | | | |
| Acadian Flycatcher (*Empidonax virescens*) | The Acadian Flycatcher may find the riparian woodland areas of the Study Area to provide attractive forage habitat. | No | Possible |
| Bank Swallow (*Riparia riparia*) | The Study Area does not contain steep banks or stockpiles and therefore does not provide ideal nesting opportunity for this species. | No | Unlikely |
| Barn Swallow (*Hirundo rustica*) | Numerous bridges occur within the Study Area, providing suitable nesting opportunity. | No | Possible |
| Bobolink (*Dolichonyx oryzivorus*) | The Study Area does not contain large hayfields and croplands to support nesting and forage for Bobolink. | No | Unlikely |
| Canada Warbler (*Cardellina canadensis*) | Canada Warbler was observed within the Study Area (Figure 5). | Yes | Confirmed |
| Cerulean Warbler (*Setophaga cerulea*) | The riparian habitat surrounding Etobicoke Creek is thin and generally disturbed with few White Oak, Shagbark Hickory, and Sugar Maple trees. | No | Unlikely |
| Chimney Swift (*Chaetura pelagica*) | The Study Area does not contain chimneys or abandoned buildings with chimneys and therefore does not provide ideal nesting opportunity for this species. | No | Unlikely |
| Common Nighthawk (*Chordeiles minor*) | Common Nighthawk was observed near the Study Area. | Nearby | Likely |
| Eastern Meadowlark (*Sturnella magna*) | The Study Area does not contain large grassy meadows and pastures suitable for this species to nest in. | No | Unlikely |
| Eastern Wood-pewee (*Contopus virens*) | The Study Area contains suitable forested habitat that the Eastern Wood-pewee may find attractive for nesting and foraging. | No | Possible |

| Common Name | Determination Made Based on Field Observations | Occurrence Onsite | Likelihood of Occurrence |
|---|---|---|---|
| Grasshopper Sparrow (*Ammodramus savannarum*) | The Study Area does not contain large hayfields and croplands to support nesting and forage for Grasshopper Sparrow. | No | Unlikely |
| Golden-winged Warbler (*Vermivora chrysoptera*) | The Study Area contains moist shrubby areas, forest edges, and successional growth, which provides attractive forage habitat for the Golden-winged Warbler. | No | Possible |
| Henslow's Sparrow (*Ammodramus henslowii*) | The Study Area does not contain large fields with tall grass and no woody vegetation. | No | Unlikely |
| Least Bittern (*Ixobrychus exilis*) | The Study Area does not contain large wetland habitat with emergent aquatic vegetation such as *Typha Sp.* | No | Unlikely |
| Louisiana Waterthrush (*Parkesia motacilla*) | The riparian forested habitat provides suitable nesting and foraging opportunities. | No | Possible |
| Northern Bobwhite (*Colinus virginianus*) | The Study Area does not contain large hayfields, croplands, or pine forests. | No | Unlikely |
| Olive-sided Flycatcher (*Contopus cooperi*) | The Study Area does not contain a coniferous dominated forest near water. | No | Unlikely |
| Peregrine Falcon (*Falco peregrinus*) | The creek may provide suitable forage habitat for the Peregrine Falcon. Tall buildings nearby may provide suitable nesting habitat. | No | Possible |
| Red-headed Woodpecker (Melanerpes erythrocephalus) | The Red-headed Woodpecker may find the mixed deciduous stands and open urban parklands attractive; however, few Oak trees are present. | No | Marginally Possible |
| Short-eared Owl (*Asio flammeus*) | The Study Area does not contain large grasslands or hayfields to support nesting and forage opportunity for the Short-eared Owl. | No | Unlikely |
| Eastern Whip-poor-will (*Antrostomus vociferus*) | The Study Area does not contain dry forested areas with little underbrush suitable for nesting habitat. | No | Unlikely |
| Wood Thrush (*Hylocichla mustelina*) | The forested areas within the Study Area may contain too many edge areas because of disturbance, resulting in reduced woodland area to attract a Wood Thrush for nesting. | No | Unlikely |

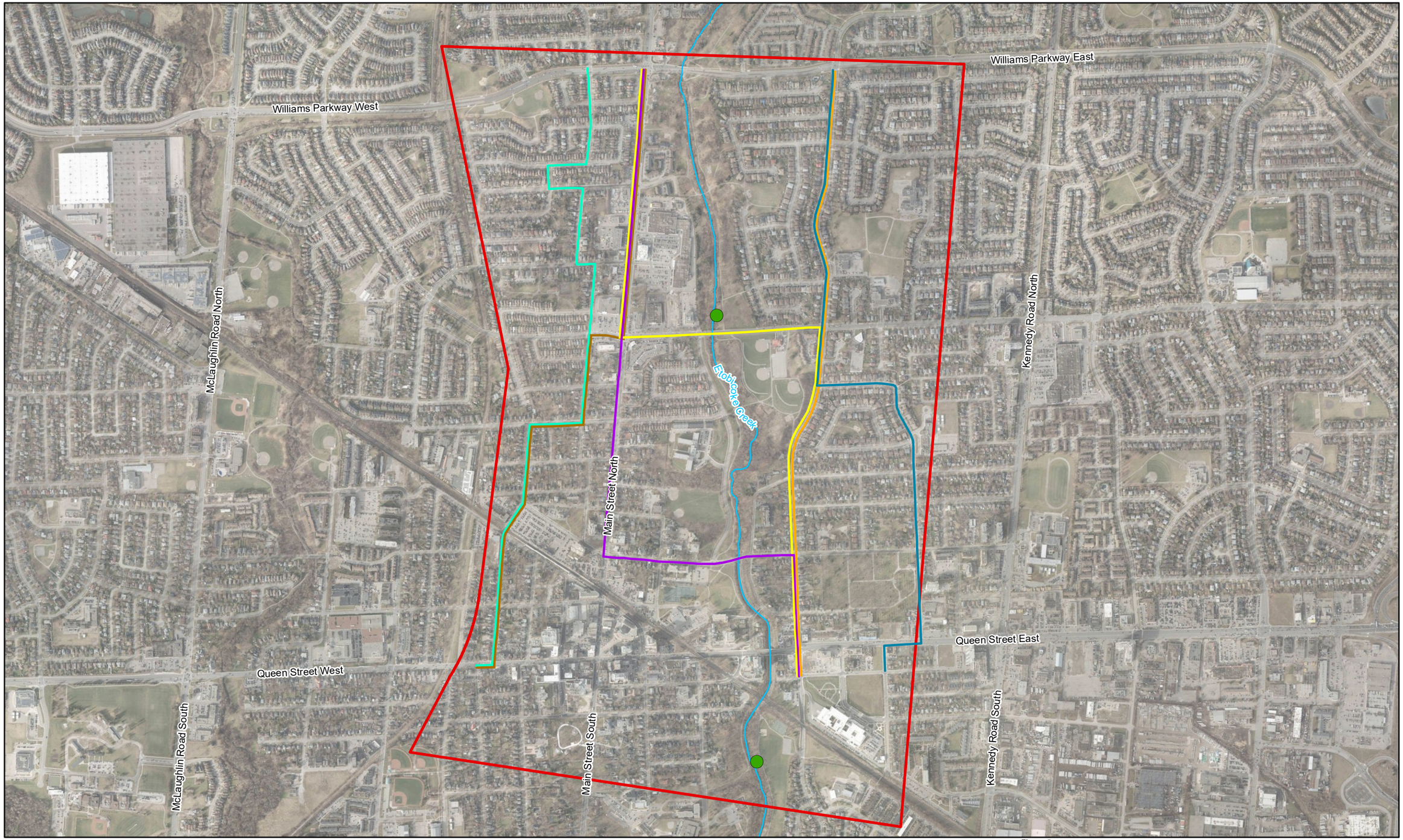
| Common Name | Determination Made Based on Field Observations | Occurrence Onsite | Likelihood of Occurrence |
|---|---|---|---|
| Yellow-breasted Chat (*Icteria virens*) | The Study Area contains dense shrubby forested and riparian areas that may be attractive to the Yellow-breasted Chat. | No | Possible |
| **Herptiles** | | | |
| Snapping Turtle (*Chelydra serpentina*) | Snapping turtle may find sand and gravel deposits within Etobicoke Creek and surrounding riparian areas to provide nesting, overwintering, and foraging habitat. | No | Possible |
| **Mammals** | | | |
| Eastern Small-footed Myotis (*Myotis leibii*) | The Study Area contains bridges and suitable trees for roosting habitat along riparian corridors. However, within other treed areas, there is limited Maple (native), Oak, and other snag species. | No | Marginally Possible |
| Little Brown Myotis (*Myotis lucifugus*) | The Study Area contains wooded areas along riparian corridors with suitable trees. However, within other treed areas, there is limited Maple (native), Oak, and other snag species. | No | Marginally Possible |
| Northern Myotis (*Myotis septentrionalis*) | The Study Area contains wooded areas along riparian corridors with suitable trees. However, within other treed areas, there is limited Maple (native), Oak, and other snag species. | No | Marginally Possible |
| Tri-colored Bat (*Perimyotis subflavus*) | The Study Area contains wooded areas along riparian corridors with suitable trees. However, within other treed areas there is limited Maple (native), Oak, and other snag species. | No | Marginally Possible |
| **Fish** | | | |
| Redside Dace (*Clinostomus elongatus*) | Etobicoke Creek is highly disturbed with few areas containing overhanging grasses. Redside Dace is known to be extirpated from Etobicoke Creek (TRCA 2006). | No | Unlikely |
| **Vegetation** | | | |
| Butternut (*Juglans cinerea*) | Suitable forest edge habitat near water is present. | No | Possible |

## 4.2 Natural Features

Based on field survey results, the following natural features occur within the Study Area (Figure 5): fish habitat (Etobicoke Creek); potentially sensitive wildlife habitat – FOD communities; potential habitat for at-risk bats; and Special Concern species including, Canada Warbler, Common Nighthawk, Monarch and Black-crowned Night-Heron (provincially vulnerable). These species will be carried over to Section 5 Impact Assessment and Table 5-2 Potential Impacts, Mitigation Measures and Environmental Monitoring.

Based on information from the NHIC, OBBA, ORAA, and MECP (Table 4-1), the Study Area may provide suitable habitat for the following species: Acadian Flycatcher, Barn Swallow, Canada Warbler, Common Nighthawk, Eastern Wood-pewee, Golden-winged Warbler, Louisiana Waterthrush, Peregrine Falcon, Red-headed Woodpecker, Yellow Breasted Chat, Snapping Turtle, and Butternut. These species, however, will not be carried over directly to Section 5 because they were not observed during the field surveys. However, general recommendations for at-risk avifauna and migratory birds will be provided within Table 5-2 Natural Features, Potential Impacts, Proposed Mitigation Measures, and Environmental Monitoring. MECP also indicated that at-risk bat species may occur (Appendix A). The habitat for these species will be brought forward to Section 5 Impact Assessment and Table 5-2.

Figure 5 Natural Heritage Features




Notes:
1. Aerial Source: City of Brampton, 2018.

**Figure 5**
Natural Heritage Features (NHF)
Natural Features Impact Report
*New Watermain to Service Downtown Brampton: Schedule B Class Environmental Assessment*
*Region of Peel*
*Brampton, Ontarioo*

Jacobs

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# 5. Impact Assessment

One of the key purposes of this Natural Features Impact Report is the identification of potential direct or indirect effects the proposed Shortlist of Alternatives may have on natural features. Direct effects, as defined and used in this assessment, are typically associated with direct impacts to species and/or the physical removal or alteration of natural features that could occur during construction (i.e., tree and vegetation removals). Indirect effects can include changes or effects that relate to hydrological, noise, sedimentation and disturbance associated impacts occurring because of the activities being completed as part of the construction scope. While not physically altering or removing habitat, these indirect effects can result in some level of disturbance or degradation to natural features and functions. Indirect effects on natural features could result, for example, from the erosion and movement of soil from the Study Area into Etobicoke Creek. This report is based on the information gathered from the background data review, existing site conditions, the results of field surveys, and the evaluation of natural features against the Shortlist of Alternatives.

Another key component of this report is to outline which Alternatives may cause adverse effects on the natural environment. Based on the Shortlist of Alternatives, Table 5-1 discusses which Alternatives could have the following impacts on natural features:

Table 5-1 Natural Features Impacts - Shortlist of Alternatives

| Alternative | Potential for Impacts to Natural Features |
|---|---|
| **2A** | No impacts to natural features are predicted as the alignment is proposed by means of microtunneling and to occur along Centre Street and within built up areas. However, shaft locations have not been confirmed and the proposed work area is proximal to TRCA's Regulated Area. If shaft locations occur within the Regulated Area impacts to natural features could occur and mitigation will be required. In addition, tree injury and harm including a likelihood of proposed tree removals are predicted for street and parkland trees. |
| **2B** | No impacts to natural features are predicted as the alignment is proposed by means of microtunneling and to occur along Centre Street and within built up areas. However, shaft locations have not been confirmed and the proposed work area is proximal to TRCA's Regulated Area. If shaft locations occur within the Regulated Area impacts to natural features could occur and mitigation will be required. In addition, tree injury and harm including a likelihood of proposed tree removals are predicted for street and parkland trees. |
| **4B** | If not mitigated, natural feature impacts will occur due to the proposed Etobicoke Creek crossing and work occurring within forested and riparian areas which may provide SAR habitat. |
| **4C** | No impacts to natural features are predicted as the alignment is proposed to occur along a street and built-up areas. However, tree injury and harm including a likelihood of proposed tree removals are predicted for street trees. |
| **4D** | If not mitigated, natural feature impacts will occur due to the proposed Etobicoke Creek crossing and work occurring within forested and riparian areas which may provide SAR habitat. |
| **5** | No impacts to natural features are predicted as the alignment is proposed to occur along a street and built-up areas. However, tree injury and harm including a likelihood of proposed tree removals are predicted for street trees. |

Based on the Shortlist of Alternatives presented, only Alternatives 4B and 4D are predicted to potentially cause adverse effects to natural features. However, the remaining Alternatives may cause injury and /or harm to trees and tree removals will likely occur. For the purpose of this report, Alternatives 4B and 4D will solely be evaluated for potential impacts and carried over to Table 5-2 Natural Features, Potential Impacts, Proposed Mitigation Measures, and Environmental Monitoring. The remaining Alternatives 2A, 2B, 4C and 5 will not be carried over as impacts to natural features due to these proposed alignments are not predicted.

It should be noted that Alternatives 2A and 2B occur proximal to TRCA's Regulated Area and natural features. Micortunneling is proposed for these alternatives and as such impacts are not predicted. These alignments also occur at an elevation above lower floodplain areas. However, if shaft locations are proposed proximal or within the Regulated Area, natural features could be impacted from indirect and direct effects such as sedimentation, and habitat loss. At this time, these alternatives will not be carried over to Table 5-2 Natural Features, Potential Impacts, Proposed Mitigation Measures, and Environmental Monitoring below. However, impacts should be further analyzed once shaft locations are chosen at the detailed design stage.

If Alternatives 4B and 4D are chosen an Environmental Impact Study (EIS) will be required at the detailed design stage. If Alternatives 2A and 2B are chosen, and pending shaft locations, an EIS may be required at the detailed design stage.

## 5.1 Potential Direct and Indirect Effects

An objective of this report is to provide information which will allow the project at the detailed design stage to avoid or minimize direct and indirect impacts to natural features using mitigation measures. The focus of the impact assessment will be within Alternatives 4B and 4D footprints, which are proposed to cross Etobicoke Creek and occur within forested and riparian areas. The remaining Alternatives are not predicted to effect natural features; however, an arborist assessment will likely be required at the detailed design stage for all Alternatives. A description of the potential direct and indirect effects due to Alternatives 4B and 4D are presented in the following subsections.

Note that Table 5-2 identifies, describes, and evaluates the mitigation measures that should be employed to address potential impacts to natural features if Alternatives 4B and 4D are chosen. As well, the mitigation and recommendations provide information to be utilized at the detailed design stage, whereas natural environment mitigation and recommendations should be further refined after additional studies are completed (i.e. an EIS) targeting the proposed work areas which should include a field assessment within the 30 m impact zones and an updated desktop investigation within the 120 m adjacent lands.

### 5.1.1 Direct Effects

Direct effects on natural features are possible from activities taking place during construction. These effects are primarily due to clearing and site preparation related activities that require vegetation removal.

The main natural feature within Alternatives 4B and 4D is Etobicoke Creek. Direct effects could occur within this feature, depending on the proposed construction technique. As well, Alternative 4B construction works are proposed to cross Etobicoke Creek at Vodden Street, which is proximal to FOD3-1, FOD7-5 and FOD7-3 communities (Figure 3) which may provide habitat for various SAR. Alternative 4D construction works also are proposed to cross Etobicoke Creek at Church Street which is proximal to the FOD7 community (Figure 3) which may also provide habitat for various SAR. The proposed crossings and associated work (i.e. staging, access and clearing areas) could have direct impacts on SAR within these areas without the implementation of mitigation.

### 5.1.2 Indirect Effects

Potential indirect effects for Alternatives 4B and 4D include erosion and sedimentation into Etobicoke Creek and natural features, as well as the potential for noise to affect wildlife during pre-construction, construction, and post-construction activities. Additional indirect effects on natural features also include the accidental introduction of invasive species, soil compaction, and accidental spills.

Table 5-2 provides discussion on potential direct and indirect effects on natural features, mitigation, and recommendations for Alternatives 4B and 4D. Some of the mitigation below may become applicable to Alternatives 2A and 2B pending shaft locations as an EIS may be required. If an EIS is required for these, the project should carry over the relevant mitigation provided below.

Table 5-2 Natural Features, Potential Impacts, Proposed Mitigation Measures, and Environmental Monitoring

| Potentially Affected Natural Feature | Project Phase and Activity | Potential Environmental Effect to Natural Feature or Species | Likelihood, Direct or Indirect? | Mitigation Strategy | Effectiveness Monitoring and Contingency Measures |
|---|---|---|---|---|---|
| Fish Habitat: Etobicoke Creek | **Site Preparation**<br>Vegetation removal<br>Grading<br>Use of heavy equipment<br>**Construction**<br>Excavations<br>Proposed tunnelling or open-cut technique. | Site preparation and construction activities, including equipment used, may disturb natural features and cause changes in soil compaction and site drainage, and result in sedimentation to Etobicoke Creek.<br>Accidental spills from heavy equipment and site vehicles may cause environmental impacts. | Direct and indirect adverse effects to fish habitat during site preparation and construction could occur. This includes death of fish or Harmful, Alteration, Disruption, Destruction (HADD) of fish habitat. | A qualified aquatic biologist should review the proposed construction techniques and final design to ensure Best Management Practices (BMPs) for the protection of fish and fish habitat are achieved.<br>Review and follow the *Fish and Fish Habitat Protection Policy Statement* (DFO, 2020a) and DFO's Standards and codes of practice (DFO, 2020b)<br>Proposed in-water works (i.e. open-cut) will require a Request for Review submission to DFO. This is recommended to confirm avoidance of death of fish or HADD.<br>At the detailed design stage geomorphology and hydraulic modelling reports should be drafted for any proposed open-cut or tunnelling techniques. It will be important to assess the potential change in channel characteristics, flows and if scour protection will be achieved.<br>Vegetation removal, grading, and heavy equipment use should only occur within the proposed Study Area where these areas have been previously demarcated and approved to allow construction works.<br>Silt fencing should be erected along the extremities of the construction areas. Erosion and Sedimentation Controls (ESC) multibarrier (i.e., heavy-duty silt fencing and Silt Soxx,) should be utilized at any near in-water works.<br>An ESC plan should be developed by a qualified person and be site-specific. The ESC plan should be updated as required. These measures and structures should be maintained and enhanced as needed until construction has been completed and the site has stabilized.<br>A frac-out response plan may be required for any proposed tunneling techniques proximal to Etobicoke Creek.<br>Stockpiled material should be covered to prevent potential sedimentation into natural features.<br>Staging and access areas should be planned to be located within existing open and disturbed areas.<br>Access and movement of vehicles and equipment should be controlled to limit the introduction and spread of invasive species. Vehicles and equipment should be inspected entering and leaving the Study Area to verify that the equipment is clean and free of invasive species. | Etobicoke Creek is a warmwater fishery and the likely in-water works timing window is from July 1 – March 31.<br>Any proposed in-water works within Etobicoke Creek should follow the creeks in-water work timing window and should be confirmed by the agencies at the detailed design stage.<br>If in-water works are proposed the project should complete the following:<br>Prior to and during construction, isolate the work area and work in the dry, if possible. If the work cannot be completed under dry conditions, allow flows and fish passage downstream via a diversion system as required. This can be carried out for example with cofferdams and pumping within the isolated area. Pump diverted water downstream and routinely check screens for fish entrapment. Discharged water from the isolated area should flow over an energy dissipator and protected by filtrexx socks. Isolated area should be dewatered and fish to be relocated safely downstream by qualified aquatic biologists. A License to Collect Fish for Scientific Purposes will have to be retained from MNRF.<br>Weekly and within 24 hours following a heavy rain event, sediment control structures should be inspected to verify that structures are in good working condition and sedimentation is not occurring.<br>Sediment control structures and surrounding areas should be replaced, repaired, and modified as required within 24 hours of noted deficiencies.<br>Weekly monitoring should be conducted to prevent disturbances occurring outside of the Study Area. If disturbances are observed, activities should be altered to avoid these impacts, and the area should be restored as soon as possible.<br>Designated refuelling areas and equipment should be regularly monitored for leaks, and all equipment will be checked to verify that it is functioning properly.<br>Equipment checks, and preventative maintenance should be conducted regularly. If repairs are not feasible on faulty equipment, it will be removed from site immediately. |

Table 5-2 Natural Features, Potential Impacts, Proposed Mitigation Measures, and Environmental Monitoring

| Potentially Affected Natural Feature | Project Phase and Activity | Potential Environmental Effect to Natural Feature or Species | Likelihood, Direct or Indirect? | Mitigation Strategy | Effectiveness Monitoring and Contingency Measures |
|---|---|---|---|---|---|
| | | | | Construction equipment movement should be limited to occur within the existing trail system and disturbed areas, where possible.<br>Equipment should be inspected and used only if in good working order.<br>Changes to land contours and natural drainage should be minimized.<br>The Study Area should be revegetated with native species as soon as possible following disturbance. ESC measures should not be removed until the site has been restored.<br>A designated and lined refuelling area with appropriate spill containment should be established a minimum of 30 m from any watercourses.<br>A spill response team member should be appointed as a point of contact in the case of an accident or spill to verify the proper and timely implementation of site response controls. A spill control plan should be developed.<br>Absorbent materials and equipment required to control and clean up spills of deleterious substances should be available onsite. Spills and leaks of deleterious substances will be immediately contained and cleaned up in accordance with regulatory requirements and reported immediately to the Ontario Spills Action Centre (SAC) at 1.800.268.6060. | |
| SAR Avifauna and Migratory birds | **Site Preparation**<br>Vegetation removal<br>Grading<br>Use of heavy equipment<br>New access routes<br>Staging areas<br>**Construction** | SAR Avifauna and species protected under the MBCA from noise, tree removals, and habitat fragmentation. Canada Warbler were observed foraging within the Study Area and Common Nighthawk was observed slightly south of the Study Area. Although, Special Concern species and their habitat are not formally protected under the *Endangered Species Act* ESA, BMP's is to incorporate mitigation. | No indirect impacts are predicted if construction timing windows can be followed.<br>Marginal direct impacts are predicted due to noise, minor habitat loss, or fragmentation. | A Breeding Bird Survey (BBS) should be completed at the detailed design stage.<br>If possible, construction, tree and shrub removal and vegetation clearing should be avoided from early April to late August (Government of Canada, 2020). This window conforms to the Study Area's general nesting period (Zone C2, Toronto), corresponding to the MBCA.<br>Avoid vegetation removal within FOD communities where possible (Figure 3) to protect potential avifauna SAR habitat. Limit site access and staging to previously disturbed areas. | If the early April to late August construction timing window cannot be applied for construction, the following should be implemented:<br>Have a qualified avifauna biologist sweep areas of proposed construction and flag any nests observed.<br>Implement appropriate buffers and timing windows based on type of nests observed per the MBCA.<br>Nest sweeps are valid for 1 week from the date of survey. The biologist may have to also monitor certain areas during construction activities if agencies comment further on methodology. |
| SAR Bats | **Site Preparation**<br>Tree removal | Currently, the Study Area provides marginal habitat for suitable roosting opportunity for at-risk bats. However, there is a chance that snag features may develop further within trees (i.e., Maple, Birch, Oak and other snag trees), and the decaying foliage and leaves may provide additional opportunity. | No direct or indirect affects are currently predicted. | In general, removal of select species of trees with a diameter-at-breast height (DBH) greater than 10 cm should be avoided (MNRF Guelph District, 2017) for trees occurring within forested areas proximal to Etobicoke Creek. These trees generally include Maple, Birch, Oak and other snag species that may be used for roosting by at-risk bats. | At minimum follow-up tree snag surveys should be completed at the detailed design phase following the *Survey Protocol for Species at Risk Bats within Treed Habitats Little Brown Myotis, Northern Myotis & Tri-Colored Bat* (MNRF Guelph District, 2017) Additional specialized surveys may be required if Maple, Oak, Birch or other snag trees are proposed for removal. |

Table 5-2 Natural Features, Potential Impacts, Proposed Mitigation Measures, and Environmental Monitoring

| Potentially Affected Natural Feature | Project Phase and Activity | Potential Environmental Effect to Natural Feature or Species | Likelihood, Direct or Indirect? | Mitigation Strategy | Effectiveness Monitoring and Contingency Measures |
|---|---|---|---|---|---|
| | | | | Site should be restored with native tree and shrub species with attributes attractive for wildlife forage and nesting. | If tree removals are proposed, an arborist survey, tree replacement and compensation plan should be submitted. If possible, avoidance of Maple, Oak, Birch and other snag tree removals should be carried out, as these trees may provide roosting habitat for at-risk bats as snag features and growth progress.<br>Tree removal construction timing windows may mitigate impacts to SAR avifauna. However, after completion of a BBS and pending the results, consultation with MECP may be required for the protection of SAR avifauna. |
| SAR Flora and Monarch (Special Concern) | **Site Preparation**<br>Vegetation removal<br>Grading<br>Use of heavy equipment<br>New access routes<br>Staging areas | The FOD 7-5 (Figure 3), ecotone is dominated by Black Walnut, a species very similar to Butternut (Endangered). Butternut was not identified during the EA field surveys, however, if this species occurs within the Study Area, it could be impacted from the proposed works.<br>Monarch was observed foraging within the Study Area Although, Special Concern species and their habitat are not formally protected under the *Endangered Species Act* ESA, BMP's is to incorporate mitigation. | Potential for direct and indirect impacts. | An updated ELC and plant survey should be conducted over periods during the growing season at the detailed design phase.<br>Butternut targeted surveys should be completed within the Study Area during the detailed design stage as a follow-up to the EA field investigations. Complete a BBS at detailed design as required.<br>Avoid removals of Common Milkweed and native wildflowers within cultural meadows, as these species are the preferred flora for Monarch forage. | If a true butternut is observed, the species may be protected by a 25 m buffer. A Butternut Health Assessment (BHA) should be completed by a qualified assessor (Government of Ontario, 2015). Registration/permitting under the ESA may be required if the 25 m buffer cannot be adhered to.<br>Common Milkweed and other attractive native wildflowers for Monarch should be flagged during the detailed design surveys and avoided during construction. |
| Snapping Turtle (Special Concern) and other at-risk herptiles | **Site Preparation**<br>Vegetation removal<br>Grading<br>Use of heavy equipment<br>New access routes<br>Staging areas<br>**Construction**<br>Noise from heavy equipment | Based on the NHIC background search, Snapping Turtle may occur within the Study Area. This species or signs of this species were not observed during the EA field surveys. However, suitable habitat is present within the Study Area. Although, Special Concern species and their habitat are not formally protected under the ESA, BMP's is to incorporate mitigation. | Direct and indirect effects could occur. | Targeted searches for Snapping Turtle and other at-risk herptiles should be carried out during the detailed design phase. Although wetlands were not observed during the EA field surveys, smaller inclusion wetland habitat should be searched for at the detailed design stage through an EIS. | Exclusion fencing is recommended to prevent Snapping Turtle from entering the Construction Area. Hardware cloth, chain link fence (½" mesh or smaller), concrete, aluminum, vinyl wall, or prefabricated plastic wildlife fence should be utilized (MNRF, 2016). *MNRF's Best Management Practices for Mitigating the Effects of Roads on Amphibian and Reptile Species at Risk in Ontario* should be followed for installation. |
| General Wildlife and SAR | **Site Preparation**<br>**Construction** | Potential effects on any new SAR identified during the detailed design surveys. | Direct and indirect effects could occur. | The Study Area should be assessed for Significant Wildlife Habitat (SWH) at the detailed design stage utilizing Criteria Schedules for Ecoregion 7E (MNRF, 2015a).<br>Complete SAR surveys during the detailed design phase. Avoid impacts directly to SAR and indirect impacts to their habitat if possible. | Create SAR informational brochure for contractor at the construction phase. If SAR is encountered stop work, contact the MECP and follow protocols which should be outlined during the detailed design phase.<br>If direct or indirect impacts to SAR or their habitat cannot be avoided registration or permitting under the ESA will be required. |

# 6. Natural Environment Permitting and Next Steps

## Toronto Region Conservation Authority (TRCA)

The Shortlist of Alternatives, Alternatives 4B and 4D occur within TRCA's regulated area in which an EIS and permit under *O. Reg. 166/06: Toronto and Region Conservation Authority: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses.* will be required to allow for the proposed construction within these areas. TRCA should be consulted at the detailed design stage and in addition to the required EIS, it is likely that geotechnical, geomorphology, hydraulic and arborist reports including final design drawings will be required as part of the permit application. It is anticipated that a permit will not be required for Alternatives 4C and 5. A permit may be required for Alternatives 2A and 2B depending on the location of shafts as well as an EIS.

## Ministry of the Environment, Conservation and Parks (MECP)

MECP administers the *Endangered Species Act* (ESA, 2007). The MECP should be consulted at the detailed design stage. The proponent will be responsible to screen the project and assess whether SAR or their habitat will be impacted from the proposed works. Based on the background search and agency consultation, no SAR occur within Etobicoke Creek. However, the FOD and riparian communities adjacent to the creek (within Alternatives 4B and 4D) may provide suitable habitat for at-risk bats, various avifauna and Snapping Turtle. Special Concern species were confirmed within the Study Area, however, are not afforded formal protection under the ESA. However, as per Table 5-2, additional surveys and a SAR impact assessment at the detailed design stage is required. It is anticipated that a permit will not be required for Alternatives 4C and 5. It is unlikely a permit will be required for Alternatives 2A and 2B but will depend on construction technique and location of shafts.

## Fisheries and Oceans Canada (DFO)

DFO prohibits the harmful alteration, disruption or destruction of fish habitat (HADD) and death of fish as per the recently amended *Fisheries Act*. A proposed open-cut technique may cause the following impacts, if not mitigated during the detailed design stage:

- Vegetation clearing
- Addition or removal of aquatic vegetation
- Change in timing, duration and frequency of flow
- Placement of material or structures in water
- Use of industrial equipment
- Sedimentation

A proposed tunneling technique may cause the following impacts, if not mitigated during the detailed design stage:

- Vegetation clearing
- Placement of material or structures in water
- Use of industrial equipment
- Sedimentation
- Frac-out

Both proposed techniques have the potential to create a sedimentation event within Etobicoke Creek if ESC controls are not implemented. As well, the proposed techniques have the potential to cause numerous negative effects to fish and fish habitat. Many of the impacts are temporary in nature and mitigation should reduce the severity of the impacts and avoid a residual impact, HADD and death of fish. As per the recently amended *Fisheries Act*, proponents no longer self-assess projects. It is likely that a Request for Review (RFR) will have to be submitted to DFO for Alternatives 4B and 4D which must include final design drawings. Similar projects completed indicate that a Letter of Advice (LOA) can be retained from DFO to allow for the proposed construction, however, that is pending the detailed design and measures provided to protect fish and fish habitat. A *Fisheries Act Authorization* which results in construction oversight, habitat offsetting and 3-5 years of post-construction monitoring will be required if HADD or death of fish cannot be avoided. Permitting with DFO will not be required for Alternatives 2A, 2B, 4C and 5.

## Trees

It is anticipated that tree injury or harm could occur based on all Shortlist of Alternatives and therefore a Tree Preservation and Compensation Plan will be required with Landscape Drawings. Alternatives 4B and 4D would require tree removals within ravine, woodland and street areas and possibly within parkland features. Whereas the remaining Alternatives would likely result in removals for street trees alone and potentially within or near parkland areas for Alternatives 2A and 2B.

# 7. Conclusion

The Shortlist of Alternatives, Alternatives 4B and 4D for the proposed new 750 mm Feedermain has the potential to have direct and indirect impacts on natural features. This includes potential adverse effects within Etobicoke Creek, forested and riparian ecological communities and potential SAR habitat. If Alternatives 4B or 4D are selected, additional work will be required including an EIS and permitting under TRCA, DFO and potentially MECP. Based on similar projects of this magnitude if the set of recommendations and mitigation are followed within Table 5-2 and updated at the detailed design stage, the project may be able to proceed with avoidance of direct impacts, however, indirect, and temporary effects are predicted. Alternatives 2A and 2B are not predicted to have an impact on natural features based on the microtunneling alignment. However, deviation in construction technique and depending on where shaft locations are proposed will be a determining factor whether these Alternatives could cause natural environment impacts and result in a permitting effort and EIS.

From an ecological perspective, it would be ideal to select Alternatives 4C or 5. These alternatives are not predicted to have impacts on natural features. If one of these Alternatives is chosen, it is recommended to select the Alternative which will have limited street tree removals and capability of avoiding parkland tree removals.

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# 9. Signature Page

Report Completed By:

_____

Christopher J. Flesher, Senior Biologist/Ontario Ecology Team Lead
416.499.9000
[redacted]

# Appendix A. Agency Consultation Record

**From:** McAllister, Aurora (MECP)
**To:** Flesher, Chris/TOR
**Subject:** [EXTERNAL] RE: Downtown Brampton Schedule B EA - Sanitary Sewer Replacements/Relining
**Date:** Thursday, November 14, 2019 1:16:29 PM
**Attachments:** Downtown Brampton Schedule B EA - Sanitary Sewer ReplacementsRelining.msg

---

Hi Chris,

I did the screening for all the phases and works shown in figure that was provided with the original info request (attached to this email).

Other than Redside Dace, the records for the other species at risk would be the same for your updated/refined study area (the area within the orange square).

Aurora

Aurora McAllister | Management Biologist | Permissions and Compliance | Species at Risk Branch | Ontario Ministry of Environment, Conservation and Parks | [redacted]

---

**From:** Flesher, Chris/TOR <[redacted]>
**Sent:** November 12, 2019 6:34 PM
**To:** McAllister, Aurora (MECP) <[redacted]>
**Subject:** RE: Downtown Brampton Schedule B EA - Sanitary Sewer Replacements/Relining

Hi Aurora,

Just following up on this. Was it possible that there was an error on selections of sites? Our site (plan attached again), contains Etobicoke Creek and not Fletcher's Creek. Aside from Redside Dace (assuming does not occur within Etobicoke Creek at this location), could you please confirm the remaining species listed below could occur?

Thank you,
Chris

---

**From:** McAllister, Aurora (MECP) <[redacted]>
**Sent:** Friday, August 16, 2019 11:33 AM
**To:** Flesher, Chris/TOR <[redacted]>
**Subject:** [EXTERNAL] RE: Downtown Brampton Schedule B EA - Sanitary Sewer Replacements/Relining

Hello Chris,

The Ministry has records of numerous species at risk in the area including Chimney Swift, Peregrine Falcon, Snapping Turtle, Barn Swallow, Butternut and Bank Swallow. Fletcher's Creek is an occupied reach of stream for Redside Dace.

Other species that have the potential to be present within or adjacent to your study area include species at risk bats. If endangered or threatened species and/or their habitat will be impacted by the proposed project, authorization under the Endangered Species Act will be required in order to proceed.

The replacement of the watermain under Fletcher's Creek may qualify for registration under s. 23.4 (aquatic species) of O. Reg. 242/08 in relation to Redside Dace.

Regards,

Aurora McAllister | Management Biologist | Permissions and Compliance | Species at Risk Branch | Ontario Ministry of Environment, Conservation and Parks |
[redacted]

---

**From:** Flesher, Chris/TOR <[redacted]>
**Sent:** June 26, 2019 3:26 PM
**To:** Species at Risk (MECP) <[redacted]>
**Cc:** Jones, Lee Anne/TOR <[redacted]>; Parmar, Pragni <[redacted]>; Hart, Erica/TOR <[redacted]>; ESA Aurora (MNRF) <[redacted]>; Kowalyk, Bohdan (MNRF) <[redacted]>; Kelly, Crystal <[redacted]>
**Subject:** Downtown Brampton Schedule B EA - Sanitary Sewer Replacements/Relining

Greetings,

On behalf of the Region of Peel we're conducting a Schedule B Class EA for the Sanitary Sewer Replacement/Relining works within Downtown Brampton, site figure attached (Phase 3).

We would like to screen the project with you for Species at Risk (SAR). Please provide a report at your earliest opportunity.

Thanks,

Christopher Flesher, B.Sc.,ET.Dip.
Jacobs
Biologist | Global Environmental Solutions
[redacted]

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**From:** Sharon Lingertat
**To:** Flesher, Chris/TOR
**Cc:** Parmar, Pragni; Hart, Erica/TOR
**Subject:** RE: [EXTERNAL] RE: Downtown Brampton Schedule B EA - Sanitary Sewer Replacements/Relining
**Date:** Friday, November 15, 2019 9:50:39 AM
**Attachments:** image004.png
image006.png
image008.png

---

Hi Chris,

Please just keep me posted on the EA as it progresses.

I will respond to the Notice of Commencement once received. We also typically like to review the draft report so that any concerns or comments can be incorporated into the report, prior to finalizing and posting for public review.

Regards,

**Sharon Lingertat, B.Sc. (Hons), MCIP, RPP**
Senior Planner
Infrastructure Planning and Permits | Development and Engineering Services

[redacted]

---

**From:** Flesher, Chris/TOR <[redacted]>
**Sent:** Tuesday, November 12, 2019 6:40 PM
**To:** Sharon Lingertat <[redacted]>
**Cc:** Parmar, Pragni <[redacted]>; Hart, Erica/TOR <[redacted]>
**Subject:** RE: [EXTERNAL] RE: Downtown Brampton Schedule B EA - Sanitary Sewer Replacements/Relining

Hi Sharon,

Just checking in on this file. Thank you for sending in the GIS request we did receive! Please let us know if there is anything further you require.

Pragni/Erica – could you please provide Sharon with name of the PM from the Region for this project? Will a Notice of Commencement be sent out?

Thanks,
Chris

**From:** Flesher, Chris/TOR
**Sent:** Wednesday, July 03, 2019 1:47 PM
**To:** Sharon Lingertat <[redacted]a>
**Cc:** Parmar, Pragni <[redacted]>; Hart, Erica/TOR <[redacted]>; Plourde, Rachelle/TOR <[redacted]>; Jones, Lee Anne/TOR <[redacted]>
**Subject:** RE: [EXTERNAL] RE: Downtown Brampton Schedule B EA - Sanitary Sewer Replacements/Relining

Thanks Sharon for letting me know and sending in the GIS request.

Pragni and all – could someone please confirm the Region of Peel PM on this file so Sharon can send a response. Also, have we sent out a Notice of Commencement?

Thanks,
Chris

---

**From:** Sharon Lingertat <[redacted]>
**Sent:** Wednesday, July 03, 2019 1:31 PM
**To:** Flesher, Chris/TOR <[redacted]>
**Subject:** RE: [EXTERNAL] RE: Downtown Brampton Schedule B EA - Sanitary Sewer Replacements/Relining

Hi Chris,

You're request is in with our GIS group. They may contact you directly regarding a data sharing agreement.

Who is your contact at the Region of Peel as we normally send out a formal response to the proponent (not sure if a Notice of Commencement has already been sent?)?

Thanks

**Sharon Lingertat, B.Sc. (Hons), MCIP, RPP**
Senior Planner
Infrastructure Planning and Permits | Development and Engineering Services

[redacted]

---

**From:** Flesher, Chris/TOR <[redacted]>
**Sent:** Friday, June 28, 2019 10:27 AM
**To:** Sharon Lingertat <[redacted]>
**Cc:** Jones, Lee Anne/TOR <[redacted]>; Parmar, Pragni <[redacted]>; Hart, Erica/TOR <[redacted]>; Kelly, Crystal <[redacted]>
**Subject:** Re: [EXTERNAL] RE: Downtown Brampton Schedule B EA - Sanitary Sewer Replacements/Relining

Hi Sharon,

Thanks for the response. Shape file format would be great.

Have a great long weekend!
Chris

Get Outlook for iOS

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**From:** Sharon Lingertat <[redacted]>
**Sent:** Friday, June 28, 2019 8:18 AM
**To:** Flesher, Chris/TOR
**Cc:** Jones, Lee Anne/TOR; Parmar, Pragni; Hart, Erica/TOR; Kelly, Crystal
**Subject:** [EXTERNAL] RE: Downtown Brampton Schedule B EA - Sanitary Sewer Replacements/Relining

Hi Chris,

Annette is currently on maternity leave, but I will make the request through our GIS and will get back to you.

What format do you need this in (shape file, CAD, Microstation)?

Thanks,

**Sharon Lingertat, B.Sc. (Hons), MCIP, RPP**
Senior Planner
Infrastructure Planning and Permits | Development and Engineering Services

[redacted]

**From:** Flesher, Chris/TOR <[redacted]>
**Sent:** Wednesday, June 26, 2019 3:29 PM
**To:** Annette Lister <[redacted]>
**Cc:** Jones, Lee Anne/TOR <[redacted]>; Parmar, Pragni <[redacted]>; Hart, Erica/TOR <[redacted]>; Kelly, Crystal <[redacted]>
**Subject:** Downtown Brampton Schedule B EA - Sanitary Sewer Replacements/Relining

Hi Annette,

On behalf of the Region of Peel we're conducting a Schedule B Class EA for the Sanitary Sewer Replacement/Relining works within Downtown Brampton, site figure attached (Phase 3).

Would you be able to send a request to your GIS team for updated data i.e. ELC, floodline, flora and fauna, etc? Any other natural heritage data and background reports which could be passed along would be much appreciated.

Thank you,

Christopher Flesher, B.Sc.,ET.Dip.
Jacobs
Biologist | Global Environmental Solutions
[redacted]

[redacted]
www.jacobs.com



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# Appendix B. Ontario Breeding Bird Atlas and Natural Heritage Information Centre Results

## Square Summary (17NJ93)

| #species (1st atlas) | | | | #species (2nd atlas) | | | | #hours | | #pc done | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| poss | prob | conf | total | poss | prob | conf | total | 1st | 2nd | road | offrd |
| 6 | 19 | 54 | 79 | 19 | 18 | 65 | 102 | 160 | 118 | 30 | 14 |

## Region summary (#10: Halton-Peel-Dufferin)

| #squares | #sq with data | | #species | | #pc done | target #pc |
|---|---|---|---|---|---|---|
| | 1st | 2nd | 1st | 2nd | | |
| 38 | 38 | 38 | 160 | 177 | 1681 | 950 |

**Target number of point counts in this square**: 24 road side, 1 off road (1 in deciduous forest). Please try to ensure that each off-road station is located such that the entire 100m radius circle is within the prescribed habitat.

| SPECIES | Code | | % | | SPECIES | Code | | % | | SPECIES | Code | | % | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1st | 2nd | 1st | 2nd | | 1st | 2nd | 1st | 2nd | | 1st | 2nd | 1st | 2nd |
| Canada Goose | FY | NE | 94 | 100 | Broad-winged Hawk | | | 47 | 57 | Ruby-thr Hummingbird | H | P | 89 | 89 |
| Wood Duck | FY | FY | 78 | 89 | Red-tailed Hawk | NY | NY | 100 | 100 | Belted Kingfisher | CF | FY | 100 | 100 |
| Gadwall ‡ | | | 2 | 7 | American Kestrel | A | P | 100 | 92 | Red-headed Woodpecker † | NY | NY | 76 | 26 |
| American Wigeon ‡ | | | 2 | 7 | Virginia Rail | | | 52 | 71 | Red-bell Woodpecker ‡ | | FY | 5 | 36 |
| American Black Duck | | | 31 | 28 | Sora | | | 57 | 57 | Yellow-bellied Sapsucker | | | 57 | 55 |
| Mallard | FY | FY | 100 | 97 | Common Moorhen | | | 7 | 23 | Downy Woodpecker | AE | NY | 100 | 100 |
| Blue-winged Teal | FY | | 81 | 34 | American Coot | | | 13 | 15 | Hairy Woodpecker | P | NY | 97 | 100 |
| Northern Shoveler ‡ | | | 2 | 5 | Coot/Moorhen | | | 0 | 0 | Northern Flicker | NY | NY | 100 | 100 |
| Northern Pintail | | | 7 | 2 | Killdeer | FY | FY | 100 | 100 | Pileated Woodpecker | T | FY | 81 | 97 |
| Green-winged Teal | | | 0 | 10 | Rock Dove | NY | NY | 100 | 100 | Olive-sided Flycatcher ‡ | | | 2 | 0 |
| Hooded Merganser | | T | 18 | 42 | Spotted Sandpiper | FY | FY | 97 | 84 | Eastern Wood-Pewee | A | T | 100 | 100 |
| Common Merganser ‡ | | | 5 | 5 | Upland Sandpiper | DD | | 71 | 39 | Alder Flycatcher | S | S | 65 | 86 |
| Ring-necked Pheasant | | | 28 | 21 | Common Snipe | | | 55 | 65 | Willow Flycatcher | | T | 68 | 86 |
| Ruffed Grouse | D | FY | 89 | 78 | American Woodcock | D | S | 84 | 92 | Least Flycatcher | T | T | 92 | 97 |
| Wild Turkey | | FY | 7 | 68 | Wilson's Phalarope † | | | 5 | 2 | Eastern Phoebe | N | NY | 94 | 97 |
| Northern Bobwhite † | | | 2 | 2 | Herring Gull § | | | 15 | 2 | Gr Crested Flycatcher | CF | T | 100 | 100 |
| Pied-billed Grebe | | | 10 | 36 | Black Tern † § | | | 2 | 2 | Eastern Kingbird | NY | NY | 100 | 100 |
| American Bittern | | | 31 | 23 | Mourning Dove | NY | NY | 100 | 100 | Yellow-throated Vireo | | | 23 | 31 |
| Least Bittern † | | | 7 | 15 | Yellow-billed Cuckoo | | H | 28 | 52 | Blue-headed Vireo ‡ | | | 2 | 42 |
| Great Blue Heron § | H | H | 73 | 65 | Black/Yell-billed Cuckoo | | S | 0 | 34 | Warbling Vireo | NY | T | 100 | 100 |
| Green Heron § | A | H | 97 | 86 | Black-billed Cuckoo | P | S | 71 | 86 | Red-eyed Vireo | A | T | 100 | 100 |
| Yellow-crn N.-Heron † | | | 2 | 0 | Eastern Screech-Owl | A | FY | 60 | 97 | Blue Jay | NY | FY | 100 | 100 |
| Turkey Vulture | D | H | 73 | 89 | Great Horned Owl | NY | NY | 92 | 76 | American Crow | FY | NY | 100 | 100 |
| Osprey ‡ | | | 2 | 13 | Barred Owl ‡ | | | 2 | 13 | Horned Lark | FY | FY | 97 | 92 |
| Northern Harrier | P | H | 86 | 81 | Long-eared Owl | | | 13 | 10 | Purple Martin | AE | NY | 42 | 34 |
| Sharp-shinned Hawk | | AE | 44 | 76 | North Saw-whet Owl | | | 10 | 7 | Tree Swallow | NY | NY | 94 | 100 |
| Cooper's Hawk | | A | 21 | 68 | Common Nighthawk | V | S | 42 | 31 | North Rgh-wing Swallow | NY | NY | 100 | 84 |
| Northern Goshawk | | | 18 | 34 | Whip-poor-will | | AE | 23 | 10 | Bank Swallow § | NY | NY | 97 | 76 |
| Red-should Hawk † | | | 15 | 23 | Chimney Swift | AE | V | 71 | 71 | Cliff Swallow § | NY | NY | 81 | 86 |

next page >>

## Ontario Breeding Bird Atlas - Summary Sheet for Square 17NJ93 (page 2 of 2)

| SPECIES | Code | | % | |
|---|---|---|---|---|
| | 1st | 2nd | 1st | 2nd |
| Barn Swallow | NY | NY | 100 | 100 |
| Black-capped Chickadee | CF | FY | 100 | 100 |
| Red-breast Nuthatch | | FY | 60 | 78 |
| White-breast Nuthatch | AE | CF | 94 | 97 |
| Brown Creeper | | P | 47 | 71 |
| Carolina Wren ‡ | | | 2 | 26 |
| House Wren | FY | NY | 100 | 100 |
| Winter Wren | | S | 71 | 71 |
| Sedge Wren | | S | 10 | 36 |
| Marsh Wren | | | 18 | 31 |
| Golden-crown Kinglet | | FY | 26 | 42 |
| Blue-gr Gnatcatcher | | | 23 | 36 |
| Eastern Bluebird | P | NY | 44 | 84 |
| Veery | | T | 81 | 89 |
| Swainson's Thrush ‡ | | | 2 | 0 |
| Hermit Thrush ‡ | | | 2 | 26 |
| Wood Thrush | T | FY | 89 | 100 |
| American Robin | NY | NY | 100 | 100 |
| Gray Catbird | NY | FY | 100 | 100 |
| Northern Mockingbird | | FY | 7 | 47 |
| Brown Thrasher | CF | NY | 100 | 97 |
| European Starling | NY | NY | 100 | 100 |
| Cedar Waxwing | NY | T | 100 | 100 |
| Blue-winged Warbler | | S | 21 | 50 |
| Golden-winged Warbler | | | 28 | 28 |
| Blue/Gold-wing Warbler | | | 0 | 18 |
| Brewster's Warbler † | | | 2 | 7 |
| Nashville Warbler | | S | 76 | 84 |
| Northern Parula ‡ | | | 2 | 5 |
| Yellow Warbler | NY | CF | 97 | 100 |
| Chestn-sided Warbler | S | | 71 | 84 |
| Magnolia Warbler | | T | 23 | 60 |
| Black-thr Blue Warbler | | | 2 | 39 |
| Yellow-rumped Warbler | | | 23 | 68 |
| Black-thr Green Warbler | | | 42 | 73 |
| Blackburnian Warbler | | | 34 | 47 |
| Pine Warbler | S | T | 42 | 84 |
| Black-white Warbler | | H | 76 | 84 |
| American Redstart | | CF | 60 | 92 |
| Ovenbird | | T | 92 | 92 |
| North Waterthrush | | | 73 | 73 |
| Louis Waterthrush † | | | 10 | 15 |
| Mourning Warbler | NE | CF | 76 | 94 |
| Common Yellowthroat | CF | CF | 100 | 100 |
| Hooded Warbler † | | S | 0 | 2 |
| Canada Warbler | | | 50 | 47 |
| Yellow-breast Chat † | | | 5 | 0 |
| Eastern Towhee | | S | 65 | 86 |
| Chipping Sparrow | NY | CF | 100 | 100 |
| Clay-colored Sparrow | | | 13 | 42 |
| Field Sparrow | CF | CF | 86 | 84 |
| Vesper Sparrow | NY | CF | 92 | 78 |
| Savannah Sparrow | CF | NY | 100 | 100 |
| Grasshopper Sparrow | | | 76 | 65 |
| Henslow's Sparrow † | | | 10 | 2 |
| Song Sparrow | CF | CF | 100 | 100 |
| Lincoln's Sparrow ‡ | | | 2 | 2 |
| Swamp Sparrow | T | S | 89 | 92 |
| White-throat Sparrow | | | 81 | 76 |
| Scarlet Tanager | S | T | 76 | 84 |
| Northern Cardinal | NY | CF | 92 | 92 |
| Rose-breast Grosbeak | A | FY | 97 | 100 |
| Indigo Bunting | FY | FY | 100 | 100 |
| Bobolink | CF | FY | 97 | 100 |
| Red-wing Blackbird | NY | FY | 100 | 100 |
| Eastern Meadowlark | CF | CF | 100 | 97 |
| Western Meadowlark ‡ | | | 2 | 0 |
| Common Grackle | CF | FY | 100 | 100 |
| Brown-head Cowbird | FY | FY | 100 | 100 |
| Orchard Oriole | | | 23 | 28 |
| Baltimore Oriole | NY | NY | 100 | 100 |
| Purple Finch | | S | 39 | 68 |
| House Finch | | NY | 18 | 86 |
| Red Crossbill | | | 7 | 0 |
| Pine Siskin | | | 13 | 10 |
| American Goldfinch | FY | FY | 100 | 100 |
| House Sparrow | NY | NY | 100 | 100 |

This list includes all species found during the Ontario Breeding Bird Atlas (1st atlas: 1981-1985, 2nd atlas: 2001-2005) in the region #10 (Halton-Peel-Dufferin). Underlined species are those that you should try to add to this square. They have not yet been reported during the 2nd atlas, but were found during the 1st atlas in this square or have been reported in more than 50% of the squares in this region during the 2nd atlas so far. In the species table, "BE 2nd" and "BE 1st" are the codes for the highest breeding evidence for that species in square 17NJ93 during the 2nd and 1st atlas respectively. The % columns give the percentage of squares in that region where that species was reported during the 2nd and 1st atlas (this gives an idea of the expected chance of finding that species in region #10). Rare/Colonial Species Report Forms should be completed for species marked: § (Colonial), ‡ (regionally rare), or † (provincially rare). Current as of 21/11/2019. An up-to-date version of this sheet is available from http://www.birdsontario.org/atlas/summaryform.jsp?squareID=17NJ93

<< previous page

## Square Summary (17PJ03)

| #species (1st atlas) | | | | #species (2nd atlas) | | | | #hours | | #pc done | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| poss | prob | conf | total | poss | prob | conf | total | 1st | 2nd | road | offrd |
| 6 | 8 | 61 | 75 | 18 | 10 | 62 | 90 | 43 | 293 | 50 | 5 |

## Region summary (#12: Toronto)

| #squares | #sq with data | | #species | | #pc done | target #pc |
|---|---|---|---|---|---|---|
| | 1st | 2nd | 1st | 2nd | | |
| 16 | 16 | 16 | 130 | 159 | 833 | 400 |

**Target number of point counts in this square**: 23 road side, 2 off road (1 in deciduous forest, 1 in pasture/grassland). Please try to ensure that each off-road station is located such that the entire 100m radius circle is within the prescribed habitat.

| SPECIES | Code | | % | | SPECIES | Code | | % | | SPECIES | Code | | % | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1st | 2nd | 1st | 2nd | | 1st | 2nd | 1st | 2nd | | 1st | 2nd | 1st | 2nd |
| Canada Goose | NY | FY | 87 | 100 | Turkey Vulture | | H | 0 | 75 | Yellow-billed Cuckoo | | S | 25 | 75 |
| Mute Swan | | | 18 | 56 | Northern Harrier | H | H | 37 | 56 | Black/Yell-billed Cuckoo | | | 0 | 6 |
| Trumpeter Swan † | | | 0 | 18 | Sharp-shinned Hawk | | H | 0 | 100 | Black-billed Cuckoo | | CF | 68 | 87 |
| Wood Duck | | FY | 31 | 81 | Cooper's Hawk | | FY | 0 | 100 | Eastern Screech-Owl | | T | 50 | 100 |
| Gadwall | | P | 31 | 68 | Northern Goshawk | | | 0 | 6 | Great Horned Owl | NY | AE | 81 | 100 |
| American Wigeon ‡ | | | 0 | 6 | Red-should Hawk † | | | 12 | 0 | Barred Owl ‡ | | | 0 | 0 |
| American Black Duck | | | 50 | 68 | Broad-winged Hawk | | | 12 | 6 | Long-eared Owl ‡ | | | 0 | 12 |
| Mallard | NY | FY | 93 | 100 | Red-tailed Hawk | NY | NY | 81 | 100 | Short-eared Owl † | | | 0 | 0 |
| Blue-winged Teal | | | 56 | 31 | American Kestrel | AE | NY | 81 | 100 | Common Nighthawk | | H | 68 | 87 |
| Northern Shoveler ‡ | | | 6 | 6 | Peregrine Falcon † | | | 0 | 50 | Chimney Swift | AE | AE | 87 | 100 |
| Green-winged Teal ‡ | | | 0 | 6 | Virginia Rail | | | 18 | 56 | Ruby-thr Hummingbird | | H | 62 | 93 |
| Canvasback † | | | 0 | 12 | Sora | | H | 31 | 87 | Belted Kingfisher | H | FY | 93 | 100 |
| Redhead † | | | 0 | 6 | Common Moorhen | | | 12 | 6 | Red-headed Woodpecker † | | | 37 | 12 |
| Lesser Scaup ‡ | | | 0 | 0 | American Coot | | | 6 | 6 | Red-bell Woodpecker | | | 0 | 43 |
| Hooded Merganser | | H | 0 | 81 | Coot/Moorhen | | | 0 | 0 | Yellow-bellied Sapsucker | | H | 37 | 56 |
| Common Merganser ‡ | | H | 0 | 6 | Killdeer | FY | DD | 93 | 100 | Downy Woodpecker | NY | NY | 81 | 100 |
| Ruddy Duck † | | | 0 | 0 | Rock Dove | NY | NY | 100 | 100 | Hairy Woodpecker | H | AE | 68 | 100 |
| Ring-necked Pheasant | H | S | 81 | 68 | Spotted Sandpiper | NY | FY | 93 | 93 | Northern Flicker | NY | AE | 93 | 100 |
| Ruffed Grouse | | | 12 | 25 | Upland Sandpiper | FY | | 31 | 12 | Pileated Woodpecker | | FY | 31 | 81 |
| Wild Turkey | | | 0 | 18 | Common Snipe | S | | 43 | 25 | Eastern Wood-Pewee | CF | CF | 81 | 93 |
| Pied-billed Grebe | | | 6 | 6 | American Woodcock | FY | T | 50 | 81 | Acadian Flycatcher † | | | 6 | 6 |
| Red-necked Grebe † | | | 0 | 18 | Ring-billed Gull § | | | 6 | 31 | Alder Flycatcher | D | S | 31 | 50 |
| Double-crest Cormorant § | | | 6 | 12 | California Gull † | | | 6 | 0 | Willow Flycatcher | CF | AE | 87 | 100 |
| American Bittern | | | 18 | 6 | Herring Gull § | | | 43 | 6 | Least Flycatcher | T | S | 56 | 81 |
| Least Bittern † | | | 6 | 12 | Great Black-backed Gull † | | | 12 | 6 | Eastern Phoebe | AE | NY | 68 | 100 |
| Great Blue Heron § | | | 37 | 25 | Caspian Tern † | | | 12 | 6 | Gr Crested Flycatcher | AE | CF | 87 | 100 |
| Great Egret † | | | 0 | 12 | Black Tern † § | | | 12 | 0 | Eastern Kingbird | NY | CF | 93 | 100 |
| Green Heron § | | T | 56 | 81 | Common Tern § | | | 25 | 18 | Yellow-throated Vireo ‡ | | | 12 | 6 |
| Black-crown N.-Heron † § | | | 31 | 6 | Mourning Dove | NY | AE | 100 | 100 | Blue-headed Vireo | | | 0 | 12 |

next page >>

## Ontario Breeding Bird Atlas - Summary Sheet for Square 17PJ03 (page 2 of 2)

| SPECIES | Code | | % | | SPECIES | Code | | % | | SPECIES | Code | | % | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1st | 2nd | 1st | 2nd | | 1st | 2nd | 1st | 2nd | | 1st | 2nd | 1st | 2nd |
| Warbling Vireo | NY | CF | 93 | 100 | Northern Mockingbird | | NY | 12 | 87 | Song Sparrow | NY | CF | 100 | 100 |
| Red-eyed Vireo | NY | CF | 93 | 100 | Brown Thrasher | CF | FY | 100 | 100 | Swamp Sparrow | CF | T | 43 | 75 |
| Blue Jay | NY | CF | 100 | 100 | European Starling | NY | NY | 100 | 100 | White-throat Sparrow | CF | S | 43 | 62 |
| American Crow | NY | CF | 87 | 100 | Cedar Waxwing | NE | FY | 87 | 100 | Scarlet Tanager | CF | | 50 | 56 |
| Horned Lark | NY | FY | 68 | 87 | Blue-winged Warbler | | | 0 | 6 | Northern Cardinal | NY | CF | 93 | 100 |
| Purple Martin | | P | 75 | 93 | Golden-winged Warbler | | | 0 | 6 | Rose-breast Grosbeak | CF | CF | 75 | 93 |
| Tree Swallow | AE | FY | 87 | 100 | Nashville Warbler | | | 18 | 50 | Indigo Bunting | CF | CF | 81 | 93 |
| North Rgh-wing Swallow | AE | FY | 93 | 100 | Yellow Warbler | NY | CF | 93 | 100 | Bobolink | NY | CF | 81 | 93 |
| Bank Swallow § | AE | H | 100 | 100 | Chestn-sided Warbler | NE | S | 37 | 62 | Red-wing Blackbird | NY | NE | 100 | 100 |
| Cliff Swallow § | AE | NY | 50 | 87 | Magnolia Warbler | | | 0 | 18 | Eastern Meadowlark | CF | CF | 93 | 93 |
| Barn Swallow | NY | CF | 93 | 100 | Black-thr Blue Warbler ‡ | | | 0 | 6 | Western Meadowlark ‡ | | | 6 | 0 |
| Black-capped Chickadee | NY | CF | 100 | 100 | Black-thr Green Warbler | | | 12 | 12 | Common Grackle | NY | CF | 100 | 100 |
| Tufted Titmouse † | | | 0 | 12 | Blackburnian Warbler ‡ | | | 6 | 6 | Brown-head Cowbird | NY | NE | 93 | 100 |
| Red-breast Nuthatch | | FY | 37 | 100 | Pine Warbler | | | 0 | 68 | Orchard Oriole | | CF | 37 | 93 |
| White-breast Nuthatch | P | FY | 81 | 100 | Cerulean Warbler † | | | 12 | 0 | Baltimore Oriole | NY | CF | 100 | 100 |
| Brown Creeper | | | 18 | 43 | Black-white Warbler | | | 18 | 18 | House Finch | FY | NE | 81 | 100 |
| Carolina Wren | | | 0 | 62 | American Redstart | T | S | 62 | 81 | Red Crossbill ‡ | | | 18 | 0 |
| House Wren | AE | AE | 81 | 100 | Ovenbird | CF | | 50 | 37 | Pine Siskin | | | 37 | 25 |
| Winter Wren | | T | 31 | 37 | North Waterthrush | S | | 37 | 25 | American Goldfinch | NE | NE | 93 | 100 |
| Sedge Wren ‡ | | | 0 | 12 | Mourning Warbler | T | T | 50 | 81 | House Sparrow | AE | CF | 100 | 100 |
| Marsh Wren | | | 6 | 18 | Common Yellowthroat | NE | T | 75 | 87 | | | | | |
| Golden-crown Kinglet | | | 0 | 12 | Canada Warbler ‡ | | | 12 | 12 | | | | | |
| Ruby-crown Kinglet ‡ | | | 6 | 0 | Eastern Towhee | | | 43 | 56 | | | | | |
| Blue-gr Gnatcatcher | T | FY | 37 | 100 | Chipping Sparrow | NY | FY | 100 | 100 | | | | | |
| Eastern Bluebird | | | 0 | 18 | Clay-colored Sparrow | | | 0 | 18 | | | | | |
| Veery | T | S | 62 | 68 | Field Sparrow | NE | FY | 56 | 75 | | | | | |
| Wood Thrush | CF | CF | 75 | 93 | Vesper Sparrow | NY | T | 50 | 37 | | | | | |
| American Robin | NY | NY | 100 | 100 | Savannah Sparrow | NY | CF | 93 | 93 | | | | | |
| Gray Catbird | NE | CF | 93 | 100 | Grasshopper Sparrow | T | | 18 | 18 | | | | | |

This list includes all species found during the Ontario Breeding Bird Atlas (1st atlas: 1981-1985, 2nd atlas: 2001-2005) in the region #12 (Toronto). Underlined species are those that you should try to add to this square. They have not yet been reported during the 2nd atlas, but were found during the 1st atlas in this square or have been reported in more than 50% of the squares in this region during the 2nd atlas so far. In the species table, "BE 2nd" and "BE 1st" are the codes for the highest breeding evidence for that species in square 17PJ03 during the 2nd and 1st atlas respectively. The % columns give the percentage of squares in that region where that species was reported during the 2nd and 1st atlas (this gives an idea of the expected chance of finding that species in region #12). Rare/Colonial Species Report Forms should be completed for species marked: § (Colonial), ‡ (regionally rare), or † (provincially rare). Current as of 21/11/2019. An up-to-date version of this sheet is available from http://www.birdsontario.org/atlas/summaryform.jsp?squareID=17PJ03

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**Downtown Brampton NHIC** Accessed 8/07/2019

17NJ9838

| Element Type | Common Name | Scientific Name | SRank | SARO Status | COSEWIC Status | Last Obs Date |
|---|---|---|---|---|---|---|
| SPECIES | Redside Dace | Clinostomus elongatus | S2 | END | END | 5/21/1985 |

17NJ9938

| Element Type | Common Name | Scientific Name | SRank | SARO Status | COSEWIC Status | Last Obs Date |
|---|---|---|---|---|---|---|
| SPECIES | Redside Dace | Clinostomus elongatus | S2 | END | END | 5/21/1985 |
| SPECIES | Eastern Wood-pewee | Contopus virens | S4B | SC | SC | |

17PJ0038

| Element Type | Common Name | Scientific Name | SRank | SARO Status | COSEWIC Status | Last Obs Date |
|---|---|---|---|---|---|---|
| NATURAL AREA | Humber River | | | | | |

17NJ9937

| Element Type | Common Name | Scientific Name | SRank | SARO Status | COSEWIC Status | Last Obs Date |
|---|---|---|---|---|---|---|
| SPECIES | Redside Dace | Clinostomus elongatus | S2 | END | END | 5/21/1985 |

17PJ0037

| Element Type | Common Name | Scientific Name | SRank | SARO Status | COSEWIC Status | Last Obs Date |
|---|---|---|---|---|---|---|
| SPECIES | Redside Dace | Clinostomus elongatus | S2 | END | END | 5/21/1985 |
| SPECIES | Eastern Wood-pewee | Contopus virens | S4B | SC | SC | |

17PJ0138

| Element Type | Common Name | Scientific Name | SRank | SARO Status | COSEWIC Status | Last Obs Date |
|---|---|---|---|---|---|---|
| NATURAL AREA | Humber River | | | | | |

17PJ0137

| Element Type | Common Name | Scientific Name | SRank | SARO Status | COSEWIC Status | Last Obs Date |
|---|---|---|---|---|---|---|
| NATURAL AREA | Humber River | | | | | |

# Appendix C. Flora and Fauna List

| Common Name | Scientific Name |
|---|---|
| (Acer rubrum X Acer saccharinum) | *Acer x freemanii* |
| American Basswood | *Tilia americana* |
| American Elm | *Ulmus americana* |
| American Goldfinch | *Spinus tristis* |
| American Mountain-ash | *Sorbus americana* |
| American Reed | *Phragmites australis ssp. americanus* |
| American Robin | *Turdus migratorius* |
| American Toad | *Anaxyrus americanus* |
| Balsam Poplar | *Populus balsamifera* |
| Black Locust | *Robinia pseudoacacia* |
| Black Walnut | *Juglans nigra* |
| Black-and-white Warbler | *Mniotilta varia* |
| Black-Crowned Night-Heron | *Nycticorax nycticorax* |
| Blue Jay | *Cyanocitta cristata* |
| *Bromus sp.* | - |
| Brown-headed Cowbird | *Molothrus ater* |
| Canada Warbler | *Cardellina canadensis* |
| Cedar Waxwing | *Bombycilla cedrorum* |
| Chipping Sparrow | *Spizella passerina* |
| Choke Cherry | *Prunus virginiana* |
| Cloudless Sulphur | *Phoebis sennae* |
| Common Buckthorn | *Rhamnus cathartica* |
| Common Burdock | *Arctium minus* |
| Common Dandelion | *Taraxacum officinale* |
| Common Grackle | *Quiscalus quiscula* |
| Common Hawthorn | *Crataegus monogyna* |
| Common Milkweed | *Asclepias syriaca* |
| Common Nighthawk | *Chordeiles minor* |
| Common Teasel | *Dipsacus fullonum* |
| Common Yellowthroat | *Geothlypis trichas* |
| Crabapple | *Malus sp.* |
| Deer Mouse | *Peromyscus maniculatus* |
| Downy Woodpecker | *Picoides pubescens* |
| Eastern Cottonwood | *Populus deltoides ssp. deltoides* |
| Eastern Gray Squirrel | *Sciurus carolinensis* |
| Eastern Hemlock | *Tsuga canadensis* |
| Eastern White Cedar | *Thuja occidentalis* |
| Eastern White Pine | *Pinus strobus* |
| European Euonymus | *Euonymus europaeus* |
| European Starling | *Sturnus vulgaris* |
| Garden Bird's-foot Trefoil | *Lotus corniculatus* |
| Garlic Mustard | *Alliaria petiolata* |
| Grasses | - |
| Gray Catbird | *Dumetella carolinensis* |
| Hairy Woodpecker | *Picoides villosus* |
| Highbush Cranberry | *Viburnum opulus ssp. trilobum* |

| | |
|---|---|
| House Sparrow | *Passer domesticus* |
| Kentucky Bluegrass | *Poa pratensis ssp. pratensis* |
| Large-toothed Aspen | *Populus grandidentata* |
| Mallard | *Anas platyrhynchos* |
| Manitoba Maple | *Acer negundo* |
| Monarch | *Danaus plexippus* |
| Mountain Maple | *Acer spicatum* |
| Mourning Dove | *Zenaida macroura* |
| Northern Cardinal | *Cardinalis cardinalis* |
| Northern Catalpa | *Catalpa speciosa* |
| Northern Red Oak | *Quercus rubra* |
| Norway Maple | *Acer platanoides* |
| Paper Birch | *Betula papyrifera* |
| Peach-leaved Willow | *Salix amygdaloides* |
| Philadelphia Vireo | *Vireo philadelphicus* |
| Purple Loosestrife | *Lythrum salicaria* |
| Red Maple | *Acer rubrum* |
| Red Pine | *Pinus resinosa* |
| Red-breasted Nuthatch | *Sitta canadensis* |
| Red-eyed Vireo | *Vireo olivaceus* |
| Red-tailed Hawk | *Buteo jamaicensis* |
| Ring-billed Gull | *Larus delawarensis* |
| Riverbank Grape | *Vitis riparia* |
| Rock Elm | *Ulmus thomasii* |
| *Salix Sp.* | - |
| Shagbark Hickory | *Carya ovata* |
| Showy Sunflower | *Helianthus laetiflorus* |
| Silver Maple | *Acer saccharinum* |
| Smooth Brome | *Bromus inermis* |
| *Solidago sp.* | - |
| Solitary Sandpiper | *Tringa solitaria* |
| Song Sparrow | *Melospiza melodia* |
| Speckled Alder | *Alnus incana* |
| Spotted Jewelweed | *Impatiens capensis* |
| Spotted Joe Pye Weed | *Eutrochium maculatum var. maculatum* |
| Staghorn Sumac | *Rhus typhina* |
| Sugar Maple | *Acer saccharum* |
| Tall Beggarticks | *Bidens vulgata* |
| Tall Meadow-rue | *Thalictrum pubescens* |
| Thistle | *Cirsium sp.* |
| Trembling Aspen | *Populus tremuloides* |
| *Ulmus Sp.* | - |
| Virginia Creeper | *Parthenocissus quinquefolia* |
| Weeping Willow | *Salix babylonica* |
| White Ash | *Fraxinus americana* |
| White Oak | *Quercus alba* |

| | |
|---|---|
| White Spruce | *Picea glauca* |
| White-throated Sparrow | *Zonotrichia albicollis* |
| Wild Carrot | *Daucus carota* |
| Wild Mock-cucumber | *Echinocystis lobata* |
| Wild Parsnip | *Pastinaca sativa* |
| Woolly Blue Violet | *Viola sororia* |
| Yellow Birch | *Betula alleghaniensis* |

# Appendix D. Photo Log

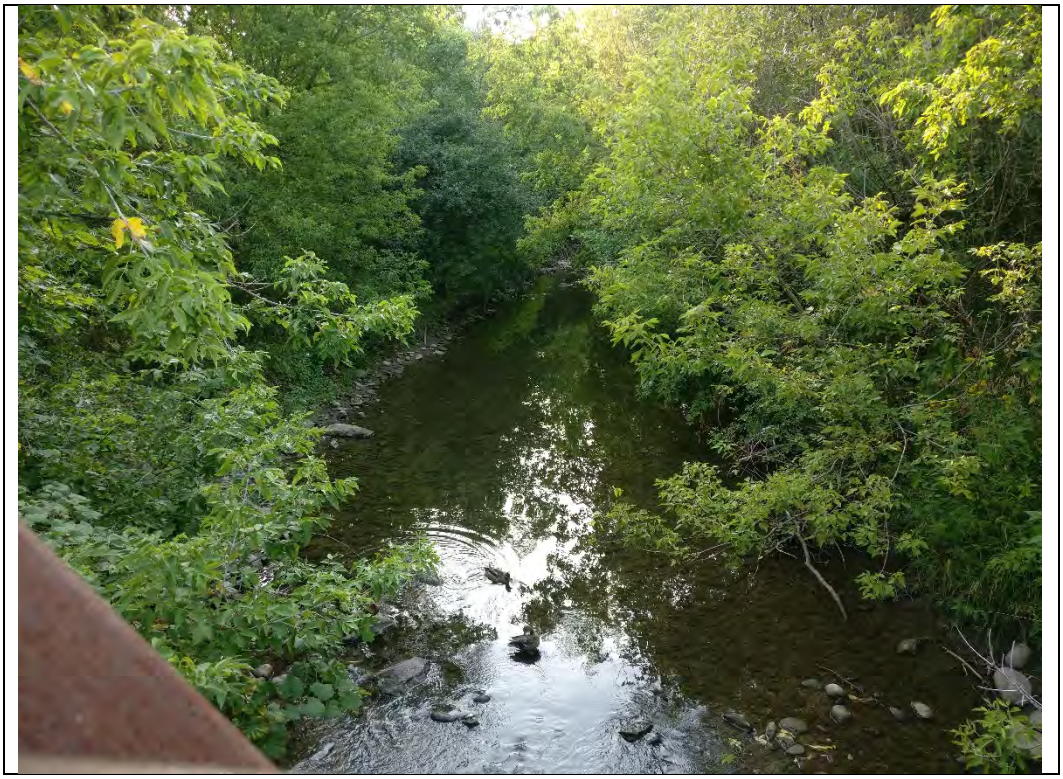

*Photo 1. Looking upstream (north) of Etobicoke Creek at Pedestrian Bridge 1.*

*Photo 2. FOD 7-3 community north of Vodden St. E, looking south west.*

*Photo 3. Parkland habitat north of Vodden St. E, looking east.*

*Photo 4. Left bank of Etobicoke creek North of Vodden St. E, looking west.*

*Photo 5. Beneath Vodden St. E bridge, looking south.*

*Photo 6. Etobicoke Creek Recreation Trail between Duggan Park and FOD 3-1, looking east.*

*Photo 7. Etobicoke Creek at Pedestrian Bridge 2, looking south towards FOD 7-5 community.*

*Photo 8. Parkland community and Etobicoke Creek Recreational Trail along Ken Whallis Drive, looking North*

*Photo 9. FOD 7-5 community and upstream limit of concrete channel at Church St., looking north.*

*Photo 10. Concrete channel and bench, looking south from Church St.*

*Photo 11. Concrete channel and bench, looking south from Scott St.*

*Photo 12. Concrete channel and bench, looking south from Queen St.*

*Photo 13. Weir at downstream limit of concrete channel. Looking north towards Pedestrian Bridge 3.*

*Photo 14. Etobicoke Creek through FOD 7-5 community, looking south from Pedestrian Bridge 3.*

*Photo 15. Etobicoke Creek Recreational Trail through Centennial Park, looking northeast.*