Appendix H

Natural Heritage Assessment Report

Natural Heritage Existing Conditions Report
Mayfield Road From Chinguacousy Road to Heart Lake Road Class Environmental Assessment

Regional Municipality of Peel

July, 2014

Prepared for:
Region of Peel
10 Peel Centre Drive
Suite A and B
Brampton, Ontario L6T 4B9

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Project No. 101-17262-00

Distribution:
3 c Client
1 c File

GENIVAR

Project No. 101-17262-00

July 24, 2014

Region of Peel
10 Peel Centre Drive
Suite A and B
Brampton, Ontario
L6T 4B9

Re: Mayfield Road From Chinguacousy Road to Heart Lake Road
Natural Heritage Existing Conditions Report
Schedule C Class Environmental Assessment
Regional Municipality of Peel

Dear Sirs:

GENIVAR has been retained to conduct a Natural Heritage Existing Conditions Report as part of the Schedule C Class Environmental Assessment for the proposed development on Mayfield Road from Chinguacousy Road to Heart Lake Road. The Study Area can be described as Part of Lots 17 and 18 on Concession 2 West of Centre Road, 17 and 18 on Concession 1 West of Centre Road, 17 and 18 on Concession 1 East of Centre Road and 17 and 18 on Concession 2 West of Centre Road, City of Brampton, Regional Municipality of Peel.

This report outlines the existing conditions in the Study Area at the time of the August and September 2011 site visits and provides an assessment of the potential impacts associated with the proposed roadway improvements. Also provided are recommendations to mitigate potential impacts. Please find the document attached for your records.

Thank you for the opportunity to complete this assignment. Please contact the undersigned with any questions or comments.

Yours truly,
GENIVAR Inc.

Dan J. Reeves, M.Sc.
Project Biologist

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1. Introduction

GENIVAR Inc. (GENIVAR) has been retained to conduct an assessment of the Natural Heritage Features as part of a Schedule C Class Environmental Assessment for the site known as Mayfield Road. The site can be described as lands on and adjacent to Mayfield Road between Chinguacousy Road and Heart Lake Road and consists of Part of Lots: 17 and 18 on Concession 2 West of Centre Road; 17 and 18 on Concession 1 West of Centre Road; 17 and 18 on Concession 1 East of Centre Road; and 17 and 18 on Concession 2 West of Centre Road, City of Brampton, Regional Municipality of Peel and is herein referred to as the "Study Area". Refer to Figure 1 for location details.

This study is being conducted to determine the presence and extent of natural heritage features and associated constraints on the proposed road widening development for Mayfield Road (Regional Road 14). The identification and description of natural features on and adjacent to the Study Area is necessary in order to assess the potential environmental impact of the development and to provide suggestions for the minimization and/or mitigation of these impacts. This report provides a description of the existing conditions within the Study Area with a focus on the terrestrial and aquatic environment The report includes descriptions of natural features on and adjacent to the Study Area, as determined through consultation with relevant authorities, reviews of secondary source information and direct observation during site visits, provides an assessment of the potential impacts associated with the proposed development, and provides recommendations to mitigate these impacts. The locations of the natural features on and adjacent to the Study Area are shown in Figure 2.

2. Environmental Policy Context

2.1 Provincial Policy Statement

The Provincial Policy Statement (PPS) (Ontario Ministry of Municipal Affairs and Housing (OMMAH), 2014) is a planning document that provides a framework for, and governs development within, the Province of Ontario. In order to preserve various ecological resources deemed significant in the Province, development lands must be assessed for the presence of natural heritage features prior to construction. These natural heritage features (listed below) are both defined and afforded protections under the PPS. Linkages between natural heritage features, surface water and groundwater features are also recognized and afforded similar protections under the policy. Section 2.1.2 of the PPS also requires that the diversity and connectivity of all natural heritage features and the long-term ecological function of natural heritage systems be maintained, restored or improved where possible. Further to this, natural heritage systems within Ecoregions 6E and 7E are to be identified as per Section 2.1.3.

Under the PPS (OMMAH, 2014), development or site alteration is prohibited within significant wetlands in Ecoregions 5E, 6E and 7E and in significant coastal wetlands, but may be allowed adjacent to these features provided the adjacent lands have been evaluated and it has been demonstrated that there will be no negative impacts to these features or their ecological functions. Development may be permitted in or adjacent to significant wetlands north of Ecoregions 5E, 6E and 7E, significant woodlands and significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River), significant wildlife habitat, and significant areas of natural and scientific interest (ANSI), provided there will be no negative impacts to these features or their ecological function due to the proposed undertaking. In

addition, development and site alteration is not permitted in fish habitat unless in accordance with provincial and federal legislation.

Natural heritage features as defined by the PPS (OMMAH, 2014) include:

A) Fish Habitat;
B) Habitats of Endangered and Threatened Species;
C) Significant Areas of Natural and Scientific Interest (ANSI);
D) Significant Wetlands;
E) Significant Coastal Wetlands;
F) Other *Coastal Wetlands* in Ecoregions 5E, 6E and 7E;
G) Significant Wildlife Habitat;
H) Significant Woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River); and,
I) Significant Valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River).

2.2 Conservation Authorities Act

The Conservation Authorities Act gives individual conservation authorities the power to regulate development and activities in or adjacent to river or stream valleys, Great Lakes and large inland lakes and shorelines, watercourses, hazardous lands and wetlands. Regulations made under the Conservation Authorities Act specify the Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulations managed by individual Conservation Authorities. These regulations apply to lands within river or stream valleys, flood plains, wetlands, watercourses, lakes, hazardous lands or lands within 120 m of a Provincially Significant Wetland or wetlands greater than 2 hectares, or lands within 30 m of non-provincially significant wetlands. Development or site alteration within these regulated areas may be permitted provided development is conducted in accordance with existing policies.

The Study Area is within the Credit Valley Conservation (CVC) and Toronto Region Conservation Authority (TRCA) jurisdictions. All work must be conducted to meet the requirements of both regulating agencies.

3. Information Resources

Several relevant information resources were consulted over the course of the report preparation. Full references are provided in the Literature Cited section of this report.

- Region of Peel Official Plan (2011);
- City of Brampton Official Plan (2006);
- Mayfield Road: Hurontario Street to Heart Lake Road Class Environmental Assessment (Stantec, 2002);
- Mount Pleasant Secondary Plan Landscape Scale Analysis and Subwatershed Study for Huttonville and Fletcher's Creeks (52-slide Powerpoint presentation prepared by Philips Engineering for the City of Brampton, 2007);
- Peel Region Official Plan Review: Natural Heritage Policy Review (Region of Peel, 2008);

- Provincial Policy Statement (2014);
- Conservation Authority Act, Ontario Regulation 160/06 Credit Valley Conservation (CVC) and 166/06 Toronto and Region Conservation Authority (TRCA);
- Natural Heritage Information Centre (NHIC) Mapping and Databases (OMNR, 2010b);
- Land Information Ontario (LIO) Mapping Resources (OMNR, 2010a);
- Aerial Photographs and Satellite Images;
- Atlas of the Breeding Birds of Ontario (Bird Studies Canada, 2009);
- Species at Risk in Ontario (SARO) List (OMNR, 2011);
- Species at Risk Public Registry (2011); and
- Endangered Species Act (2007).

In addition to the above, several watershed reports were consulted for background information on aquatic systems in the Study Area. These resources included:

- State of the Watershed Report: Etobicoke and Mimico Creek Watersheds (TRCA, 1998);
- Turning over a new leaf: The Etobicoke and Mimico Creeks Watersheds Report Card 2006 (TRCA, 2006);
- The Etobicoke and Mimico Creeks Watersheds Technical Update Report (TRCA, 2010);
- Mayfield West, Phase 2 Secondary Plan Comprehensive Environmental Impact Study and Management Plan (AMEC, 2010); and,
- Mayfield West, Phase 2 Secondary Plan Comprehensive Environmental Impact Study and Management Plan – Revised Draft (AMEC, February 2011).

The most recent 2001 document summarized information contained in earlier documents. Additional information with respect to fish sampling data was provided by TRCA. Aquatic species of risk distribution within the CVC and TRCA boundaries was consulted (http://www.conservation-ontario.on.ca/projects/DFO.html, accessed August 2011). A Screening Request Letter was also sent to OMNR Aurora District on October 11, 2011 and the information in their response is incorporated herein.

4. Study Area Information

4.1 Study Area Description

The Study Area is a 5.6 km section of Mayfield Road between Chinguacousy Road and Heart Lake Road. Mayfield Road (Regional Road 14) is a major east-west arterial road that forms the boundary between the City of Brampton and the Town of Caledon within the Regional Municipality of Peel. The section of road between Chinguacousy Road and Hurontario Street is currently two lanes, while the section from Hurontario Street to Heart Lake Road has been expanded to four lanes. Refer to Figure 1 for location information.

For the most part, the Study Area is dominated by residential development and agricultural lands along both sides of Mayfield Road with the exception of the Etobicoke Creek Valleylands east of Hurontario Street and the Heart Lake Conservation Area which lies south of Mayfield Road at Heart Lake Road (refer to Figure 2). The Heart Lake Conservation Area encompasses the Heart Lake Forest and Bog Life Science ANSI and part of the Heart Lake Provincially Significant Wetland Complex. Wetland areas are also found north of Mayfield Road between Kennedy Road and Heart Lake Road. Manicured lawns and

gardens with occasional landscape trees are found along Mayfield Road within residential areas. A more detailed description of vegetation along the Mayfield Road right-of-way is provided in Section 4.2.

4.2 Site Visits

Site visits were conducted on August 4, August 5, September 4 and September 22, 2011 to confirm the presence of Natural Heritage Features, map vegetation and to determine general characteristics of the Study Area. Emphasis during the site visits was on documentation of dominant vascular plants and natural features within 10 m of the Mayfield Road right-of-way. At the time of the site visit road resurfacing activities were ongoing between Kennedy Road and Heart Lake Road.

Prior to the site visit a review of background information, satellite images and topographic maps was conducted to identify potential Natural Heritage Features and species of conservation concern. During the site visit photographs of the site were taken and observations of any wildlife, vegetation or natural features were recorded. A list of incidental species observed during the site visit can be found in Appendix A. This list is not exhaustive and more targeted surveys would be required to compile a comprehensive list of animal and plant species on and adjacent to the Study Area.

A brief description of the vegetation communities observed within the Study Area is outlined below.

Chinguacousy Road to McLaughlin Road

The western portion of the Study Area between Chinguacousy Road and McLaughlin Road is predominantly farmland which at the time of the site visit was supporting corn and soybean monocultures. Roadside vegetation consisted predominantly of grasses, common weeds and the occasional shrub. Landscape trees on the residential properties included Silver Maple (*Acer saccharinum*), Northern Catalpa (*Catalpa speciosa*), Norway Maple (*Acer platanoides*), White Spruce (*Picea glauca*), Blue Spruce (*Picea pungens*), Willows (*Salix* spp.), Trembling Aspen (*Populus tremuloides*), Manitoba Maple (*Acer negundo*) and Black Walnut (*Juglans nigra*). Several trees in this area may be impacted by the proposed road widening.

A survey of the significant woodland on the south side of Mayfield Road indicated that species composition varied from north to south within the woodland. At the north of the woodland, dominant species were Basswood (*Tilia americana*), Red Oak (*Quercus rubra*) and White Ash (*Fraxinus americana*), with pockets of Ironwood (*Ostrya virginiana*) and the occasional Bitternut Hickory (*Carya cordiformis*). Moving south through the woodland, Sugar Maple (*Acer saccharum*) became a larger component of the composition while the presence of Red Oak decreased. At the south end of the woodland, Sugar Maple was dominant with small contributions of American Beech (*Fagus grandifolia*) and Eastern Hemlock (*Tsuga canadensis*), and to a lesser extent White Ash and Blue Beech (*Carpinus caroliniana*). Occasional White Pine (*Pinus strobus*) were observed along the western edge of the woodland.

McLaughlin Road to Hurontario Street

The section of Mayfield Road between McLaughlin Road and Hurontario Street is predominantly residential, with pockets of agricultural fields to the northwest and small areas of manicured parkland east of the railway line. The main agricultural crop in this area of the Study Area was soybean, however a small hay field existed just west of the railway line. Along the south side of Mayfield Road between Van

Kirk Drive and McLaughlin Road a small stream lies between the housing development and the roadway. Although the stream appears to have been channelized, the area has been renaturalized with native riparian vegetation, shrubs and trees.

Manicured lawns and landscape trees lined both sides of Mayfield Road approaching Hurontario Street. Common landscape tree species included Ashes (*Fraxinus* spp.), Scots Pine (*Pinus sylvestris*), Maples (*Acer* spp.), Blue Spruce, European White Poplar (*Populus alba*), Staghorn Sumac (*Rhus typhina*) and a thornless cultivar of Honey Locust (*Gleditsia triacanthos* var. *inermis*).

Hurontario Street to Kennedy Road North

The most notable feature of the section of Mayfield Road between Hurontario Street and Kennedy Road is the Etobicoke Creek and associated valleylands. Although the general area is predominantly residential or agricultural land, the Etobicoke Creek valleylands support native lowland forest and marsh wetland communities. Black Locust (*Robinia pseudoacacia*), White Elm (*Ulmus americana*), Silver Maple, and Black Walnut were common tree species in the low-lying areas south of Mayfield Road. To the north, a stormwater pond west of Etobicoke Creek provides additional wetland habitat. The pond was fringed with common marsh vegetation such as Cattails (*Typha* sp.), grasses, sedges, Willows and other herbaceous plants. The occasional Eastern White Cedar (*Thuja occidentalis*), Ash, White Spruce, Willow and Staghorn Sumac exists along the edge of the stormwater pond and northern reaches of Etobicoke Creek.

Similar landscape tree species were observed in this section, with the addition of the occasional Red Pine (*Pinus resinosa*), Basswood, Horsechestnut (*Aesculus hippocastanum*), and Amur Maple (*Acer ginnala*). A new housing development exists on the north side of Mayfield Road at Kennedy Road. Undeveloped land in this area has been colonized by weeds and typical roadside vegetation. A corn field exists along the south side of Mayfield Road west of Kennedy Road.

Kennedy Road North to Heart Lake Road

The Heart Lake Provincially Significant Wetland Complex is located on the north and south sides of Mayfield Road in this section of the Study Area. Lands to the north are open meadows with the occasional tree or shrub, and larger concentrations of vegetation along the margins of the wetland areas. Dominant vegetation along the wetland margins consists of Cattails, grasses, Ashes, Silver Maple, Alder (*Alnus* sp.), Willows and the occasional White Elm and Staghorn Sumac.

The residential area along the south side of Mayfield Road is separated from the right-of-way by a strip of manicured lawns and landscape trees consistent with those observed in other areas of the Study Area. A conifer plantation consisting of Scots Pine, White Spruce and Norway Spruce (*Picea abies*) exists along the northwest boundary of the Heart Lake Conservation Area. A Black Walnut stand exists in the low-lying areas adjacent to the road in the approximate centre of the Conservation Area. Other common tree and shrub species observed along the northern margin of the Conservation Area include White Elm, Silver Maple, and Common Buckthorn (*Rhamnus cathartica*). A full inventory of the vegetation in the Heart Lake Conservation Area was not undertaken.

Vegetation in roadside ditches and abandoned fields was relatively uniform along the length of the Study Area. In drier areas Wild Carrot (*Daucus carota*), Chicory (*Cichorium intybus*), Clovers (*Trifolium* and *Melilotus* spp.), Common Milkweed (*Asclepias syriaca*), Thistles (*Cirsium* sp.), Goldenrod (*Solidago* sp.)

and Common Ragweed (*Ambrosia artemisiifolia*) were common while wetter areas were dominated by Cattails and various graminoids.

5. Natural Heritage Features

The following sections outline the Natural Heritage Features present within the Study Area and discuss the potential for species at risk (SAR) within the Study Area.

5.1 Fish Habitat

Fish habitat, as defined by the *Fisheries Act*, c. F-14, includes the spawning grounds and nursery, rearing, food supply and migration areas on which fish depend directly or indirectly in order to carry out their life processes. The Act also includes a broader definition of fish as shellfish, crustaceans, and marine mammals at all stages of their life cycles.

Several waterbodies and wetlands exist on or adjacent to the Study Area. These features as they apply to fish habitat are discussed below.

5.1.1 Background Information

The Study Area straddles the boundaries of two watersheds and the jurisdictions of two Conservation Authorities. Fletcher's Creek (CVC) and its tributaries cross Mayfield Road north-southerly in the western portion of the Study Area (Chinguacousy Road to Hurontario Street). Little Etobicoke Creek (TRCA) and tributaries cross Mayfield Road north-southerly between Hurontario Street and Heart Lake Road. Surrounding land use was primarily agricultural (crop fields) and residential subdivisions.

Ten (10) current and/or modified watercourse locations were documented in the Chinguacousy Road to Hurontario Street portion of the Study Area. Etobicoke Creek and a large man-made pond outletting to the Heart Lake Conservation Area were documented between Hurontario Street east to Heart Lake Road.

5.1.1.1 Fletcher's Creek

The Study Area contains portions of the headwaters referred to as the West, Central and East tributaries of Fletcher's Creek. These small headwater tributaries within the Study Area were classified in July 2009 following *Evaluation, Classification and Management of Headwater Drainage Features: Interim Guidelines (CVC and TRCA, 2009).*

The five (5) categories of Fish Habitat Classification are as follows:

- Permanent – Provides direct habitat onsite (e.g. feeding, breeding and/or migration) as a result of year round groundwater discharge and/or permanent standing surface water within a storage feature (i.e., ponds, wetlands. Habitat may be either existing or potential (i.e., existing above a barrier.

- Seasonal – Provides limited direct habitat on site (e.g., feeding breeding, migration and/or refuge habitat) as a result of seasonally high groundwater discharge or seasonally extended contributions from wetlands or other surface storage areas that support intermittent flow conditions, or (rarely) ephemeral flow conditions.
- Contributing – Provides indirect contributing habitat to downstream reaches – There are two types: i) Complex contributing habitat – result of intermittent or less commonly ephemeral surface flows – generally well vegetated features that influence flow, conveyance, attenuation, storage, infiltration, water quality, sediment, food (invertebrates) and organic matter/nutrients, and ii) Simple contributing habitat – generally as a result of ephemeral (or less commonly intermittent surface flows but generally not well vegetated features that influence the same factors as above.
- Not Fish Habitat – No features and/or functions associated with headwater drainage features is present – general characterized by no definition or flow, no groundwater seepage or wetland functions, and evidence of cultivation, furrowing, presence of a seasonal crop, lack or natural vegetation and fine textured soils (i.e., clay or silt)
- Recharge zone – Areas of groundwater recharge that maintain downstream aquatic functions via groundwater connections to streams.

For a previous study, the watercourses were visited on March 9, 2010 and April 21, 2010 with TRCA, CVC, MNR and stakeholder groups to refine the classifications. Following these site visits, revisions to the classifications were provided to the Town of Caledon in an update to the Mayfield West Phase Two Secondary Plan, (AMEC letter to Tim Manley, Senior Policy Planner, Town of Caledon, dated June 9, 2010). The fisheries assessment of the Fletcher's Creek Tributaries for this EA is based on these final classifications.

Flow and Terrestrial Assessments were combined with Aquatic Habitat Classifications to define an Net Constraint Ranking (derivation of Net Constraint Ranking outlined in AMEC, 2011) The headwater tributaries were classified in the Watercourse Constraint Matrix as follows in AMEC's Revised Draft (February, 2011). (Reach names as per the 2011 document for consistency and presented from west at Chinguacousy Road east to McLaughlin Road). The Classifications and Net Constraint Ranking for Fletcher's Creek headwater tributaries crossing Mayfield Road are listed below:

Table 1 Habitat Classifications for Fletcher's Creek Headwaters (AMEC, 2010)

Branch	Reach Number	Habitat Classification	Constraint Rankings
Fletcher's Creek West	MFC - R27	Simple Contributing	Low
	MFC - R24	Simple Contributing	Low
	MFC - R25	Simple Contributing	Low
Fletcher's Creek Central	MFC –R20	Simple Contributing	Low
	MFC – R18	Simple Contributing	Low
	MFC - R03	Simple contributing upstream from Mayfield Road, Seasonal downstream from Mayfield Road	Medium
	MFC – R14	Simple Contributing	Low
	MFC - R10	Simple Contributing	Low
Fletcher's Creek East	MFC – R02	Simple Contributing	Medium
	MFC – R01	Complex Contributing	Medium

Fisheries constraint rankings were established based on the habitat classifications as follows:

Table 2 Fisheries Constraints Rankings (summarized from AMEC, 2010)

Habitat Type	Constraint Ranking	Recommended Action
Permanent Fish Habitat	High	Habitat should be protected and/or enhanced in-situ
Seasonal Fish Habitat	Medium	Habitat should be maintained or replicated so that the net productive capacity is maintained or increased
Complex Contributing, Simple Contributing and/or Not Fish Habitat	Low	Habitat can be eliminated, pending satisfaction of drainage density targets, but would not require a riparian corridor or setbacks.

Only one seasonal tributary of Fletcher's Creek provides direct fish habitat in the Study Area, the watercourse that crosses Mayfield Road immediately west of McLaughlin Road (MFC-R03). It has yielded extremely low numbers of warmwater bait fish numbers in the reach south of Mayfield Road during historical sampling (AMEC, 2010).

Outside (south) of the Study Area, the lower reaches of Fletcher's Creek support a cool/warm fish community that includes seasonal use by rainbow trout *(Oncorhynchus mykiss)*. Fletcher's Creek and unnamed tributaries of Fletcher's Creek downstream of the Study Area are designated as occupied reaches for Redside Dace (Melinda Thompson-Black, Species at Risk Biologist, Aurora District MNR, pers.comm., Response to Species At Risk Screening request, letter dated October 13, 2011).

5.1.1.2 Etobicoke Creek

The Etobicoke Creek mainstem is a permanent watercourse that flows through the Study Area northeasterly. Upstream sections of the headwaters have been straightened and impacted by livestock access (AMEC, 2010), but the section of the mainstem that crosses Mayfield Road exhibits natural characteristics and a healthy riparian zone, due in part to the surrounding municipal park.

Etobicoke Creek at the Mayfield Road crossing is considered an intermediate riverine warmwater habitat. The mainstem of Etobicoke Creek contains a diverse fish community, including cyprinids (minnows), suckers, darters and centrachids (sunfish). A total of twenty (20) fish species have been captured in the Etobicoke Creek Headwaters between Chinguacousy and McLaughlin Road (AMEC, 2010). Although rainbow darters were presumed extirpated from the watershed (TRCA, 2006), several were captured by TRCA in 2010, bringing the total to twenty-one (21) documented fish species (TRCA fisheries data, 2011).

There are no known aquatic species at risk in or in the vicinity of Etobicoke Creek within the Study Area (http://conservation-ontario.on.ca, accessed July 2011).

5.1.2 Current Study

5.1.2.1 Methodology

The Study Area watercourses were visited by GENIVAR's Senior Fisheries Biologist on August 4 and September 4, 2011. Due to the known ephemeral nature of many of the watercourses, field visits were timed following seasonal rains, in an attempt to capture at least standing water in the locations along Mayfield Road. 13.8 mm of rain had fallen in the previous 24 hr period prior to the August sampling and 10.2 mm in the previous 24 hr period before the September sampling date (Environment Canada, www.climate.weatheroffice.gc.ca., accessed October 2011). Visual assessments of watercourse

characteristics both upstream (north) and downstream (south) of Mayfield Road were conducted. Features such as watercourse permanence, morphology, flow, amount overhead cover, amount instream cover, riparian vegetation and presence were noted. Information from the review of the background documentation was field-confirmed and existing conditions were photo-documented. Fish sampling was not deemed necessary for the current study by either TRCA or CVC (pers. comm., March 11, and June 9, 2011, respectively).

5.1.2.2 Fish Habitat – Fletcher's Creek Headwaters

The Fletcher's Creek headwaters within the CVC portion of the Study Area (Chinguacousy Road to Hurontario Street) were primarily Simple Contributing Habitat. Channels were straight or slightly sinuous. Channels were dry, not well defined and overgrown with robust terrestrial vegetation or crops. Some standing water was present at culvert inverts on the August site visit. Overhead cover was open. Substrate was primarily sand, silt and gravel at culvert inverts (see Photo 1 for representative habitat). Many culverts were relatively new and installed recently and passage was blocked in several culverts (e.g. MFC – R10) by recent development (subdivisions and associated stormwater management systems). Evidence of shoulder erosion was present on the south side of Mayfield Road at MFC-R20.

Photo 1: Representative conditions at mapped watercourse location north of Mayfield Road between Chinguacousy Road and Hurontario representing Simple Contributing Habitat. Note seasonal crop, lack of both definition and flow. View facing north. Photo was taken August 4, 2011.

GENIVAR's habitat classification was in concurrence with recent studies for the most part. There is only one stream classified as Seasonal fish habitat, namely, the watercourse crossing Mayfield Road immediately west of McLaughlin Road (MFC-R03), and only for the section downstream (south) of Mayfield Road. Fish were visually observed on the south side of Mayfield Road in this system during the

August site visit. Two discrepancies were MFC-R01 and MFC-R02, immediately west of the CPR line, which were ranked Medium for Net Constraint Ranking, but found not to have any north-south connection across Mayfield Road during GENIVAR's August site visit. At MFC-R02, the channel remnant on the north side of Mayfield Road directed to a west-east ditch that paralleled Mayfield Road. No connecting culvert was visible on the south side of Mayfield Road. At MFC-R01, the remnant channel north of Mayfield Road was heavily vegetated. South of Mayfield Road, no channel was visible and no connecting culvert was found. A manhole cover and storm sewer grate were noted on the south side at this location.

It is important to note that while GENIVAR is maintaining the classifications of Simple Contributing and Complex Contributing for MFC-R02 and MFC-R01 respectively (Table 1, AMEC 2010) at the time of our assessment there was discontinuity of the channel across Mayfield Road.

5.1.2.3 Fish Habitat –Etobicoke Creek

The Etobicoke Creek mainstem crosses Mayfield Road within the Study Area at the Snelgrove Bridge Site specific information was obtained in 2002 (Stantec) and more recently by TRCA..

There are ten (10) documented fish species from Etobicoke Creek at the Mayfield Road crossing, ranging from warmwater generalists (rock bass) to coolwater species (darters and dace) and one introduced species (goldfish) (Natural Resource Solutions Inc., 2002, in Stantec 2002). Fish habitat in the vicinity of the existing bridge consisted of pool-riffle- run sections with refuge areas, some undercut banks, boulders, organic debris and instream and overhanging riparian vegetation. Substrate was dominated by gravels and cobble, but was overlain with a heavy layer of sedimentation. Anthropogenic round stone was also present around the existing abutments Instream vegetation was primarily emergent and submergent vegetation. Scant floating vegetation was found aside from duckweed. Riparian trees and shrubs included Manitoba maple, black willow, and red-osier dogwood. Trees were set back from the watercourse immediately up and downstream of the bridge site so that overhead cover was minimal within the right-of-way. Native and invasive vegetation included cattails, reed canary grass, purple loosestrife, tall goldenrod, viper's bugloss and Queen's Anne's Lace. Surrounding habitat is urban park and urban litter is present instream (Photo 2). Fish sampling was not conducted during this field visit as per the instructions of TRCA (March 11, 2011).

Photo 2: Existing conditions, Etobicoke Creek, immediately downstream of bridge at Mayfield Road. View looking south. Photo was taken September 4, 2011.

Water levels were low at time of sampling and a barrier to fish passage was noted underneath the bridge (Photo 3). A small dam from surrounding gabion stone has been constructed to cross the creek and at the water levels observed at the time of survey (September 9, 2011), was impassible to all fish species including any jumpers (trout species) that may be present.

Photo 3: Barrier beneath Snelgrove Bridge. View looking east. Photo was taken September 4, 2011.

Additional warmwater fish habitat is noted in the open water portion of the large wetland north of Mayfield Road and west of Heart Lake Road (Photo 4). A number of small game and baitfish species have been documented, including brown bullhead, pumpkinseed, central mud minnow, fathead minnow, golden shiner and brook stickleback (TRCA, 1998 in Stantec, 2002). Numerous ducks were noted during GENIVAR's September field visit. A dam and drainage outlet from this pond area flows under Mayfield Road and into the wetland on the south side of Mayfield Road, but passage at this feature has been noted as impassible to all fish species (TRCA, 1996).

Photo 4: Pond north of Mayfield Road. View looking north. Photo was taken September 4, 2011.

In summary, the Fletcher's Creek Tributaries are primarily poorly defined drainage features through cultivated fields that are dry for the majority of the year. Due to this impermanence, these tributaries cannot support fish on year-round basis, but provide indirect (contributing) habitat to downstream reaches. Although not included in the Net Constraints Ranking of the Fletcher's Creek Headwaters, the permanence and diverse fish community of the Etobicoke Creek mainstem at the Mayfield Road crossing would be ranked as High Constraint, and the fish and fish habitat should be protected and/or enhanced in-situ in light of the proposed works.

5.2 Significant Areas of Natural and Scientific Interest

Significant Areas of Natural and Scientific Interest (ANSI) are defined as areas of land and water containing natural landscapes or features that have been identified as having life science or earth science values related to protection, scientific study or education.

The Natural Heritage Information Centre (NHIC) database was searched for the presence of any ANSI's on or within 120 m of the Study Area. The 40 hectare Heart Lake Forest and Bog Life Science ANSI is located southwest of the intersection of Mayfield Road and Heart Lake Road (Figure 2). It is characterized by variable terrain including upland deciduous forests and wetland depressions containing swamp, marsh and bog vegetation. The kettle bog has been known to support some uncommon plant species such as Virginia Chain Fern (*Woodwardia viginica*), Snake Mouth Orchid (*Pogonia ophioglossoides*), and Eastern Dwarf Mistletoe (*Arceuthobium pusillum*).

5.3 Significant Habitat of Endangered or Threatened Species

The PPS (2014) defines the significant habitat of endangered or threatened species as the habitat, as approved by the Ontario Ministry of Natural Resources (OMNR), that is necessary for the maintenance, survival and/or the recovery of naturally occurring or reintroduced populations of endangered or threatened species, and where those areas of occurrence are occupied or habitually occupied by the species during all or any part(s) of their life cycle. The OMNR is directly responsible for identifying, listing and conducting ongoing assessments for significant endangered species and their related habitats.

A geographical search for significant or endangered species presence and associated habitat was conducted using the OMNR NHIC database (2010b). A conservative two (2) kilometre radius centroid search surrounding the subject lands was completed as it is understood that NHIC information is based on regional reports and habitat boundaries may be variable. The search revealed eleven (11) species of conservation concern (Table 1). Of these eleven (11) records, one (1) is listed as a species of Special Concern (SC) and one is listed as Extirpated (EXP) on the Species at Risk in Ontario (SARO) and the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) Lists. Refer to Appendix B for complete NHIC records for these species.

Table 3 NHIC Records for Species of Conservation Concern

Species Name	Scientific Name	GRank[1] Global	SRank[1] Provincial	COSEWIC[2] Canada	SARO[3] Ontario
a moss	*Helodium paludosum*	G3G5	S1?	-	-
Amber-winged Spreadwing	*Lestes eurinus*	G4	S3	-	-
Eastern Pipistrelle	*Pipistrellus subflavus*	G5	S3?	-	-
Hart's Tongue Fern	*Asplenium scolopendrium*	G4T3	S3	SC	SC
Honey-locust	*Gleditsia triacanthos*	G5	S2	-	-
Jefferson x Blue-spotted Salamander	*Ambystoma* hybrid population 1	GNA	S2	-	-
Lilypad Clubtail	*Arigomphus furcifer*	G5	S3	-	-
Northern Hawthorn	*Crataegus dissona*	G4G5	S3	-	-
Small-footed Bat	*Myotis leibii*	G3	S2S3	-	-
Timber Rattlesnake	*Crotalus horridus*	G4	SX	EXP	EXP
Twisted Sedge	*Carex torta*	G5	SX	-	-

[1] Source: Nature Conservancy Ranking (NHIC, 2010). 1 - Critically Imperiled, 2 - Imperiled, 3 - Vulnerable, 4 - Apparently Secure, 5 - Secure, G - Global Level, S - Sub-national Rank (Ontario), ? – Rank Uncertain, X – Presumed Extirpated, NA – Conservation Status Rank is Not Applicable at this level.
[2] Source: Species at Risk Public Registry (SARA, 2010) COSEWIC Status and [3] Source: Species at Risk in Ontario List (SARO, 2010). EXP – Extirpated, END – Endangered, THR – Threatened, SC – Special concern, '-' - Not listed.

In addition to the element occurrences recorded in the NHIC database several other species at risk were identified as having the potential to be in the area. The bird, amphibian and reptile species identified are discussed in later sections of the report. Butternut (*Juglans cinerea*), an endangered tree species with the potential to be in the area, was given special consideration during the site visit. A review of background information and an assessment of available habitat suggested that the significant woodland in the west end of the Study Area south of Mayfield Road, the Etobicoke Creek valleylands and the Heart Lake Conservation Area would have the highest potential for Butternut. Surveys for Butternut focused on these areas as well as all land within 10 m of the Mayfield Road right-of-way. There were no Butternuts or species at risk listed in the NHIC database (Table 1) observed during the site visit. Adult Monarchs

(*Danaus plexippus*) were observed in several locations along the Mayfield Road right-of-way, and their larval host plant, Common Milkweed, was common along the roadside. Monarchs have been designated as a species of Special Concern on the SARO List.

5.4 Biophysical Inventories/Observations

5.4.1 Bird Populations

The Atlas of the Breeding Birds of Ontario was consulted to determine if there were any rare or endangered species known to be present within the Study Area. The Atlas uses 100 km by 100 km blocks, then further to 10 km by 10 km squares to compartmentalize geographical areas. The Study Area lies within the 10 km by 10 km square identified as 17NJ94. Species names as well as their associated habitat potential within the Study Area are listed in Table 2. These species and their potential habitat were given special consideration during the site visit.

Table 4: Bird Species at Risk
(SARO designation: END = Endangered; THR = Threatened; SC = Special Concern)

Species Name	SARO	Habitat Description[1]	Study Area Habitat Potential	Field Observations
Black Tern	SC	The species requires large, shallow, quiet marshes where their floating nests are not subject to disturbance from humans or boat traffic.	Low	Species not observed
Bobolink	THR	The species build nests on the ground in dense grasses such as hayfields. Though few hayfields exist on Study Area, a crop rotation to include hay would provide the preferred habitat.	Moderate	Species not observed
Canada Warbler	SC	The species is found in a variety of forest types, but is most abundant in wet, mixed deciduous-coniferous forests with a well-developed shrub layer. Also found in riparian shrub forests.	Low	Species not observed
Chimney Swift	THR	The species feeds in flocks around water bodies due to the large amount of insects present. Nesting occurs in large, hollow trees or in the chimneys of houses in urban and rural areas.	Low	Species not observed
Common Nighthawk	SC	The species nests in areas with little to no ground vegetation, such as logged or burned-over areas, forest clearing, rock barrens, etc.	Low	Species not observed
Henslow's Sparrow	END	The species nests in old fields, pastures and wet meadows that have not been invaded by shrubs. It requires tall dense grasses that provide cover for their nests.	Low	Species not observed
Least Bittern	THR	The species breeds in stable marshes with emergent vegetation, such as cattails, and areas with open water. They are typically found in large, quiet marshes.	Moderate	Species not observed
Louisiana Waterthrush	SC	The species typically nests along pristine, headwater streams associated with large tracts of mature forest. It may also be found in heavily wooded deciduous swamps with large areas of open water.	Low	Species not observed

Species Name	SARO	Habitat Description[1]	Study Area Habitat Potential	Field Observations
Northern Bobwhite	END	The species inhabits edge and grassland type habitats such as fields that are not subject to intensive agriculture.	Low	Species no observed
Olive-sided Flycatcher	SC	The species lives in forest openings and edges, particularly where tall snags and dead trees can be used for foraging perches. Breeding habitat is frequently located along wooded riparian corridors or wetlands.	Moderate	Species not observed
Red-headed Woodpecker	SC	The species lives in open woodlands and woodland edges, especially in oak savannah and riparian forest, where dead trees are used for nesting and perching.	Moderate	Species not observed
Whip-poor-will	THR	The species breeds in patchy forests with clearings, and generally avoids exposed, open areas, or closed-canopy forests.	Low	Species not observed
Yellow-breasted Chat	SC	The species breeds in early successional habitats with low, dense vegetation. Such habitat can be found in abandoned agricultural fields, power-line corridors, fencerows, forest edges and openings, etc.	Low	Species not observed

[1] Source: COSEWIC reports and/or Species at Risk in Ontario (SARO) List

None of the bird species listed in Table 2 were observed during the site visit. All incidental bird sightings are provided in Appendix A.

5.4.2 Wildlife

Visual observations of area wildlife were recorded during the site visit. Wildlife observations are based on incidental contact, scat evidence, and tracks, and are consistent with species known to occupy this area. NHIC records for the Eastern Pipistrelle and Small-footed Bat date back to 1952 and 1948 respectively, while data from the Atlas of Mammals (Dobbyn, 1994) suggests these bat species may have been observed in the general area between 1970 and 1993. Suitable habitat for these species, particularly bat hibernacula were not observed within the Study Area. The only mammal species observed during the site visits was the Eastern Grey Squirrel (*Sciurus carolinensis*). No mammalian species at risk were observed within the Study Area.

5.4.3 Herpetofauna

Due to the highly disturbed nature of the Study Area, suitable habitat for amphibian and reptile species is thought to be restricted to the natural areas and wetlands along Etobicoke Creek and the Heart Lake Provincially Significant Wetland Complex. A review of the Ontario Herpetofaunal Atlas suggests that the following species at risk have the potential to be in the area: Blanding's Turtle (*Emydoidea blandingii*), Eastern Musk Turtle (*Sternotherus odoratus*), Eastern Ribbon Snake (*Thamnophis sauritus*), Milksnake (*Lampropeltis triangulum*) and Snapping Turtle (*Chelydra serpentina*).

None of these species were observed during the site visits, however Green Frog (*Rana clamitans*) and Northern Leopard Frog (*Rana pipiens*) were observed in the small catchment ponds and marshy areas at the southeast corner of the Mayfield Road and Heart Lake Road intersection, and in the wetland areas north of Mayfield Road. No herptile species at risk were observed during the site visit.

5.5 Significant Wetlands

Wetlands are defined in the PPS (OMMAH, 2014) as lands that are seasonally or permanently covered by shallow water, as well as lands where the water table is close to or at the surface. There are four major wetland types; which are classified as swamps, marshes, bogs, and fens. A significant wetland is defined as an area identified as provincially significant by the Ministry of Natural Resources using evaluation procedures established by the Province, as amended from time to time (OMMAH, 2014). Accordingly, it is the responsibility of the OMNR to both identify and classify wetlands as significant in Ontario.

The Provincially Significant Heart Lake Wetland Complex is located on lands to the west and south of the intersection of Mayfield Road and Heart Lake Road. The wetland complex is composed of 9 individual wetlands, several of which are part of the Heart Lake Conservation Area (Figure 2). It is described in the Natural Heritage Information Centre (NHIC) database (1984) as 64% swamp and 36% marsh. This area has been identified as a Core Area within the Peel Region Greenlands System (Region of Peel Official Plan, 2011).

Portions of the Heart Lake Wetland Complex exist on the lands immediately north of Mayfield Road and have the potential to be impacted during the construction phases of this project. The wetland area closest to Kennedy Road has been classified as a Maple Mineral Deciduous Swamp in the Stantec (2002) report. A shallow pond classified as a Floating-Leaved Shallow Aquatic Wetland is located to the north of the Heart Lake Conservation Area. Neither wetland is known to support endangered or threatened species.

Several stormwater ponds exist within the Study Area. The edges of these ponds have been colonized by typical wetland vegetation and provide some additional wetland habitat in the area.

5.6 Significant Wildlife Habitat

Wildlife habitat is defined as areas where plants, animals, and other organisms live and find adequate amounts of food, water, shelter, and space needed to sustain their populations. Specific wildlife habitats of concern may include areas where species concentrate at a vulnerable point in their annual life cycle; and areas which are important to migratory or non-migratory species (OMMAH, 2014).

Wildlife habitat is referred to as significant if it is ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or Natural Heritage System (OMMAH, 2014).

Guidelines and criteria for the identification of significant wildlife are detailed in the Significant Wildlife Habitat Technical Guide (OMNR, 2000) and the Natural Heritage Reference Manual (OMNR, 2010c). Significant wildlife habitat is described under four main categories:

- Seasonal concentrations of animals,
- Rare vegetation communities or specialized habitats for wildlife,

- Wildlife movement corridors, and
- Habitats of species of conservation concern.

A review of available information resources did not uncover any identified significant wildlife habitat in the Study Area; however, the Peel Natural Heritage Policy Review (2008) proposed that the Heart Lake Conservation Area be designated as a significant wildlife habitat 'highly diverse area'. These 'highly diverse areas' identified in the report represent 5% of the most diverse habitat patches within the Region.

5.7 Significant Woodlands

Significant Woodlands are defined as treed areas that provide environmental and economic benefits such as erosion prevention, water retention, and provision of habitat, recreation and the sustainable harvest of woodland products (OMMAH, 2014). Woodlands include treed areas, woodlots or forested areas and vary in their level of significance. The identification and assessment of significant woodlands is the responsibility of the local planning bodies, in this case the City of Brampton, Town of Caledon and Regional Municipality of Peel, and should be identified using criteria established by the OMNR. Woodland significance is typically determined by evaluating key criteria which relate to woodland size, ecological function, uncommon woodland species, and economic and social value.

Few natural wooded areas remain along Mayfield Road within the Study Area. The lands which were originally cleared for agriculture have given way to an increasing number of residential developments. Natural areas are now restricted to woodland patches and low-lying areas along Etobicoke Creek and wetland areas associated with the Heart Lake Wetland Complex and Conservation Area.

In the west end of the Study Area between Chinguacousy Road and Hurontario Street a woodland exists approximately 75 m south of Mayfield Road. Three residential properties and agricultural fields lie between the woodland and Mayfield Road. The woodland has been designated as a significant woodland by the City of Brampton and Regional Municipality of Peel based on its size. The Mount Pleasant Secondary Plan Landscape Scale Analysis and Subwatershed Study (2007) describes this woodland as a deciduous forest with small plantations along the south and east boundaries. While the woodland has the potential to provide suitable habitat for species of conservation concern, it has not been identified as significant habitat for endangered or threatened species or significant wildlife habitat. There were no species of conservation concern observed within the woodland at the time of the September 22, 2011 site visit. A 10 m buffer zone is required for significant woodlands in the City of Brampton.

In the east end of the Study Area between Hurontario Street and Heart Lake Road natural wooded areas exist along Etobicoke Creek, in the Heart Lake Conservation Area and along the boundaries of the wetland areas north of Mayfield Road. The wooded areas around Etobicoke Creek and associated marsh areas have been classified as Fresh-Moist Elm Lowland (Stantec, 2002). Dominant tree species observed during the site visit along Etobicoke Creek and its tributary include White Elm, Black Walnut, Black Locust, Willows, Silver Maple, Poplars (*Populus* sp.) and to a lesser extent Manitoba Maple and Staghorn Sumac.

The Heart Lake Conservation Area woodlands along Mayfield Road consist of two dominant forest types: a conifer plantation dominated by Scots Pine, White Spruce and Norway Spruce, and a Fresh Moist Black Walnut Lowland (Stantec, 2002). Occasional White Elm, Silver Maple and Manitoba Maple are also present. Along the forest edge understory species such as Common Buckthorn, Honeysuckle (*Lonicera* sp.), Smooth Wild Rose (*Rosa blanda*) and Staghorn Sumac are common.

Sparsely treed areas mark the boundaries of the wetland areas to the north of Mayfield Road. Common species in these low-lying areas include Silver Maple, Green Ash (*Fraxinus pennsylvanica*), Willows, Alders (*Alnus* sp.), White Elm and the occasional Scots Pine. The most densely wooded area in this part of the Study Area lies to the east of the catchment pond on the northeast corner of Mayfield Road and Kennedy Road.

5.8 Significant Valleylands

The PPS (OMMAH, 2014) refers to significant valleylands as "a natural area that occurs in a valley or other landform depression that has water flowing through or standing for some period of the year". The local planning authority is responsible for identifying and evaluating significant valleylands.

Significant valleylands are associated with the Etobicoke Creek which is located east of Hurontario Street in the approximate middle of the Study Area (City of Brampton Official Plan, 2006). These valleylands are part of the City of Brampton's parkland and open spaces system and are identified as a Core Area within the Peel Region Greenlands System (Region of Peel Official Plan, 2011).

5.9 Significant Feature Summary

A summary of the significant Natural Heritage Features identified on or adjacent to the Study Area are provided in the table below. This summary is based on four site visits and a review of available documentation pertaining to the Study Area and adjacent lands. In order to minimize the effects of the development on these natural features mitigative measures may have to be considered for all work conducted in the area.

Table 5: Significant Feature Summary

Feature	Present	Comment
Fish Habitat	Yes	Etobicoke Creek which is classified as a warm water creek is present in the approximate middle of the Study Area. Several intermittent tributaries of Fletcher's Creek cross Mayfield Road in the western portion of the Study Area between McLaughlin Road and Chinguacousy Road.
Significant ANSI	Yes	The Study Area is within 120 m of a Significant ANSI. The Heart Lake Forest and Bog Life Science ANSI is located in the southwest corner of the Mayfield Road and Heart Lake Road intersection, and is part of the Heart Lake Road Conservation Area.
Threatened or Endangered Species Habitat	No	Habitat for Threatened of Endangered species has not been identified on or within 120 m of the Study Area.
Significant Wetland	Yes	The Heart Lake Provincially Significant Wetland Complex, which is composed of 9 separate wetland areas, is located within 120 m of the Study Area in the northwest, southwest and southeast quadrants of the Mayfield Road and Heart Lake Road intersection.
Significant Wildlife Habitat	No	Significant Wildlife Habitat has not been identified on or within 120 m of the Study Area.
Significant Woodland	Yes	The woodland located south of Mayfield Road and west of McLaughlin Road has been designated a significant woodland by the Regional Municipality of Peel and the City of Brampton. As such, a 10 m setback is required for this woodland.
Significant Valleyland	Yes	Significant valleylands have been identified along the Etobicoke Creek which runs through the approximate centre of the Study Area just east of Hurontario Street.

6. Proposed Works

Mayfield Road between Chinguacousy Road and Heart Lake Road is a major east-west arterial road and forms the boundary between the City of Brampton to the south, and the Town of Caledon to the north. Mayfield Road is currently a largely rural two-lane road west of Hurontario Street, a four-lane urban road east of Hurontario Street, and a six-lane road as it approaches Heart Lake Road and beyond.

Peel Region has the second highest rate of growth in the Greater Toronto Area and this pattern is expected to continue. Mayfield Road is approaching capacity and in its current configuration will not have sufficient capacity to accommodate anticipated traffic volumes by the Planning Horizon Year of 2031. Improvements to transportation infrastructure and operational characteristics of the intersections are required to meet the growing needs.

The evaluated alternatives included 3 alternatives; widening Mayfield Road to the north, widening Mayfield Road to the south, and widening Mayfield Road to the north and south. The preferred alternative in the EA recommended a hybrid of all alternatives (Alternative 4).

The preferred alternative includes the widening of Mayfield Road to the north and south from Chinguacousy Road to McLaughlin Road, from McLaughlin Road to Orangeville Rail, From Orangeville Rail to Hurontario Street, from Hurontario to Snelgrove Bridge, from Snelgrove Bridge to Kennedy Road, and from Stonegate Drive to Heart Lake Road. The preferred solution for the section from Kennedy Road to Stonegate Drive includes widening of the road to the north only.

The proposed work includes 18 culvert crossings:

- Six will be abandoned;
- Three will be replaced based on like for like design;
- Four will be replaced with larger sized pipe to accommodate the proposed widening; and,
- One new culvert will be installed at a new location.

7. Impacts and Mitigation Measures

An impact assessment is required as part of the Environmental Assessment to determine the potential for negative impacts on identified natural features or their ecological functions. In addition, suggestions for preventative, mitigative or remedial measures must also be provided. Fish habitat, an ANSI, a significant wetland, significant woodlands, and significant valleylands were identified within the Study Area. The area of impact associated with the road widening is highly localized and features that are more than 30 m from the increased road width are unlikely to experience significant negative impacts as a result of the proposed works.

7.1 ANSI and Wetlands

The Heart Lake Forest and Bog Life Sciences ANSI is located southwest of the intersection of Mayfield Road and Heart Lake Road. Potential impacts to this feature include further encroachment into this feature, though no rare or endangered species were noted within the ROW. It is anticipated that impacts associated with the proposed road widening will be limited to local vegetation removal and the potential

for disturbance to local wildlife, though these disturbances will be limited to the areas directly within the proposed roadway and working space. Further, portions of the Heart Lake Wetland Complex exist on the lands immediately north of Mayfield Road and have the potential to be impacted during the construction phases of this project. In order to minimize negative impacts to these features, the following mitigation measures are proposed:

- Erosion control fencing should be placed around all ongoing construction activity areas as well as adjacent to temporary storage locations for supplies, excavated materials and imported fill. Fencing should be properly installed and inspected at regular intervals and after significant rain events to confirm it is functioning properly. Fencing should be regularly cleared of silt accumulation to ensure the integrity of erosion prevention/sediment containment measures. Areas of exposed soil, especially newly graded areas that cannot be immediately stabilized with the final surface treatments should be appropriately treated to minimize erosion (e.g., straw mulch, erosion blanket, sod, or hydroseed).
- Temporarily store, handle and dispose of all materials used or generated (e.g. organics, soils, woody debris, temporary stockpiles, construction debris) during site preparation, construction and clean-up in a manner that prevents their entry to naturalized areas in the vicinity of the excavation site.
- Ensure a Spills Management Plan (including materials, instructions regarding their use, education of contract personnel, emergency contact numbers) is onsite at all times for implementation in event of accidental spill during construction. Adequate measures to prevent or capture and contain any debris and spills resulting from construction activities should be kept onsite in sufficient quantities. Staff should be orientated as to the location of materials and their proper use and disposal. All measures and procedures should conform to pertinent provincial requirements.
- Operating, refuelling and maintenance of construction equipment and the handling and storage of toxic materials (e.g. fuel, lubricants, and other chemicals) must be carried out in such a way as to avoid contamination of soils, groundwater and surface waters.
- All parts of equipment shall be free of fluid leaks and externally cleaned/degreased offsite, in a contained environment.

7.2 Fish Habitat and Valleylands

Etobicoke Creek which is classified as a warm water creek is present in the approximate middle of the Study Area. Several intermittent tributaries to Fletcher's Creek cross Mayfield Road in the western portion of the Study Area between McLaughlin Road and Chinguacousy Road. These intermittent watercourses are likely dominated by warm-water species. Warm-water species are generally habitat generalists that are less sensitive to changes in environmental conditions when compared to cool and cold water species. Warm-water habitats are generally stable and more resilient to disturbance.

The primary risk to aquatic habitats and communities will be during the work within the watercourses and associated floodplains. Impacts to fish and fish habitat related to the proposed works will generally occur at a small extent, short duration, and low intensity. Potential impacts to the aquatic environment as a result of the proposed culvert works may include:

- Erosion and Sediment- Erosion and sediment deposition into the watercourse may result from the construction works and surface runoff during the construction period. The introduction of sediments increases the level of total suspended solids (TSS) in the water column causing a number of factors which result in the degradation of fish habitat. Increased TSS levels may also lead to physiological stress in fish resulting in injury or mortality (Waters, 1995).
- Interference with fish passage and distribution- Fish are likely to be in permanent systems throughout the year and may occur periodically in intermittent and ephemeral systems. The disruption of fish passage at sensitive life stages may have a detrimental impact to fish populations (Tillinger and Stein, 1996). Culvert designs allowing for excessive water velocities, inadequate water depth, and perched culverts may result in a barrier to fish passage.
- Fish mortality- The proposed works may require site isolation which may potentially entrap fish within the work area resulting in injury or mortality. Installation of isolation measures may require dewatering of the existing channel. Fish salvage operations would be required to minimize potential impacts to the fish community.
- Introduction of deleterious substances- Deleterious substances may be introduced into fish habitat as a result of the construction activities. This may lead to the degradation of fish habitat.
- Habitat degradation or Loss- The footprint for the proposed works will be similar (Like for Like) to the footprint of the existing structure. Preliminary indications on the proposed works show installation of a culvert liner within the existing structure. There is the potential for the loss of fish habitat if the works extend past the current footprint.

7.2.1 Design

Many impacts to the aquatic environment as a result of water crossings (e.g., culverts) can be mitigated during the design stage. The Department of Fisheries and Oceans Canada has outlined impacts that may occur to fish and fish habitat as a result of water crossings and provided general guidelines to consider for various water crossing types.

7.2.2 Operations

To minimize the potential negative impacts to watercourses during operational stages of the project, the following mitigation measures are suggested:

- The in-water construction timing window restriction for the Southern Region of Ontario is from July 1st to March 31st. No in-water work can occur during this time.
- Minimize duration of in-water work.
- Conduct instream work during periods of low flow, or at low tide, to further reduce the risk to fish and their habitat or to allow work in water to be isolated from flows.
- Schedule work to avoid wet, windy and rainy periods that may increase erosion and sedimentation.
- Design and plan activities and works in watercourses such that loss or disturbance to aquatic habitat is minimized and sensitive spawning habitats are avoided.
- Design and construct approaches to the watercourses such that they are perpendicular to the watercourse to minimize loss or disturbance to riparian vegetation.
- Undertake all instream activities in isolation of open or flowing water to maintain the natural flow of water downstream and avoid introducing sediment into the watercourse.

- Use a qualified biologist to complete fish salvage operations, monitor near-water and in-water construction activities (if required), and ensure all related mitigation measures are properly installed, maintained, and functioning effectively.
- Screen any water intakes or outlet pipes to prevent entrainment or impingement of fish. Entrainment occurs when a fish is drawn into a water intake and cannot escape. Impingement occurs when an entrapped fish is held in contact with the intake screen and is unable to free itself.
  - Screens should be located in areas and depths of water with low concentrations of fish throughout the year.
  - Screens should be located away from natural or artificial structures that may attract fish that are migrating, spawning, or in rearing habitat.
  - The screen face should be oriented in the same direction as the flow.
  - Ensure openings in the guides and seals are less than the opening criteria to make “fish tight”.
  - Screens should be located a minimum of 300 mm (12 in.) above the bottom of the watercourse to prevent entrainment of sediment and aquatic organisms associated with the bottom area.
  - Structural support should be provided to the screen panels to prevent sagging and collapse of the screen.
  - Large cylindrical and box-type screens should have a manifold installed in them to ensure even water velocity distribution across the screen surface. The ends of the structure should be made out of solid materials and the end of the manifold capped.
  - Heavier cages or trash racks can be fabricated out of bar or grating to protect the finer fish screen, especially where there is debris loading (woody material, leaves, algae mats, etc.). A 150 mm (6 in.) spacing between bars is typical.
  - Provision should be made for the removal, inspection, and cleaning of screens.
  - Ensure regular maintenance and repair of cleaning apparatus, seals, and screens is carried out to prevent debris-fouling and impingement of fish.
  - Pumps should be shut down when fish screens are removed for inspection and cleaning.
- Transfer any fish isolated in the work area using appropriate capture, handling and release techniques to prevent harm and minimize stress downstream or away from the construction area.
- Any part of equipment entering the waterbody or operating on the bank shall be free of fluid leaks and externally cleaned/degreased.
- Operate, store and maintain (e.g., re-fuel, lubricate) all equipment and associated materials in a manner that prevents the entry of any deleterious substances to the waterbody.
- Operating, refuelling and maintenance of construction equipment and the handling and storage of toxic materials (e.g. fuel, lubricants, form oils, paints, wood preservatives, and other chemicals) must be carried out in such a way as to avoid contamination of soils, groundwater and surface waters.
- Limit machinery fording of the watercourse to a one-time event (i.e., over and back), and only if no alternative crossing method is available. If repeated crossings of the watercourse are required, construct a temporary crossing structure.
- Use temporary crossing structures or other practices to cross watercourses with steep and highly erodible (e.g., dominated by organic materials and silts) banks and beds. For fording equipment without a temporary crossing structure, use stream bank and bed protection methods (e.g., swamp mats, pads) if minor rutting is likely to occur during fording.

- Ensure a Spills Management Plan (including materials, instructions regarding their use, education of contract personnel, emergency contact numbers) is on-site at all times for implementation in event of accidental spill during construction. Adequate measures to prevent or capture and contain any debris and spills resulting from construction activities should be kept onsite in sufficient quantities. Staff should be orientated as to the location of materials and their proper use and disposal. All measures and procedures should conform to pertinent provincial requirements.
- Plan activities near water such that materials such as paint, primers, blasting abrasives, rust solvents, degreasers, grout, or other chemicals do not enter the watercourse.
- Develop a response plan that is to be implemented immediately in the event of a sediment release or spill of a deleterious substance and keep an emergency spill kit on site.
- Ensure that building material used in a watercourse has been handled and treated in a manner to prevent the release or leaching of substances into the water that may be deleterious to fish.

7.2.3 Erosion and Sedimentation Controls

Erosion and sediment control measures should be maintained until all disturbed ground has been permanently stabilized, suspended sediment has resettled to the bed of the watercourse or settling basin and runoff water is clear. The plan should, where applicable, include:

- Erosion control fencing consisting of heavy duty siltation fencing should be placed around ongoing construction activity areas, temporary storage locations, excavated materials and imported fill.
- Siltation fencing should be installed before work on the site begins and inspected at regular intervals and after significant rain events to confirm it is functioning properly. If any section is found to be damaged or non-functional it should be replaced immediately. Fencing should be regularly cleared of silt accumulation to ensure the integrity of erosion prevention/sediment containment measures.
- Measures for managing water flowing onto the site, as well as water being pumped/diverted from the site such that sediment is filtered out prior to the water entering a watercourse. For example, pumping/diversion of water to a vegetated area, construction of a settling basin or other filtration system.
- Site isolation measures (e.g., silt boom or silt curtain) for containing suspended sediment where in-water work is required (e.g., dredging).
- Measures for containing and stabilizing waste material (e.g., dredging spoils, construction waste and materials, commercial logging waste, uprooted or cut aquatic plants, accumulated debris) above the high water mark of nearby watercourses to prevent re-entry.
- Regular inspection and maintenance of erosion and sediment control measures and structures during the course of construction.
- Repairs to erosion and sediment control measures and structures if damage occurs.
- Removal of non-biodegradable erosion and sediment control materials once site is stabilized.
- Temporarily store, handle and dispose of all materials used or generated (e.g. organics, soils, woody debris, temporary stockpiles, construction debris such as concrete, sheet pile, wood forms, etc.) during site preparation, construction and clean-up in a manner that prevents their entry into the waterbody, including temporarily storing and stockpiling materials a safe distance from the waterbody and appropriate measures to stabilize/contain them.
- The following activities are prohibited beyond the siltation fencing: storage or stockpiling of materials; disposal of liquids; and operation of heavy machinery.

- Upon completion of construction, exposed soils should be restored to the original condition. Erosion control fencing may be removed once vegetation has been established (i.e. more than 80% cover).
- In the event that it is necessary to remove water to safely complete specific tasks (e.g. welding, etc.), the Contractor will remove the water from the trench by pumping it into an appropriate filter bag (e.g., Terrafix® Envirobag) and onto an area of undisturbed vegetation located beyond the boundaries of the work area.

7.3 Woodlands

Several woodland areas exist within the Study Area: one approximately 75 m south of Mayfield Road between Chingaucousy and Hunrontario, one associated with Etobicoke Creek, and one associated with the Heart Lake Conservation Area. Potential impacts to these woodlands would include a loss of habitat and/or damage or removal of individual trees.

It is understood that a 10 m buffer area between construction works and the woodlands will be maintained during construction. As such, direct impacts to these woodlands are not anticipated; however, to further ensure potential negative impacts on the woodlands are minimized, the following mitigation measures are proposed:

- Tree protection fencing should be installed between the areas of proposed development and the woodland boundary, when construction activities are proposed within 15 m of a woodland edge, to reduce the potential for physical damage to trees and their root systems within the woodland. Supports and bracing used to secure the barriers should be installed as close to the woodland dripline as possible, and in a way that minimizes root damage.
- Tree protection fencing should be installed before work on the Site begins and inspected regularly to ensure it is performing its intended function. If any section is found to be damaged or non-functional it should be replaced immediately.
- The following activities are prohibited beyond the tree protection fencing: storage or stockpiling of materials; disposal of liquids; and operation of heavy machinery.
- Changes to existing land contours and drainage patterns due to grading should be minimized to ensure that significant changes to the existing woodland moisture regime do not occur.
- Tree removal should conform to local, municipal, or regional by-laws, and should be performed by properly trained and accredited individuals.
- To limit disturbance to the local birds, required tree removal should be limited during their most vulnerable period, i.e. the breeding bird season (May 1st to July 31st), unless a survey by a qualified biologist confirms that there are no active nests within the tree(s) to be removed.
- Replanting should occur at a 3:1 ratio (3 planted for each tree removed) for native trees removed during site preparation. Compensation should occur for trees that are greater than 15 cm in diameter at breast height or as directed by the Municipality or TRCA. Tree species selected for planting should be native species that are suited to the conditions present within the Study Area. Plantings should be done by hand to reduce the potential for mechanical compaction of soils and should be performed by a qualified and knowledgeable tree planter to ensure plantings are placed in suitable sun exposures and moisture regimes.
- Once the final impact area is determined, a site-specific edge management plan and tree compensation plan should be prepared.

7.3.1 Forest Edge Management Plan

While not currently anticipated, if the removal of trees within a woodland is necessary, in addition to the above-mentioned general mitigation measures, a Forest Edge Management Plan to protect the post-construction woodland edge should be included with the application. The Forest Edge Management Plan should follow the TRCA's (2004) Forest Edge Management Plan Guidelines. Edge management plans are requested when tree clearing involves an existing forest edge, and are intended to mitigate negative impacts to the remaining forest community (TRCA Forest Edge Management Plan Guidelines, 2004). Typically, impacts include:

- Direct loss of floral and faunal habitat;
- Trees along the 'new' edge may be susceptible to windthrow;
- Reduced species richness and abundance;
- Decreased biodiversity;
- Reduced stability of landforms composed of unconsolidated material;
- Regrading/fill placement along forest edges can impact root systems of retained trees, resulting in root stress/tree decline;
- Loss of canopy cover/shade, resulting in an increase in sunlight penetration;
- Some trees with thicker bark (e.g. Beech) can be susceptible to sunscale and frost cracking due to changes in light penetration;
- Changes in microclimates (increase temperatures, decreased soil moisture) resulting in desiccation;
- Site may be more susceptible to invasion by non-native species, pathogens, etc.;
- Soil compaction resulting from unrestricted vehicle and machinery operations; and,
- Loss of native seed bank.

To minimize the negative impacts on the new woodland edge, the following mitigation measures are proposed:

- Tree removal should take place at minimum one season prior to construction activities taking place in the vicinity of the new woodland edge. This will ensure the new edge has been 'pre-stressed' before construction activities begin.
- Tree protection fencing should be employed between the areas of proposed development and the new woodland boundary to reduce the potential physical damage of trees and their root systems within the woodland. Tree protection fencing should be installed before any work on the Site begins, and removed after the threat to tree and root damage effects have ceased.
- Grading should be designed to meet existing woodland grades to prevent suffocation of existing tree roots.
- A monitoring program should be established to ensure that the new woodland edge has continued health and normal growth.

7.4 General Mitigation Measures

In addition to the mitigation measures outlined above, general mitigation measures for works within the Study Area should include the following:

- To limit disturbance to the local birds, if feasible, construction activity could be limited during their most vulnerable period, i.e. the breeding bird season (May 1st to July 31st). Additionally, tree removal should not occur during this period, unless a nest survey by a qualified biologist suggests that no breeding birds occur in the tree(s) to be removed.
- Further consultation with the OMNR is necessary to determine if detailed design encroaches into regulated Redside Dace habitat. Where the design does encroach, current approval, mitigation and monitoring practices should be undertaken as part of the detailed design study, under guidance of the Endangered Species Act, Ontario Regulation 242/08, and through consultation with the OMNR.
- During construction, the Study Area should be monitored for Species at Risk as described in this report. If Species at Risk are identified, MNR and the qualified project biologist should be contacted immediately.

8. Closure

This report has been prepared by GENIVAR Inc. The assessment represents the conditions at the subject property only at the time of the assessment, and is based on the information referenced and contained in the report. The conclusions presented herein respecting current conditions represent the best judgment of the assessors based on current environmental standards. GENIVAR Inc. attests that to the best of our knowledge, the information presented in this report is accurate. The use of this report for other projects without written permission of the client and GENIVAR Inc. is solely at the user's own risk.

Thank you for the opportunity to complete this report. We trust that this information is satisfactory for your current requirements. Please contact us if we can be of further assistance.

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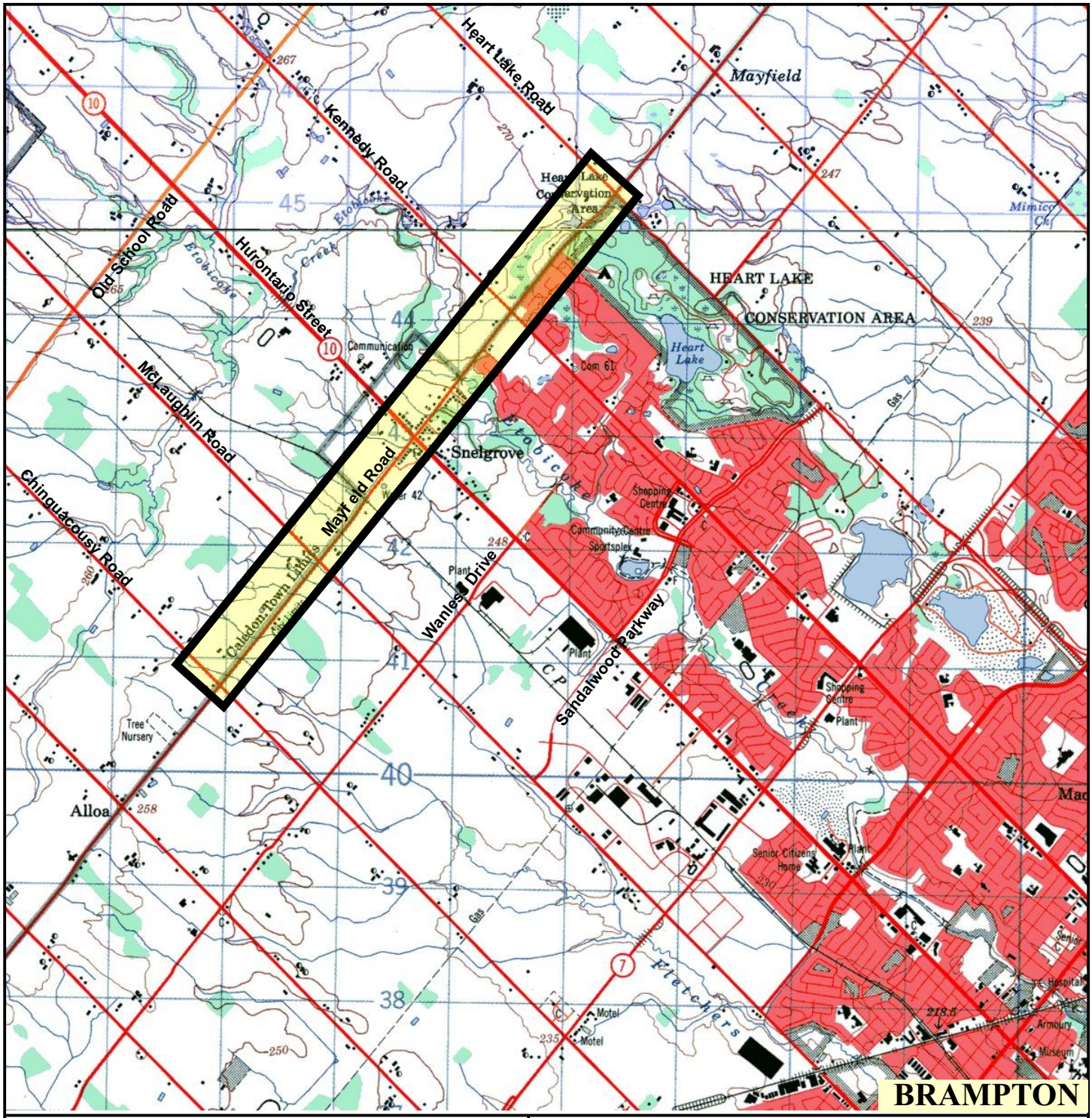
Figures



LEGEND

APPROXIMATE STUDY LOCATION

N
W E
S

MAP SOURCE:
NTS SHEET 30 M/13 Bolton, 30 M/12 Brampton

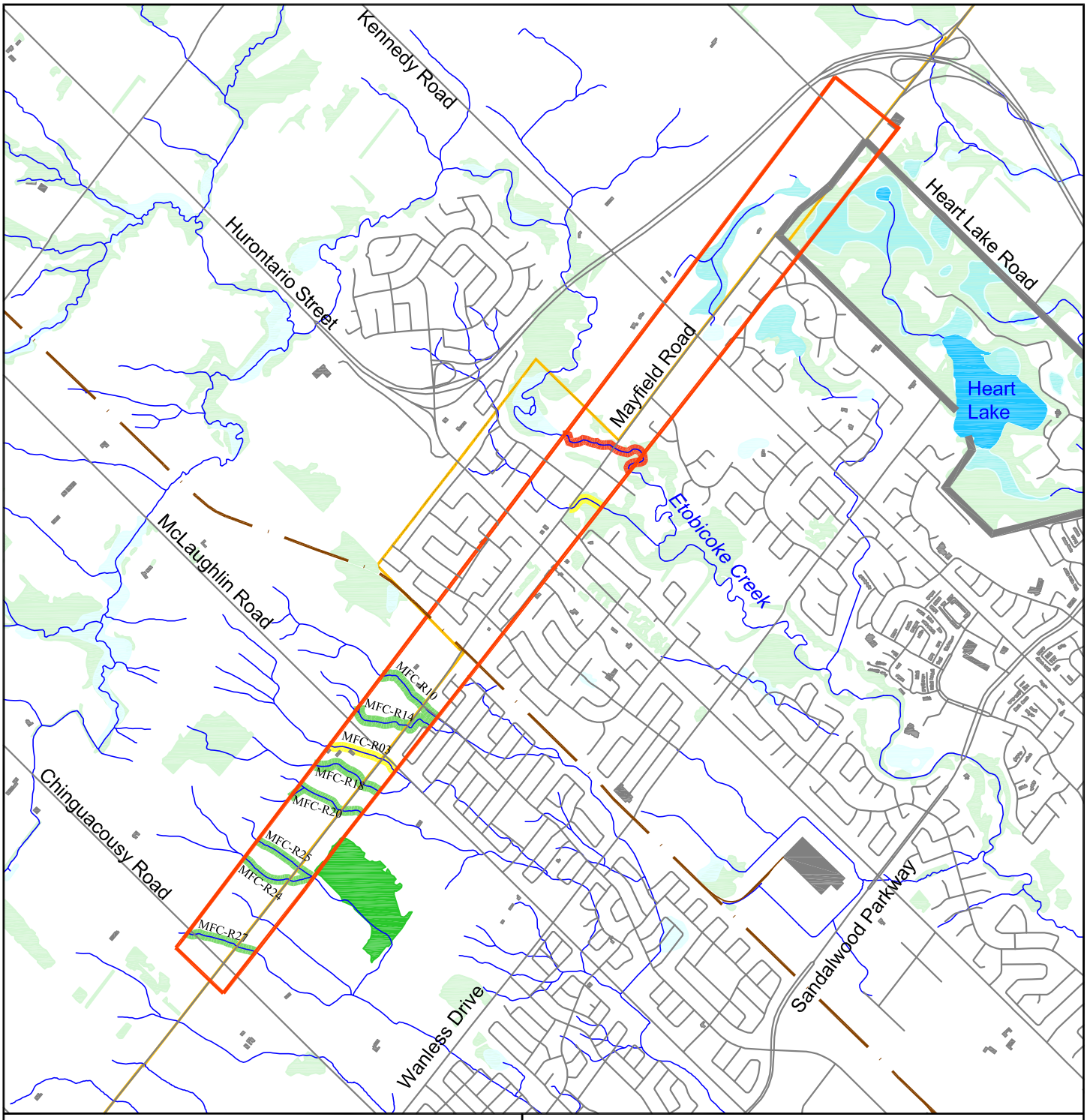
LOCATION MAP

MAYFIELD ROAD
CLASS ENVIRONMENTAL ASSESSMENT
NATURAL HERITAGE
EXISTING CONDITIONS REPORT
For Regional Municipality of Peel

DATE: SEPTEMBER 2011	SCALE: 1:50,000
PROJECT: 111-17262-00	REF. NO.: 0-11-2362-00F1-LM

GENIVAR

FIGURE 1



LEGEND

- STUDY AREA
- WOODED AREA
- SIGNIFICANT WOODLAND
- WETLAND
- PROVINCIALLY SIGNIFICANT WETLAND
- HEART LAKE CONSERVATION AREA
- NET CONSTRAINT RANKINGS FOR FISH HABITAT AS PER AMEC 2011 (LOW, MEDIUM, HIGH)
- ROAD
- RAILWAY
- WATERWAY

200 0 600 metres

NATURAL HERITAGE FEATURES

MAYFIELD ROAD
CLASS ENVIRONMENTAL ASSESSMENT
NATURAL HERITAGE
EXISTING CONDITIONS REPORT
For Regional Municipality of Peel

DATE: NOVEMBER 2011	SCALE: 1:30,000
PROJECT: 101-17262-00	REF. NO.: 0-11236200F2-SP

GENIVAR

FIGURE 2

Appendices

Appendix A

Species List

Appendix A: Species noted during the site visit on and adjacent to the subject Site. Species present represent incidental flora and fauna contact and is not exhaustive.

Group	Common Name	Scientific Name
Trees	American Beech	*Fagus grandifolia*
	Amur Maple	*Acer ginnala*
	Apple	*Malus sp.*
	Basswood	*Tilia americana*
	Bitternut Hickory	*Carya cordiformis*
	Black Locust	*Robinia pseudoacacia*
	Black Walnut	*Juglans nigra*
	Blue Beech	*Carpinus caroliniana*
	Blue Spruce	*Picea pungens*
	Bur Oak	*Quercus macrocarpa*
	Cherry sp.	*Prunus sp.*
	Eastern Hemlock	*Tsuga canadensis*
	Eastern White Cedar	*Thuja occidentalis*
	European White Poplar	*Populus alba*
	Green Ash	*Fraxinus pennsylvanica*
	Ironwood	*Ostrya virginiana*
	Honey Locust (Thornless)	*Gleditsia triacanthos* var. *inermis*
	Horsechestnut	*Aesculus hippocastanum*
	Manitoba Maple	*Acer negundo*
	Northern Catalpa	*Catalpa speciosa*
	Norway Maple	*Acer platanoides*
	Norway Spruce	*Picea abies*
	Poplar/Cottonwood sp.	*Populus sp.*
	Red Oak	*Quercus rubra*
	Red Pine	*Pinus resinosa*
	Scots Pine	*Pinus sylvestris*
	Silver Maple	*Acer saccharinum*
	Sugar Maple	*Acer saccharum*
	Trembling Aspen	*Populus tremuloides*
	White (Weeping) Willow	*Salix alba*
	White Ash	*Fraxinus americana*
	White Elm	*Ulmus americana*
	White Pine	*Pinus strobus*
	White Spruce	*Picea glauca*
	Wild Black Cherry	*Prunus serotina*
Shrubs	Alder sp.	*Alnus sp.*
	Black Raspberry	*Rubus occidentalis*
	Common Buckthorn	*Rhamnus cathartica*
	Dogwood sp.	*Cornus sp.*
	Honeysuckle	*Lonicera sp.*
	Mountain Ash sp.	*Sorbus sp.*
	Smooth Wild Rose	*Rosa blanda*
	Staghorn Sumac	*Rhus typhina*
	Wild Red Raspberry	*Rubus ideaus*
	Willow spp.	*Salix spp.*
Herbaceous Plants, Ferns and Allies, and Grasses	Alfalfa	*Medicago sativa*
	Alsike Clover	*Trifolium hybridum*
	Black-eyed Susan	*Rudbeckia hirta*
	Blueweed	*Echium vulgare*
	Bull Thistle	*Cirsium vulgare*
	Burdock sp.	*Arctium sp.*

	Canada Goldenrod	*Solidago canadensis*
	Canada Thistle	*Cirsium arvense*
	Carex spp.	*Carex spp.*
	Chicory	*Cichorium intybus*
	Common Cattail	*Typha latifolia*
	Common Milkweed	*Asclepias syriaca*
	Common Mullein	*Verbascum thapsus*
	Common Plantain	*Plantago major*
	Common Ragweed	*Ambrosia artemisiifolia*
	Common Reed	*Phragmites australis*
	Common St. John's-Wort	*Hypericum perforatum*
	Cow Vetch	*Vicia cracca*
	Crown Vetch	*Securigera varia*
	Dandelion	*Taraxacum officinale*
	Dock sp.	*Rumex sp.*
	European Bittersweet	*Solanum dulcamara*
	Field Bindweed	*Convolvulus arvensis*
	Field Pennycress	*Thlaspi arvense*
	Fleabane sp.	*Erigeron sp.*
	Foxtail Barley	*Hordeum jubatum*
	Foxtail sp.	*Setaria sp.*
	Garlic Mustard	*Alliaria petiolata*
	German Chamomile	*Matricaria recutita*
	Goldenrod spp.	*Solidago spp.*
	Grasses (Poaceae)	
	Ox-eye Daisy	*Leucanthemum vulgare*
	Perennial Sow Thistle	*Sonchus arvensis*
	Pigweed sp.	*Amaranthus sp.*
	Prairie Goldenbean	*Thermopsis rhombifolia*
	Purple Coneflower	*Echinacea purpurea*
	Purple Loosestrife	*Lythrum salicaria*
	Red Baneberry	*Actaea rubra*
	Running Burning Bush	*Euonymus obovatus*
	Rushes (Juncaceae)	
	Spotted Joe-Pye Weed	*Eupatorium maculatum*
	Teasel	*Dipsacus sylvestris*
	Timothy	*Phleum pratense*
	White Clover	*Trifolium repens*
	White Sweet Clover	*Melilotus alba*
	Wild Carrot/Queen Anne's Lace	*Daucus carota*
	Wild Lettuce	*Lactuca sp.*
	Wild Grape	*Vitus sp.*
	Yarrow	*Achillea millefoilum*
Herptiles	Green Frog	*Rana clamitans*
	Northern Leopard Frog	*Rana pipiens*
Mammals	Eastern Grey Squirrel	*Sciurus carolinensis*
Birds	American Crow	*Corvus brachyrhynchos*
	American Goldfinch	*Carduelis tristis*
	American Robin	*Turdus migratorius*
	Canada Goose	*Branta canadensis*
	European Starling	*Sturnus vulgaris*
	Great Blue Heron	*Ardea herodias*
	Gull sp.	*Larus sp.*
	House Sparrow	*Passer domesticus*
	Mallard	*Anas platyrhynchos*
	Mourning Dove	*Zenaida macroura*

	Northern Cardinal	*Cardinalis cardinalis*
	Purple Martin	*Progne subis*
	Red-winged Blackbird	*Agelaius phoeniceus*
Other	Monarch Butterfly	*Danaus plexippus*

Appendix B

NHIC Records

Appendix B: NHIC Search Results

Results are based on a conservative search of the following 13 one square kilometer quadrats: 17NJ94-20, 21, 30, 31, 32, 41, 42, 43, 52, 53, 54, 64 and 65.

Element Occurrences:

Species Element Occurrence Report help

Scientific name:	Myotis leibii		
Common name:	Small-footed Bat		
Family:	Vespertilionidae		
Global (G-rank):	G3	**Committee on the Status of Endangered Wildlife in Canada (COSEWIC)**:	
Ontario (S-rank):	S2S3	**Species At Risk in Ontario (SARO)**:	
Canada General Status:	May be at risk	**Ontario General Status**:	May be at risk

1 **Element Occurrence Retrieved**

EO ID	UTM Zone	Easting(nearest km)	Northing(nearest km)	EO Rank	Last Observed Date
35144	17	*585000*	4841000	H	1948-09-02

Species Element Occurrence Report help

Scientific name:	Pipistrellus subflavus		
Common name:	Eastern Pipistrelle		
Family:	Vespertilionidae		
Global (G-rank):	G5	**Committee on the Status of Endangered Wildlife in Canada (COSEWIC)**:	
Ontario (S-rank):	S3?	**Species At Risk in Ontario (SARO)**:	
Canada General Status:	Sensitive	**Ontario General Status**:	Sensitive

1 **Element Occurrence Retrieved**

EO ID	UTM Zone	Easting(nearest km)	Northing(nearest km)	EO Rank	Last Observed Date
35455	17	*586000*	4848000	H	1952-10-14

Species Element Occurrence Report help

Scientific name:	Crotalus horridus		
Common name:	Timber Rattlesnake		
Family:	Viperidae		
Global (G-rank):	G4	**Committee on the Status of Endangered Wildlife in Canada (COSEWIC)**:	EXP
Ontario (S-rank):	SX	**Species At Risk in Ontario (SARO)**:	EXP
Canada General Status:	Extirpated or extinct	**Ontario General Status**:	At Risk

1 Element Occurrence Retrieved

EO ID	UTM Zone	Easting(nearest km)	Northing(nearest km)	EO Rank	Last Observed Date
17359	17	*586000*	4845000	X	n/a

Species Element Occurrence Report help

Scientific name:	Ambystoma hybrid pop. 1		
Common name:	Jefferson X Blue-spotted Salamander, Jefferson genome dominates		
Family:	Ambystomatidae		
Global (G-rank):	GNA	**Committee on the Status of Endangered Wildlife in Canada (COSEWIC)**:	
Ontario (S-rank):	S2	**Species At Risk in Ontario (SARO)**:	
Canada General Status:		**Ontario General Status**:	

1 Element Occurrence Retrieved

EO ID	UTM Zone	Easting(nearest km)	Northing(nearest km)	EO Rank	Last Observed Date
35302	17	*584000*	4848000	E	2003-05-13

Species Element Occurrence Report help

Scientific name:	Lestes eurinus		
Common name:	Amber-winged Spreadwing		
Family:	Lestidae		
Global (G-rank):	G4	**Committee on the Status of Endangered Wildlife in Canada (COSEWIC)**:	
Ontario (S-rank):	S3	**Species At Risk in Ontario (SARO)**:	
Canada General Status:		**Ontario General Status**:	

1 Element Occurrence Retrieved

EO ID	UTM Zone	Easting(nearest km)	Northing(nearest km)	EO Rank	Last Observed Date
41604	17	*594000*	4842000	E	n/a

Species Element Occurrence Report help

Scientific name:	Arigomphus furcifer		
Common name:	Lilypad Clubtail		
Family:	Gomphidae		
Global (G-rank):	G5	**Committee on the Status of Endangered Wildlife in Canada (COSEWIC)**:	
Ontario (S-rank):	S3	**Species At Risk in Ontario (SARO)**:	
Canada General Status:		**Ontario General Status**:	

1 Element Occurrence Retrieved

EO ID	UTM Zone	Easting(nearest km)	Northing(nearest km)	EO Rank	Last Observed Date
41909	17	*594000*	4842000	E	n/a

Species Element Occurrence Report help

Scientific name:	Asplenium scolopendrium var. americanum		
Common name:	Hart's-tongue Fern		
Family:	Aspleniaceae		
Global (G-rank):	G4T3	**Committee on the Status of Endangered Wildlife in Canada (COSEWIC)**:	SC
Ontario (S-rank):	S3	**Species At Risk in Ontario (SARO)**:	SC
Canada General Status:		**Ontario General Status**:	

1 Element Occurrence Retrieved

EO ID	UTM Zone	Easting(nearest km)	Northing(nearest km)	EO Rank	Last Observed Date
21646	17	*584000*	4844000	D	1993

Species Element Occurrence Report help

Scientific name:	Carex torta		
Common name:	Twisted Sedge		
Family:	Cyperaceae		
Global (G-rank):	G5	**Committee on the Status of Endangered Wildlife in Canada (COSEWIC)**:	
Ontario (S-rank):	SX	**Species At Risk in Ontario (SARO)**:	
Canada General Status:		**Ontario General Status**:	

1 Element Occurrence Retrieved

EO ID	UTM Zone	Easting(nearest km)	Northing(nearest km)	EO Rank	Last Observed Date
59347	17	*594000*	4842000	X	1910-06-03

Species Element Occurrence Report help

Scientific name: Crataegus dissona

Common name: Northern Hawthorn

Family: Rosaceae

Global (G-rank): G4G5 **Committee on the Status of Endangered Wildlife in Canada (COSEWIC)**:

Ontario (S-rank): S3 **Species At Risk in Ontario (SARO)**:

Canada General Status: **Ontario General Status**:

1 Element Occurrence Retrieved

EO ID	UTM Zone	Easting(nearest km)	Northing(nearest km)	EO Rank	Last Observed Date
2550	17	*598000*	4831000	H	1982-06-02

Species Element Occurrence Report help

Scientific name: Gleditsia triacanthos

Common name: Honey-locust

Family: Fabaceae

Global (G-rank): G5 **Committee on the Status of Endangered Wildlife in Canada (COSEWIC)**:

Ontario (S-rank): S2 **Species At Risk in Ontario (SARO)**:

Canada General Status: **Ontario General Status**:

1 Element Occurrence Retrieved

EO ID	UTM Zone	Easting(nearest km)	Northing(nearest km)	EO Rank	Last Observed Date
59841	17	*594000*	4842000	H	1911-06-17

Species Element Occurrence Report help

Scientific name:	Helodium paludosum		
Common name:	A Moss		
Family:	Helodiaceae		
Global (G-rank):	G3G5	**Committee on the Status of Endangered Wildlife in Canada (COSEWIC)**:	
Ontario (S-rank):	S1?	**Species At Risk in Ontario (SARO)**:	
Canada General Status:		**Ontario General Status**:	

1 Element Occurrence Retrieved

EO ID	UTM Zone	Easting(nearest km)	Northing(nearest km)	EO Rank	Last Observed Date
35665	17	*596000*	4843000	H	1939-06-24

Natural Areas Reports: HEART LAKE FOREST AND BOG

help

Identifiers

Area Type:	Life Science ANSI	**Significant Level**:	Regional
Area ID:	1295	**Reported Size (ha)**:	0
Alias(es):	HEART LAKE FOREST AND BOG	**Related to**:	

Locational Information

UTM Centroid:	17,596512,4844122	**Datum**:	NAD83	**Decimal Lat./Long.**:	43.7438 / -79.8013
Ecodistrict(s):				**County(ies)**:	
Topographic Map(s):				**Tertiary Watershed(s)**:	
Imagery:					

Natural Heritage Values

Description: Lying 2 km northeast of Snelgrove, just north of Heart Lake, this 40 ha site includes deciduous uplands and several wetland depressions containing swamp, marsh and bog vegetation, along with a kettle pond. The terrain is rolling and hummocky, part of a small esker running from Heart Lake to Nortonville. The kettle bog supports significant species such as Woodwardia virginica, Pogonia ophioglossoides, Arceuthobium pusillum. Close to built-up area of Brampton. [Hanna 1984]

Vegetation:

Landform:

Representation:

Ecological Functions:

Other Values:

Current Land Use:

Historical Land Use:

Floristic Quality:

Management and Protection

Management Organisation: **IUCN Category**:

Management Comments:

Protection:

Ownership:

Threats:

Exotic/Invasive Species:

Off Site Uses:

Rating Comments:

Other Comments:

Search Criteria

Website content last updated from NHIC database on 2010-07-30
Generated on 2011-11-24
Natural Heritage Information Centre. 2011. Element Summary Report for Ontario Ministry of Natural Resources, Peterborough, Ontario. Available http://www.biodiversityexplorer.mnr.gov.on.ca/nhicWEB/nhicIndex.jsp

Natural Areas Reports: HEART LAKE WETLAND

help

Identifiers

Area Type:	Wetland	**Significant Level**:	Provincial
Area ID:	3843	**Reported Size (ha)**:	0
Alias(es):	HEART LAKE WETLAND	**Related to**:	

Locational Information

UTM Centroid:	17,596912,4844022	**Datum**:	NAD83	**Decimal Lat./Long.**:	43.7429 / -79.7964
Ecodistrict(s):				**County(ies)**:	
Topographic Map(s):				**Tertiary Watershed(s)**:	
Imagery:					

Natural Heritage Values

Description: A Provincially significant wetland complex, made up of nine individual wetlands, composed of two different wetland types (64% swamp, 36% marsh) (Dodge et al., 1985).

Vegetation: Dominant Vegetation Forms (Dodge et al., 1985):35.8% deciduous trees, 26.2% tall shrubs, 3.8% low shrubs, 0.9% herbaceous ground cover, 4.5% narrow-leaved emergents, 12.3% robust emergents, 14% free-floating plants, 0.8% submergent vegetation, and 1.6% unvegetated;A master plant list is included in the evaluation (Dodge et al., 1985) supplement pages.Vegetation Communities (Dodge et al., 1985):One formW1: free-floating plants- Lemna minor/ Wolffia spp.;W4: submergents- Potamogeton spp.;W7: herbs- Impatiens capensis;W10: unvegetated;Two formsS3: tall shrubs- Alnus rugosa/ Salix spp.; Impatiens capensis/ Onoclea sensibilis;S5: deciduous trees- Acer rubrum; Rubus pubescens/ Osmunda cinnamomea;M3: narrow-leaved emergents- sedges; Impatiens capensis/ Polygonum sagittum;M5: robust emergents- Typha spp.; Lemna minor;W6: free-floating plants- Lemna minor/ Wolffia spp.; Potamogeton spp.;M8: robust emergents- Typha latifolia; Bidens cernua/ Verbena hastata;M9: robust emergents- Typha latifolia; grasses;Three formsS8: deciduous trees- Acer saccharinum/ Acer rubrum/ Fraxinus nigra; Alnus rugosa; Onoclea sensibilis/ Impatiens capensis;S9: tall shrubs- Alnus rugosa/ Amelanchier spp.; Solanum dulcamara/ Cornus spp./ Alnus rugosa; Impatiens capensis/ Boehmeria cylindrica;S11: tall shrubs- Salix spp.; Cornus spp., Spiraea spp./ Solanum dulcamara; Typha spp.;S12: tall shrubs- Alnus rugosa; Ilex verticillata/ Salix spp./ Solanum dulcamara; grasses, sedges;S13: tall shrubs- Acer rubrum; Rubus spp.; Impatiens capensis;Three formsS15: tall shrubs- Salix spp.; sedges/ grasses/ Equisetum spp.; Typha spp.;S17: narrow-leaved emergents- sedges; Salix spp./ Cornus spp.; Typha latifolia;M2: robust emergents- Typha spp.; Solanum dulcamara/ Salix spp./ Spiraea spp.; Impatiens capensis;Four formsS1: tall shrubs- Betula papyrifera/ Acer saccharinum/ Salix spp., Ilex verticillata/ Alnus rugosa; Solanum dulcamara/ Cornus stolonifera; Lycopus virginicus/ Impatiens capensis/ Bidens cernua/ Hypericum virginicum; grasses, sedges/ Sparganium spp.;S2: low shrubs- Chamaedaphne calyculata/ Solanum dulcamara; Impatiens capensis/ Bidens frondosa; Typha spp.; Sphagnum spp.;S4: tall shrubs- Alnus rugosa; Acer rubrum; Solanum dulcamara/ Fraxinus nigra/ Vaccinium corymbosum; Impatiens capensis/ Onoclea sensibilis;S6: deciduous trees- Acer rubrum/ Betula lutea; Vaccinium corymbosum; Onoclea sensibilis; Sphagnum spp.;S7: deciduous trees- Acer rubrum/ Betula lutea/ Acer saccharinum; Alnus rugosa; Solanum dulcamara/ Cornus spp./ Ilex verticillata/ parthenocissus quinquefolia; ferns/ Impatiens capensis/ Bidens cylindrica;S14: tall shrubs- Alnus rugosa; Acer rubrum/ Ulmus spp.; Salix spp./ Solanum dulcamara; grasses, sedges;Five formsS10: deciduous trees- Acer saccharinum; Alnus rugosa/ Acer rubrum; Solanum dulcamara/ Cornus spp./ Acer rubrum; Rubus pubescens/ Bidens frondosa/ Onoclea sensibilis/ Impatiens capensis; grasses/sedges;S16: tall shrubs- Alnus rugosa/ Salix spp.; Bidens cernua; sedges; Calla palustris; Lemna minor;

Landform: Soils (Dodge et la., 1985): 16% clays, loams or silts (mineral), 70% organic, and 14% undesignated;Site Types (Dodge et la., 1985): 21% isolated, 53% palustrine (permanent or intermittent outflow), 6.5% lacustrine (at rivermouth), 19.5% lacustrine (exposed to lake);

Representation:

Ecological Functions: Nesting for colonial waterbirds- active feeding area for Great Blue Heron (Dodge et al., 1985);Good winter cover for wildlife (A. Norman, MNR Maple referenced) (Dodge et al., 1985);Waterfowl staging- local or no significance (A. Norman, MNR Maple referenced) (Dodge et al., 1985);Waterfowl production- local significance (A. Norman, MNR Maple referenced) (Dodge et al., 1985);Significance for fish spawning and rearing- present: Rainbow Trout, Largemouth Bass, Brown Bullhead, Rock Bass, White Sucker, Common Shiner, Brook Stickleback, Bluntnose Minnow (all- 1980 Heart Lake Survey, referenced) (Dodge et al., 1985);

Other Values: Resource Products (Dodge et al., 1985):Furbearers-Muskrat (field obsv.);

Current Land Use:

Historical Land Use:

Floristic Quality:

Management and Protection

Management Comments:

Protection:

Ownership:

Threats: Moderate disturbance or localized water pollution (Dodge et al., 1985).

Exotic/Invasive Species:

Off Site Uses:

Rating Comments:

Other Comments:

Search Criteria

Website content last updated from NHIC database on 2010-07-30
Generated on 2011-11-24
Natural Heritage Information Centre. 2011. Element Summary Report for Ontario Ministry of Natural Resources, Peterborough, Ontario. Available http://www.biodiversityexplorer.mnr.gov.on.ca/nhicWEB/nhicIndex.jsp

Natural Areas Reports: HEART LAKE WETLAND COMPLEX

help

Identifiers

Area Type:	Wetland	**Significant Level**:	Provincial
Area ID:	18504	**Reported Size (ha)**:	0
Alias(es):	HEART LAKE WETLAND COMPLEX	**Related to**:	HEART LAKE FOREST AND BOG, BRAMPTON BURIED ESKER

Locational Information

UTM Centroid:	17,597012,4843722 **Datum**: NAD83	**Decimal Lat./Long.**:	43.7401 / -79.7952
Ecodistrict(s):		**County(ies)**:	
Topographic Map(s):		**Tertiary Watershed(s)**:	

Imagery: Aerial Photographs: MNR 1997 Infrared Roll 41: 9441-9443, 9545-9549, Roll 44 0969-0974.

Natural Heritage Values

Description: The provincially significant Heart Lake Wetland Complex is found in the northern portion of the City of Brampton and the southern portion of the Town of Caledon (OMNR - Aurora District, 2000).The Heart Lake Wetland Complex encompasses previously evaluated wetlands (MNR 1985) and additional wetlands not previously evaluated (OMNR - Aurora District, 2000).The Ministry has identified the Heart Lake Conservation Area portion of this wetland complex as a regional life science and an earth science Area of Natural and Scientific Interest (ANSI). The life science ANSI is known as the Heart Lake Forest and Bog and the earth science ANSI as the Brampton Buried Esker.The Heart Lake wetlands are situated in headwater areas for the Etobicoke Creek and Mimico Creek watersheds. The wetlands are linked by stream corridors, adjacent forested uplands or by agricultural lands, regenerating fields and hedgerows (OMNR - Aurora District, 2000).The Heart Lake Wetland Complex has 35 wetlands covering a total of 87 hectares. The largest wetland at 33 ha encompasses two kettle lakes, the 0.6 ha Tea Pot Lake and the 16.5 ha Heart Lake. As well, it encompasses two kettle bogs that occur along the shores of these lakes. Another 7 wetlands range from 2 to 7.5 ha in size and the remaining 27 wetlands are under 2 ha in size (OMNR - Aurora District, 2000).The complex is noteworthy for its two kettle bogs, its two kettle lakes and its adjacent upland woodlands (OMNR - Aurora District, 2000).

Vegetation: Most common within the Heart Lake Wetland Complex are palustrine wetlands along headwater tributaries of Mimico Creek and Etobicoke Creek, constituting 78% of the wetland complex. Occupying another 6% of the wetland complex are isolated or kettle wetlands. The remaining 16% are lacustrine wetlands situated around Heart Lake.The palustrine, lacustrine and isolated wetlands at Heart Lake sustain a high diversity of 49 wetland types. The most common wetland types are thicket swamps covering 25% of wetlands. They are dominated by shrubs of Speckled Alder (Alnus rugosa) and, occasionally, Winterberry (Ilex verticillatus), various willow shrubs such as Pussy Willow (Salix discolor), Missouri Willow (Salix eriocephala) and Slender Willow (Salix petiolaris), Red-osier Dogwood (Cornus stolonifera) and Narrow-leaved Meadow-sweet (Spiraea alba). Below the shrubs, there is a diverse understorey of Common Cattail (Typha latifolia) and various grasses and sedges such as Tall Manna Grass (Glyceria grandis), Cut Grass (Leersia oryzoides), Reed Canary Grass (Phalaris arundinacea), Canada Blue-joint (Calamagrostis canadensis), Bristly Sedge (Carex comosa) and Cyperus-like Sedge (Carex pseudo-cyperus). There are also a variety of herbs such as Marsh Fern (Thelypteris palustris), Water Arum (Calla palustris), Common Duckweed (Lemna minor), Water-parsnip (Sium sauve), Sensitive Fern (Onoclea sensiblis) and Nodding Beggar-ticks (Bidens cernus). One low shrub thicket swamp of Water-willow (Decodon verticillatus) occurs on the fringes of Tea Pot Lake. This is the only example of a Water-willow wetland type on the South Slope.Also covering 25% of the wetlands are deciduous swamps of Red Maple, Silver Maple and the hybrid between them. As well there is also a scattering of Yellow Birch and Black Ash, and Peach-leaved Willow dominates one small wetland. Below the tree layer there is a diverse understorey of Speckled Alder and Winterberry shrubs and such herbs as Dwarf Dewberry (Rubus pubescens), Sensitive Fern, Spotted Jewelweed (Impatienscapensis) and Bitter Nightshade (Solanum dulcamara).Cattail marshes cover 17% of the wetlands and are dominated by Common Cattail, Hybrid Cattail (Typha Xglauca) and Narrow-leaved Cattail (Typha angustifolia).Another 11% of wetlands are graminoid marshes of Lake Sedge (Carex lacustris), Tussock Sedge (Carex stricta), Tall Manna Grass and Reed Canary Grass.Open water aquatic communities cover 11% of wetlands. The largest example is found along the shallow margins of Heart Lake where one finds submergent beds of Eurasian Water-milfoil (Myriophyllum spicatum) and Starwort (Chara sp.) and closer to shore floating beds of Bullhead Pond Lily (Nuphar variegatum) and Fragrant Water-lily (Nymphaea odorata). Open water aquatic communities also occur in smaller wetlands and are variously dominated by submergent pondweeds (Potamogeton sp.) and by floating aquatics such as Common Duckweed, Great Duckweed (Spirodela polyrrhiza), Columbian Water-meal (Wolffia columbiana), Northern Water-meal (Wolffia borealis) and FloatingPondweed (Potamogeton natans).Herbaceous marshes (7% of wetlands) are dominated by Spotted Jewelweed,

Sensitive Fern, Bitter Nightshade, Purple Loosestrife (Lythrum salicaria), Marsh Fern and, in one flooded-out swamp, Stinging Nettle (Urtica dioica). Kettle bogs cover 1% of the wetlands and include the 0.7 ha Heart Lake Bog and the 0.3 ha Tea Pot Lake Bog.On the eastern side of Tea Pot Lake there is a conifer bog of Tamarack and Red Maple with scattered Black Spruce. Below the trees there is a dense low shrub layer of Black Huckleberry (Gaylussacia baccata) and Leatherleaf (Chamaedaphne calyculata) and scattered tall shrubs of Winterberry, Mountain-holly (Nemopanthus mucronatus) and Highbush Blueberry (Vacinium corymbosum). On the ground the Sphagnum moss carpet has scattered herbs and sedges of Hairy Sedge (Carex lasiocarpa), Three-fruited Sedge (Carex trisperma) and Three-leaved Solomon's Seal (Maianthemum trifolium).A bay in the eastern portion of Heart Lake supports a marsh lagg and thicket swamp with acentral low shrub bog. The bog is dominated by low shrubs of Leatherleaf with scattered tall shrubs of Speckled Alder and Winterberry. Common in the understorey are Marsh Fern, Tufted Loosestrife (Lysimachia thrysiflora), Marsh St. John's-wort (Triadenum fraseri), Silvery Sedge (Carex canescens), Three-way Sedge (Dulichium arundinaceum), Inland Sedge (Carex interior), and Small-headed Rush (Juncus brachycephalus). Sphagnum moss is confined to hummocks in this community.The final 2% of wetlands consist of unvegetated open water in the centre of Tea Pot Lake and in the centre of several marshes.Heart Lake Wetlands also support a diversity of surrounding upland habitats such as forests, plantations, thickets, regenerating fields, farmland and hedgerows. Deciduous forests of Sugar Maple and Red Oak occur on the slopes around Heart Lake and Tea Pot Lake. There are also a few mixed forests of Eastern Hemlock, White Pine and Red Oak, successional deciduous forests, conifer plantations and Fragrant Sumac thickets (OMNR - Aurora District, 2000).

Landform: The wetland complex is situated on and around the Brampton Buried Esker, an esker covered in Halton Till. Eskers are linear sand and gravel deposits laid down by rivers under glaciers. Kettles or depressions in this esker support kettle lakes, kettle bogs and kettle wetlands that are more typical of the Oak Ridges Moraine to the north. The buried esker occurs on the South Slope physiographic region that abuts the Oak Ridges Moraine. The South Slope historically was cleared for agriculture with few woodlands and wetlands remaining. It is estimated that less than 1% of the South Slope still supports wetlands. The Heart Lake Wetland Complex is one of the largest wetland complexes remaining on the South Slope. It provides the only examples of kettle lakes and kettle bogs on the South Slope (OMNR - Aurora District, 2000).67% of the area has humic/mesic soils, with 21% clay/loam, 10% sand and 2% silt/marl (Zajc et al., 2000)

Representation: The Heart Lake Wetland Complex is provincially significant. Its 35 significant wetlands comprise a large and diverse wetland complex on the South Slope, noteworthy for its high concentration of significant plants and its kettle lakes and kettle bogs. Many of the wetlands contribute spring flows to headwater tributaries and they occur in the midst of a recharge area for an aquifer (OMNR - Aurora District, 2000).

Ecological Functions: Adjacent uplands are important for many wetland species at Heart Lake Wetlands and are critical for the maintenance of its wetland functions. Waterfowl such as Mallard nest in fields around the wetlands. The population of woodland frogs such as Spring Peeper and Wood Frog rely on the wetlands for breeding, but forage and hibernate in upland forests and plantations. Leopard Frogs forage in fields a considerable distance from their wetlands. They also move between wetlands, hibernating in the bottom of deeper permanent ponds or lakes and breeding in more shallow wetlands. The resident Midland Painted Turtles and Snapping Turtles live year-round in the kettle lakes, but lay their eggs in surrounding uplands (OMNR - Aurora District, 2000).The wetlands contribute base flows to eight headwater tributaries of Mimico Creek and one headwater tributary of Etobicoke Creek. These wetlands contribute to flood attenuation, water quality improvement and the long term trapping of nutrients. The wetlands also occur in the midst of a recharge area for the Brampton Esker Overburden Aquifer (OMNR - Aurora District, 2000).Heart Lake supports significant fish spawning and nursery habitat. Species present include Rainbow Trout, Pumpkinseed, White Sucker, Largemouth Bass, Rock Bass, Brown Bullhead, Bluntnose Minnow, Central Mudminnow, Common Shiner and Golden Shiner (OMNR - Aurora District, 2000).

Other Values: Heart Lake and Tea Pot Lake are research sites for Dr. Barry Warner with the University of Waterloo. These lakes have existed since the last ice-age accumulating sediments that contain pollen and plant remains. These provide a window into the vegetation and climate of the area over the past 12,000 years. Tea Pot Lake is also noted as a merimictic type lake, one of the few in the province. These lakes do not turnover in the fall or spring like most lakes do. This absence of any water mixing results in the settling down of clearly demarcated light and dark seasonal lake deposits allowing one to accurately access yearly climatic and vegetation changes (OMNR - Aurora District, 2000).

Current Land Use: The wetlands in the Heart Lake Conservation Area are frequently used by school groups, naturalists and the general public for outdoor education and nature appreciation. Heart Lake is also used for swimming, boating and recreational fishing. The location of these wetlands in the City of Brampton makes them very important for wildlife viewing and nature enjoyment.

Historical Land Use:

Floristic Quality:

Management and Protection

Management Organisation: **IUCN Category**:

Management Comments:

Protection:

Ownership:

Threats: Most of the wetlands are relatively undisturbed, however there have been some impacts from residential development in the western and southern portions of the wetland complex.A number of wetlands have also been lost historically by gravel pits to the south, which mined over half of the Brampton Buried Esker. The mined portion of the esker, like the portion still remaining in the Heart Lake Conservation Area, once supported a number of unusual kettle wetlands and bogs noteworthy for their rare northern plant species.Some impacts have also occurred to Heart Lake. Jocelyn Webber notes that the lake before its development as a recreational area in the 1950s supported a Black Spruce wetland boggy fringe (Webber 1984). The exotic wetland plant, Purple Loosestrife, has taken over a southwestern bay. There has been some associated shoreline damage from a heavily used trail and associated armouring along the southeastern shore. There has also been deterioration in water quality at Heart Lake, as evidenced by algal blooms and the disappearance of aquatic plant species from the lake such as the locally rare Ribbonleaf Pondweed and Spiral Pondweed. This decline could be due to housing development in the southwestern portion of the catchment basin, runoff from the extensive lawns in the catchement basin and a large resident Canada Goose population that defecate in the lake and on the lawns (OMNR - Aurora District, 2000).To ensure that wetland functions are maintained, it is important to maintain water quality, quantity and seasonal duration to the wetlands. Alterations to water regimes could have dramatic impacts on wetland communities and their resident species. The sensitivity of wetlands to changes in water regimes and water quality is demonstrated by the impact of stormwater drainage from urban development and roads. Stormwater inputs into wetlands can convert a diversity of wetland types ranging from swamps to thicket swamps and a variety of marshes into a monoculture of cattail marsh.Most sensitive to changes in water regimes are the two kettle lakes, the two kettle bogs and the other kettle wetlands. Because of their low turnover rates and their relatively small drainage basins, even small

scale development could have dramatic impacts. This is particularly the case for bogs because they typicall have low nutrient levels.To safeguard these internally draining kettle wetlands, development should not be contemplated in their drainage basins (OMNR - Aurora District, 2000).

Exotic/Invasive Species:

Off Site Uses: The surrounding habitat is diverse, including such features as row crops, pastures, abandoned agricultural land, deciduous, coniferous and mixed forests, abandoned pits or quarries, open lakes or deep rivers, fence rows with cover or shelterbelts, undulating, hilly terrain and creek flood plains (Zajc et al., 2000).

Rating Comments:

Other Comments:


Search Criteria

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