



# **SCOPED ENVIRONMENTAL IMPACT STUDY**

## **THE MANORS OF BELFOUNTAIN BELFOUNTAIN, ON**

March 2018







# Scoped Environmental Impact Study

The Manors of Belfountain  
Belfountain, ON

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## 1.0 INTRODUCTION

### 1.1 Project Overview

Savanta Inc. (Savanta) was retained by the Manors of Belfountain Corporation to complete an Environmental Impact Study (EIS) of their Belfountain lands (herein referred to as the Subject Lands). These are lands generally located in the Town of Caledon, within the hamlet of Belfountain and are legally described as Part of Lot 9, Concession 5, West of Hurontario Street. The Subject Lands are bordered by Bush Street and Old Main Street (Mississauga Road) to the north, Mississauga Road to the east, Shaws Creek Road to the west and the agricultural lands and the Belfountain Wetland (un-evaluated) to the south (**Figures 1 and 2, Appendix A**). The Subject Lands are entirely within the Niagara Escarpment Commission (NEC) planning area and are subject to requirements of the Niagara Escarpment Plan for the Minor Urban Centre of Belfountain.

### 1.2 Project Study Area

The Subject Lands are situated generally within active agricultural fields (dissected by several hedgerows) with a patchwork of cultural meadow, cultural woodland, cultural plantation, thicket swamp, cattail marsh, mixed forest, and coniferous forest along the northern and eastern boundary. A portion of a small deciduous woodland is located at the southwest limits of the Subject Lands. The hamlet of Belfountain is located to the north and east, with forest/wetland and residential lots to the south, and agricultural use to the west.

The Cattail organic shallow marsh, located along the northern boundary has been identified as a Jefferson Salamander (JESA) (*Ambystoma jeffersonianum*) breeding pond by the Ministry of Natural Resources and Forestry (MNR). Through site visits and discussions with MNR the JESA habitat regulation boundary has been established.

This report presents the results of inventories and analyses of existing natural heritage feature conditions and provides an assessment of the significance and sensitivity of those resources in the context of the proposed development application. Site observations and inventory findings were analyzed to assess potential constraints to development. This EIS is based on a series of inventories and analyses carried out by Savanta Inc. (Savanta) between 2014 to 2017.

### 1.3 Purpose of the Report

An original Terms of Reference (ToR) for this EIS was submitted by R.J. Burnside & Associates Limited (Burnside) to the Town of Caledon and Credit Valley Conservation on May 9, 2013, and re-submitted by Savanta on April 1, 2016, December 15, 2017 and January 17, 2018. The January 2018 submission addresses CVC's December 22<sup>nd</sup> comments on the December 2017 submission, and it is expected to be the final submission.

The EIS is a requirement of the municipal planning process and is intended to fulfill the policies of the Town of Caledon and Region of Peel Official Plans and the Niagara Escarpment Plan. This study was completed to characterize the existing natural heritage conditions and to assess the significance and sensitivity of those resources in the context of the proposed development. Potential impacts, mitigation, net effects and recommended monitoring associated with the proposed development are presented. This work considers applicable provincial and municipal

requirements and policies including reference to the natural heritage policies of the Provincial Policy Statement (PPS) (MMAH 2014) and associated provincial guidance contained in the Natural Heritage Reference Manual (NHRM) (MNR 2010).

The EIS addresses the following key components:

- A review of existing background information, policies and legislation applicable to the Subject Lands in its regional context;
- A field review and description of the natural environmental features and functions on and adjacent to the Subject Lands (i.e., 120 m adjacent lands with detailed assessment subject to access permissions) through the completion of various ecological surveys and inventories;
- A description of the location and distribution of rare or uncommon species based upon the 2002 CVC report “Plants of the Credit River Watershed”;
- Results of Butternut (*Juglans cinerea*) health survey and individual stems location relative to proposed development;
- The two wetlands (Cattail organic shallow marsh and Willow organic thicket swamp), while unevaluated, are considered as Significant Wetland given that the Cattail marsh is confirmed Jefferson Salamander (END) habitat;
- Identification of significant natural heritage features as per PPS (MMAH 2014). Definition of Significant Wildlife Habitat as per MNRF Ecoregion 6E guidelines (2015) and the Peel-Caledon Significant Woodland and Significant Wildlife Habitat Study (2009). A separate Significant Wildlife Habitat table is provided in the EIS for each guideline. Definition of Significant Woodlands as per Peel-Caledon Significant Woodlands and Significant Wildlife Habitat Study (2009) and Region of Peel Official Plan (2014).
- An evaluation of the sensitivity of the natural heritage features and their functions on the Subject Lands;
- A determination of constraints and opportunities based on significant natural heritage features and functions identified through field studies;
- Detailed constraints and opportunity mapping indicating the location of all vegetation communities, significant features, designated hazards, headwater drainage features and watercourses, and all recommended and required buffers and setbacks;
- A description of the proposed development proposal, including stormwater management, timing of construction, building envelopes, etc.;
- Identification and discussion of the potential direct and indirect environmental (i.e., biophysical) impacts that could impact the natural heritage features and associated functions as a result of the proposed development;
- Determination of natural features to be protected during construction and operation, and identification of mitigation measures (i.e., maintaining existing grades and landforms, wildlife protection during construction and impact management, grassland bird habitat enhancement; vegetation protection measures and buffers, ecologically appropriate trail

design and sensitivity signage, surface water and groundwater balance) with information on their effectiveness;

- A concept plan and preliminary grading (i.e. road layout and potential elevations, building envelopes, stormwater management facilities, pedestrian trails, and rear lot/block lines) relative to environmental constraints. Assessments will determine if additional setbacks are required to facilitate adjacent lots and/or service grading;
- An Impact Assessment table detailing natural heritage features and their development impacts, predicted effects of impacts, avoidance and mitigation options, net effects, and future monitoring and management of the feature; and,
- Identification of components of a Monitoring Plan as required, to address relevant pre-construction, construction and post construction periods.

## 1.4 Natural Heritage Planning Considerations

In addition to an assessment of natural heritage features and functions of the Subject Lands, there are pieces of legislation and environmental policies that could influence or govern development on the Subject Lands. The following municipal and regulatory agencies and relevant items of legislation and policy have been considered in the planning context of the Subject Lands. Glen Schnarr & Associates Inc. (GSAI) is providing professional planning direction and support to this EIS. Planning opinions are presented in their planning report and summaries of relevant materials are addressed in this report for context only.

### 1.4.1 The Town of Caledon Official Plan (TCOP) (2016)

The Subject Lands are affected by the policies and designations defined within the TCOP (2016). The Town of Caledon 2016 Official Plan (OP) identifies the Subject Lands as “Settlement Area” within the Land Use Plan schedule (Schedules “A” and “F”).

The November 2017 Draft Plan was presented by GSAI and Town of Caledon’s Development Application Review Team (DART) on September 21, 2017. This Scoped EIS addresses comments provided by DART on the development application.

The EIS will address the Ecosystem Planning and Management Policies (Section 3.2), Ecosystem Framework (Table 3.1), and Environmental Policy Areas (Section 5.7) of the Town’s OP (2016).

### 1.4.2 Region of Peel Official Plan (2016)

The Regional Official Plan implements the Provincial Policy Statement’s (PPS) natural features policies through the Greenlands System’s Core Areas, Natural Areas and Corridors (NAC) and Potential Natural Areas and Corridors (PNAC) policy framework. The Regional Official Plan outlines natural heritage policies and identifies the following components as Core Areas (Schedule A) of the Peel Greenlands system (section 2.3.2.2):

- Significant wetlands;
- Significant coastal wetlands;
- Core woodlands meeting one or more criteria in Table 1 (of the Regional Official Plan);
- Environmentally Sensitive or Significant Areas;

- Provincial Life Science ANSIs;
- Significant habitats of threatened and endangered species;
- Escarpment Naturals Areas of the Niagara Escarpment Plan; and,
- Core Valley and Stream corridors meeting one or more criteria in Table 2 (of the Regional Official Plan).

Schedule A of the Regional Official Plan identifies the woodland situated at the northeastern portion of the Subject Lands as Core Area of the Regional Greenlands System. The remaining areas of the Subject Lands are identified as within the Rural Settlement Boundary and fall under the Niagara Escarpment Plan Area.

#### **1.4.3 The Niagara Escarpment Plan Area (NEPA) (2017)**

Belfountain is designated as a “Minor Urban Centre” in the Niagara Escarpment Plan. This land use designation identifies rural settlements, villages and hamlets within the Niagara Escarpment Plan Area and one of the objectives for “Minor Urban Centres” is to “direct the growth of villages, hamlets and settlement areas away from Escarpment Natural Areas and Escarpment Protection Areas into Escarpment Rural Areas in a logical manner with the least possible environmental and agricultural disruption” (Sec. 1.6.1.6, NEP).

The Subject Lands are further designated “Escarpment Rural Area”, “Escarpment Protection Area” and “Escarpment Natural Area” in the Niagara Escarpment Plan. They include approximately 70 ha, of which approximately 50 ha are proposed to be developed for residential lots, parkland and roads through this proposal. The balance of the Subject Lands (approximately 20 ha) are proposed to be excluded from the proposed development because they are within the “Escarpment Natural Area” designation in the Niagara Escarpment Plan and are characterized as valleyland and woodlot associated with the Credit River valley system.

Section 2.13 of the Niagara Escarpment Plan addresses Scenic Resources and Landform Conservation, and describes that development must ensure the preservation of “the natural scenery, and maintains Escarpment Related Landforms and the open landscape character of the Escarpment”.

Section 2.4 of the Niagara Escarpment Plan addresses Lot Creation. “5. New lots must: a) maintain and enhance the existing community character and/or open landscape character of the Escarpment; and b) protect and enhance existing natural heritage and hydrologic features and functions.”

Section 2.7 of the Niagara Escarpment Plan identify the following Key Natural Heritage Features under the NEC:

- Wetlands;
- Habitat of endangered species and threatened species;
- Fish habitat;
- Life Science Areas of Natural and Scientific Interest;
- Earth Science Areas of Natural and Scientific Interest;
- Significant valleylands;
- Significant woodlands;

- Significant wildlife habitat; and
- Habitat of special concern species in Escarpment Natural and Escarpment Protection Areas.

The Niagara Escarpment Plan calls for the maintenance and where possible the enhancement of diversity and connectivity between key natural heritage features and key hydrologic features, to allow for the movement of native plants and animals across the landscape.

Under Section 2.7.4 of the Niagara Escarpment Plan, development in other natural features not identified as key natural heritage features or key hydrologic features should be avoided. The Plan notes that such features should be incorporated into the planning and design of the proposed use wherever possible, and the impact of the development on the natural feature and its functions shall be minimized.

#### **1.4.4 Credit Valley Conservation (CVC)**

Credit Valley Conservation (CVC) reviews planning application submissions associated with the future development of properties within its jurisdictional boundaries. In addition, CVC provides planning and technical advice to planning authorities to assist them in fulfilling their responsibilities regarding natural hazards, natural heritage and other relevant policy areas pursuant to the Planning Act, as both a watershed-based resource management agency and through planning advisory services, in addition to their Regulatory responsibilities.

Credit Valley Conservation administers the Development, Interference with Wetlands, Alterations to Shorelines and Watercourses Permit process, under Ontario Regulation 162/06. Credit Valley Conservation also administers the Generic Regulation (Ontario Regulation 97/04), adopted in May 2004, which defines the areas of interest that allow conservation authorities to:

- Prohibit, regulate, or provide permission for straightening, changing, diverting or interfering in any way with the existing channel of a river, creek, stream, watercourse or changing or interfering with a wetland; and,
- Prohibit, regulate, or provide permission for development if the control of flooding, erosion, dynamic beaches, pollution or the conservation of land may be affected by the development.

#### **1.4.5 Provincial Legislation and Associated Guideline Documents**

##### Provincial Policy Statement (2014)

The PPS (MMAH 2014) provides direction on matters of provincial interest related to land use planning and development. It "...supports a comprehensive, integrated and long-term approach to planning..." This EIS will address those policies that are specific to Natural Heritage (section 2.1) with some reference to other policies with relevance to Natural Heritage and impact assessment considerations and areas of overlap (e.g., those related to Efficient and Resilient Development and Land Use Patterns, section 1.1; Sewage, Water and Stormwater, section 1.6.6; Water, section 2.2; Natural Hazards, section 3.1).

Eight types of significant natural heritage features are defined in the PPS, as follows:

- Significant Wetlands
- Significant Coastal Wetlands;
- Significant Woodlands;
- Significant Valleylands;
- Significant Wildlife Habitat;
- Fish Habitat;
- Habitat of Endangered and Threatened Species; and,
- Significant Areas of Natural and Scientific Interest (“ANSIs”).

The PPS states the following:

Development and site alteration shall not be permitted in significant wetlands, or in significant coastal wetlands.

Development and site alteration shall not be permitted in significant woodlands, significant valleylands, significant wildlife habitat or significant ANSIs, unless it is demonstrated that there will be no negative impacts on the natural features or their ecological functions.

Development and site alteration shall not be permitted in the habitat of endangered and threatened species or in fish habitat, except in accordance with provincial and federal requirements.

Development and site alteration may be permitted on lands adjacent to fish habitat provided it has been demonstrated that there will be no negative impacts on the natural feature or their ecological functions.

In order to assess how natural heritage features are defined and how they relate to land development proposals, the MNRF has prepared a technical guidance document, the Natural Heritage Reference Manual (NHRM) (MNR 2010). This report provides a summary of the natural features found on and adjacent to the Subject Lands and their ecological functions.

#### Endangered Species Act, 2007

The provincial Endangered Species Act (ESA) 2007 was developed to:

- Identify species at risk, based upon best available science;
- Protect species at risk and their habitats and to promote the recovery of species at risk; and
- Promote stewardship activities that would support those protection and recovery efforts.

The ESA protects all threatened, endangered and extirpated species listed on the Species at Risk in Ontario (SARO) list. These species are legally protected from harm or harassment and their associated habitats are legally protected from damage or destruction, as defined under the ESA 2007 (MNR 2007).

The Manors of Belfountain Corporation will be submitting an Information Gathering Form (IGF) to MNRF, to commence discussions regarding mitigation and permitting requirements associated

with potential impacts to SAR species. For removal of grassland breeding bird habitat, the Manors of Belfountain Corporation Lands will be required to Register the Project under Section 23.2 of the ESA.



## 2.0 DATA COLLECTION APPROACH & METHODS

### 2.1 Background References

Savanta reviewed and drew from supporting background information and previous site surveys and investigations to provide additional insight into the overall character of these Subject Lands. These background resources are listed in the References to this report.

#### 2.1.1 Land Information Ontario (LIO) Natural Features Summary

Based on a search of the MNRF Land Information Ontario (LIO) geographic database, the Subject Lands are located less than 100 m southeast of the Credit Forks Life Science Area of Natural or Scientific Interest (ANSI), and greater than 200 m southwest of the Dufferin Lake ANSI and the Caledon Meltwater Deposits ANSI. The Subject Lands are also within 200 m northeast of an evaluated wetland complex (Significance: Other). The natural heritage features have been presented in **Figure 2 (Appendix A)**. These features are also identified in the NHIC database maintained by the MNRF.

#### 2.1.2 Natural Heritage Information Centre Database

The Natural Heritage Information Centre (NHIC) database, maintained by the MNRF was accessed to search for records of provincially significant plants, vegetation communities and all forms of wildlife in, and in the vicinity of the Subject Lands. The database provides occurrence data by 1 km blocks, which overlap with areas outside of the Subject Lands.

A search of the NHIC database identified five species, four of which were last observed over 20 years ago and are considered historical. Bobolink (*Dolichonyx oryzivorus*) was last observed in 2002 and is considered a recent record (**Table 1, Appendix B**).

#### 2.1.3 Ontario Breeding Bird Atlas

The Ontario Breeding Bird Atlas (OBBA) contains detailed information on the population and distribution status of Ontario birds (2005). The data are presented based upon 10 km x 10 km squares. The data square that overlaps with the Subject Lands is used to determine the potential bird species list for that area. It should be noted that the Subject Lands are a small component of the overall bird atlas square, and therefore it is unlikely that all bird species are found within the Subject Lands. Habitat type, availability and size are all contributing factors in bird species presence and use.

A total of 118 bird species were recorded in the atlas square 17NJ74 that overlaps with the Subject Lands. These birds are listed in **Table 8 (Appendix B)**. Of the species reported in the atlas square, six are Threatened (THR) or Special Concern (SC) in Ontario. They are: Bank Swallow (THR) Barn Swallow (*Hirundo rustica*) (THR), Bobolink (THR), Chimney Swift (*Chaetura pelagica*) (THR), Eastern Meadowlark (*Sturnella magna*) (THR), Short-eared Owl (*Asio flammeus*) (SC).

#### 2.1.4 Ontario Nature Reptile and Amphibian Atlas

The Ontario Reptile and Amphibian Atlas contains detailed information on the population and distribution status of Ontario herpetofauna (Ontario Nature 2015).



The data are presented on 10 km x 10 km squares. The data square that overlaps with the Subject Lands is used to determine the potential herpetofauna species list for that area. The Subject Lands are a small component of the overall herpetofauna atlas square, and therefore it is unlikely that all herpetofauna species are found within the Subject Lands. Habitat type, availability and size are all contributing factors in herpetofauna species presence and use.

A total of 100 herpetofauna records were documented in the atlas square (17NJ74) that overlaps with the Subject Lands. The atlas square search results show one provincially and/or federally listed species; the species is Snapping Turtle (*Chelydra serpentina*). This information assists in defining the search effort and target species for studies on and immediately adjacent to the Subject Lands.

### 2.1.5 Ontario Insect Atlas

The Ontario Butterfly Atlas contains detailed information on the population and distribution status of Ontario lepidoptera species (Ontario Nature 2015).

The data are presented on 10 km x 10 km squares. The data square that overlaps with the Subject Lands is used to determine the potential lepidoptera species list for that area. The Subject Lands are a small component of the overall lepidoptera atlas square, and therefore it is unlikely that all lepidoptera species are found within the Subject Lands. Habitat type, availability and size are all contributing factors in lepidoptera species presence and use.

A total of 30 lepidoptera records were documented in the atlas square (17NJ74) which overlaps with the Subject Lands. None of the species listed are at Risk in Ontario

## 2.2 Consultation and Agency Correspondence

The MNRF Aurora District Information Request Form pertaining to SAR and natural heritage features on, and adjacent to the Subject Lands was submitted on February 21, 2014. A response letter was received April 29, 2014. A 2017 Information Request Form was submitted on July 12, 2017 to determine if updates to SAR and natural features occurred since the 2014 submission. A response letter was received November 6, 2017.

The 2017 response letter identified the following species on or in the immediate vicinity of the Subject Lands:

- Butternut (*Juglans cinerea*) (Endangered in Ontario);
- Jefferson Salamander (Endangered in Ontario);
- Northern Myotis (*Myotis septentrionalis*) (Endangered in Ontario);
- Barn Swallow (Threatened in Ontario);
- Bobolink (Threatened in Ontario);
- Chimney Swift (Threatened in Ontario);
- Eastern Meadowlark (Threatened in Ontario);
- Louisiana Waterthrush (*Parkesia motacilla*) (Threatened in Ontario);
- Canada Warbler (*Cardellina canadensis*) (Special Concern in Ontario);
- Snapping Turtle (Special Concern in Ontario); and,
- Wood Thrush (*Hylocichla mustelina*) (Special Concern in Ontario).

On June 11, 2014, the MNRF (Mr. Heaton) conducted a site visit on the Subject Lands with Savanta to confirm the location of a MNRF-defined JESA breeding pond and to delineate and finalize the regulation limit (**Appendix A, Figure 2**). It was determined at that time that JESA were not moving from the confirmed breeding pond to the larger mixed forest patch south of the pond given the large break in forest vegetation in which old-field meadow vegetation is present (CUM 1-1) (**Figure 3, Appendix A**).

Communication with the CVC and Town of Caledon has been ongoing throughout the scoped EIS process. There have been three staking exercises completed on this site, the dates, type of feature staked and agencies present are provided below:

Date	Feature Staked	Parties Present
September 4 and 12, 2014	<ul style="list-style-type: none"> <li>Northern Woodland</li> <li>Top of Slope</li> </ul>	<ul style="list-style-type: none"> <li>Town</li> <li>CVC</li> <li>MNRF</li> <li>NEC</li> <li>Savanta Inc.</li> <li>GSAI</li> </ul>
November 23, 2015	<ul style="list-style-type: none"> <li>Southern Woodland</li> <li>Hedgerow along Shaws Creek Road</li> </ul>	<ul style="list-style-type: none"> <li>CVC</li> <li>Savanta Inc.</li> <li>GSAI</li> </ul>

Based on EXP's slope stability report (EXP 2014), the analyses for the staked top of slope are considered to be the Long Term Stable Slope.

Pertinent agency correspondence is included in **Appendix C**.

### 3.0 TECHNICAL METHODS AND FIELD STUDIES

Field surveys and natural environment inventories were completed within the Subject Lands during 2014 to 2017. These field investigations included three headwater drainage feature assessments (late spring, early spring and summer), dripline staking, botanical inventories (spring, summer) and Ecological Land Classification (ELC) of vegetation communities, Butternut Health Assessment, two breeding bird surveys, a grassland bird habitat assessment, three breeding amphibian surveys, reptile surveys including cover boards and road mortality surveys, turtle nesting habitat assessment, snake hibernaculum habitat assessment, a winter wildlife survey and incidental wildlife observations (including discernable movement paths). The survey dates are summarized in **Table 2 (Appendix B)**.

#### 3.1 Aquatic Ecology: Habitat Assessment and Species Occurrences

Potential headwater drainage features on the Subject Lands were assessed using the Credit Valley Conservation/Toronto Region and Conservation Authority (TRCA and CVC 2014) “Evaluation, Classification and Management of Headwater Drainage Features Guidelines” (HDFA Guidelines). These guidelines provide a standardized means of identifying and assessing the value of headwater drainage features and identifying long-term management recommendations to protect or maintain the important ecological or biophysical functions provided by headwater drainage features in a developing landscape.

As per the requirements of the HDFA Guidelines, Savanta completed site visits to assess headwater drainage features on the Subject Lands on the following dates:

- Round 1 – May 8, 2014 (RA1 and RB1);
- Round 2 – June 2, 2014; and
- Round 3 – August 11, 2014.

During the first site visit, all areas of the Subject Lands were walked to identify potential headwater drainage features. Each headwater drainage feature observed was separated into specific reaches, per the guidance on reach delineation in the HDFA Guidelines. Data collection was completed for each reach based on OSAP protocols (Gorenz and Stanfield 2017), Section 4: Module 11 (Unconstrained Headwater Sampling). Savanta used a modified field data collection form, based on the OSAP data form, to standardize data collection and ensure all necessary data was recorded efficiently during the site investigations. A photographic record of each headwater drainage feature was collected during each survey event.

Spring 2014 was cold and wet, and suitable survey conditions (i.e., at least 48 hours without precipitation) were not encountered until early June 2014. As per the OSAP protocols (Gorenz and Stanfield 2017), the second-round site visit should be completed following a period of at least 48 hours (and preferably 72 hours) with no precipitation, so that baseflow conditions are present to assess the hydroperiod of headwater drainage features.

### **3.2 Terrestrial Ecology: Habitat Assessment and Species Occurrences**

#### ***3.2.1 Ecological Land Classification and Botany Methods***

Vegetation communities were first identified on aerial imagery and then verified in the field (July 15 and July 24, 2014). Vegetation community types were confirmed, sampled and revised, if necessary, using the sampling protocol of the ELC for Southern Ontario (Lee et al. 1998). ELC was completed to the finest level of resolution (Vegetation Type) where feasible. Species names generally follow nomenclature from the Flora Ontario – Integrated Botanical Information System (FOIBIS; Newmaster and Ragupathy 2012).

The provincial status of all plant species and vegetation communities is based on NHIC (2016). Identification of potentially sensitive native plant species is based on their assigned coefficient of conservatism (CC) value, as determined by Oldham et al. (2003). This CC value, ranging from 0 (low) to 10 (high), is based on a species tolerance of disturbance and fidelity to a specific natural habitat. Species with a CC value of 9 or 10 generally exhibit a high degree of fidelity to a narrow range of habitat parameters.

#### ***3.2.2 Breeding Bird Survey Methods***

Breeding bird surveys were conducted on May 27 and June 26, 2014; and June 23 and July 7, 2017 for the Belfountain Subject Lands following protocols set forth by the Ontario Breeding Bird Atlas (Cadman et al. 2007), the Ontario Forest Bird Monitoring Program (Cadman et al. 1998) and the Marsh Monitoring Program (Bird Studies Canada 2014 and 2006).

Surveys were conducted between dawn and five hours after dawn with suitable wind conditions, no thick fog or precipitation (Cadman et al. 2007). Point count stations were located in various habitat types within the Subject Lands and were combined with area searches to help determine the presence, variety and abundance of bird species. Each point count station was surveyed for 10 minutes for birds within 100 m and outside of 100 m. All species recorded on a point count were mapped to provide specific spatial information and were observed for signs of breeding behaviour. Surveys were conducted at least 10 days apart.

During breeding bird surveys, vegetation was assessed for the potential presence of Species at Risk (SAR) habitat. If suitable habitat was encountered or individuals were observed standard protocols were used (in consultation with the Ministry of Natural Resources and Forestry; MNRF). If present on the Subject Lands, open grassland habitat, including pasture, hay fields and fallow areas, was surveyed according to the MNR (2012) Guidelines for Bobolink and Eastern Meadowlark. Point count stations (discussed above) were located within open grassland habitat. Where this habitat was greater than 250 m wide or long, two-point count stations were completed (point count stations are set up every 250 m in large habitats). Transects or area searches were also conducted in addition to the 10-minute point count stations.

Both the Natural Heritage Information Centre (NHIC 2016) database and the Species at Risk in Ontario (SARO) list (Ontario Regulation 230/08) were reviewed to determine the current provincial status for each bird species.

### 3.2.3 Amphibian Surveys

Amphibian surveys were conducted in the evening on April 21, May 20, and June 12, 2014 at five call stations on the Subject Lands. Survey station locations were determined through an assessment of ortho-photography defined vegetation communities with confirmatory ground observations. Locations of survey stations are depicted in **Figure 5 (Appendix A)**.

Surveys were conducted at night, in accordance with the Marsh Monitoring Program (BSC 2004). All locations were surveyed three times during optimal weather conditions (low wind levels, no heavy rain). Where noise from plane, road traffic and/or train was present, monitoring did not begin until there was a quiet period. Any calls heard within the Subject Lands were recorded as well as any incidental call observations on adjacent lands. The purpose of the investigation was to establish relative importance of amphibian breeding sites within the Subject Lands by recording breeding calls, incidental visual species observations and other habitat details. The provincial and global statuses of species identified on the Subject Lands were obtained from the Natural Heritage Information Centre (NHIC 2016).

### 3.2.4 Reptile Surveys

Transect surveys were conducted along with scanning rocks/debris piles for basking snakes, turtle nesting evidence, and wildlife road crossing surveys. Cover boards which help detect more common snake species are most effective when placed near known/potential hibernacula; i.e., old standing structures, stone foundations, rocky slopes, rock crevices.

#### Turtle Nesting Survey

This survey methodology focuses on Snapping Turtle and Midland Painted Turtle (*Chrysemys picta marginata*); two species that generally occur in the vicinity of the Subject Lands. The MNR (2012) and Toronto Zoo (Caverhill et al. 2011) turtle survey methods were considered in the formation of this survey protocol. Where turtles are recorded, the presence of animal movement corridors was considered.

One round of turtle nesting surveys was conducted on July 15, 2017. Ahead of the survey, aerial interpretation was performed on lands within 0.5 km overland and 8 km along connecting stream features to screen for potential nesting areas. Candidate nesting areas include: shores/beaches of wetlands, lakes or rivers; trails and driveways; and farm field margins, etc., so long as suitable substrate and sun exposure are present. During the survey, these areas were ground-truthed and, where potential habitat was noted, a soil auger sample was completed to confirm soil substrate and depth. Data recorded include: nesting area size, % slope of the nesting area, % canopy cover over the nesting area, direction of orientation (i.e., east facing), location (UTM coordinates), soil substrate and depth. One transect was identified in a field located 0.5km north overland from a large open water pond. Fields 0.5km south of the pond located south of Bush Street were screened out due to barriers to turtle movement, dense SWM1-1 and FOC2-2 features and steep sloping landscape.

#### Artificial Cover Objects (ACO)

Five snake surveys were conducted during the spring emergence period and late spring (April 21, May 6, May 20, June 2 and June 17, 2014). During the spring period, the most effective methods

to be implemented are: transect surveys to check cover boards; scanning rocks for basking snakes; and road surveys.

Cover boards, which help detect more common snake species are most effective when placed near known/potential hibernacula, (i.e., old standing structures, stone foundations, rocky slopes, rock crevices). These locations were identified in advance of the spring survey period. Cover boards consisted of large boards of plywood, measuring 0.6 m by 0.6 m. Boards were concentrated around old stone foundations and grassy meadows. Surveys were conducted on mild spring mornings (minimum 8°C) between 8:00 AM and 2:00 PM, with sunny or overcast conditions. Cover boards were installed on the Subject Lands ahead of surveys to facilitate active searches. Data recorded during snake surveys includes species observed and locations (UTM coordinates), air temperature, water temperature, start and end time, and weather conditions. Survey methods are based on MNR Species at Risk protocols and Toronto Zoo snake survey protocols.

#### Camera Trap Surveys

A total of five wildlife camera traps were setup at potential hibernacula locations (i.e., rock piles along hedgerows) on September 7, 2017 within the peak movement period for returning to overwintering sites. These locations were identified during a site visit conducted on July 13, 2017; and were collected after one month. The camera snake hibernacula survey methodology and timing was suitable to determine whether rock piles were snake hibernacula.

#### Road Mortality Survey

Road mortality surveys were also conducted along Mississauga Road concurrently with ACO surveys on April 21 and June 17, 2014. On September 7 and October 4, 2017 road mortality surveys were conducted along Shaws Creek Road (within property limits). Road mortality surveys are also effective in adding additional reptile data, as often snakes will utilize asphalt as basking areas, or cross them to reach foraging habitat. Reptile road mortalities can give an indication of species that may have been missed with transect or coverboard surveys (**Figure 4, Appendix A**).

### **3.2.5 Winter Wildlife Surveys**

Winter wildlife surveys were conducted along transects throughout the Subject Lands. Transect locations were determined through an inspection of orthophotography, vegetation communities, and ground observations and were distributed across the study area to ensure that the ecological variability was adequately sampled. Surveys were concentrated along existing access routes, trails, habitat edges, hedgerows, and streams, as long as habitat was safely accessible. Unique transects were established for each vegetation community type, and long transects were broken up into transect segments so that it was easier to identify where an observation took place.

When possible, fieldwork was conducted at least 12 hrs to 24 hrs after moderate (less than 15 cm accumulation in 24 hrs) snowfall. Fieldwork was conducted 24 hrs to 48 hrs after larger snow events (greater than 15 cm accumulation in 24 hrs). The winter wildlife survey was conducted on January 30, 2015, 24 hrs after a large snow event, where wind conditions ranged from 30 km/hr to 50km/hr.



Wildlife tracks were recorded within 2 m to 3 m on either side of each transect, and all other evidence or 'signs' of wildlife (scat, browse, nests, hibernacula, etc.) were recorded. 'Trails' are defined as *numerous overlapping tracks that are difficult to discern from one another*, which creates a trail system. In many cases, trails are used by many different wildlife species.

The Significant Wildlife Habitat Technical Guide (MNR 2000) as well as the Resources Inventory Standards Committee (RISC) species inventory methods manual (2014), were used as guidance documents for the survey methodology. The provincial and global statuses of species identified on the Subject Lands were referenced in the Natural Heritage Information Centre (NHIC) database (NHIC 2016).

### **3.2.6 Headwater Feature Drainage Assessment (HDFA)**

Headwater drainage features on and within 120 m of the Subject Lands were assessed on three occasions in 2014 (May 8, June 2, and August 11) using the "Evaluation, Classification, and Management of Headwater Drainage Features Guideline" (TRCA and CVC 2014). This involved documentation of hydrology, channel form descriptions (dimensions, bed substrate, morphology), fish and aquatic habitat assessments, terrestrial habitat assessments (riparian and in-stream vegetation), and the characterization of upstream and downstream linkages. This assessment results in the classification of each reach with respect to hydrology, riparian, fish and terrestrial habitat values and functions and a resulting management recommendation based on these values.

## 4.0 ENVIRONMENTAL SETTING AND CHARACTERISTICS

### 4.1 Physiography

Due to the location of the study area, lying within a complex set of physiographical features, the area contains a widespread assortment of drainage and relief patterns as well as soils. Subject Lands are within the Niagara Escarpment and much of the Peel Region has a drainage pattern flowing from north to south towards (and into) Lake Ontario.

The Subject Lands are within the West Credit River Subwatershed, within the upper watershed, lying above the Niagara Escarpment, and are comprised of till plains, moraines, and glacial spillways. The soils generally consist of coarse materials which are more permeable than the middle and lower watershed (CVC 1998; Chapman and Putnam 1984). The upper watershed has many headwater systems, which is predominantly maintained by groundwater discharge (CVC 1998).

As determined by Cole (2018b) the Subject Lands are within the Horseshoe Moraine physiographic region, as noted by hummocky sandy topography. Deposits of 10 m to 20 m of sand, are located above dolostone bedrock. Cole (2018b) provides more detailed information regarding physiography.

### 4.2 Topography and Drainage

As described above the Subject Lands is comprised of hummocky sandy topography. Just north and northeast of the Subject Lands, there is a steep slope, towards an offsite farm and cultural meadow. The MNRF (Mr. Heaton) advised that groundwater seeps have been observed in the mixed treed swamp <100 m to the north. These groundwater seeps feed a cold water tributary to the West Credit River. Groundwater movement on the Subject Lands is from the south to the north (Cole 2018b). There are no watercourses on the Subject Lands.

### 4.3 Water Resources

The following sections describe existing conditions with respect to surface water drainage features and groundwater resources on the Subject Lands.

#### 4.3.1 Surface Water Resources

The Subject Lands are within the West Credit River Subwatershed as defined by the Credit Valley Conservation Authority (CVC). The MNRF label the section of the Credit River adjacent to the Subject Lands as the Erin Branch of the Credit River; this report refers to the CVC terminology. This portion of the Credit River is known to contain Brook Trout (*Salvelinus fontinalis*) which require cool water refuges and good water quality.

There are no permanent watercourses present on the Subject Lands. There is a small section of a headwater drainage feature (HDF), identified as feature RB1, on the southern portion of the Subject Lands (**Figure 5, Appendix A**). A second HDF (labelled RA1) is present north of the Subject Lands, and access was granted to complete an assessment. These two HDFs are discussed in the following sections.



### 4.3.2 Headwater Drainage Features

A HDFA was completed on two headwater drainage features (RA1 and RB1) located on and adjacent to the Subject Lands (**Figure 5, Appendix A**). Each of the features is described in the following sections, including a characterization of specific functions associated with each headwater drainage feature (i.e., hydrological, riparian, fish habitat and terrestrial functions) and management recommendations (i.e., based on the TRCA and CVC 2014 HDFA Guidelines). The management recommendations are based on Part 3 of those Guidelines, which provides guidance on linking the characteristics and functions of features to specific management recommendations that may be applied to those features. To assist, the HDFA Guidelines include Figure 2: “Flowing Chart Providing Direction on Management Options”. That flow chart depicts various decision points associated with hydrology, fish habitat, riparian vegetation and terrestrial habitat, and ultimately leads the user to an appropriate management recommendation for each headwater drainage feature segment. Management recommendations can include the following:

- Protection;
- Conservation;
- Mitigation;
- Maintain Recharge;
- Maintain/Replicate Terrestrial Linkage; or,
- No Management Required.

The classifications and management recommendation for each HDF are summarized in **Table 11 (Appendix B)**. The portion of HDF RB1 located on the Subject Lands received a management recommendation of Protection, as depicted on **Figure 5 (Appendix A)**. Given that HDF RA1 and the upstream portion of RB1 are located off the Subject Lands, the corresponding management recommendations for these reaches are not depicted on **Figure 5 (Appendix A)**.

#### RA1

This feature originates from groundwater seeps located northwest of the Subject Lands, and south of Bush Street. It is supported by surface water and groundwater inputs and is an integral element of both the dry-fresh White Cedar coniferous forest and the White Cedar-hardwood mineral mixed treed swamp that surround it. The feature flows northwest towards the West Credit River, and has a well-defined natural channel with mainly fine substrate and some gravel and cobble. RA1 contained flowing water during all three survey rounds. No fish were observed in the feature during any of the surveys, although there is possible fish habitat present including pools and undercut. The cedar swamp, adjacent to the feature, contains significant amphibian breeding habitat. Given that the feature is flowing year-round, receives groundwater inputs, is associated with a wetland, is adjacent to significant amphibian breeding habitat and has fish habitat features it received the management recommendation of Protection. This means that the feature should remain on the landscape in its current location and enhancement of the feature is encouraged. This feature is outside of the Subject Lands and no development is proposed for that natural area.

#### RB1

RB1 begins offsite to the southeast at a mineral meadow marsh (RB1-B) at the edge of a woodlot, moving through agricultural fields before crossing a hedgerow on to the actively managed

agricultural field in the southwest portion of the Subject Lands. On the Subject Lands, the drainage feature flows for approximately 80 m before all water in the feature infiltrates into the ground as a result of the coarse substrates within the agricultural field. Cole (2018) describes this feature as a losing reach, it loses flow / infiltrates as it moves from less permeable Wentworth Till in the south onto the more permeable sandy outwash sediments. RB1 contained flowing water during Round 1, and was dry during Rounds 2 and 3. Therefore, outside of spring freshet, there is no standing water in the reach. The infiltrated water moves vertically down through the unsaturated zone in the overburden deposits until it reaches the groundwater where it would then flow laterally towards the West Credit River valley. Therefore, the feature does not directly connect to any downstream HDFs or watercourses.

No fish were observed in RB1 during the HDFA completed by Savanta in 2014. However, fish [Brook Stickleback (*Culaea inconstans*)] have been previously observed within the feature by others during the spring freshet, as discussed further in section 4.3.4. The source of these fish is anticipated to be the isolated kettle lakes within the forested wetlands to the south. While the presence of fish on a seasonal basis would necessitate identification of this feature as valued fish habitat per the HDFA Guidelines, the value and function of the habitat is limited, with the feature appearing to result in fish mortality as opposed to providing any productive capacity for the upstream fish community.

As noted in **Table 11 (Appendix B)**, the important ecological function of the portion of RB1 on the Subject Lands is that of groundwater recharge. Therefore, a HDFA Management Recommendation of "Maintain Recharge" could be warranted. However, when considering that there is a wetland community upstream, and conveyance of flow from the wetland to the recharge area on the Subject Lands is important, the overall reach has been designated as Conservation, which means that it should be left on the landscape, though it could potentially be relocated or otherwise altered if required, provided the groundwater recharge function can be maintained. No direct alterations to this feature are proposed and it will be maintained in an open space.

### 4.3.3 Groundwater

Groundwater flow is approximately northwards across the Subject Lands, and is typically 10 m to 20 m below ground surface. Near the Willow organic thicket swamp and the Cattail organic shallow marsh the depth to groundwater is typically 0 m to 1 m below ground surface. A small headwater drainage feature, RB1, flows from the adjacent lands near PZ1-14 onto the Subject Lands from the south near TW2 and MW1-14, where it appears to infiltrate through a depression into the thick sandy overburden material (Cole 2018b). Water that infiltrates across the Subject Lands moves vertically down through the permeable outwash sand in the unsaturated zone to the water table (Cole 2018b). Where the grades decrease steeply just north of the Subject Lands, there is groundwater seepage (i.e., in White Cedar-Hardwood Mineral Mixed Swamp) that contributes to this wetland and to HDF RA1, and in some cases potentially to the West Credit River directly. During all botanical survey dates groundwater seepage conditions were observed within the Cedar-Hardwood Mineral Mixed Swamp.

Groundwater contributions are estimated to be minimal for the Willow organic thicket swamp since the piezometer PZ2-14 indicates groundwater levels consistently below ground surface with the exception of very wet spring seasons when groundwater levels are only slightly above ground surface (Cole 2018b). Although there is no direct data for the on-site Cattail organic shallow marsh, the ground surface elevation (as indicated by cross-section A-A') is very similar between

the two wetland features and thus groundwater is expected to be at a similar elevation as at the Willow organic thicket swamp, or slightly deeper, as it declines towards the West Credit River (Cole 2018b). Observations made during the site visit confirm this as groundwater was at approximately 0.87 mbgs within the Willow organic thicket swamp and no standing water was visible within the Cattail organic shallow marsh (Cole 2018b).

The pre-development groundwater recharge rate is ~290 mm/year (Cole 2018b). The stormwater management plan will maintain the groundwater recharge rate (Cole 2018b). In addition, a large portion of the extracted groundwater will be reintroduced to the groundwater system through tertiary treated septic systems, further reducing impacts to natural features (Cole 2018b). No changes in groundwater infiltration or flow are anticipated post-development, so groundwater contributions to headwater drainage features and wetland (onsite and offsite) are expected to remain consistent with pre-development conditions (Cole 2018b).

#### **4.3.4 Fish Community**

A review of available data was conducted. There was no historic data for the Subject Lands.

##### **West Credit River**

The Subject Lands headwater drainage feature support the cool/cold water fish community in the West Credit River above the Belfountain Dam and Falls. The Dam and Falls are a barrier for upstream fish communities. The West Credit River supports a number of self-sustaining Salmonid communities including Brook Trout, therefore groundwater input and excellent water quality are important to the ongoing health of the local fish community.

##### **RA1**

RA1 flows into the Upper West Credit River which is managed as a cool/cold water fishery and supports a number of salmonid species including Brook Trout. The MNRF has indicated that the West Credit Brook Trout community uses some portion of RA1 and is supported by groundwater.

##### **RB1**

Brook Stickleback have been previously observed at RB1 on the Subject Lands during the spring freshet. The feature is generally isolated from other fish communities except during extreme high-water events when isolated headwater wetlands to the south (upstream) of the Subject Lands overtop and fish are washed into the reach. As described above, RB1 is a losing reach, and water infiltrates into the permeable sandy outwash sediments and there is no downstream surface water connection to any other HDF or watercourse. Any fish that do enter the reach are anticipated to perish, since the feature fully infiltrates relatively quickly after the freshet recedes. It appears unlikely that this reach provides any productive value to the local upstream fish community.

Therefore, while RB1 provides direct seasonal fish habitat, its value is limited and its presence may result in negative impacts on the upstream fish community (kettle lakes east of Subject Lands) due to likely mortality associated with fish movement into the feature on a seasonal basis.

#### 4.4 Ecological Land Classification and Vegetation Ecology

The Subject Lands are within the Lake Simcoe-Rideau Ecoregion 6E (specifically, Ecodistrict 6E-1), which extends east from Lake Huron in the west to the Ottawa River in the east. Ecoregion 6E falls within the Great Lakes-St. Lawrence forest region, an area of moderate climate where natural succession leads to forests of shade tolerant hardwood species including Sugar Maple, American Beech, and shade intermediate species such as Red Oak and Yellow Birch, as well as associations of White and Red Pine.

Spring and summer botanical investigations were completed, with spring botanical and ELC surveys conducted by Burnside on June 19, 2013, and summer botanical surveys and ELC surveys completed by Savanta on July 15 and July 24, 2014. The Subject Lands primarily consist of active agricultural fields (dissected by hedgerows) except for the various wetlands and forests along the northwestern and northern boundary, consisting of open marshes, treed swamps, and coniferous and deciduous forests. The dominant vegetation cover is a disturbed old field cultural meadow, dominated by grasses and goldenrods. The ELC types occurring on the Subject Lands are summarized in **Table 3 (Appendix B)** and are shown in **Figure 3 (Appendix A)**.

A total of 178 species of vascular plants were recorded from the Subject Lands. Of that number, 96 (or 54%) species are native and 82 (or 46%) are exotic (**Table 4a, Appendix B**).

The majority of the native species (93%) are ranked S5 (Secure – common, widespread and abundant in Ontario). The six species ranked S4 (Apparently Secure) are:

- Black Maple (*Acer saccharum* ssp. *nigrum*), an S4 species – common in the hedgerow along Shaws Creek Road;
- Giant Blue Cohosh (*Caulophyllum giganteum*) an S4 species – occasional in unit FOD5-11 (this species is more common in Southern Ontario than the closely related *C. thalictroides*);
- American Beech (*Fagus grandifolia*) – occasional in unit FOD5-11 (recent status upgrading due to concerns over beech bark disease);
- Black Walnut (*Juglans nigra*) – occasional in cultural woodland and unit FOM7-2;
- White Ash (*Fraxinus americana*) – occasional in unit FOD5-11 (recent status upgrading due to concerns over the emerald ash borer infestation); and
- Autumn willow (*Salix serissima*) – dominant in unit SWT3-2.

Six locally (Peel, CVC) rare or uncommon species were found (including some overlap with the S4 list above):

- Interrupted Fern (*Osmunda claytoniana*) – occasional in unit SWM1-1;
- White Spruce (*Picea glauca*) – planted;
- Giant Blue Cohosh (*Caulophyllum giganteum*) an S4 species – occasional in unit FOD5-11 (this species is more common in Southern Ontario than the closely related *C. thalictroides*);
- Water smartweed (*Polygonum amphibium*) – occasional in unit MAS3-1;
- Autumn Willow (*Salix serissima*) – dominant in unit SWT3-2; and
- Beaked Sedge (*Carex utriculata*) – occasional in unit MAS3-1.

The provincially and nationally endangered butternut, with a ranking of S3 (Vulnerable), is also present on the Subject Lands.

#### 4.4.1 Butternut Health Assessment

Two Butternut trees were found on the Subject Lands; they were identified at the eastern forest edge (ELC unit FOD5-11) near the north-central location of ELC unit CUM1-1 (cultural meadow) (**Figure 6, Appendix A**).

A provincially certified Butternut Health Assessor completed a Butternut health assessment for each stem on July 24, 2014, using the protocol outlined by the Forest Gene Conservation Association (2010; with updates from 2015). A Butternut health assessment report was submitted to MNRF on December 18, 2015 (**Appendix C**).

Many Butternut trees in Ontario show evidence of a fungal pathogen, *Ophiognomonia clavigignenti-juglandacearum*, which causes the canker that kills most of the trees. The Butternut health assessment, which was performed during the growing season, is used to determine if a tree is deemed retainable or non-retainable. Non-retainable trees are classified as Category 1, while retainable trees are classified as Category 2 or Category 3 (archival).

Both stems are considered Category 2 specimens. A Category 2 specimen is considered a retainable tree under Ontario Regulation 242/08. Category 2 butternut trees are protected under the *Endangered Species Act, 2007*. This species is provincially designated 'endangered'; impact to, or removal of, less than 10 Category 2 trees can be registered under the Act following the Rules and Regulations Process if the tree or its surrounding habitat will be negatively impacted by a development activity. Based on the proposed Development Concept, it is not predicted that these trees will be negatively affected by the development and no compensation measurements should be required.

#### 4.4.2 Tree Inventory and Preservation Plan

Baker Turner Inc. (Baker Turner) was retained to complete a Tree Inventory and Preservation Plan report for the Subject Lands. The inventory was conducted in June 2014, and the report was updated February 2018. Species included in the inventory are comprised of Siberian Elm (*Ulmus pumila*), Black Cherry (*Prunus serotina*), Scots Pine (*Pinus sylvestris*), and Sugar Maple (*Acer saccharum*). While an individual tree health assessment was not completed, Baker Turner reported that the majority of the hedgerow trees were observed to be in poor health. Where native trees in good condition and over 150 mm are proposed for removal, a compensation ratio of 3:1 ratio will guide mitigation (Baker Turner 2018). A total of 47 trees are recommended for removal due to construction activities, as a result, 141 trees should be planted as compensation for the trees removed (Baker Turner 2018). Of the 47 trees recommended for removal, seven of the trees are identified on the tree inventory list, whereas; the remaining 40 trees were only assessed for general species makeup and conditions (Baker Turner 2018).

In 2014, Savanta completed some vegetation surveys that complement data gathered by Baker Turner. Results of general observations regarding hedgerow composition are provided in **Table 4b (Appendix B)**. Locations of hedgerows assessed are depicted on **Figure 3 (Appendix A)**.

In accordance with the Urban Design and Architectural Design Guidelines (Architecture Unfolded



et al, 2018), dead, invasive, and diseased material will be removed and augmented with smaller indigenous trees to fill in gaps within hedgerows. In addition, hedgerows will be thinned out for overgrown shrubs in the understory, and will maintain the majority of fallen material as wildlife habitat.

#### 4.5 Amphibians Surveys – Amphibian Call-Count

A total of four stations were identified on Subject Lands in 2014. Two stations (AMC1 and AMC4) were included within the updated Subject Land boundaries.

At the two stations on Subject Lands, five amphibian species were heard calling within the Subject Lands (Cattail organic shallow marsh/Willow thicket swamp), during the three rounds of call count surveys. Four of these species are provincially ranked S5 (common and secure). One species, the Western Chorus Frog (Great Lakes/ St. Lawrence – Canadian Shield population) is considered S3 (vulnerable). Amphibian species and detailed amphibian call count records are provided in **Table 5 (Appendix B)**. Stations and results are shown on **Figure 4 (Appendix A)**. The greatest diversity and abundance of species were recorded during the early-spring survey in April. In addition, both Spring Peeper and Western Chorus Frogs were also heard on adjacent lands, outside of the Belfountain Subject Lands.

On adjacent lands at stations AMC3 and AMC4, five amphibian species were heard calling within the White -Cedar-Hardwood Mineral Mixed Swamp (SWM1-1), and no species were heard calling within the Dry-Fresh White Cedar Coniferous Forest (FOC2-2) during the three rounds of call count surveys. Four of these species are provincially ranked S5 (common and secure). One species, the Western Chorus Frog (Great Lakes/ St. Lawrence – Canadian Shield population) is considered S3 (vulnerable). Amphibian species and detailed amphibian call count records are provided in **Table 5 (Appendix B)**. Stations and results are shown on **Figure 4 (Appendix A)**. The greatest diversity and abundance of species were recorded during early and late spring surveys in April and May.

#### 4.6 Reptile Surveys – Turtle Nesting, Artificial Cover Objects, Camera Traps and Road Mortality

##### 4.6.1 Turtle Nesting Survey

No turtle nesting evidence was recorded on Subject Lands. Soil auger tests completed at potential turtle nesting stations NT1, displayed poor suitability due to low quality nesting substrate (silty-clay loam soil type). Detailed results are provided in Table 6, Appendix B.

Snapping Turtle (*Chelydra serpentina*) was identified by the MNRF in an Information Request Letter received November 6, 2017, as occurring on or in the vicinity of the Subject Lands. No overwintering habitat is present on the Subject Lands as Snapping Turtle require open water features with soft substrates. One MAS3-1 (Cattail Organic Shallow Marsh) is present on the Subject Lands, however; this feature does not contain enough open water or substrate to support Snapping Turtle overwintering or foraging. No Snapping Turtle nesting habitat was identified on the Subject Lands.

#### 4.6.2 Artificial Cover Object Surveys

Artificial Cover Objects (ACOs) consisted of large boards of plywood, measuring 0.6 m by 1.2 m. A total of 24 cover boards were installed on the Subject Lands on April 9, 2014. They were distributed on the Subject Lands around old stone foundations and grassy meadows (**Figure 4, Appendix A**). The ACOs were surveyed on April 21, May 6, May 20, June 2 and June 17, 2014 (**Table 7, Appendix B**). The survey season encompassed both snake emergence and summer foraging periods.

No snakes were observed under ACOs during the surveys; however, two Eastern Gartersnakes (*Thamnophis sirtalis sirtalis*) were observed on May 6 along the southern stone foundations, and one Eastern Gartersnake was found along a field southwest of the coverboard study area (**Figure 4, Appendix A**). Meadow voles (*Microtus pensylvanicus*) were sighted throughout the surveys; rodent use was also evident under a number of ACOs.

Eastern Ribbonsnake (*Thamnophis sauritus*) was identified by the MNRF in their November 6, 2017 response letter to an information request as having the potential to occur on the Subject Lands. Eastern Ribbonsnake habitat is limited on the Subject Lands, however the MAS3-1 feature is potential Eastern Ribbonsnake foraging habitat. Multiple species of amphibians have been observed in this feature that would support Eastern Ribbonsnake. Suitable Eastern Ribbonsnake overwintering habitat is also present on the Subject Lands as Eastern Ribbonsnake utilize ant mounds, rock crevices and rodent burrows as hibernacula. A 50m width (Carpenter 1952) of the surrounding FOM7-2 and the FOC2-2 are considered suitable Ribbonsnake overwintering habitat. Area searches for snakes were conducted in 2014 and 2017; no Ribbonsnakes were observed.

#### 4.6.3 Wildlife Camera Trap

No reptile observations were captured by the five camera traps set up at potential hibernacula locations (i.e., rock piles along hedgerows) within the peak movement period for returning to overwintering sites (**Figure 4, Appendix A**).

#### 4.6.4 Road Mortality Survey

No road mortalities were observed during the two rounds of surveys conducted in Spring/Summer 2014 and Fall 2017.

#### 4.7 Winter Wildlife Surveys

The Subject Lands are generally heavily used by common mammal species, such as Red Fox (*Vulpes vulpes*), Deer Mouse (*Peromyscus maniculatus*), Meadow Vole, Eastern Gray Squirrel (*Sciurus carolinensis*), Red Squirrel (*Sciurus vulgaris*), Eastern Cottontail (*Sylvilagus floridanus*), White-tailed Deer (*Odocoileus virginianus*) and Coyote (*Canis latrans*). No defined wildlife trails were observed. Detailed results are provided in **Table 9, Appendix B**.

#### 4.8 Breeding Bird and Species at Risk Bird Surveys

From 2014 and 2017 breeding bird surveys, a total of 63 bird species were observed within the Subject Lands (**Table 8, Appendix B**). Of this total, 58 birds are confirmed, probable or possible breeders on the Subject Lands. The remaining bird species (five) are considered non-breeders,

flyovers or migrants. A total of 58 (100%) of the confirmed, probable or possible breeders are provincially ranked S5 (common and secure) and S4 (apparently common and secure). None of the bird species are considered S1- S3 (critically imperiled to vulnerable). Species of note are discussed below.

#### **4.8.1 Bobolink**

In 2014, a single male was heard distantly in flight at PC2 (on May 27, 2014), and was probably flying between PC2 and PC5 (**Appendix A, Figure 4**). Habitat at PC2 is not suitable for breeding for this species (wet mixed forest and wetland).

During the 2014 first round of breeding bird surveys, a single male Bobolink was observed at PC5 in suitable breeding habitat. Bobolink was not observed during the second round of surveys. No bobolink were observed at PC1 during 2014 or 2017 surveys.

In 2017, upon approach to PC5 on June 23, a male Bobolink was observed flying and calling overhead and moving in the direction of the habitat on the Subject Lands. When arriving at the field (PC5), a male Bobolink was observed perched on a small tree within grassland habitat on the Subject Lands. Throughout the point count, the male was observed transiting between various song posts within the field and singing. During the area search following the point count, a female Bobolink was flushed from the field and was observed to interact with the male (chases, perched in close proximity, etc.). The area search continued, and towards the end of the survey, the female was again flushed from the approximate location of the first occurrence. Though no nest was identified, Bobolink nests are very difficult to identify, and therefore this observation is indicative of active nesting effort.

During round 2 of breeding bird surveys (July 7, 2017), no evidence of Bobolink was observed on the Subject Lands. Though no disturbance within the grasslands was evident on the Subject Lands, the adjacent fields had been harvested, which may have impacted the habitat. The nesting attempt on the Subject Lands may have completed, whether successfully or unsuccessfully, and the resident individuals may have departed. While no confirmation of breeding was observed on the Subject Lands, based on 2014 and 2017 results, the cultural meadow around PC5 should be considered to be confirmed breeding habitat for Bobolink.

#### **4.8.2 Eastern Meadowlark**

In 2014, a singing male was heard at PC5 (on May 27, 2014); the male aggressively responded to playback and was on suitable breeding habitat (**Figure 4, Appendix A**). This species was not detected during the second survey even though the habitat was largely intact and all the suitable habitat was checked. Breeding was not confirmed on the Subject Lands despite strong evidence (probable breeding) of its occurrence.

In 2015, a female Eastern Meadowlark was observed during an MNR/client/consultant site walk at PC5 (June 25, 2015). In 2017, Eastern Meadowlark was not observed during breeding bird surveys. As a result, given the data collected through 2014 to 2017, the cultural meadow around PC5 should be considered to probable breeding habitat for Eastern Meadowlark.



#### **4.8.3 Barn Swallow**

No structures were identified on the Subject Lands that offer suitable nesting habitat. A single adult flying was observed over the hayfield at PC5 on May 27, 2014. The only potential nesting structure is a barn on private lands to the east of PC5. Since no birds were observed on June 26 in the vicinity of the barn or this area of the Subject Lands, it is unclear whether Barn Swallows were using the structure for nesting.

#### **4.8.4 Chimney Swift**

Single birds were observed/heard in flight over the Subject Lands nearest PC2 and PC7. Due to a lack of suitable natural nesting sites (e.g., broken off, canopy tree, standing snags in extensive forest tracts) it was presumed that these represented birds from nesting sites within the village of Belfountain where artificial, human-made structures (i.e., stone/brick chimneys) afford nesting opportunities.

#### **4.8.5 Wood Thrush**

A single singing male was recorded off-site to the south of PC 12 (**Appendix A, Figure 4**) in the extensive mixed mature forest tract on June 26, 2014. None were observed on the Subject Lands, despite appropriate timing and repeated visits. The ELC units FOM7-2 and FOD5-11 appeared to be suitable breeding habitat for this species. It is possible that the somewhat degraded understory (i.e./ post-cattle foraging effects) have rendered much of the FOD5-11 unsuitable for breeding.

#### **4.8.6 Eastern Wood-Pewee**

Eastern Wood-Pewee was recorded in 2014 surveys using hedgerows near PC 11 along Shaw Creek Rd. These hedgerows were comprised of mature deciduous trees and do constitute habitat for which the species is known to utilize. While it is not optimal, Eastern Wood-Pewees are found commonly using hedgerows in fragmented landscapes. Since it was not observed using other hedgerows on the Subject Lands, it is presumed that the habitat was not suitable.

More likely breeding habitat was observed in the eastern portions of the site in ELC units FOM7-2 and FOD5-11. Despite two surveys in the appropriate timing window, no Eastern Wood-Pewee were recorded here. It is possible that birds were present but not detected, especially since other species associated with mature hardwood/mixed forest were observed here; some classed as “more” interior forest species such as Scarlet Tanager (*Piranga olivacea*) and Broad-winged Hawk (*Buteo platypterus*), and the amount of habitat seems more than accommodating.

#### **4.8.7 Louisiana Waterthrush and Canada Warbler**

Louisiana Waterthrush (*Parkesia motacilla*) - is known mainly in Canada to inhabit steep wooded ravines within large parcels of mixed forest. While these conditions are locally available on the Credit River watershed adjacent to the Subject Lands, they are not present here. The secondary habitat is a large woodland swamp on sand-based soils but does not meet suitable habitat size criteria, and also not present on the Subject Lands.

Canada Warbler (*Cardellina canadensis*) requires low, conifer-dominated wetlands in south-central Ontario's fragmented landscape. The habitat preferred by the Canada Warbler appears to be possibly present in the northern reaches of the former subject lands (SWM1-1, FO2-2). The area of suitable habitat is restrictive for the species, and Canada Warbler was targeted in the fieldwork (e.g./ species playback was used), however, it was not observed. It is possible that the species does use the habitat present.

These two species were not observed on the Subject Lands.

#### **4.8.8 Lawrence's Warbler**

Lawrence's Warblers (*Vermivora lawrencei*) were observed in second growth/old field habitat adjacent to the Subject Lands south of PC12 (**Figure 4, Appendix A**) on May 27, 2014. Lawrence's Warbler is an unusual recessive hybrid between Golden-winged Warbler (*Vermivora chrysoptera*) (Special Concern) and Blue-winged Warbler (*Vermivora cyanoptera*)(G5). The pair was observed during round 1 and only the male was seen during round 2, providing evidence that they breed at this site. The territory was mainly south and east of PC 12, off-site, however, both individuals were seen flying onto the Subject Lands on May 27, 2014.

#### **4.8.9 Henslow's Sparrow**

Henslow's Sparrow (*Ammodramus henslowii*): Large, somewhat moist, old hayfields are typical breeding habitat for this species. While Henslow's Sparrow has been recorded recently in Peel, the small size of the CUM-1 fields, their isolation from other large suitable patches of habitat on the landscape and steep, and the dry sloping sides with very little thatch cover exclude the Subject Lands from being suitable breeding habitat for Henslow's Sparrow.

### **4.9 Incidental Wildlife**

Throughout the Subject Lands, incidental lepidopteran, odonate, and mammal species were observed during 2014, 2016, and 2017 field surveys. All the species recorded are secure and common. A list of all wildlife species observed on the Subject Lands is provided in **Table 10 (Appendix B)**.

No individuals Monarchs (*Danaus plexippus*) were observed on the site during the targeted surveys conducted alongside the two visits for breeding bird surveys. It is likely that the species was simply missed as suitable breeding habitat was observed in a number of locations on the Subject Lands and visits were timed earlier than typical detection windows. ELC units that contained a suitable quantity of host plant Common Milkweed (*Asclepius syriaca*) were CUM1-1, CUS, as well as all hedgerows within the AG unit boundaries.

## 5.0 ANALYSIS OF ECOLOGICAL AND NATURAL HERITAGE SIGNIFICANCE (PPS)

Eight types of significant natural heritage features are defined in the PPS, as follows:

- Significant wetlands;
- Significant coastal wetlands;
- Significant woodlands;
- Significant valleylands;
- Significant wildlife habitat;
- Fish habitat;
- Habitat of endangered and threatened species; and
- Significant areas of natural and scientific interest (ANSIs).

Field surveys and subsequent analyses have concluded that five natural heritage features are present on the Subject Lands; significant wetland, significant woodland, significant wildlife habitat, fish habitat, and habitat of Endangered and Threatened species. The remaining PPS natural heritage features were not observed on the Subject Lands. **Table 14 (Appendix B)** summarizes the natural heritage features present on the Subject Lands.

### 5.1 Significant Wetlands

Within Ontario, Significant Wetlands are identified by the MNRF or by their designates. Other evaluated or unevaluated wetlands may be identified for conservation by the municipality or the conservation authority.

The wetland located at the northern end of the Subject Lands is a diverse habitat, consisting of at least two organic soil vegetation types (Cattail Marsh and Willow Thicket Swamp). The marsh is confirmed breeding habitat for Jefferson Salamander (Endangered), and is dominated by Broad-leaved Cattail (*Typha latifolia*), Reed-canary Grass (*Phalaris arundinacea*) and Blue-joint Grass (*Calamagrostis canadensis*). The swamp thicket is dominated by the locally rare (CVC) plant species Autumn Willow (*Salix serissima*), and is accompanied by Red-Osier Dogwood (*Cornus sericea*) and Bitter Nightshade (*Solanum dulcamara*). These two wetlands would likely meet the provincial biological criteria for designation as Significant.

There are two wetlands on the adjacent lands to the north; a White Cedar hardwood mixed treed swamp (SWM1-1) and a Blue-joint organic meadow marsh (MAM3-1). Savanta observed groundwater discharge conditions within the SWM1-1 during each vegetation survey period. Cole (2018) estimates groundwater levels near ground surface for the wetlands on adjacent lands. Mr. Mark Heaton (MNRF) has communicated that that groundwater seeps within SWM1-1, support a Brook Trout stream that begins before Bush Street. Both of these wetlands are within the Jefferson Salamander (END) regulated habitat area. Based on our understanding of vegetation communities, flora and fauna present, these two adjacent wetlands would likely meet the provincial biological criteria for designation as Significant.

## 5.2 Significant Woodlands

Significant Woodlands within the Town of Caledon area evaluated using the criteria within the Region of Peel - Town of Caledon Significant Woodland and Wildlife Habitat Study Report (2009). Within this report woodlands are considered significant if they meet one of the following criteria:

- $\geq 16$  ha in size within the Rural System;
- areas on and above (west of) the Niagara Escarpment: all woodlands  $\geq 16$  ha in size;
- $\geq 0.5$  ha in size and older than 90 years;
- $\geq 0.5$  ha in size identified as supporting a linkage function as determined through a natural heritage study approved by the Region or the Town;
- $\geq 0.5$  ha in size and within 100 m of another significant feature;
- within 30 m of a watercourse, surface water feature or evaluated wetland;
- supports G1, G2, G3, S1, S2, or S3 plant or animal species;
- contains species designated by COSEWIC or COSSARO as Threatened, Endangered or Special Concern; or,
- contains one of the following vegetation communities: FOC1-2; FOM2-1; FOM2-2; FOM6-1; FOD1-1; FOD1-2; FOD1-4; FOD2-2; FOD2-3 or FOD6-2.

The Region of Peel OP (Table 1) sets out criteria and thresholds for identifying woodlands in the Rural System. Core areas are those that meet one or more of the following criteria:

- $\geq 16$  ha in size;
- $\geq 4$  ha in size and containing at least 0.5 ha of woodland in native trees older than 100 years and having late successional characteristics;
- $\geq 4$  ha in size and supports G1, G2, G3, S1, S2, or S3 plant or animal species;
- $\geq 4$  ha in size and contains species designated by COSEWIC or COSSARO as Threatened, Endangered or Special Concern; or,
- $\geq 4$  ha in size and contains one of the following vegetation communities: FOC1-2; FOM2-1; FOM2-2; FOM6-1; FOD1-1; FOD1-2; FOD1-4; FOD2-2; FOD2-3 or FOD6-2. – (Absent from Subject Lands)

The woodlands on the Subject Lands (northeast corner) are  $< 20$  m distance from woodlands east of Mississauga Road and are, according to Regional policies, considered to be contiguous. The woodlands on the Subject Lands are  $\geq 16$  ha in size and part of these woodlands are within the Jefferson Salamander (Endangered) regulated habitat area. Therefore, the woodlands on the Subject Lands meet both the Town and Region's criteria for designation as Significant Woodland (Core-Region). The Belfountain Transportation EA (NRSI 2014) also identified these woodlands as core features under the Region of Peel OP, and recommended a 10 m buffer from the dripline edge for the Mississauga Road expansion.

The woodlot (0.59 ha) in the southern portion of the Subject Lands is  $< 20$  m distance from adjacent woodlands, and is considered to be contiguous. This southern woodland meets size criteria, as it is contiguous with extensive woodland to the south, for designation as Significant Woodland. It is identified as a core feature under the Region of Peel OP. As a result, a 10 m buffer is also recommended from the dripline edge to the development limits.

### 5.3 Significant Valleylands

Significant Valleylands are defined in Table 2 of the Region of Peel Official Plan. The rolling topography of the Subject Lands does not meet the criteria of core valley under the Region's Official Plan.

### 5.4 Significant Wildlife Habitat

Significant Wildlife Habitat (SWH) is one of the more complex natural heritage features to identify and evaluate (**Tables 12 and 13, Appendix B**). There are several provincial documents that discuss identifying and evaluating SWH: the Natural Heritage Reference Manual (MNR 2010), the Significant Wildlife Habitat Technical Guide (MNR 2000), and the Final SWH Ecoregion 6E Criterion Schedule (MNR 2015). The Subject Lands are located in the Region of Peel, and the Peel-Caledon Significant Woodlands and Significant Wildlife Habitat Study (2009) was also considered.

There are four general types of significant wildlife habitat: seasonal concentration areas, rare or specialized habitats, habitat for species of conservation concern, and animal movement corridors. These are discussed in detail below.

#### 5.4.1 Seasonal Concentration Areas

Seasonal concentration areas are those sites where large numbers of a species gather together at one time of the year, or where several species congregate. The following is a partial list of numerous examples: deer yards, snake and bat hibernacula, waterfowl staging areas, raptor wintering areas, bird nesting colonies, shorebird stopover areas, and colonial nesting bird habitats. Areas that support a species at risk, or if a large proportion of the population may be lost if the habitat is destroyed, are examples of seasonal concentration areas which should be designated as significant.

Of the habitat types identified above, three were identified as potentially occurring on the Subject Lands, and subject to further assessment:

- Reptile Hibernacula – Rock piles were identified as present during site reconnaissance surveys, however no snakes were observed through targeted camera surveys during the fall return to hibernacula period, suggesting that this feature does not meet the criteria for this SWH type;
- Raptor Wintering Area – the woodlands and adjacent cultural meadows and savannahs were assessed. The cultural meadows are small, with hilly topography and do not provide suitable habitat. The cultural meadows on the adjacent lands are actively managed hayfields and there is a lack of thatch in fall for rodent use. The Subject Lands and adjacent lands do not provide suitable raptor wintering habitat; and
- Bat Maternity Colony – The woodland communities on the Subject Lands may provide suitable habitat features for bat maternity colonies. As these features are outside of the proposed development limit, they are treated as candidate SWH and will be carried forward to the impact assessment.

Based on information collected and analyzed, the only seasonal concentration area to be carried forward to the impact assessment is candidate bat maternity colony habitat.

### **5.4.2 Rare or Specialized Habitats**

#### **Rare Vegetation Communities**

Rare habitats are those with vegetation communities that are considered rare in the province. SRANKS are rarity rankings applied to species at the 'state', or in Canada at the provincial level, and are part of a system developed under the auspices of the Nature Conservancy (Arlington, VA). Generally, community types with SRANKS of S1 to S3 (extremely rare to rare-uncommon in Ontario), as defined by the NHIC, could qualify. It is assumed that these habitats are at risk and that they are also likely to support additional wildlife species that are considered significant.

All vegetation communities were identified, delineated and assessed within the Subject Lands. None of the identified vegetation communities are considered rare in Ontario. The Peel-Caledon Significant Woodlands and Significant Wildlife Habitat Study criteria identifies SWT3-2 (Willow Organic Thicket Swamp) as a rare vegetation community. A SWT3-2 community was found on the Subject Lands; however, the features is less than 0.5 ha, which is the minimum size required for a vegetation community to be considered significant wildlife habitat. As a result, the SWT3-2 community does not meet this SWH criterion.

#### **Specialized Habitat for Wildlife**

Specialized habitats are microhabitats that are critical to some wildlife species. Potential examples include woodland raptor nesting habitat, turtle nesting areas or amphibian breeding habitats.

An assessment of the wildlife habitats available on the Subject Lands was completed in consideration of the relevant Ecoregion Criteria Schedules. Additional commentary is provided below with respect to those features where suitable habitat conditions were identified:

- Seeps and springs – No seeps and springs were identified within the woodland communities on the Subject Lands;
- Amphibian Breeding Habitats (woodlands) – the shallow marsh community on the Subject Lands was surveyed for breeding amphibians. Two of the indicator species for this SWH type were identified, however numbers were below thresholds for significance, and therefore the criterion for this SWH type is not met;
- Waterfowl Nesting Area – No nesting waterfowl were identified during breeding bird surveys within 120 m of the MAS community on the Subject Lands, and therefore the criterion is not met for this habitat type; and
- Open country and early successional breeding bird habitat – The Ecoregion Criteria Schedule requires a minimum of 30 ha of open country habitat for a feature to be significant. The CUM community on and adjacent to the Subject Lands is less than 30 ha in size. The Peel-Caledon Significant Woodlands and Significant Wildlife Habitat Study requires a minimum of 10 ha of open country habitat that has not been actively farmed in the past 5 years. Though the CUM community is greater than 10 ha in size, it remains actively farmed and therefore does not meet this criterion.

As a result, it was determined that no specialized habitats for wildlife are present on the Subject Lands.



### **5.4.3 Habitat for Species of Conservation Concern**

Specialized habitats are microhabitats that are critical to some wildlife species. Potential examples include woodland raptor nesting habitat, turtle nesting areas or amphibian breeding habitats.

A detailed review confirms that the Subject Lands do not provide suitable habitat for any specialized wildlife.

Species of conservation concern include:

- a) those that are rare;
- b) those whose populations are significantly declining;
- c) those that have been identified as being at risk to certain common activities; and
- d) those with relatively large populations in Ontario compared to the remainder of the globe.

Habitats of species of conservation concern do not include habitats of endangered or threatened species as identified by the *ESA, 2007*.

An assessment of the wildlife habitats available on the Subject Lands was completed in consideration of the relevant Ecoregion Criteria (6E) Schedules. Additional commentary is provided below with respect to those features where suitable habitat conditions were identified:

- Terrestrial Crayfish – No evidence of terrestrial crayfish was noted within the wetland communities on the Subject Lands
- Special Concern and Rare Wildlife Species:
  - Western Chorus Frog, an S3 species, was confirmed as breeding within the Cattail marsh on the Subject Lands, and therefore this feature is considered to be SWH; and
  - Evidence of breeding of Special Concern species was noted from adjacent lands, with a singing male Wood Thrush observed in a mature hardwood forest and an Eastern Wood-Pewee observed in a hardwood fencerow between two old fields offsite. Detailed analyses determined that habitat conditions were suboptimal for both species, and that these off-site features are not considered to meet SWH criteria.

### **5.4.4 Animal Movement Corridors**

Animal movement corridors are areas that are traditionally used by wildlife to move from one habitat to another. This is usually in response to different seasonal habitat requirements. Some examples are trails used by deer to move to wintering areas, and areas used by amphibians between breeding and summering habitat. As neither deer wintering areas or significant amphibian breeding habitats were identified, an assessment of animal movement corridors was not required for the Subject Lands.

## 5.5. Other Natural Heritage Features and Functions

### 5.5.1 Other Wetlands

No other wetlands occur on Subject Lands, however, directly to the south is the Belfountain Wetland (located >120 m away). A White Cedar hardwood mineral swamp and a Blue Joint organic meadow marsh are located north of the Subject Lands, and south of Bush Street.

### 5.5.2 Regionally and Locally Important Species

There are six locally rare or uncommon species in the Region of Peel on the Subject Lands (**Table 4a, Appendix B**). All rare and uncommon species are located within natural features that will be outside of proposed development areas. Important wildlife habitat areas were identified through the analysis of significant wildlife habitat (MNRF 2015).

## 5.6 Fish Habitat

Fish habitat, as defined in the federal *Fisheries Act*, c. F-14, means, “spawning grounds and any other areas including nursery, rearing, food supply, and migration areas on which fish depend directly or indirectly in order to carry out their life processes”. Fish, as defined in S.2 of the *Fisheries Act*, c. F-14, includes “parts of fish, shellfish, crustaceans, marine animals and any parts of shellfish, crustaceans or marine animals, and the eggs, sperm, spawn, larvae, spat and juvenile stages of fish, shellfish, crustaceans and marine animals”.

RB1 (**Figure 5, Appendix A**) provides direct seasonal fish habitat for fish that incidentally wash out from the upstream wetlands off the Subject Lands. Given that water in RB1 infiltrates and the feature disappears approximately 80 m from the Subject Lands boundary, any fish that enter the reach are anticipated to perish if they are not able to move back upstream to the wetland ponds east of the Subject Lands. Therefore, while the reach on the Subject Lands provides direct seasonal fish habitat, its presence may negatively impact the upstream fish community off the Subject Lands. Opportunities for restricting fish entry into RB1 could potentially be considered to minimize potential fish mortality.

RA1 (located offsite) provides contributing habitat functions including hydrological contributions and organic material inputs that help maintain downstream fish habitat. RA1 has no downstream barriers that would prohibit fish from using the available fish habitat.

## 5.7 Habitat of Endangered and Threatened Species

Endangered and threatened species are identified by the Committee on the Status of Species at Risk in Ontario (COSSARO), using criteria, which generally follow those in use at a global scale by the IUCN and at a national scale by COSEWIC. Through the Information Request Form (IRF) process MNRF responded that the following species may occur on the Subject Lands (**Appendix C**):

- Butternut (Endangered in Ontario);
- Jefferson Salamander (Endangered in Ontario);
- Northern Myotis (Endangered in Ontario);
- Barn Swallow (Threatened in Ontario);
- Bobolink (Threatened in Ontario);



- Chimney Swift (Threatened in Ontario);
- Eastern Meadowlark (Threatened in Ontario);
- Louisiana Waterthrush (Threatened in Ontario);
- Canada Warbler (Special Concern in Ontario);
- Eastern Wood-Pewee (Special Concern in Ontario)
- Snapping Turtle (Special Concern in Ontario); and,
- Wood Thrush (Special Concern in Ontario).

The following species were identified as having the potential to occur in the study area:

- Eastern Small-footed Myotis (*Myotis leibii*) (Endangered in Ontario);
- Henslow's Sparrow (*Ammodramus henslowii*) (Endangered in Ontario);
- Little Brown Myotis (*Myotis lucifugus*), (Endangered in Ontario);
- Tri-colored Bat (*Perimyotis subflavus*) (Endangered in Ontario);
- Eastern Ribbonsnake (*Thamnophis sauritus sauritus*) (Special Concern in Ontario); and,
- Monarch (*Danaus plexippus*) (Special Concern in Ontario).

Four of these species and/or their habitat were observed on the Subject Lands; Butternut, Jefferson Salamander, Bobolink, and Eastern Meadowlark. Two species were observed only foraging on the Subject Lands (Barn Swallow, Chimney Swift).

All woodlands on the Subject Lands (FOD, FOC, FOM, SWD, SWC, SWM, and CUW) are potential habitat for Ontario's four endangered bat species: Eastern Small-footed Myotis (*Myotis leibii*), Little Brown Myotis, Northern Myotis (*Myotis septentrionalis*), and Tri-colored Bat. All woodlands within the Subject Lands are outside of areas proposed for development.

Barn Swallow, which is listed as Threatened under Ontario's *Endangered Species Act, 2007*, was observed foraging over the Subject Lands in low numbers but no breeding evidence was recorded. There are no nesting structures known from the Subject Lands. Barn Swallow foraging habitat is addressed on a case-by-case basis by MNRF to determine whether the reduction in foraging habitat, caused by the development, would trigger the need for an overall benefit Permit under the *ESA, 2007*. The MNR General Habitat Description defines Barn Swallow foraging habitat as woodland edges, pasture with livestock and waterbodies. The Subject Lands provide foraging habitat in the form of tributaries, ponds and woodland/swamp edges.

A single Chimney Swift was observed/heard in flight over the Subject Lands near PC 2 and PC 7. However, due to a lack of suitable natural nesting sites it was presumed that these represented birds were nesting within artificial, human-made structures.

During 2014 first round of breeding bird surveys on a single male Bobolink was heard distantly in flight at PC 2 in non-breeding habitat and then again observed at PC 5 in suitable breeding habitat. Bobolink was not observed during the second round surveys, as a result, habitat at PC2 is not suitable for breeding (wet mixed forest and wetland) for this species. Surveys conducted in 2017 observed a male and female bobolink during first round, however; Bobolink was not observed during second round surveys presumably due to adjacent fields (offsite) being harvested. The cultural meadow around PC 5 should be considered to provide confirmed breeding habitat for Bobolink.

One singing male Eastern Meadowlark was observed during round 1 in 2014 at PC5, which is deemed suitable breeding habitat. Surveys conducted in 2017 did not observe Eastern Meadowlark. While breeding was not confirmed, this area should be considered to be probable breeding habitat.

Two Butternut stems were identified at the eastern deciduous forest edge (FOD5-11) near the north-central location of the cultural meadow (CUM1-1). Both stems are considered Category 2 specimens and are considered to be retainable. These trees occur outside of areas proposed for development.

The MNRF (Mr. Heaton) confirmed Jefferson Salamander breeding habitat within the pond located on the northern portion of the Subject Lands on February 17, 2015. Confirmation came from DNA analysis through the Region of Peel Class EA Study for the Regional Road network (2012-2014). Jefferson Salamander was confirmed in two locations along Mississauga Road, within 50 m of the pond. Additional ponds have also been identified as potential Jefferson Salamander breeding habitat given their proximity to the confirmed breeding pond. The pond is not within areas proposed for development.

## 5.8 Areas of Natural and Scientific Interest (ANSI)

An ANSI is an area identified by the MNRF as having provincially or regionally significant representative geological or ecological features. There are no ANSIs identified on the Subject Lands; the Credit Forks Life Science ANSI occurs east of Mississauga Road.

## 5.9 Summary of Natural Heritage Features Subject to Future Impact Assessment

An analysis of existing natural features on the Subject Lands and adjacent lands was completed, followed by an evaluation of their significance against criteria in the Significant Wildlife Habitat Technical Guide and Eco-region 6E Criteria Schedule (MNRF 2015), as well as under criteria recommended in the NHRM (MNRF 2010), the Town of Caledon Official Plan (2016), and the Region of Peel Official Plan (2016).

The following natural heritage features occur, in whole or in part, on, or within 120 m, of the Subject Lands (**Figure 6, Appendix A**):

- Significant Wetland;
- Significant Woodland;
- Specialized Wildlife Habitat;
  - Candidate bat maternity colony habitat associated with the woodlands on the Subject Lands (FOD, FOC, SWD, SWM)
  - Habitat for species of conservation concern (Western Chorus Frog associated with the MAS unit on the Subject Lands)
- Habitat of Endangered and Threatened Species; and
  - Bobolink (THR)
  - Eastern Meadowlark (THR)
  - Butternut (END)
  - Jefferson Salamander (END)

- 
- Barn Swallow (THR) (foraging habitat)
  - Chimney Swift (THR) (foraging habitat)
  - Fish Habitat (Credit River and RB1).

## 6.0 DESCRIPTION OF DEVELOPMENT PROPOSAL

The proposed development is depicted on **Figure 7 (Appendix A)**. This figure depicts the 67 lots, each a minimum of 0.61 ha in size on Subject Lands. Each lot will have a septic bed with tertiary (Level IV) treatment, and will rely on well water. The draft plan also proposes two parks located at the east and southeast corner of the development (0.22 ha and 2.25 ha, respectively). As well as, an open space area located where the headwater feature “RB1” will be retained and enhanced (1.27 ha). The open space is proposed to be enhanced (i.e., seeded with native meadow species) marked with signage proposed to educate residents on the sensitivity of the area.

Grading for roads, building envelopes, septic beds, driveways, parks is proposed to be limited and the design has been developed to reflect the natural topography and vegetation (i.e., using existing hedgerows as a screening for visual mitigation). Baker Turner prepared a Visual Impact Model to determine the appropriate location for homes, and driveways. **Figure 7, (Appendix A)** depicts the proposed building envelopes, septic beds and driveways as collaboratively developed by Baker Turner and Cole Engineering.

The individual lot stormwater model (Cole 2018a) will provide retention and infiltration for up to the 100-year event through roadside ditches with dry wells. Infiltration is provided in all roadside ditches; these ditches act as shallow, linear, dry stormwater detention and infiltration ponds (Cole 2018a). Orifice stormwater controls are proposed at each driveway culvert, and additional check dams at 20 m to 40 m intervals along the ditches, depending on storage required and slope of road/ditch (Cole 2018a). Rear and side yard swales may also be included to capture surface runoff; to be determined at detailed design when individual catchment areas are modelled.

Dry wells spaced at 20 m to 80 m intervals along the ditches will be used for rapid infiltration of larger storm flows. These infiltration devices will be located upstream of driveways and check dams. They are expected to consist of a vertical, 375 mm diameter Big O pipe with woven filter sock, installed from the surface to an approximate depth of 3.6 m. At the surface, an inlet to these pipes will be a precast, bottomless catchbasin with a catchbasin grate, perched above the bottom of the ditch. Perching the inlet means that for normal storm events, no runoff will enter the dry wells. The dry wells would expect to receive excess runoff only once or twice per year, during a rain on frozen ground event, or greater than 2 year summer storm event (Cole 2018a).

Park Block 71 and Open Space Block 74 will provide emergency runoff storage and infiltration (>100 year storm event). A drainage easement for emergency flow for storms in excess of the 100 year storm event is proposed between proposed Lots 19 and 20. This takes advantage of an existing drainage flow pattern to lands to the north of the property.

In general, the proposed distributed infiltration method of stormwater management produces very similar patterns of infiltration as occurs under pre-development conditions. Existing infiltration patterns are distributed across the site, and proposed storage and infiltration methods will only transport runoff away from a lot for significant storm events, 100 year event or larger. Runoff from smaller storm events will not be conveyed along the roadside ditch system. Effectively, the majority of rainfall will infiltrate where it falls (Cole 2018a).

## 7.0 IMPACT ASSESSMENT, MITIGATION, ENHANCEMENT AND NET EFFECTS

This section presents a discussion regarding the potential effects of development on natural heritage features and associated functions. This information is presented in **Table 14** (below). Mitigation measures to limit negative impacts and/or to enhancement measures are recommended where practical.

Impacts from a proposed land development application can generally be considered in two broad categories, direct and indirect. Direct impacts are normally associated with the physical removal or alteration of natural features that could occur based upon a land use application, and indirect impacts may be changes or impacts (these could be minor or dramatic) to less visible functions or pathways that could cause negative impacts to natural heritage features over time.

For purposes of this evaluation, we have provided the assessment concisely within **Table 14**. **Figure 7 (Appendix A)** illustrates environmental constraints on the Subject Lands.

### 7.1 Significant Wetlands

As described in Section 5.1 the Cattail organic shallow marsh and Willow organic thicket swamp would likely meet provincial criteria for designation as Significant, given the Cattail marsh provides confirmed breeding habitat for Jefferson Salamander (JESA). Both of these wetlands are located outside of the proposed development area.

### 7.2 Significant Woodlands

The woodland in the north, east, and south end of the Subject Lands meet criteria for designation as Significant Woodland. All woodlands will be retained and a 10 m buffer is recommended from the dripline edge to the development limits.

### 7.3 Significant Wildlife Habitat

Candidate bat maternity colony habitat associated with the woodlands, and habitat for species of conservation concern (Western Chorus Frog associated with the MAS3-1 unit on the Subject Lands) are present on Subject Lands. Significant Wildlife Habitat will be retained and a 10 m buffer is recommended from the dripline edge to the development limits.

### 7.4 Habitat of Endangered & Threatened Species

The Subject Lands provide habitat for several Endangered or Threatened species including Eastern Meadowlark, Bobolink, Jefferson Salamander, Barn Swallow (foraging), Chimney Swift (foraging), and Butternut. The woodlands of the Subject Lands provide potential habitat for Ontario's four endangered bat species. These species are protected under the *Endangered Species Act, 2007*. The Manors of Belfountain Corporation will be preparing an Information Gathering Form (IGF) and submitting it to MNRF to commence discussions regarding mitigation and permitting requirements associated with potential impacts to these species. For removal of grassland breeding bird habitat, The Manors of Belfountain Corporation will be required to Register the Project under Section 23.2 of the ESA.

## **7.5 General Mitigation and Enhancement Strategies**

Mitigation and enhancement strategies are presented according to the following general categories:

- Maintaining Existing Grades and Landforms;
- Wildlife Protection During Construction and Impact Management;
- Habitat Enhancement;
  - Bobolink and Eastern Meadowlark
- Erosion and Sediment Control;
- Vegetation Protection Measures and Buffers
- Trail Design and Signage; and
- Surface Water and Ground Water Balance.

### ***7.5.1 Maintaining Existing Grades and Landforms***

Through communication with Niagara Escarpment Commission (NEC) and the Town of Caledon, requirements to minimize disturbance to existing grades and landforms across the Subject Lands was discussed and endorsed. As a result, where grading is required in order to site a house, it will be localized to the house envelope and within approximately 5 m of the house. The local grading around the house per lot to site will approximately be less than 0.5 m change in elevation (Cole 2018a).

In addition to grading in lot layouts, road grading will be minimized to ensure that the roads follow the existing contours as much as possible. The grading adjacent to the hedgerows will also be minimized to ensure preservation where possible (Cole 2018a).

### ***7.5.2 Wildlife Protection During Construction and Impact Management***

As per the Migratory Birds Convention Act (1994), it is recommended that hedgerow tree removals occur prior to, or after, the migratory breeding bird season (May 1 to July 31). If tree removal is required between May 1 to July 31, nest searches are necessary to determine the presence/absence of nesting birds or breeding habitat every 72 hours until clearing is complete, or until July 31, whichever comes first. If an active nest is observed, a designated setback will be identified within which no construction activity will be allowed while the nest remains active. The setback distance ranges from 5 m to 60 m from the nest, depending on the species and its sensitivity to adjacent activities. These distances have been reviewed and approved by Environment Canada.

### ***7.5.3 Habitat Enhancement***

Bobolink and Eastern Meadowlark are provincially designated Threatened and are protected under the ESA. They have general habitat protection, which is defined as the area on which a species depends directly or indirectly to carry out its life processes. These life processes may include, but are not limited to, breeding, foraging or resting.



The Manors of Belfountain Corporation will be required to Register the Project under Section 23.2 of the ESA. Section 23.2 requires registering the proposed development activity through the MNRF Registry, available on-line. This option does not contain on-going dialogue with the MNRF. Rather, it involves the submission of an electronic registration form and supplementary Habitat Management Plan. Once these documents have been submitted, an email confirmation is provided within 15 business days. It is assumed that all conditions provided in the Habitat Management Plan will be adhered to, as MNRF may choose to audit the Project at any point. An ESA Registration requires providing an understanding of the level of impact from the proposed development activity and how to off-set the impact. This can be achieved, in part, by including the location and size of habitat that will be damaged or destroyed, as well as the location, size and quality of replacement habitat at a minimum replacement ratio of 1:1. The replacement habitat requires monitoring breeding bird surveys for 5 consecutive years and maintenance for 5 years.

The Manors of Belfountain Corporation will fulfill the requirements under Section 23.2 (ESA registration, provide habitat management plan, secure compensation lands etc.) and receive all MNRF authorization prior to removal of habitat. The habitat will be removed outside of the grassland breeding bird season, following receipt of MNRF authorization and will be replaced within a calendar year.

#### ***7.5.4 Erosion and Sediment Control***

As detailed in the Functional Servicing Report (Cole 2018a), a formal Erosion and Sediment Control Plan will be provided as part of the site alteration permit application. The plan will demonstrate how the construction activities will occur without impact to the protected areas, adjacent natural features, and agricultural lands. The plan will ensure that sediment control fencing is installed prior to grading, and that mud mats are utilized at locations where construction vehicles exit the site. Sediment traps will be used to allow sedimentation of runoff, and any sediment-laden water will be diverted away from the natural low points where possible. Slope breaks and other stabilization measures will be used to mitigate erosion along steep slopes. All temporary erosion and sediment control measures will be routinely inspected and repaired during construction. Temporary controls will not be removed until the areas they serve are restored and stable.

#### ***7.5.5 Vegetation Protection and Buffer***

Recommended mitigation measures to minimize impacts to trees identified for preservation in the Tree Inventory and Preservation Plan (Baker Turner 2018) include the implementation of tree protection barriers and fencing. All tree protection measures are to be implemented prior to construction phase (earth works) to ensure the trees identified for preservation are not impacted by the development.

A butternut tree (Tree #2) was recorded adjacent to the southern portion of the future pedestrian woodchip surfaced trail, the tree is identified as a Category 2 (retainable). See section 7.5.6 for discussion on pedestrian trail material. As a result, a 50 m buffer is recommended to prevent root disturbance. In this buffer area, certain operations such as excavating or paving that would remove or significantly compact the roots and soils, and cause direct harm to the tree are not permitted. However, the removal of other vegetation within the buffer zone is permitted. No planting or trail fencing is permitted within the buffer of either Butternut Tree #1 or #2.



The predicted effects on the natural features and associated functions will be eliminated through the protection, mitigation and enhancement measures recommended and discussed in this report. The health, diversity, and size of the Significant Woodland on the Subject Lands will be maintained and potentially enhanced through the planting of native trees and shrubs within the buffer area. A native meadow will be seeded for the open space area associated with HDF “RB1”. The onsite natural features (significant woodland, significant wetland, HDF RB1) are contiguous (linked) with offsite natural heritage features. The vegetative buffers prescribed for the natural features on the Subject Lands will protect and enhance the ability of the important biodiversity and linkage functions concentrated south of the Subject Lands.

### **7.5.6 Trail Design and Signage**

An unlit pedestrian trail is planned along an existing farm path from Mississauga Road to access the 2.25 ha park. To limit the potential effects of this use, woodchips or limestone screenings are recommended with pedestrian access control barriers alongside the trail (e.g., combination of split rail cedar fences and with a mixture of tall shrubs for screening and thorny shrubs to deter users from venturing off trail). Signage should be designed and installed to inform users of the sensitivity of the natural areas, including the open space area. The design guidelines provided in this EIS are echoed in the Urban Design Guidelines (Architecture Unfolded et al. 2018).

Post-development, lands adjacent to the pedestrian trail from Mississauga Road to the development will be monitored (1 year) to determine whether barriers (such as signage, woodchip trail and cedar wood fences) into the adjacent woodland have kept the public on the trail and deterred users from creating unwanted pathways into the adjacent natural features.

A park walkway between lots 16 and 17 is also planned to connect the public school with the proposed development (Street ‘B’). There are no natural heritage features adjacent to this walkway and design elements may include a paved and lit surface, depending on school safety requirements.

## **7.6 Fish Habitat, Wetlands and Hydrologic Interactions**

### **7.6.1 Wetland Water Balance**

The pre-development hydrologic (surface and groundwater) contributions to the two onsite and the two offsite wetlands will be maintained post-development (Cole 2018b). Under pre-development conditions there is no surface runoff (up to the 100 year event) from the agricultural fields (future lots) to the wetlands. The hydrogeological and functional servicing report (Cole 2018a, Cole 2018b) demonstrates that existing groundwater contributions will be maintained post-development. As existing hydrogeologic conditions are maintained post-development, a feature based water balance is not needed for the two onsite wetlands or the two offsite wetlands. These and other considerations related to fish habitat and wetlands are discussed in more detail in the following sections.

### 7.6.2 Fish Habitat

This section discusses the potential impacts of the proposed development on fish habitat in RB1 and RA1 during the construction and post-construction periods. This assessment includes both direct and indirect effects.

#### Potential Direct & Indirect Impacts

There are no direct impacts to fish habitat in RA1 or RB1. RA1 is located approximately 100 m north of the Subject Lands and will not be directly impacted by development. RB1 is located on the Subject Lands, but will be located within an Open Space block designed to address the Conservation HDFA management recommendation. The primary function of RB1 is groundwater recharge and this will be maintained within the feature on the open space block. Conservation of the feature will likely prevent direct impacts on the seasonal fish habitat of the feature. However, as discussed previously, the presence of the feature may result in negative impacts on the upstream fish community, given that any fish that enter the feature from the upstream wetlands likely perish, with no benefits to overall community productivity occurring as a result of this seasonal use.

Indirect impacts on fish and fish habitat during construction could occur due to erosion and sedimentation from the construction site and/or accidental spills of potentially toxic materials. Each of these are discussed in the following sections.

#### Erosion and Sedimentation

Erosion and sedimentation from the disturbed work area associated with the proposed development could potentially result in negative impacts to water quality (e.g., increased turbidity) or sedimentation and associated effects on fish (e.g., injury or mortality due to suspended sediments or altered habitat use) or fish habitat (e.g., loss of interstitial spaces in rocky areas, smothering of aquatic vegetation and/or incubating eggs).

It is recommended that the contractor prepare and implement an Erosion and Sedimentation Control (ESC) Plan to minimize the potential for erosion and sedimentation from the construction site. The ESC Plan should be developed based on the guidance provided in the *Erosion and Sediment Control Guideline for Urban Construction* (GGHCA 2006). Basic elements of the plan should include consideration of:

- Identification of natural areas to be protected including HDFs and infiltration areas;
- Construction phasing to minimize the amount of time soils are barren and therefore, more susceptible to erosion;
- Requirements and timing for rehabilitation of disturbed areas;
- Stormwater management strategies during construction;
- Grading and removal of surface water drainage features (e.g. headwater drainage features not being maintained on the landscape) during periods when the features are dry, to minimize potential for impacts on downstream water quality;
- Erosion prevention measures (e.g., hydroseeding, sodding, erosion control matting, tarping of stockpiles);
- Sedimentation control measures (e.g., silt fences); and

- Inspection and performance monitoring requirements and adaptive management considerations.

Implementation of an effective ESC Plan, incorporating both erosion and sediment controls, coupled with regular inspection and performance monitoring and implementation of any remedial actions necessary to ensure effective performance, is anticipated to be largely effective in preventing the movement of eroded soil particles towards fish habitat.

Overall, no negative impacts to fish and fish habitat are predicted to occur as a result of erosion and sedimentation during construction, provided an effective ESC Plan, including monitoring and adaptive management, is implemented.

### **Accidental Spills**

Accidental spills of potentially hazardous materials (e.g., fuel and oil from heavy equipment), if transported to the watercourse, could cause stress or injury to fish and other aquatic biota (e.g., benthic invertebrates).

To mitigate the potential for negative impacts on fish and fish habitat due to accidental spills during construction, it is recommended that the contractor prepare a spill prevention and response plan to outline the material handling and storage protocols, mitigation measures (e.g., spill kits on-site), monitoring measures and spill response plans (i.e., emergency contact procedures, including MOECC Spills Action Centre, and response measures including containment and clean-up). Implementation of an effective spill prevention and response plan is anticipated to be largely effective in preventing negative impacts on fish and fish habitat.

### **Potential Post-Construction Impacts**

Post construction impacts on fish and fish habitat in the HDFs could potentially occur as a result of:

- Changes in the area, timing, duration and function of fish habitat due to changes in water balance in the watercourse; or
- Impacts due to adjacent development (e.g., stormwater runoff and potential impacts due to water quality deterioration).

These potential impacts are discussed in the following sections.

#### **7.6.3 Groundwater Infiltration**

The pre-development groundwater recharge rate is ~290 mm/year (Cole 2018b). The SWM plan will maintain the groundwater recharge rate (Cole 2018a). In addition, a large portion of the extracted groundwater will be reintroduced to the groundwater system through tertiary treated septic systems, further reducing impacts to natural features (Cole 2018a). No changes in groundwater infiltration or flow are anticipated post-development, so groundwater contributions to headwater drainage features and wetland (onsite and offsite) are expected to remain consistent with pre-development conditions (Cole 2018a).

In general, the proposed distributed infiltration method of stormwater management produces very similar patterns of infiltration as occurs under pre-development conditions. Existing infiltration patterns are distributed across the site, and proposed storage and infiltration methods will only transport runoff away from a lot for significant storm events, >100 year events. Runoff from smaller storm events will not be conveyed along the roadside ditch system. Effectively, the majority of rainfall will infiltrate where it falls.

This reliance entirely on infiltration for all runoff to the 100 year storm event has been discussed with CVC. In general, CVC is supportive of the infiltrative measures being proposed although they expect to be able to review and consider details as they are made available.

The proposed stormwater management measures (Cole 2018a) are anticipated to be sufficient to maintain site and wetland water balance, as well as provide necessary quantity and quality control, to prevent negative impacts to the watercourse associated with stormwater runoff from the road right of ways themselves.

Provided surface water and groundwater balance to the watercourses are maintained through stormwater management and infiltration measures on the Subject Lands, no impacts on fish habitat in RB1 or RA1 are anticipated to occur.

#### **7.6.4 Additional Fish Habitat Mitigation**

As shown in **Figure 7 (Appendix A)** development will border the open space containing RB1. Adjacent land uses are anticipated to include residential lots and a local road network. Adjacent residential developments can potentially impact fish habitat in the HDF due to direct stormwater runoff from the development and loss of riparian function. However, as previously noted, seasonal fish use of the portion of RB1 on the Subject Lands is not considered to be of value from an overall productive capacity standpoint since any fish entering the feature on a seasonal basis from the upstream wetlands are anticipated to perish.

Although protection of the seasonal fish habitat within RB1 should not be considered a necessary requirement of the development, protecting the groundwater recharge function of the HDF is considered to be important. Protection of this function of the HDF will ultimately protect the seasonal fish habitat by locating the feature within an open space block (**Figure 7, Appendix A**), all of which will be seeded with a native meadow seed mix.

As discussed in Cole 2018, some surface water on the Subject Lands (i.e., within the development blocks) will infiltrate through residential lawns and into the shallow groundwater flowing towards RA1 or will flow directly as overland runoff from residential rear yards into the adjacent watercourse. Based on effluent discharge of 1000 L/lot/day and assuming implementation of tertiary treatment systems across the site (nitrate loading of 20 g/lot/day), the nitrate loading at the site boundary is approximately 2.17 mg/L, which is less than the CCME guideline for NO<sub>3</sub>-as-N of 3 mg/L, which has also been adopted by CVC. As the on-site wetland features are essentially at the site boundary, and groundwater seepage locations appear to be slightly beyond the site boundary, the CCME/CVC guideline is met at all downgradient natural features that may receive even minimal groundwater discharge (Cole, 2018a).

Overall, the open space block for RB1, and the stormwater (infiltration) management measures are anticipated to be effective to provide sufficient buffering function to prevent negative impacts

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on the headwater drainage features due to adjacent land uses and ensure the groundwater recharge function is maintained.

Table 14: Predicted Effects, Mitigation, Enhancement and Net Effects

NATURAL HERITAGE FEATURES AND ASSOCIATED FUNCTIONS	SIGNIFICANT CHARACTERISTICS AND SENSITIVITY	IMPACTOR	PREDICTED EFFECTS	AVOIDANCE, MITIGATION AND/OR RESTORATION	NET EFFECTS	MONITORING AND MANAGEMENT
<b>PPS NATURAL HERITAGE FEATURES</b>						
1. Significant Wetlands	<ul style="list-style-type: none"><li>Within Ontario, Significant Wetlands are identified by the MNRF or by their designates. Other evaluated or unevaluated wetlands may be identified for conservation by the municipality or the conservation authority</li><li>The northern wetland is a diverse community of at least two organic soil vegetation types (MAS3-1 and SWT3-2), containing a CVC rare plant and confirmed JESA habitat. These wetlands are unevaluated, however, they would likely meet the biological criteria for designation as Significant (i.e., given confirmed JESA)</li><li>On adjacent lands to the northwest there are two wetlands (SWM1-1, MAM3-1). Mr. Mark Heaton (MNRF) has communicated that that groundwater seeps within SWM1-1, support a Brook Trout stream that begins before Bush Street. Both of these wetlands are within the Jefferson Salamander (END) regulated habitat area. Based on our understanding of vegetation communities, flora and fauna present, these two adjacent wetlands would likely meet the provincial biological criteria for designation as Significant</li></ul>	<ul style="list-style-type: none"><li>None - Existing surface water and groundwater contributions to MAS3-1 and SWT3-2 will be maintained post-development</li><li>None - Existing surface water and groundwater contributions to SWM1- and MAM3-1 will be maintained post-development</li></ul>	None	None	None	Post-construction groundwater monitoring is recommended to confirm existing hydrologic conditions remain post-development
2. Significant Coastal Wetlands	<ul style="list-style-type: none"><li>Not present/not applicable</li></ul>	N/A	N/A	N/A	N/A	N/A
3. Significant Woodlands	<ul style="list-style-type: none"><li>Significant Woodlands within the Town of Caledon are evaluated using the criteria within the Region of Peel - Town of Caledon Significant Woodland and Wildlife Habitat Study Report (2009)</li></ul>	<ul style="list-style-type: none"><li>Potential construction equipment/storage intrusion into Significant Woodlands</li><li>Potential impacts with woodlands associated with pedestrian access</li></ul>	<ul style="list-style-type: none"><li>Potential for increased invasive plant populations and random walking trails within Significant Woodlands associated with human use/disturbance</li></ul>	<ul style="list-style-type: none"><li>Install construction barriers at edge of woodland buffer to prevent soil compaction in setback</li></ul>	<ul style="list-style-type: none"><li>Increased human activity may have minor effects on Significant Woodlands</li></ul>	<ul style="list-style-type: none"><li>Monitor areas where woodland buffer plantings installed for 3 yrs to 5 yrs, and if required, initiate management of aggressive invasive species if evaluated to</li></ul>

NATURAL HERITAGE FEATURES AND ASSOCIATED FUNCTIONS	SIGNIFICANT CHARACTERISTICS AND SENSITIVITY	IMPACTOR	PREDICTED EFFECTS	AVOIDANCE, MITIGATION AND/OR RESTORATION	NET EFFECTS	MONITORING AND MANAGEMENT
	<ul style="list-style-type: none"><li>The Region of Peel Official Plan (Table 1) sets out criteria for and thresholds for identifying Significant Woodlands.</li><li>Woodlands in the northeast corner of the Subject Lands meet the Town and Region's definitions of a Significant Woodland</li><li>The southern woodlot on the Subject Lands meet the Town and Region's definitions of a Significant Woodland</li></ul>	<ul style="list-style-type: none"><li>Existing farm access road from Mississauga Road through cultural meadow to new park to be refined into pedestrian pathway; without mitigation pedestrians could leave pathway and enter Significant Woodlands</li></ul>		<ul style="list-style-type: none"><li>Development limits will be 10 m back from the dripline of the Significant Woodland feature</li><li>Install permanent fences without gates along rear lots adjacent to woodland</li><li>Pedestrian pathway to be non-lit. Either side of the pathway to be lined with cedar rail fence and thorny native shrub plantings to discourage users from going off trail. Signage is recommended to encourage users to stay on trail</li><li>Interpretative signage in the future park is recommended to address the sensitivity of woodland habitat and restoration areas, and actions park users can take to demonstrate environmental stewardship</li></ul>	<ul style="list-style-type: none"><li>Increased risk of establishment of invasive plant populations in disturbed soils adjacent to woodlands that can be partially mitigated through monitoring and control efforts</li></ul>	<p>threaten the establishment of planted native vegetation</p> <ul style="list-style-type: none"><li>Lands adjacent to the pedestrian trail will be monitored (1 year) to determine whether barriers (such as signage, woodchip trail and cedar wood fences) into the adjacent woodland have kept the public on the trail and deterred users from creating unwanted pathways into the adjacent natural features</li></ul>
4. Significant Valleylands	<ul style="list-style-type: none"><li>Not present/not applicable</li></ul>	N/A	N/A	N/A	N/A	N/A
5. Significant Wildlife Habitat	<ul style="list-style-type: none"><li>Refer to Appendix B for Peel-Caledon SWH and Ecoregion 6E SWH tables</li><li>Candidate significant bat maternity colony habitat</li><li>Woodlands on the Subject Lands</li></ul>	<ul style="list-style-type: none"><li>No direct impacts anticipated on either feature as they are located outside of the limits of development</li><li>Construction noise and anthropogenic noise following occupation of adjacent residential units</li></ul>	<ul style="list-style-type: none"><li>Disturbance of bats roosting within the woodland communities may occur due to construction noise</li></ul>	<ul style="list-style-type: none"><li>The FOM and FOD units providing this habitat are a minimum of 50 m away from the proposed development limit, which would be expected to mitigate any potential disturbance effects. Further, construction activities are anticipated to occur during the day, and would therefore not interfere with bat active periods</li></ul>	<ul style="list-style-type: none"><li>None</li></ul>	<ul style="list-style-type: none"><li>None</li></ul>
	<ul style="list-style-type: none"><li>Habitat for Western Chorus Frog (S3; vulnerable)</li><li>MAS3-1(Cattail organic shallow marsh) on the Subject Lands</li></ul>	<ul style="list-style-type: none"><li>No direct impacts anticipated on either feature as they are located outside of the limits of development</li><li>No change in surface water or groundwater contributions to feature post-development</li></ul>	<ul style="list-style-type: none"><li>Given there is more than 100 m separation between the MAS3-1 unit and the proposed limit of development, no disturbance impacts on this feature are anticipated</li></ul>	<ul style="list-style-type: none"><li>None</li></ul>	<ul style="list-style-type: none"><li>None</li></ul>	<ul style="list-style-type: none"><li>Post-construction amphibian breeding and groundwater monitoring is recommended to confirm existing conditions remain post-development</li></ul>



NATURAL HERITAGE FEATURES AND ASSOCIATED FUNCTIONS	SIGNIFICANT CHARACTERISTICS AND SENSITIVITY	IMPACTOR	PREDICTED EFFECTS	AVOIDANCE, MITIGATION AND/OR RESTORATION	NET EFFECTS	MONITORING AND MANAGEMENT
6. Fish Habitat	<ul style="list-style-type: none"> <li>The Subject Lands are located within the West Credit River subwatershed of the Credit River watershed</li> <li>Seasonal direct fish habitat is present in the headwater drainage feature (RB1) on the Subjects Lands. The feature provides contributing functions (flow conveyance, organic inputs, groundwater discharge, groundwater recharge, etc.)</li> <li>RA1, located north of the Subject Lands provides coldwater fish habitat (Brook Trout)</li> </ul>	<ul style="list-style-type: none"> <li>Earthworks (e.g., grading, filling) and vegetation removal on the Subject Lands during construction of the development could potentially result in increased quantity and decreased quality (due to increased suspended solids) of surface water runoff from the Subject Lands during storm events</li> <li>During construction, spills can occur from equipment and vehicles that could enter into the headwater drainage features, impairing water quality and aquatic and riparian vegetation</li> <li>Potential changes in headwater drainage feature water balance resulting from decreased surface water and groundwater infiltration quantities due to impervious surfaces and direction of stormwater to storm sewers</li> </ul>	<ul style="list-style-type: none"> <li>Since both headwater drainage features will remain part of the natural landscape with in the Natural Heritage System no direct effects are predicted</li> <li>Indirect effects on fish habitat could occur due to potential for erosion and sedimentation from the disturbed work area during construction. More specifically, during storm events, stormwater runoff from the construction area resulting in increased amount of stormwater to the watercourse and decreased water quality, primarily due to suspended sediments, entering the watercourse</li> <li>Increased stormwater flows could result in erosion of the bed and banks of the watercourse. Increased erosion from the Subject Lands or within the creek itself could result in negative effects on fish habitat (e.g., infilling of interstitial spaces in gravelly riffles) and mortality, health effects or altered behaviour of aquatic biota (benthic invertebrates and fish)</li> <li>During construction, water quality and vegetation could be negatively affected due to spills. This could result in negative impacts on fish and other aquatic biota (e.g., health effects or mortality)</li> <li>Potential for altered groundwater baseflow and surface water runoff to the watercourse due to increased imperviousness within the proposed development, which could negatively affect quality of the aquatic habitat in the receiving watercourse</li> <li>Impaired surface water runoff from properties backing onto the Subject Lands could result in negative impacts on fish habitat (e.g., sedimentation) or fish (e.g., health concerns or mortality)</li> </ul>	<ul style="list-style-type: none"> <li>During construction, erosion and sedimentation control measures, including stormwater management will be implemented to minimize the potential for negative impacts due to erosion and sedimentation and stormwater runoff during construction</li> <li>The erosion and sedimentation control measures will be installed prior to construction, or prior to the element of work, which may cause the effect</li> <li>During construction, the contractor will have spill kits on site, manage spills accordingly, and report spills to the appropriate MOECC Spills Action Centre, if applicable</li> <li>Mitigation measures to maintain the pre- and post-construction surface and groundwater balance in the Tributary. Mitigation anticipated to include variety of LID measures and underground stormwater storage</li> <li>30 m setback from the bankfull channel and 15 m setback from the wetland boundary will provide protection of the headwater drainage feature contributing functions. This is provided as RB1 is located in an open space block. The entire open space block will be seeded with native meadow species. Signage informing visitors of the sensitivity of this open space area is recommended</li> </ul>	<ul style="list-style-type: none"> <li>Potential for negative impacts due to erosion and sedimentation, stormwater runoff and accidental spills during construction minimized</li> <li>No long-term changes in habitat provided surface water and groundwater balance in the headwater drainage features can be maintained</li> </ul>	<ul style="list-style-type: none"> <li>A Construction Monitoring Program will be developed and adhered to during construction to ensure that the ESC measures are installed correctly and maintained in good working order throughout construction</li> <li>Monitoring of adherence to and effectiveness of the spill prevention and response measures is recommended throughout the construction period</li> <li>As part of healthy vegetative growth monitoring of newly planted species and seed mixes, ensure establishment of meadow vegetation in open space block for RB1</li> </ul>

NATURAL HERITAGE FEATURES AND ASSOCIATED FUNCTIONS	SIGNIFICANT CHARACTERISTICS AND SENSITIVITY	IMPACTOR	PREDICTED EFFECTS	AVOIDANCE, MITIGATION AND/OR RESTORATION	NET EFFECTS	MONITORING AND MANAGEMENT
			depending on the nature of the runoff			
7. Habitat of Endangered and Threatened Species	<u>Bobolink &amp; Eastern Meadowlark</u> <ul style="list-style-type: none"><li>Habitat is present within cultural meadow (CUM1-1) west of the existing residential property adjacent to Subject Lands (Figure 6)</li></ul>	<ul style="list-style-type: none"><li>Removal of 3.15 ha of Bobolink and Eastern Meadowlark nesting habitat via removal of CUM1-1 meadow habitat</li></ul>	<ul style="list-style-type: none"><li>Temporary loss of Bobolink and Eastern Meadowlark breeding habitat within Ecoregion 6E (&lt;12 months)</li></ul>	<ul style="list-style-type: none"><li>Bobolink and Eastern Meadowlark habitat is to be compensated at an offsite location within the same Ecoregion (6E), the proposed development activity will be registered under Section 23.2 of Ontario Regulation 242/08, prior to the removal of habitat on site. This will involve registration of the project with MNRF, securement of compensation lands, and the preparation of a habitat management plan</li></ul>	<ul style="list-style-type: none"><li>No net loss of Bobolink and Eastern Meadowlark breeding habitat within Ecoregion 6E</li></ul>	<ul style="list-style-type: none"><li>Monitoring and management requirements of offsite compensation habitat will follow O. Reg. 242/08, Section 23.2</li></ul>
	<u>Butternut</u> <ul style="list-style-type: none"><li>Two Category 2 trees identified within the north side of the Subject Lands</li></ul>	<ul style="list-style-type: none"><li>No direct impacts anticipated, both Butternut trees are greater than 50 m from developmental limits</li><li>No direct impacts anticipated for Tree #2 closest to the proposed pedestrian trail. Pedestrian trail to be installed on existing farm lane access road</li></ul>	<ul style="list-style-type: none"><li>None</li></ul>	<ul style="list-style-type: none"><li>The 50 m setback and distance from the pedestrian trail will provide protection for Tree #1</li><li>Additional mitigation may include clearing of surface stones and boulders amongst which Tree #2 is rooted, to reduce moisture levels at the root ball and free up space for unimpeded growth</li></ul>	<ul style="list-style-type: none"><li>No net effects on Tree #1</li><li>With the setback and clearing of rocks at the tree trunk, Tree #2 should be able to continue growing as a healthy specimen</li></ul>	<ul style="list-style-type: none"><li>Not required</li></ul>
	Jefferson Salamander <ul style="list-style-type: none"><li>Confirmed breeding pond (MAS3-1/SWT2-2)</li><li>MNRF set regulatory limit, via site walk</li></ul>	<ul style="list-style-type: none"><li>No direct impact to confirmed JESA breeding habitat, as regulated habitat is outside of the development limits</li><li>Existing surface water and groundwater contributions to MAS3-1 will be maintained post-development</li></ul>	<ul style="list-style-type: none"><li>None</li></ul>	<ul style="list-style-type: none"><li>None</li></ul>	<ul style="list-style-type: none"><li>None</li></ul>	<ul style="list-style-type: none"><li>Post-construction groundwater monitoring is recommended to confirm existing hydrologic conditions remain post-development</li></ul>
	Northern Myotis <ul style="list-style-type: none"><li>Candidate habitat is present within the FOM, FOD, and SWT wooded</li></ul>	<ul style="list-style-type: none"><li>No direct impact to candidate SAR bat habitat, as habitat is within Significant Woodlands outside of the developmental limits</li></ul>	<ul style="list-style-type: none"><li>None</li></ul>	<ul style="list-style-type: none"><li>None</li></ul>	<ul style="list-style-type: none"><li>None</li></ul>	<ul style="list-style-type: none"><li>None</li></ul>

NATURAL HERITAGE FEATURES AND ASSOCIATED FUNCTIONS	SIGNIFICANT CHARACTERISTICS AND SENSITIVITY	IMPACTOR	PREDICTED EFFECTS	AVOIDANCE, MITIGATION AND/OR RESTORATION	NET EFFECTS	MONITORING AND MANAGEMENT
	communities located at the north end of the property Eastern Small-footed Myotis <ul style="list-style-type: none"><li>Candidate habitat is present within the FOM, FOD, and SWT wooded communities located at the north end of the property</li></ul> Little Brown Myotis <ul style="list-style-type: none"><li>Candidate habitat is present within the FOM, FOD, and SWT wooded communities located at the north end of the property</li></ul> Tri-Coloured Bat <ul style="list-style-type: none"><li>Candidate habitat is present within the FOM, FOD, and SWT wooded communities located at the north end of the property</li></ul>					
	Barn Swallow <ul style="list-style-type: none"><li>Observed foraging, no breeding habitat on Subject Lands</li></ul>	<ul style="list-style-type: none"><li>None</li></ul>	<ul style="list-style-type: none"><li>Adjacent lands and river valley provide ample foraging habitat</li></ul>	<ul style="list-style-type: none"><li>N/A</li></ul>	<ul style="list-style-type: none"><li>N/A</li></ul>	<ul style="list-style-type: none"><li>N/A</li></ul>
	Chimney Swift <ul style="list-style-type: none"><li>Observed foraging, no breeding habitat on Subject Lands</li></ul>	<ul style="list-style-type: none"><li>None</li></ul>	<ul style="list-style-type: none"><li>Adjacent lands and river valley provide ample foraging habitat</li></ul>	<ul style="list-style-type: none"><li>N/A</li></ul>	<ul style="list-style-type: none"><li>N/A</li></ul>	<ul style="list-style-type: none"><li>N/A</li></ul>
8. Significant Areas of Natural and Scientific Interest	<ul style="list-style-type: none"><li>Not present/not applicable</li></ul>	N/A	N/A	N/A	N/A	N/A
OTHER PROVINCIAL PLANS						
1. Greenbelt Plan	<ul style="list-style-type: none"><li>The Subject Lands are located outside of the Greenbelt Area</li></ul>	N/A	N/A	N/A	N/A	N/A
2. Oak Ridges Moraine	<ul style="list-style-type: none"><li>The Subject Lands are located outside of the Oak Ridges Moraine area</li></ul>	N/A	N/A	N/A	N/A	N/A

NATURAL HERITAGE FEATURES AND ASSOCIATED FUNCTIONS	SIGNIFICANT CHARACTERISTICS AND SENSITIVITY	IMPACTOR	PREDICTED EFFECTS	AVOIDANCE, MITIGATION AND/OR RESTORATION	NET EFFECTS	MONITORING AND MANAGEMENT
3. Niagara Escarpment Plan	<ul style="list-style-type: none"><li>The Subject Lands are located within the Niagara Escarpment Plan Area, and include Escarpment Natural Area, Escarpment Protected Area and Escarpment Rural area (refer to Figure 2)</li></ul>	<ul style="list-style-type: none"><li>The majority of development is planned in Escarpment Rural Area.</li><li>1.24 ha of development is planned for the Escarpment Protected Area located southwest of the woodland</li></ul>	<ul style="list-style-type: none"><li>Development in the area designated as Escarpment Protected Area will only occur on lands used for agricultural use</li></ul>	<ul style="list-style-type: none"><li>Development will follow Section 2.4 of the NEP where new lots must: a) maintain and enhance the existing community character and/or open landscape character of the Escarpment; and b) protect and enhance existing natural heritage and hydrologic features and functions</li></ul>	<ul style="list-style-type: none"><li>None</li></ul>	<ul style="list-style-type: none"><li>None</li></ul>
OTHER FEATURES AND FUNCTIONS						
1. Regionally and Locally Important Species	<ul style="list-style-type: none"><li>The following locally rare or uncommon species (Peel, CVC) were observed on the Subject Lands:<ul style="list-style-type: none"><li><i>Interrupted Fern (Osmunda claytoniana)</i> – Occasional in unit SWM1-1</li><li><i>White spruce (Picea glauca)</i> – planted;</li><li><i>Giant blue cohosh (Caulophyllum giganteum)</i> an S4 species – occasional in unit FOD5-11;</li><li><i>Water smartweed (Polygonum amphibium)</i> – occasional in unit MAS3-1;</li><li><i>Autumn willow (Salix serissima)</i> – dominant in unit SWT3-2;</li><li><i>Beaked sedge (Carex utriculata)</i> – occasional in unit MAS3-1; and</li><li>Western Chorus Frog (<i>Pseudacris triseriata</i>) – observed in unit MAS3-1</li></ul></li></ul>	<ul style="list-style-type: none"><li>Units where rare or uncommon species were observed are all outside of the development limits</li><li>Pre-development groundwater infiltration volumes maintained post-development. No hydrologic changes to vegetation communities that support rare species</li></ul>	<ul style="list-style-type: none"><li>None</li></ul>	<ul style="list-style-type: none"><li>None</li></ul>	<ul style="list-style-type: none"><li>None</li></ul>	<ul style="list-style-type: none"><li>None</li></ul>

## 8.0 ENVIRONMENTAL MONITORING

Environmental Monitoring was identified, to the extent required, to assess the success (efficacy) of mitigation measures. It includes post-development monitoring of amphibian breeding use in the MAS3-1 community, amphibian road mortality surveys along Shaws Creek Road, post-development groundwater levels, and breeding bird surveys on grassland bird habitat compensation land.

Construction (1 year) and post-development (3 years) groundwater monitoring is recommended to confirm that pre-development site and wetland groundwater levels are maintained post-development. One post-development amphibian breeding survey is recommended at MAS3-1/SWT3-2 (Station No. 1). Road mortality surveys along Shaws Creek Road will be conducted for 1 year post-development.

Post-development of the park, lands adjacent to the pedestrian trail from Mississauga Road to the development will be monitored (1 year) to determine whether barriers (such as signage, woodchip trail and cedar wood fences) into the adjacent woodland have kept the public on the trail and deterred users from creating unwanted pathways into the adjacent natural features.

Grassland bird compensation habitat will have breeding birds surveys will be conducted for 5 years, as per O. Reg 242/08, Section 23.2 requirements.

## 9.0 CONCLUSION AND RECOMMENDATIONS

This Scoped EIS Report addresses the natural heritage features and associated functions currently found on, and adjacent to, the Subject Lands, and assesses the potential direct and indirect impacts of the proposed development of these lands from agricultural use to residential lots. This scoped EIS also makes recommendations to minimize potential effects on the natural environment.

With the implementation of proposed mitigation measures, there will be no negative impacts on:

- The headwater drainage features on or adjacent to Subject Lands. The proposed buffers, when combined with proposed storm water management measures to maintain pre-development groundwater infiltration volumes, is anticipated to be effective to provide sufficient buffering function to prevent negative impacts;
- Two wetland units located at the north side of the Subject Lands (MAS3-1 and SWT3-2);
- Two wetland units (SWM1-1 and MAM3-1) on adjacent lands; and,
- Significant Woodlands.

Based upon the predicted effects, Savanta identified the following mitigation measures, to be considered more fully addressed in detailed design.

- Removal of the CUM1-1 community (PC5) at the north end of the Subject Lands, following ESA authorization and outside of the grassland bird breeding season;
- 5 years of grassland breeding bird surveys and habitat management within MNRF authorized grassland compensation habitat within Eco Region 6E;
- Post-construction monitoring for the Cattail marsh at the north end of the Subject Lands, to monitor amphibian breeding within the wetland and amphibian mortality surveys along Shaw's Creek Road;
- During construction and post-development groundwater (site and feature based) monitoring;
- Monitoring of efficacy of the barriers (shrub plantings and cedar rail fence) of the pedestrian trail to determine whether the public are traversing into the natural areas (i.e., Significant Woodland) and creating unauthorized trails from the pedestrian trail;
- Vegetated buffer planting monitoring for 3 to 5 years to manage for aggressive invasive species that threaten the establishment of planted native vegetation;
- Pre-construction erection of erosion and sedimentation control fencing along the 10 m setback from greater thereof the Top of Bank or woodland dripline;
- 3:1 compensation for removal of healthy trees 150 mm or greater within hedgerows, as per Baker Turner Inc.'s 2018 Tree Preservation Plan. Tree planting health to be monitored during nursery warranty period; and,
- It is recommended that hedgerow tree removals occur prior to, or after, the migratory breeding bird season (May 1 to July 31) to avoid potential additional complexities regarding federal nest buffers and permitting.

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## **APPENDICES**

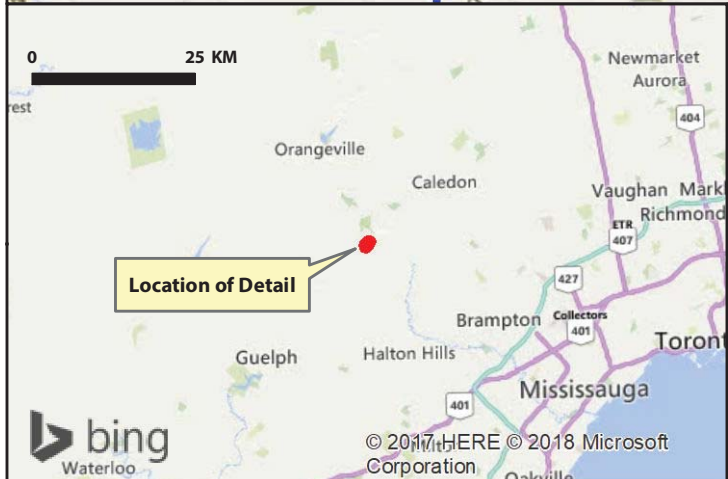
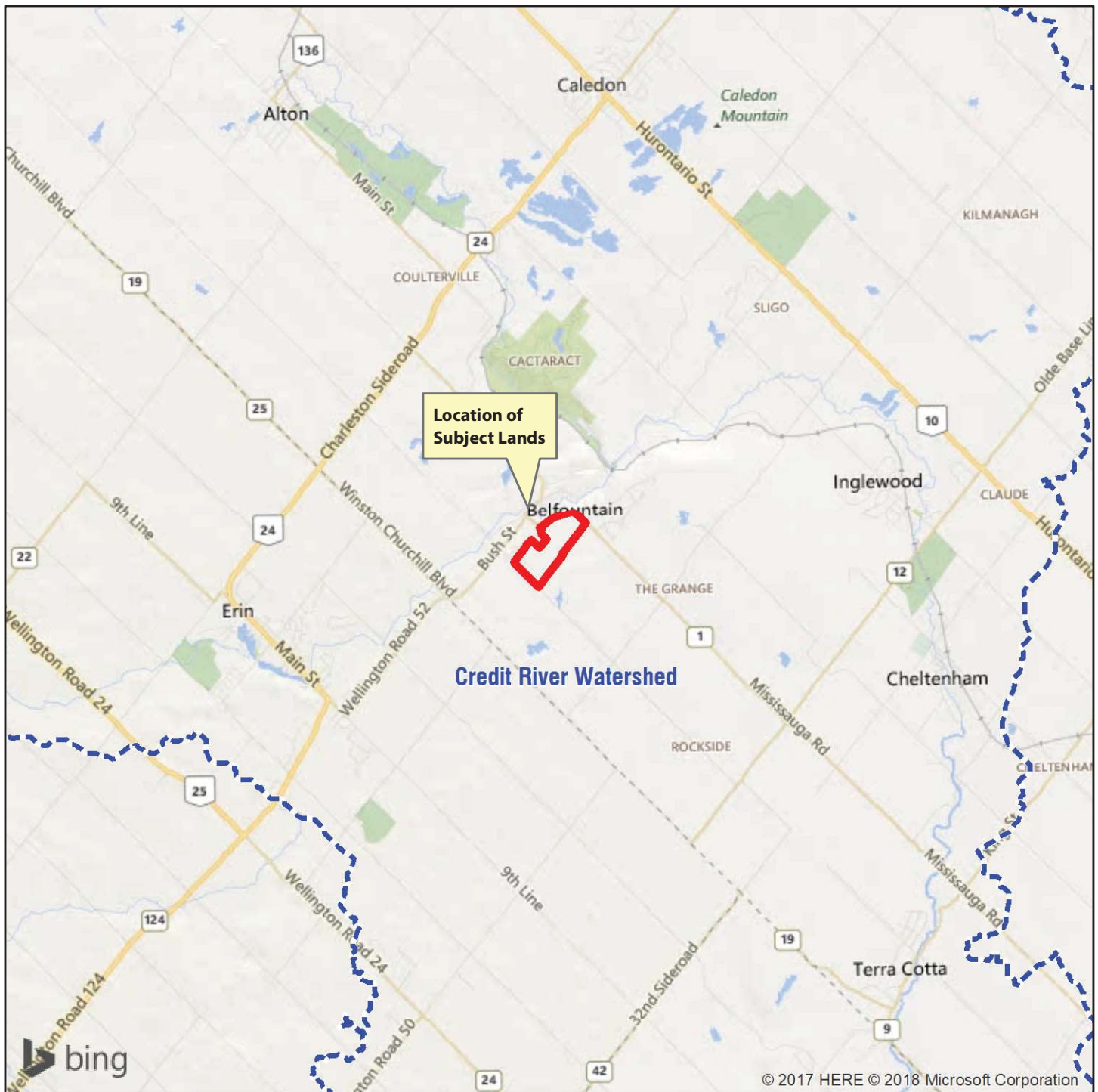




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## Appendix A – Figures





The Manors of Belfountain Corporation Lands EIS

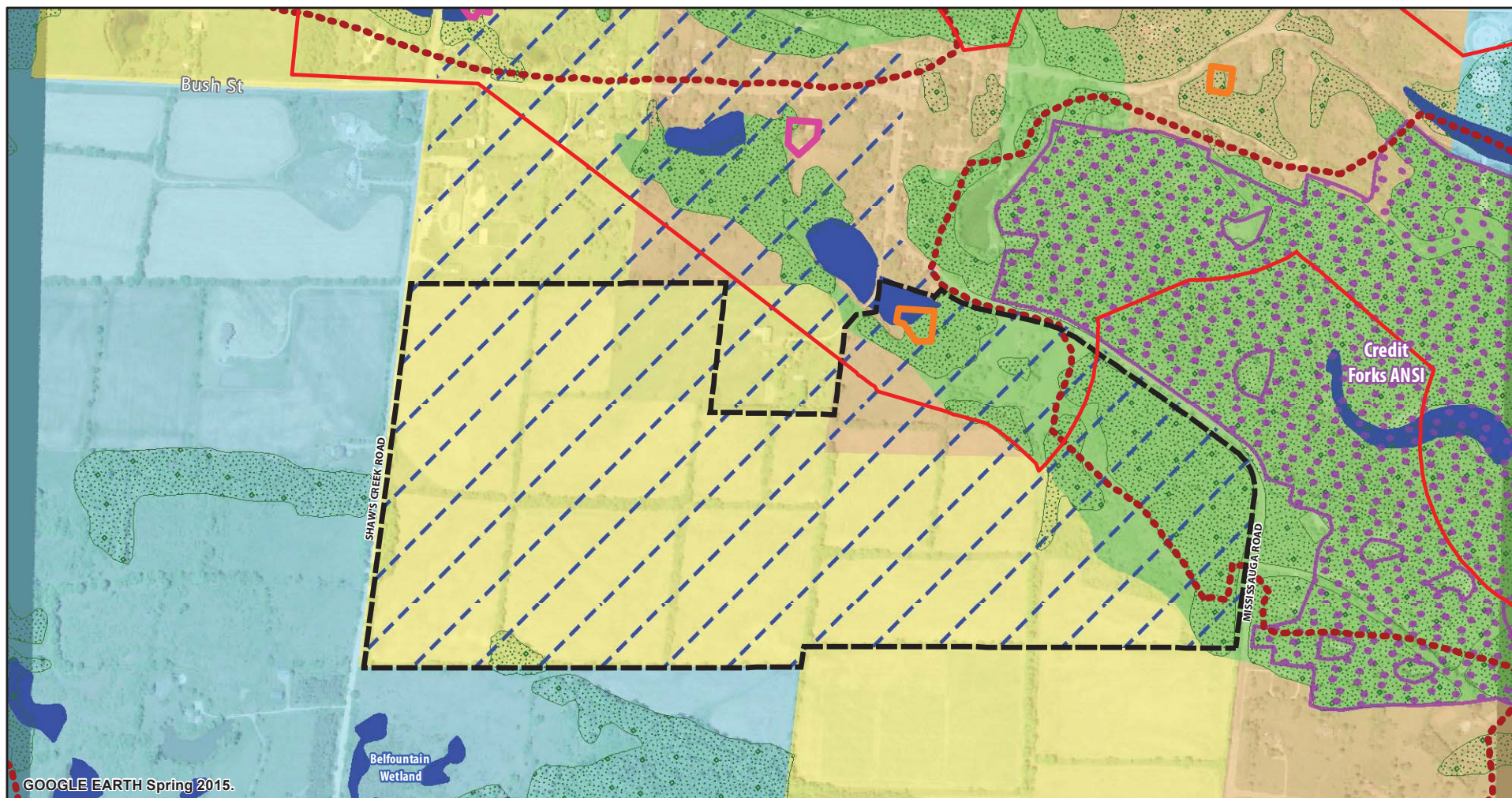
## Figure 1 Location of Subject Lands

0 2 KM



SAVANTA





The Manors of Belfountain Corporation Lands EIS

Figure 2  
Designated Natural Features

- Subject Property
- Area of Natural and Scientific Interest (MNRF LIO)
- Environmentally Significant Area (MNRF LIO)
- Jefferson Salamander Regulated Habitat
- Greenbelt Protected Countryside
- Wetland not evaluated per OWES (MNRF LIO)
- Woodland (MNRF LIO)
- Settlement Area (Town of Caledon OP, Schedule A)

#### Jefferson Salamander Habitat

- JESA Confirmed habitat
- JESA Potential habitat

#### Niagara Escarpment Plan Designations

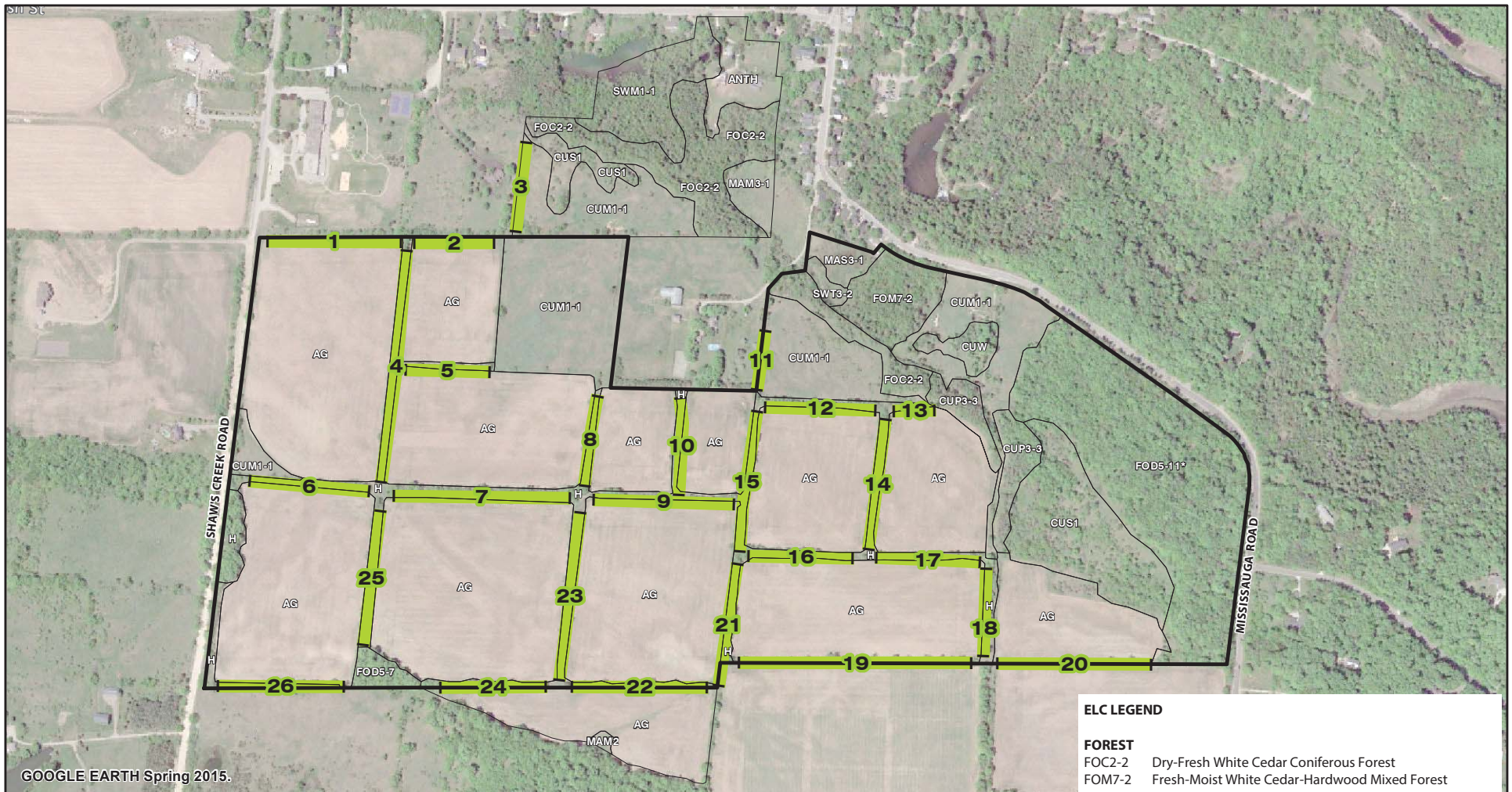
- Escarpment Natural Area
- Escarpment Protection Area
- Escarpment Recreation Area
- Escarpment Rural Area



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#### ELC LEGEND

##### FOREST

- FOC2-2 Dry-Fresh White Cedar Coniferous Forest
- FOM7-2 Fresh-Moist White Cedar-Hardwood Mixed Forest
- FOD5-7 Dry-Fresh Sugar Maple-Black Cherry Deciduous Forest
- FOD5-11\* Dry-Fresh Sugar Maple-Hardwood Deciduous Forest

##### SWAMP

- SWM1-1 White Cedar-Hardwood Mineral Mixed Swamp
- SWT3-2 Willow Organic Thicket Swamp

##### MARSH

- MAM3-1 Blue-joint Organic Meadow Marsh
- MAS3-1 Cattail Organic Shallow Marsh

##### CULTURAL

- CUS1 Cultural Savanna
- CUW Cultural Woodland
- CUP3-3 Scots Pine Coniferous Plantation
- CUM1-1 Dry-Moist Old Field Meadow

- AG Agricultural
- ANTH Anthropogenic
- H Hedgerow

\*unit not listed in Southern Ontario ELC Guide

The Manors of Belfountain Corporation Lands EIS

Figure 3  
Ecological Land Classification

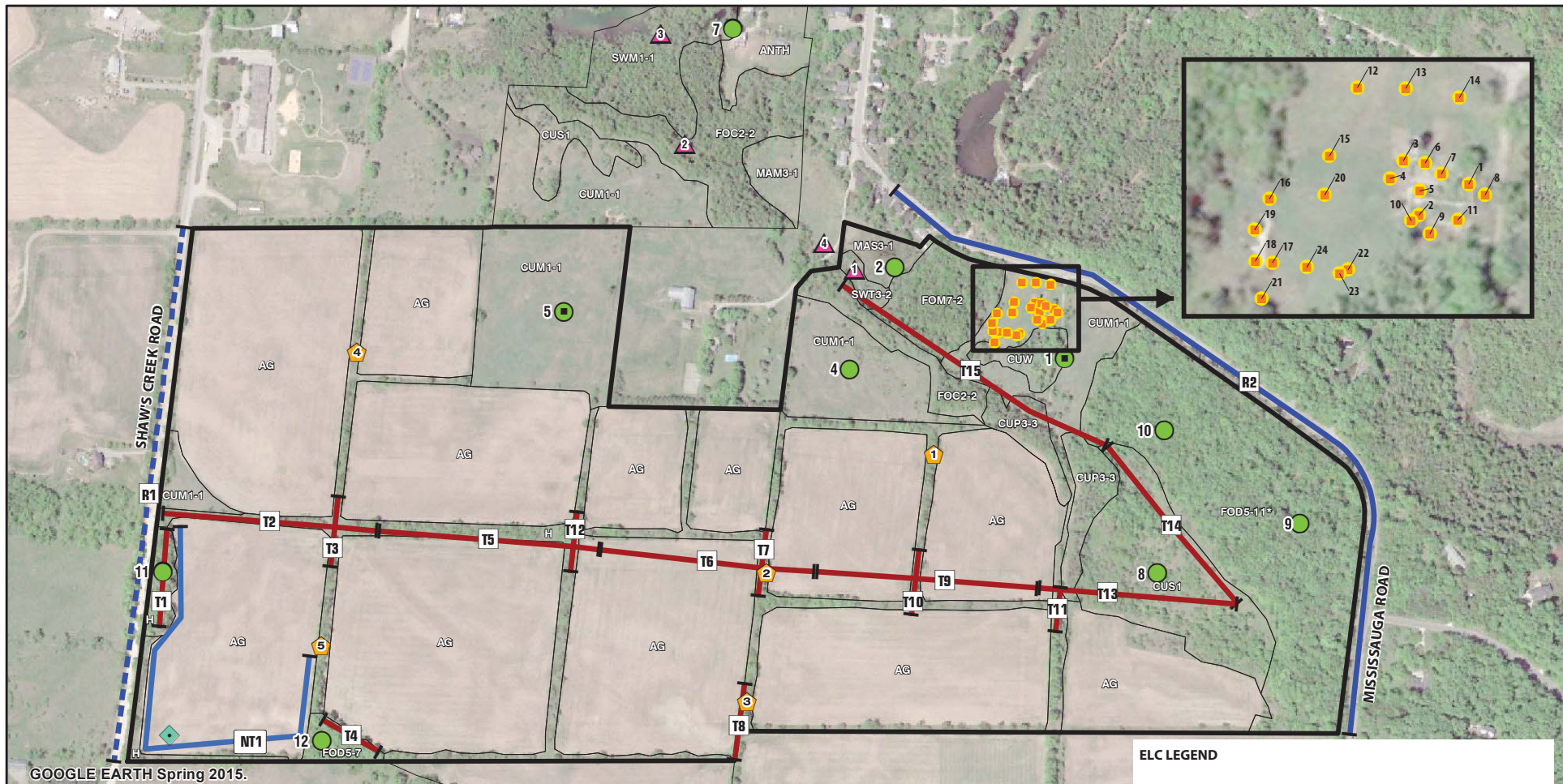
- Subject Property
- Ecological Land Classification
- Hedgerow Segments



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#### ELC LEGEND

##### FOREST

- FOC2-2 Dry-Fresh White Cedar Coniferous Forest
- FOM7-2 Fresh-Moist White Cedar-Hardwood Mixed Forest
- FOD5-7 Dry-Fresh Sugar Maple-Black Cherry Deciduous Forest
- FOD5-11\* Dry-Fresh Sugar Maple-Hardwood Deciduous Forest

##### SWAMP

- SWM1-1 White Cedar-Hardwood Mineral Mixed Swamp
- SWT3-2 Willow Organic Thicket Swamp

##### MARSH

- MAM3-1 Blue-joint Organic Meadow Marsh
- MAS3-1 Cattail Organic Shallow Marsh

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- CUW Cultural Woodland
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- CUM1-1 Dry-Moist Old Field Meadow

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- ANTH Anthropogenic
- H Hedgerow

\*unit not listed in Southern Ontario ELC Guide

The Manors of Belfountain Corporation Lands EIS

Figure 4  
Wildlife Survey Locations



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Subject Property

Ecological Land Classification

Amphibian Survey Station (2014)

Potential Snake Hibernacula and Camera Trap Locations (2017)

Snake Coverboard Locations (2014)

Soil Sample Station

Turtle Nesting Transect (2017)

Winter Wildlife Transect (2016)

Road Mortality Transects

2014 2017

Breeding Bird Point Count Stations

2014, 2014, 2017



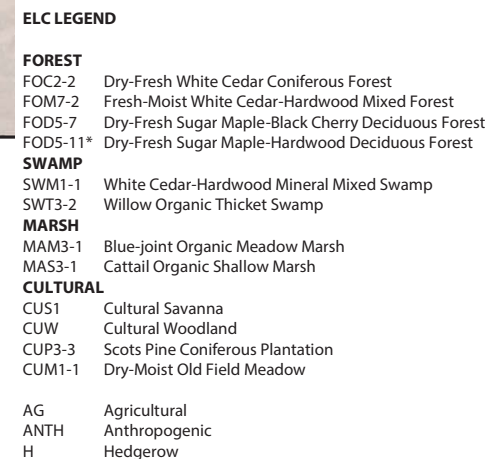
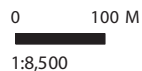







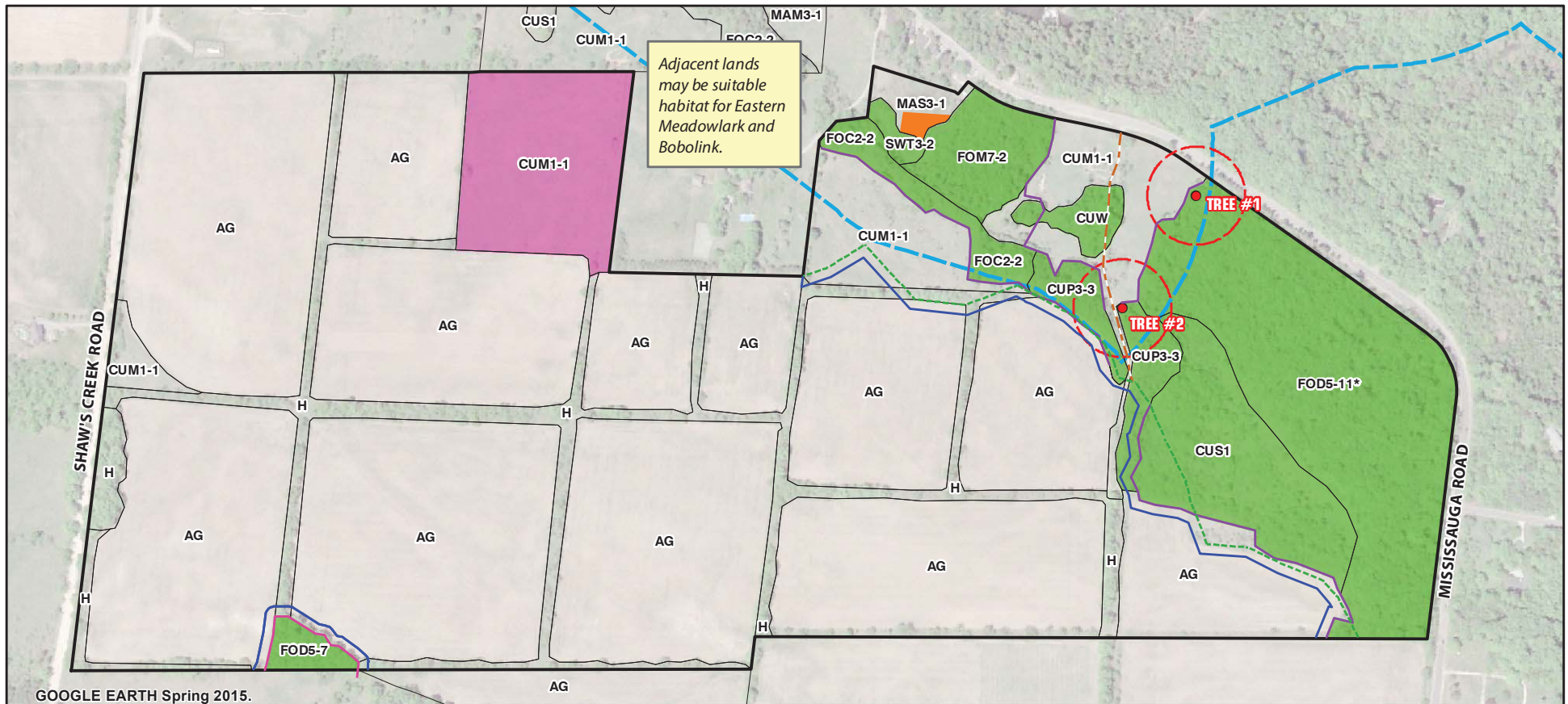
Figure 5  
Headwater Drainage Features  
and Aquatic Habitat



-  Subject Property  
 Ecological Land Classification
- HDF Management**
-  Conservation  
 Watercourse Off-site
-  Flow Direction Arrow

Path: S:\9091 - SAV 7988 Belfountain\gis\mxd\2017 12 06 report figures\Figure 5 HDF and Aquatic Habitat.mxd REVISED: January 8, 2018





The Manors of Belfountain Corporation Lands EIS

Figure 6  
Existing Natural Features and  
Development Constraints

- Subject Property
- Ecological Land Classification
- Location of Butternut Trees
- Butternut 50 m Buffer
- Jefferson Salamander Regulated Habitat
- Confirmed JESA Habitat
- Confirmed Bobolink and Eastern Meadowlark Habitat (3.1 ha)
- Significant Woodland
- Proposed Pedestrian Trail Along Existing Farm Road
- Natural Heritage Feature 10 m Buffer
- Staked Dripline (2014)
- Staked Dripline (2015)
- Staked Top of Bank (2014)

#### ELC LEGEND

##### FOREST

- FOC2-2 Dry-Fresh White Cedar Coniferous Forest
- FOM7-2 Fresh-Moist White Cedar-Hardwood Mixed Forest
- FOD5-7 Dry-Fresh Sugar Maple-Black Cherry Deciduous Forest
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- MAS3-1 Cattail Organic Shallow Marsh

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- CUS1 Cultural Savanna
- CUW Cultural Woodland
- CUP3-3 Scots Pine Coniferous Plantation
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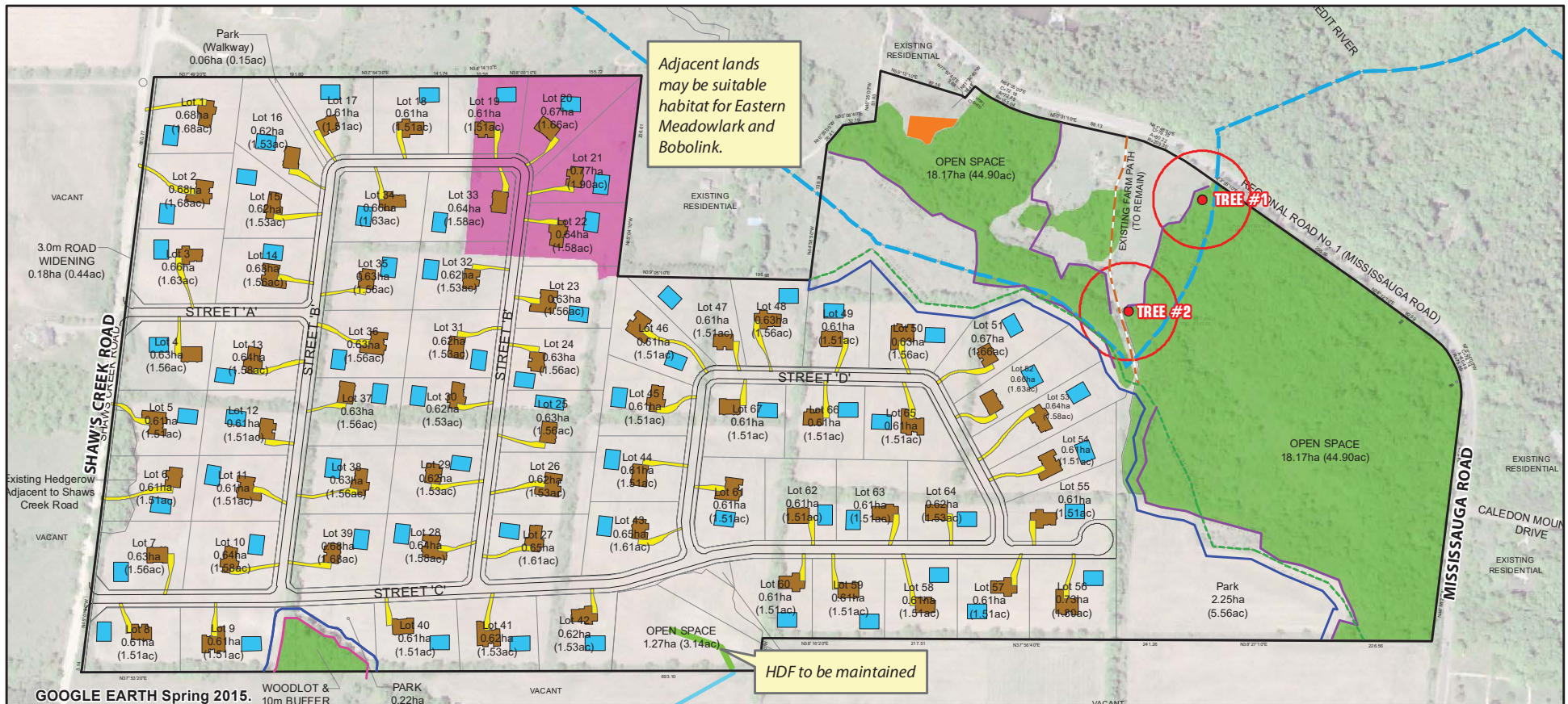
- AG Agricultural
- ANTH Anthropogenic
- H Hedgerow

\*unit not listed in Southern Ontario ELC Guide



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The Manors of Belfountain Corporation Lands EIS

## Figure 7 Development Plan and Environmental Constraints

Development Plan: Glen Schnarr & Associates  
File: Development Concept Plan (DCP\_Nov 8 17.dwg)  
Date: November 8, 2017

Development Envelopes: Baker Turner Inc.  
File: 1381-Concept (R)).dwg  
Date: January 8, 2018



0 100 M  
1:6,250



- Subject Property
- Location of Butternut Trees
- Butternut 50 m Buffer
- Jefferson Salamander Regulated Habitat
- Confirmed JESA Habitat
- Confirmed Bobolink and Eastern Meadowlark Habitat (3.1 ha)
- Significant Woodland
- Proposed Pedestrian Trail Along Existing Farm Road
- Natural Heritage Feature 10 m Buffer
- Staked Dripline (2014)
- Staked Dripline (2015)
- Staked Top of Bank (2014)

### Development Envelope

- Building Footprint
- Driveway
- Septic Footprint



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## Appendix B –Tables



Table 1 Natural Heritage Information Centre (NHIC) Data

Common Name	Scientific Name	S-Rank	G-Rank	COSSARO	COSEWIC	Last Observed	Extirpated
Hill's Pondweed	<i>Potamogeton hillii</i>	S2S3	G3	SC	SC	1983-08-24	N
Hart's-tongue Fern	<i>Asplenium scolopendrium</i>	S3	G4	SC	SC	1976	N
Eastern Ribbonsnake	<i>Thamnophis sauritus</i>	S4	G5	SC	SC	1971	N
Eastern Milksnake	<i>Lampropeltis Triangulum</i>	S4	G5	NAR	SC	1971	N
Bobolink	<i>Dolychonyx oryzivorus</i>	S4B	G5	THR	THR	2002-06-21	N



**Table 2: Field Studies and Natural Inventories (2014 - 2017)**

FIELD DATE	NATURE OF INVESTIGATION	SURVEYOR(S)
<b>2014</b>		
April 8	<ul style="list-style-type: none"> <li>First Round Headwater Drainage Assessment</li> </ul>	<ul style="list-style-type: none"> <li>- M. Randolph</li> <li>- R. Lee</li> </ul>
April 21	<ul style="list-style-type: none"> <li>First Round Snake Coverboard Survey</li> <li>First Round Road Mortality Survey</li> </ul>	<ul style="list-style-type: none"> <li>- R. Lee</li> <li>- C. Collinson</li> </ul>
April 22	<ul style="list-style-type: none"> <li>First Round Anuran Call Survey</li> </ul>	<ul style="list-style-type: none"> <li>- C. Collinson</li> <li>- R. Lee</li> </ul>
May 6	<ul style="list-style-type: none"> <li>Salamander Habitat Assessment</li> <li>Second Round Snake Coverboard Survey</li> </ul>	<ul style="list-style-type: none"> <li>- R. Lee</li> <li>- O. Park</li> </ul>
May 20	<ul style="list-style-type: none"> <li>Second Round Anuran Call Survey</li> <li>Third Round Snake Coverboard Survey</li> </ul>	<ul style="list-style-type: none"> <li>- C. Collinson</li> <li>- R. Lee</li> </ul>
May 27	<ul style="list-style-type: none"> <li>First Round Breeding Bird Survey</li> </ul>	<ul style="list-style-type: none"> <li>- P. Burke</li> </ul>
June 2	<ul style="list-style-type: none"> <li>Second Round Headwater Drainage Assessment</li> <li>Fourth Round Snake Coverboard Survey</li> </ul>	<ul style="list-style-type: none"> <li>- M. Randolph</li> <li>- C. Collinson</li> <li>- O. Park</li> </ul>
June 12	<ul style="list-style-type: none"> <li>Third Round Anuran Call Survey</li> </ul>	<ul style="list-style-type: none"> <li>- C. Collinson</li> <li>- R. Lee</li> </ul>
June 17	<ul style="list-style-type: none"> <li>Fifth Round Snake Coverboard Survey</li> <li>Second Round Road Mortality Survey</li> </ul>	<ul style="list-style-type: none"> <li>- R. Lee</li> </ul>
June 26	<ul style="list-style-type: none"> <li>Second Round Breeding Bird Survey</li> </ul>	<ul style="list-style-type: none"> <li>- P. Burke</li> </ul>
July 15	<ul style="list-style-type: none"> <li>Ecological Land Classification and Hedgerow Assessment</li> </ul>	<ul style="list-style-type: none"> <li>- C. Zoladeski</li> </ul>
July 24	<ul style="list-style-type: none"> <li>Ecological Land Classification and Hedgerow Assessment</li> <li>Butternut Inventory and Health Assessment</li> </ul>	<ul style="list-style-type: none"> <li>- C. Zoladeski</li> </ul>
Aug 11	<ul style="list-style-type: none"> <li>Third Round Headwater Drainage Assessment</li> </ul>	<ul style="list-style-type: none"> <li>- M. Randolph</li> <li>- O. Park</li> </ul>



**Table 2: Field Studies and Natural Inventories (2014 - 2017)**

FIELD DATE	NATURE OF INVESTIGATION	SURVEYOR(S)
September 4	<ul style="list-style-type: none"> <li>Agency Dripline Staking Exercise</li> </ul>	<ul style="list-style-type: none"> <li>H. Whitehouse</li> <li>Town of Belfountain</li> <li>Credit Valley Conservation Authority</li> <li>Ministry of Natural Resources and Forestry</li> <li>Niagara Escarpment Commission</li> <li>Glen Schnarr and Associates Inc.</li> </ul>
September 12	<ul style="list-style-type: none"> <li>Agency Dripline Staking Exercise</li> </ul>	<ul style="list-style-type: none"> <li>H. Whitehouse</li> <li>Town of Belfountain</li> <li>Credit Valley Conservation Authority</li> <li>Ministry of Natural Resources and Forestry</li> <li>Niagara Escarpment Commission</li> <li>Glen Schnarr and Associates Inc.</li> </ul>
October 1	<ul style="list-style-type: none"> <li>Wetland Staking</li> </ul>	<ul style="list-style-type: none"> <li>H. Whitehouse</li> <li>Ministry of Natural Resources and Forestry</li> <li>Credit Valley Conservation Authority</li> </ul>
<b>2015</b>		
July 11	<ul style="list-style-type: none"> <li>Site Reconnaissance</li> </ul>	<ul style="list-style-type: none"> <li>R. Hubbard</li> <li>S. Catton</li> <li>Ministry of Natural Resources and Forestry</li> </ul>
November 23	<ul style="list-style-type: none"> <li>Dripline Staking Exercise</li> </ul>	<ul style="list-style-type: none"> <li>C. Zoladeski</li> <li>Credit Valley Conservation Authority</li> </ul>
<b>2016</b>		
February 18	<ul style="list-style-type: none"> <li>Winter Wildlife Survey</li> </ul>	<ul style="list-style-type: none"> <li>C. Collinson</li> <li>J. Leslie</li> </ul>

**Table 2: Field Studies and Natural Inventories (2014 - 2017)**

FIELD DATE	NATURE OF INVESTIGATION	SURVEYOR(S)
<b>2017</b>		
May 29	<ul style="list-style-type: none"> <li>• Botanical Update</li> <li>• Amphibian Road Mortality Survey?</li> </ul>	- C. Zoladeski
June 23	<ul style="list-style-type: none"> <li>• First Round Breeding Bird Survey</li> </ul>	- S. Male
July 7	<ul style="list-style-type: none"> <li>• Second Round Breeding Bird Survey</li> </ul>	- S. Male
July 13	<ul style="list-style-type: none"> <li>• Turtle Nesting Habitat Survey</li> <li>• Snake Hibernacula Habitat Survey</li> </ul>	- R. Lee - E. Lee
September 7	<ul style="list-style-type: none"> <li>• Motion Camera Installation</li> <li>• Amphibian Road Mortality Survey</li> </ul>	- L. Williamson - M. Green
October 4	<ul style="list-style-type: none"> <li>• Motion Camera Retrieval</li> <li>• Amphibian Road Mortality Survey</li> </ul>	- L. Williamson - M. Green

**Table 3: Ecological Land Classification (ELC) Community Descriptions**

ELC TYPE		COMMUNITY DESCRIPTION
<b>CULTURAL (CU)</b>		
<b>Cultural Savannah (CUS)</b>		
CUS1 CULTURAL SAVANNAH	<ul style="list-style-type: none"> <li>This open association of trees, is composed of various assortments of deciduous and coniferous trees, for example, green and white ash, sugar maple, white cedar, Scots pine, black cherry, trembling aspen, or white elm. The herbaceous cover is essentially that of old field meadow.</li> </ul>	
<b>Cultural Woodland(CUW)</b>		
CUW1 CULTURAL WOODLAND	<ul style="list-style-type: none"> <li>This type is represented by one patch, as remnant trees associated with old habitation. The main species are sugar maple, Siberian elm and black walnut. The shrub layer is well developed with mostly native species, while the numerous herbs are represented by many exotics, such as awnless brome, garlic mustard, stinging nettle, orchard grass, alongside native enchanter's nightshade, yellow avens and common milkweed.</li> </ul>	
<b>Cultural Plantation (CUP)</b>		
CUP3-3 SCOTS PINE CONIFEROUS PLANTATION	<ul style="list-style-type: none"> <li>In this neglected plantation, a few hardwoods have managed to establish, for example white ash, sugar maple and black cherry. The herb layer is very poorly developed.</li> </ul>	
<b>Cultural Meadow (CUM)</b>		
CUM1-1 DRY-FRESH OLD FIELD MEADOW	<ul style="list-style-type: none"> <li>This diverse type is composed of numerous herbs of native and exotic origin, for example tall goldenrod, orchard grass, awnless brome, Canada thistle, New England aster, common milkweed, timothy, bull thistle, Kentucky bluegrass and tufted vetch.</li> </ul>	
<b>MARSH (MA)</b>		
<b>Shallow Marsh (MAS)</b>		
MAS3-1 CATTAIL ORGANIC SHALLOW MARSH	<ul style="list-style-type: none"> <li>The tall herb layer is formed of broad-leaved cattail, blue-joint grass and reed-canary grass, while the medium layer is dominated by beaked sedge.</li> </ul>	

**Table 3: Ecological Land Classification (ELC) Community Descriptions**

<b>SWAMP (SW)</b>	
<b>Thicket Swamp (SWT)</b>	
SWT3-2 WILLOW ORGANIC THICKET SWAMP	<ul style="list-style-type: none"> <li>This community occurs in shallow water, on an almost floating organic mat. The willow is accompanied by red-osier dogwood and bitter nightshade. Beneath the canopy of shrubs grow tall grasses – blue-joint and reed canary.</li> </ul>
<b>FOREST (FO)</b>	
<b>Deciduous Forest (FOD)</b>	
FOD5-7 DRY-FRESH SUGAR MAPLE-BLACK CHERRY DECIDUOUS FOREST	<ul style="list-style-type: none"> <li>Only present as a small area at the southern edge of the Subject Lands, this unit is composed of sugar maple, followed by black cherry and basswood, white elm and scattered white pine. The mostly native shrub layer is dominated by alternate-leaved dogwood and choke cherry. Herbs are represented by garlic mustard, Virginia waterweed, wild ginger, enchanter's nightshade, giant blue cohosh and Canada violet.</li> </ul>
FOD5-11* DRY-FRESH SUGAR MAPLE HARDWOOD DECIDUOUS FOREST	<ul style="list-style-type: none"> <li>This is a large stand of mostly mature forest, albeit with logging history. Many large trees, mostly maples, are still around but the bulk of the community are medium-sized maple, white ash, white birch, basswood, black cherry, beech and large-tooth aspen. Maple regeneration is abundant, but the herb layer is poorly developed. Some areas where hemlock is common almost merge into mixed forest.</li> </ul>
<b>Coniferous Forest (FOC)</b>	
FOC2-2 DRY-FRESH WHITE CEDAR CONIFEROUS FOREST	<ul style="list-style-type: none"> <li>Found on the narrow top-of bank, this community is almost entirely composed of white cedar in all woody strata. The herb layer is very poorly developed or non-existent.</li> </ul>
<b>Mixed Forest (FOM)</b>	
FOM7-2 FRESH-MOIST WHITE CEDAR- HARDWOOD MIXED FOREST	<ul style="list-style-type: none"> <li>White cedar is accompanied by several other species, including black cherry, green ash, white elm, black walnut and basswood. In the well-developed shrub and herb layers grow choke cherry, alternate-leaved dogwood, prickly gooseberry, enchanter's nightshade, lady fern, herb Robert and white avens.</li> </ul>

\*Denotes a type not listed in the Southern Ontario ELC Guide

**SAVANTA INC**  
**TABLE 4: VASCULAR PLANTS**

EIS: Manors of Belfountain  
Belfountain ON

SPECIES SCIENTIFIC NAME	SPECIES COMMON NAME	Coefficient of Conservatism	Wetness Index	Weediness Index	Provincial Status S-Rank	OMNR Status	COSEWIC Status	Global Status G-Rank	Local Status CVC/Peel
Reference									CVC 2002
<b>PTERIDOPHYTES</b>	<b>FERNS and ALLIES</b>								
<b>Dryopteridaceae</b>	<b>Wood Fern Family</b>								
<i>Athyrium filix-femina</i>	Lady Fern	4	0		S5			G5	X
<i>Dryopteris carthusiana</i>	Spinulose Wood Fern	5	-2		S5			G5	X
<i>Gymnocarpium dryopteris</i>	Common Oak Fern	7	0		S5			G5	X
<i>Onoclea sensibilis</i>	Sensitive Fern	4	-3		S5			G5	X
<b>Osmundaceae</b>	<b>Royal Fern Family</b>								
<i>Osmunda claytoniana</i>	Interrupted Fern	7	-1		S5			G5	R
<b>Thelypteridaceae</b>	<b>Marsh Fern Family</b>								
<i>Thelypteris palustris</i>	Marsh Fern	5	-4		S5			G5	X
<b>GYMNOSPERMS</b>	<b>CONIFERS</b>								
<b>Cupressaceae</b>	<b>Cedar Family</b>								
<i>Thuja occidentalis</i>	Eastern White Cedar	4	-3		S5			G5	X
<b>Pinaceae</b>	<b>Pine Family</b>								
<i>Abies balsamea</i>	Balsam Fir	5	-3		S5			G5	X
<i>Larix laricina</i>	Tamarack	7	-3		S5			G5	X
<i>Picea abies</i>	Norway Spruce		5	-1	SNA			G5	I
<i>Picea glauca</i>	White Spruce	6	3		S5			G5	L
<i>Pinus strobus</i>	Eastern White Pine	4	3		S5			G5	X
<i>Pinus sylvestris</i>	Scotch Pine		5	-3	SNA			GNA	I
<i>Tsuga canadensis</i>	Eastern Hemlock	7	3		S5			G5	X
<b>DICOTYLEDONS</b>	<b>DICOTS</b>								
<b>Aceraceae</b>	<b>Maple Family</b>								
<i>Acer platanoides</i>	Norway Maple		5	-3	SNA			GNA	I
<i>Acer saccharum ssp. saccharum</i>	Sugar Maple	4	3		S5			G5T5	X
<i>Acer saccharum ssp. nigrum</i>	Black Maple	7	3		S4?			G5	X
<i>Acer spicatum</i>	Mountain Maple	6	3		S5			G5	X
<b>Anacardiaceae</b>	<b>Sumac or Cashew Family</b>								
<i>Rhus typhina</i>	Staghorn Sumac	1	5		S5			G5	X
<b>Apiaceae</b>	<b>Carrot or Parsley Family</b>								
<i>Aegopodium podagraria</i>	Goutweed		0	-3	SNA			GNR	X
<i>Daucus carota</i>	Wild Carrot		5	-2	SNA			GNR	X
<b>Aristolochiaceae</b>	<b>Duchman's-pipe Family</b>								
<i>Asarum canadense</i>	Wild Ginger	6	5		S5			G5	X
<b>Asclepiadaceae</b>	<b>Milkweed Family</b>								
<i>Asclepias syriaca</i>	Common Milkweed	0	5		S5			G5	X
<b>Asteraceae</b>	<b>Composite or Aster Family</b>								
<i>Ambrosia artemisiifolia</i>	Annual Ragweed	0	3		S5			G5	X
<i>Arctium minus</i>	Common Burdock		5	-2	SNA			GNR	X
<i>Eurybia macrophylla</i>	Large-leaved Aster	5	5		S5			G5	X
<i>Symphotrichum novae-angliae</i>	New England Aster	2	-3		S5			G5	X
<i>Symphotrichum puniceum var. puniceum</i>	Swamp Aster				S5			G5T5	X
<i>Bidens frondosa</i>	Devil's Beggarticks	3	-3		S5			G5	X

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Reference									CVC 2002
<i>Carduus nutans ssp. nutans</i>	Nodding Thistle		5	-1	SNA			GNR	X
<i>Leucanthemum vulgare</i>	Oxeye Daisy		5	-1	SNA			GNR	X
<i>Cichorium intybus</i>	Chicory		5	-1	SNA			GNR	X
<i>Cirsium arvense</i>	Canada Thistle		3	-1	SNA			GNR	X
<i>Cirsium vulgare</i>	Bull Thistle		4	-1	SNA			GNR	X
<i>Conyza canadensis</i>	Horseweed	0	1		S5			G5	X
<i>Erigeron annuus</i>	Annual Fleabane				S5			G5	X
<i>Erigeron strigosus</i>	Daisy Fleabane	0	1		S5			G5	X
<i>Pilosella piloselloides</i>	Tall Hawkweed		5	-2	SNA			GNR	I
<i>Inula helenium</i>	Elecampane Flower		5	-2	SNA			GNR	I
<i>Lapsana communis</i>	Common Nipplewort		5	-2	SNA			GNR	I
<i>Matricaria discoidea</i>	Pineapple-weed Chamomile				SNA			G5	I
<i>Solidago altissima</i>	Tall Goldenrod	1	3		S5			G5	X
<i>Solidago canadensis</i>	Canada Goldenrod	1	3		S5			G5	X
<i>Sonchus arvensis ssp. arvensis</i>	Field Sow-thistle				SNA			GNR	I
<i>Taraxacum officinale</i>	Common Dandelion		3	-2	SNA			G5	I
<i>Tragopogon dubius</i>	Yellow Goat's-beard		5	-1	SNA			GNR	I
<i>Tragopogon pratensis</i>	Meadow Goat's-beard		5	-1	SNA			GNR	I
<i>Tussilago farfara</i>	Colt's Foot		3	-2	SNR			GNR	I
<b>Balsaminaceae</b>	<b>Touch-me-not Family</b>								
<i>Impatiens capensis</i>	Spotted Jewelweed	4	-3		S5			G5	X
<b>Berberidaceae</b>	<b>Barberry Family</b>								
<i>Caulophyllum thalictroides</i>	Giant Blue Cohosh				S4?			G4G5Q	R
<b>Betulaceae</b>	<b>Birch Family</b>								
<i>Betula alleghaniensis</i>	Yellow Birch	6	0		S5			G5	X
<i>Betula papyrifera</i>	White Birch		2		S5			G5	X
<i>Ostrya virginiana</i>	Eastern Hop-hornbeam	4	4		S5			G5	X
<b>Boraginaceae</b>	<b>Borage Family</b>								
<i>Echium vulgare</i>	Blueweed		5	-2	SNA			GNR	X
<i>Lithospermum officinale</i>	European Gromwell		5	-1	SNA			GNR	I
<i>Myosotis laxa</i>	Small Forget-me-not	6	-5		S5			G5	X
<b>Brassicaceae</b>	<b>Mustard Family</b>								
<i>Alliaria petiolata</i>	Garlic Mustard		0	-3	SNA			GNR	X
<i>Capsella bursa-pastoris</i>	Common Shepherd's Purse		1	-1	SNA			GNR	X
<i>Erysimum cheiranthoides</i>	Worm-seed Mustard		3	-1	SNA			G5	X
<i>Nasturtium microphyllum</i>	Small-leaved Water-cress		-5	-3	SNA			GNR	X
<i>Sinapis arvensis</i>	Corn Mustard		5	-1	SNA			GNR	I
<i>Thlaspi arvense</i>	Field Penny-cress		5	-1	SNA			GNR	I
<b>Caprifoliaceae</b>	<b>Honeysuckle Family</b>								
<i>Lonicera tatarica</i>	Tartarian Honeysuckle		3	-3	SNA			GNR	I
<i>Sambucus racemosa</i>	Red Elderberry	5	2		S5			G5	X
<i>Viburnum opulus</i>	Cranberry Viburnum		0	-1	S5			G5	I
<b>Caryophyllaceae</b>	<b>Pink Family</b>								
<i>Cerastium fontanum</i>	Common Mouse-ear Chickweed		3	-1	SNA			GNR	X
<i>Silene noctiflora</i>	Night-flowering Catchfly		5	-1	SNA			GNR	I
<i>Silene vulgaris</i>	Maiden's Tears		5	-1	SNA			GNR	I

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SPECIES SCIENTIFIC NAME	SPECIES COMMON NAME	Coefficient of Conservatism	Wetness Index	Weediness Index	Provincial Status S-Rank	OMNR Status	COSEWIC Status	Global Status G-Rank	Local Status CVC/Peel
Reference									CVC 2002
<b>Chenopodiaceae</b>	<b>Goosefoot Family</b>								
<i>Chenopodium album</i> var. <i>album</i>	White Goosefoot		1	-1	SNA			G5TNR	X
<b>Cornaceae</b>	<b>Dogwood Family</b>								
<i>Cornus alternifolia</i>	Alternate-leaf Dogwood	6	5		S5			G5	X
<i>Cornus sericea</i>	Red-osier Dogwood	2	-3		S5			G5	X
<b>Cucurbitaceae</b>	<b>Gourd Family</b>								
<i>Echinocystis lobata</i>	Wild Mock-cucumber	3	-2		S5			G5	X
<b>Euphorbiaceae</b>	<b>Spurge Family</b>								
<i>Euphorbia maculata</i>	Spotted Spurge		4	-1	SNA			G5?	X
<b>Fabaceae</b>	<b>Pea Family</b>								
<i>Lotus corniculatus</i>	Bird's-foot Trefoil		1	-2	SNA			GNR	I
<i>Medicago lupulina</i>	Black Medic		1	-1	SNA			GNR	I
<i>Melilotus albus</i>	White Sweetclover		3	-3	SNA			G5	I
<i>Melilotus officinalis</i>	Yellow Sweetclover		3	-1	SNA			GNR	I
<i>Trifolium pratense</i>	Red Clover		2	-2	SNA			GNR	I
<i>Vicia cracca</i>	Tufted Vetch		5	-1	SNA			GNR	I
<b>Fagaceae</b>	<b>Beech Family</b>								
<i>Fagus grandifolia</i>	American Beech	6	3		S4			G5	X
<b>Geraniaceae</b>	<b>Geranium Family</b>								
<i>Geranium robertianum</i>	Herb-robert		5	-2	SNA			G5	I
<b>Grossulariaceae</b>	<b>Currant Family</b>								
<i>Ribes cynosbati</i>	Prickly Gooseberry	4	5		S5			G5	X
<i>Ribes rubrum</i>	Northern Red Currant		5	-2	SNA			G4G5	I
<b>Guttiferae</b>	<b>St. John's-wort Family</b>								
<i>Hypericum perforatum</i>	Common St. John's-wort		5	-3	SNA			GNR	I
<b>Hippocastanaceae</b>	<b>Buckeye Family</b>								
<i>Aesculus hippocastanum</i>	Horse Chestnut		5	-1	SNA			GNR	I
<b>Hydrophyllaceae</b>	<b>Water-leaf Family</b>								
<i>Hydrophyllum virginianum</i>	Virginia Waterleaf	6	-2		S5			G5	X
<b>Juglandaceae</b>	<b>Walnut Family</b>								
<i>Juglans cinerea</i>	Butternut	6	2		S3?	END	END	G4	X
<i>Juglans nigra</i>	Black Walnut	5	3		S4			G5	X
<b>Lamiaceae</b>	<b>Mint Family</b>								
<i>Clinopodium vulgare</i>	Field Basil	4	5		S5			G5	X
<i>Glechoma hederacea</i>	Ground Ivy		5	-2	SNA			GNR	I
<i>Glechoma tetrahit</i>	Common Hempnettle		5	-1	SNA			GNR	I
<i>Leonurus cardiaca</i>	Common Motherwort		5	-2	SNA			GNR	I
<i>Lycopus uniflorus</i>	Northern Bugleweed	5	-5		S5			G5	X
<i>Marrubium vulgare</i>	Common Horehound		0	-1	SNA			GNR	
<i>Nepeta cataria</i>	Catnip		1	-2	SNA			GNR	I



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Reference									CVC 2002
<i>Prunella vulgaris</i> ssp. <i>lanceolata</i>	Self-heal	5	5		S5			G5T5	X
<b>Malvaceae</b>	<b>Mallow Family</b>								
<i>Malva moschata</i>	Musk Cheeseweed		5	-1	SNA			GNR	I
<b>Oleaceae</b>	<b>Olive Family</b>								
<i>Fraxinus americana</i>	White Ash	4	3		S4?			G5	X
<i>Fraxinus pennsylvanica</i>	Red Ash	3	-3		S5			G5	X
<i>Syringa vulgaris</i>	Common Lilac		5	-2	SNA			GNR	I
<b>Onagraceae</b>	<b>Evening-primrose Family</b>								
<i>Circaea lutetiana</i>	Enchanter's Nightshade	3	3		S5			G5	X
<b>Oxalidaceae</b>	<b>Wood Sorrel Family</b>								
<i>Oxalis stricta</i>	Upright Yellow Wood-sorrel	0	3		S5			G5	X
<b>Papaveraceae</b>	<b>Poppy Family</b>								
<i>Chelidonium majus</i>	Greater Celandine		5	-3	SNA			GNR	X
<b>Plantaginaceae</b>	<b>Plantain Family</b>								
<i>Plantago lanceolata</i>	English Plantain		0	-1	SNA			G5	I
<i>Plantago major</i>	Common Plantain		-1	-1	S5			G5	I
<b>Polygonaceae</b>	<b>Smartweed Family</b>								
<i>Polygonum achoreum</i>	Leathery Knotweed	0	5		S5			G5	X
<i>Polygonum amphibium</i>	Water Smartweed	5	-5		S5			G5	X
<i>Polygonum aviculare</i> ssp. <i>aviculare</i>	Prostrate Knotweed		1	-1	SNA			GNR	I
<i>Fallopia convolvulus</i>	Black Bindweed		1	-1	SNA			GNR	I
<i>Persicaria maculosa</i>	Lady's-thumb		-3	-1	SNA			G3G5	I
<i>Rheum rhubarbarum</i>	Rhubarb		5	-1	SNA			GNR	I
<i>Rumex crispus</i>	Curly Dock		-1	-2	SNA			GNR	I
<b>Primulaceae</b>	<b>Primrose Family</b>								
<i>Lysimachia nummularia</i>	Moneywort		-4	-3	SNA			GNR	I
<b>Ranunculaceae</b>	<b>Buttercup Family</b>								
<i>Actaea pachypoda</i>	White Baneberry	6	5		S5			G5	X
<i>Actaea rubra</i>	Red Baneberry	5	5		S5			G5	X
<i>Anemone virginiana</i>	Virginia Anemone	4	5		S5			G5	X
<i>Caltha palustris</i>	Marsh-marigold	5	-5		S5			G5	X
<i>Ranunculus acris</i>	Tall Buttercup			-2	SNA			G5	I
<b>Rhamnaceae</b>	<b>Buckthorn Family</b>								
<i>Rhamnus cathartica</i>	Common Buckthorn		3	-3	SNA			GNR	I
<b>Rosaceae</b>	<b>Rose Family</b>								
<i>Agrimonia gryposepala</i>	Tall Hairy Groovebur	2	2		S5			G5	X
<i>Crataegus species</i>	Hawthorn species								
<i>Fragaria virginiana</i>	Virginia Strawberry	2	1		S5			G5	X
<i>Geum aleppicum</i>	Yellow Avens	2	-1		S5			G5	X
<i>Geum canadense</i>	White Avens	3	0		S5			G5	X
<i>Potentilla recta</i>	Sulphur Cinquefoil		5	-2	SNA			GNR	I
<i>Prunus serotina</i>	Black Cherry	3	3		S5			G5	X

**SAVANTA INC**  
**TABLE 4: VASCULAR PLANTS**

EIS: Manors of Belfountain  
Belfountain ON

SPECIES SCIENTIFIC NAME	SPECIES COMMON NAME	Coefficient of Conservatism	Wetness Index	Weediness Index	Provincial Status S-Rank	OMNR Status	COSEWIC Status	Global Status G-Rank	Local Status CVC/Peel
Reference									CVC 2002
<i>Prunus virginiana</i>	Choke Cherry	2	1		S5			G5	X
<i>Rubus idaeus</i> ssp. <i>strigosus</i>	Red Raspberry	0	-2		S5			G5T5	X
<i>Rubus occidentalis</i>	Black Raspberry	2	5		S5			G5	X
<i>Rubus odoratus</i>	Purple Flowering Raspberry	3	5		S5			G5	X
<i>Sorbus decora</i>	Northern Mountain-ash	8	3		S5			G4G5	
<b>Salicaceae</b>	<b>Willow Family</b>								
<i>Populus grandidentata</i>	Large-tooth Aspen	5	3		S5			G5	X
<i>Populus tremuloides</i>	Trembling Aspen		0		S5			G5	X
<i>Salix serissima</i>	Autumn Willow	6	-5		S4			G4	RL
<i>Salix x rubens</i>	Reddish Willow		-4	-3	SNA			GNA	
<b>Scrophulariaceae</b>	<b>Figwort Family</b>								
<i>Verbascum thapsus</i>	Common Mullein		5	-2	SNA			GNR	I
<i>Veronica officinalis</i>	Common Speedwell		5	-2	SNA			G5	I
<b>Solanaceae</b>	<b>Nightshade Family</b>								
<i>Solanum dulcamara</i>	Climbing Nightshade		0	-2	SNA			GNR	I
<i>Solanum ptychanthum</i>	Eastern Black Nightshade	3	5		S5			G5	X
<b>Tiliaceae</b>	<b>Linden Family</b>								
<i>Tilia americana</i>	American Basswood	4	3		S5			G5	X
<b>Ulmaceae</b>	<b>Elm Family</b>								
<i>Ulmus americana</i>	White Elm	3	-2		S5			G5?	X
<i>Ulmus pumila</i>	Siberian Elm		5	-1	SNA			GNR	I
<b>Urticaceae</b>	<b>Nettle Family</b>								
<i>Urtica dioica</i> ssp. <i>dioica</i>	European Stinging Nettle		-1	-1	SNA			G5T5?	
<b>Valerianaceae</b>	<b>Valerian Family</b>								
<i>Valeriana officinalis</i>	Common Valerian		2	-1	SNA			GNR	I
<b>Verbenaceae</b>	<b>Vervain Family</b>								
<i>Verbena urticifolia</i>	White Vervain	4	-1		S5			G5	X
<b>Violaceae</b>	<b>Violet Family</b>								
<i>Viola arvensis</i>	Wild Violet				SNA			GNR	I
<i>Viola canadensis</i>	Canada Violet				S5			G5	X
<i>Viola sororia</i>	Woolly Blue Violet				S5			G5	X
<b>Vitaceae</b>	<b>Grape Family</b>								
<i>Parthenocissus inserta</i>	Inserted Virginia-creeper	3	3		S5			G5	X
<i>Vitis riparia</i>	Riverbank Grape	0	-2		S5			G5	X
<b>MONOCOTYLEDONS</b>	<b>MONOCOTS</b>								
<b>Araceae</b>	<b>Arum Family</b>								
<i>Arisaema triphyllum</i>	Jack-in-the-pulpit	5	-2		S5			G5	X
<b>Cyperaceae</b>	<b>Sedge Family</b>								
<i>Carex blanda</i>	Woodland Sedge	3	0		S5			G5?	X
<i>Carex gracillima</i>	Graceful Sedge	4	3		S5			G5	X
<i>Carex pedunculata</i>	Long-stalked Sedge	5	5		S5			G5	X

**SAVANTA INC**  
**TABLE 4: VASCULAR PLANTS**

EIS: Manors of Belfountain  
Belfountain ON

SPECIES SCIENTIFIC NAME	SPECIES COMMON NAME	Coefficient of Conservatism	Wetness Index	Weediness Index	Provincial Status S-Rank	OMNR Status	COSEWIC Status	Global Status G-Rank	Local Status CVC/Peel
Reference									CVC 2002
<i>Carex radiata</i>	Stellate Sedge	4	5		S5			G4	X
<i>Carex spicata</i>	Spiked Sedge		5	-1	SNA			GNR	X
<i>Carex utriculata</i>	Beaked Sedge	7	-5		S5			G5	L
<b>Juncaceae</b>	<b>Rush Family</b>								
<i>Juncus tenuis</i>	Path Rush	0	0		S5			G5	X
<b>Lemnaceae</b>	<b>Duckweed Family</b>								
<i>Lemna minor</i>	Lesser Duckweed	2	-5		S5			G5	X
<b>Liliaceae</b>	<b>Lily Family</b>								
<i>Clintonia borealis</i>	Bluebead-lily	7	-1		S5			G5	X
<i>Hemerocallis fulva</i>	Orange Day-lily		5	-3	SNA			GNA	I
<i>Maianthemum canadense</i>	Wild Lily-of-the-valley	5	0		S5			G5	X
<i>Trillium grandiflorum</i>	White Trillium	5	5		S5			G5	X
<i>Uvularia grandiflora</i>	Large-flowered Bellwort	6	5		S5			G5	X
<b>Orchidaceae</b>	<b>Orchid Family</b>								
<i>Epipactis helleborine</i>	Common Helleborine		5	-2	SNA			GNR	X
<b>Poaceae</b>	<b>Grass Family</b>								
<i>Agrostis gigantea</i>	Redtop		0	-2	SNA			G4G5	I
<i>Bromus inermis</i>	Awnless Brome		5	-3	SNA			G5TNR	I
<i>Calamagrostis canadensis</i>	Blue-joint Grass	4	-5		S5			G5	X
<i>Dactylis glomerata</i>	Orchard Grass		3	-1	SNA			GNR	I
<i>Elymus repens</i>	Quack Grass		3	-3	SNA			GNR	I
<i>Schedonorus pratensis</i>	Meadow Fescue		4	-1	SNA			G5	I
<i>Glyceria striata</i>	Fowl Meadow Grass	3	-5		S5			G5	X
<i>Phalaris arundinacea</i>	Reed Canary Grass	0	-4		S5			G5	X
<i>Phleum pratense</i>	Timothy		3	-1	SNA			GNR	I
<i>Poa annua</i>	Annual Blue Grass		1	-2	SNA			GNR	I
<i>Poa compressa</i>	Canada Blue Grass	0	2		SNA			GNR	X
<i>Poa pratensis ssp. pratensis</i>	Kentucky Bluegrass	0	1		S5			G5T5	X
<i>Setaria pumila</i>	Yellow Foxtail		0	-1	SNA			GNR	I
<b>Typhaceae</b>	<b>Cattail Family</b>								
<i>Typha latifolia</i>	Broad-leaved Cattail	3	-5		S5			G5	X

**STATISTICS**

Species Richness		
Total Number of Species:	178	
Native Species:	96	54%
Exotic Species	82	46%
S1-S3 Species	1	1%
S4 Species	6	6%
S5 Species	89	93%
Floristic Quality Indices		
Mean Co-efficient of Conservatism (CC)	3.8	
CC 0 - 3 lowest sensitivity	35	40%
CC 4 - 6 moderate sensitivity	44	51%
CC 7 - 8 high sensitivity	8	9%
CC 9 - 10 highest sensitivity	0	0%

SPECIES SCIENTIFIC NAME	SPECIES COMMON NAME	Coefficient of Conservatism	Wetness Index	Weediness Index	Provincial Status S-Rank	OMNR Status	COSEWIC Status	Global Status G-Rank	Local Staus CVC/Peel
Reference									CVC 2002

Floristic Quality Index (FQI)	35								
Weedy and Invasive Species									
Mean Weediness Index	-1.7								
-1 low potential invasiveness	40	50%							
-2 moderate potential invasiveness	25	31%							
-3 high potential invasiveness	15	19%							
Wetland Species									
Mean Wetness Index	1.9								
upland	58	35%							
facultative upland	43	26%							
facultative	36	21%							
facultative wetland	21	13%							
obligate wetland	10	6%							

**Table 5: Amphibian Call Count Survey Station Results**

SURVEY ROUND	STATION NUMBER	SPECIES CODE												WATER	
		NOAM	AMTO	FOTO	GRTR	SPPE	CHFR	WOFR	NLFR	PIFR	GRFR	BULL	MIFR	Present (Y/N)	Depth (CM)
1	1	X												Y	N/A
2	1					1(1)	1(1)		1(1)					Y	N/A
3	1										1(1)			Y	N/A
1	4	X												Y	N/A
2	4					1(1)	1(1)			1(1)				Y	N/A
3	4	X												Y	N/A

**LEGEND:**

SPECIES CODE	COMMON NAME	SCIENTIFIC NAME	CALL CODES	
NOAM	No Amphibians	No amphibians despite survey effort	X	No amphibians heard
AMTO	American Toad	<i>Anaxyrus americanus</i>	1	Calls can be counted without error
FOTO	Fowler's Toad	<i>Anaxyrus fowleri</i>	2	Calls overlap but can be reliably estimated
GRTR	Gray Treefrog	<i>Hyla versicolor</i>	3	Calls overlap too much to estimate number
CHFR	Western Chorus Frog	<i>Pseudacris triseriata</i>		
WOFR	Wood Frog	<i>Lithobates sylvaticus</i>		
NLRF	Northern Leopard Frog	<i>Lithobates pipiens</i>		
PIFR	Pickerel Frog	<i>Lithobates palustris</i>		
GRFR	Green Frog	<i>Lithobates clamitans</i>		
BULL	American Bullfrog	<i>Lithobates catesbeianus</i>		
MIFR	Mink Frog	<i>Lithobates septentrionalis</i>		
SPPE	Spring Peeper	<i>Pseudacris crucifer</i>		

**Note:** For each species, the first number is the call code and the second number, which is in brackets, is the number of individuals of that species heard calling

**Table 6: Turtle Nesting Survey Results**

DATE SURVEYED	SURVEY ROUND	TRANSECT OR STATION NUMBER	SPECIES CODE								
			NOTU	MPTU	SNTU	MATU	BLTU	SSTU	WOTU	STIN	SPTU
JU 13, 2017	1	TN1	X								

### Turtle Survey Results – Nesting

- Soil sampling was completed on the sites at all turtle nesting stations TN1
- TN1 had clay dominated soils that were not suitable for nesting;

### LEGEND:

SPECIES CODE	COMMON NAME	SCIENTIFIC NAME
NOTU	No Turtles	No turtles despite survey effort
MPTU	Midland Painted Turtle	<i>Chrysemys picta marginata</i>
SNTU	Snapping Turtle	<i>Chelydra serpentina</i>
MATU	Northern Map Turtle	<i>Graptemys geographica</i>
BLTU	Blanding's Turtle	<i>Emydoidea blandingii</i>
SSTU	Spiny Soft-shelled Turtle	<i>Apalone spinifera</i>
WOTU	Wood Turtle	<i>Glyptemys insculpta</i>
STIN	Stinkpot Turtle	<i>Stemotherus odoratus</i>
SPTU	Spotted Turtle	<i>Clemmys guttata</i>

DATE	
MONTH	CODE
January	JA
February	FE
March	MR
April	AP
May	MA
June	JN
July	JL
August	AU
September	SE
October	OC
November	NO
December	DE

Table 7: Snake Survey Results

DATE SURVEYED	SURVEY ROUND	TRANSECT OR STATION NUMBER	SPECIES CODE														
			NOSN	EAGA	MISN	BRSN	RBSN	NWSN	RISN	BLRA	BUGA	FOSN	HOSN	MASS	RNSN	SGSN	QUSN
AP 21, 2014	1	CB1	X														
AP 21, 2014	1	CB2	X														
AP 21, 2014	1	CB3	X														
AP 21, 2014	1	CB4	X														
AP 21, 2014	1	CB5	X														

## LEGEND:

SPECIES CODE	COMMON NAME	SCIENTIFIC NAME
NOSN	No Snakes	No snakes despite survey effort
EAGA	Eastern Gartersnake	<i>Thamnophis sirtalis sirtalis</i>
MISN	Eastern Milksnake	<i>Lampropeltis triangulum</i>
BRSN	DeKay's Brownsnake	<i>Storeria dekayi</i>
RBSN	Northern Red-bellied Snake	<i>Storeria occipitomaculata occipitomaculata</i>
NWSN	Northern Watersnake	<i>Nerodia sipedon sipedon</i>
RASN	Gray Ratsnake	<i>Pantherophis spiloides</i>
RISN	Eastern Ribbonsnake	<i>Thamnophis sauritus</i>
BLRA	Blue Racer	<i>Coluber constrictor foxii</i>
BUGA	Butler's Gartersnake	<i>Thamnophis butleri</i>
FOSN	Eastern Foxsnake	<i>Pantherophis gloyd</i>
HOSN	Eastern Hog-nosed Snake	<i>Heterodon platirhinos</i>
MASS	Massasauga	<i>Sistrurus catenatus catenatus</i>
RNSN	Ring-necked Snake	<i>Diadophis punctatus</i>
SGSN	Smooth Greensnake	<i>Opheodrys vernalis</i>
QUSN	Queensnake	<i>Regina septemvittata</i>

DATE	
MONTH	CODE
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September	SE
October	OC
November	NO
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Table 7: Snake Survey Results

DATE SURVEYED	SURVEY ROUND	TRANSECT OR STATION NUMBER	SPECIES CODE														
			NOSN	EAGA	MISN	BRSN	RBSN	NWSN	RISN	BLRA	BUGA	FOSN	HOSN	MASS	RNSN	SGSN	QUSN
AP 21, 2014	1	CB6	X														
AP 21, 2014	1	CB7	X														
AP 21, 2014	1	CB8	X														
AP 21, 2014	1	CB9	X														
AP 21, 2014	1	CB10	X														

## LEGEND:

SPECIES CODE	COMMON NAME	SCIENTIFIC NAME
NOSN	No Snakes	No snakes despite survey effort
EAGA	Eastern Gartersnake	<i>Thamnophis sirtalis sirtalis</i>
MISN	Eastern Milksnake	<i>Lampropeltis triangulum</i>
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DATE	
MONTH	CODE
January	JA
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November	NO
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Table 7: Snake Survey Results

DATE SURVEYED	SURVEY ROUND	TRANSECT OR STATION NUMBER	SPECIES CODE															
			NOSN	EAGA	MISN	BRSN	RBSN	NWSN	RISN	BLRA	BUGA	FOSN	HOSN	MASS	RNSN	SGSN	QUSN	
AP 21, 2014	1	CB11	X															
AP 21, 2014	1	CB12	X															
AP 21, 2014	1	CB13	X															
AP 21, 2014	1	CB14	X															
AP 21, 2014	1	CB15	X															

## LEGEND:

SPECIES CODE	COMMON NAME	SCIENTIFIC NAME
NOSN	No Snakes	No snakes despite survey effort
EAGA	Eastern Gartersnake	<i>Thamnophis sirtalis sirtalis</i>
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November	NO
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			NOSN	EAGA	MISN	BRSN	RBSN	NWSN	RISN	BLRA	BUGA	FOSN	HOSN	MASS	RNSN	SGSN	QUSN	
AP 21, 2014	1	CB16	X															
AP 21, 2014	1	CB17	X															
AP 21, 2014	1	CB18	X															
AP 21, 2014	1	CB19	X															
AP 21, 2014	1	CB20	X															

## LEGEND:

SPECIES CODE	COMMON NAME	SCIENTIFIC NAME
NOSN	No Snakes	No snakes despite survey effort
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AP 21, 2014	1	R1																
MA 06, 2014	2	CB1	X															
MA 06, 2014	2	CB2	X															
MA 06, 2014	2	CB3	X															
MA 06, 2014	2	CB4	X															

## LEGEND:

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NWSN	Northern Watersnake	<i>Nerodia sipedon sipedon</i>
RASN	Gray Ratsnake	<i>Pantherophis spiloides</i>
RISN	Eastern Ribbonsnake	<i>Thamnophis sauritus</i>
BLRA	Blue Racer	<i>Coluber constrictor foxii</i>
BUGA	Butler's Gartersnake	<i>Thamnophis butleri</i>
FOSN	Eastern Foxsnake	<i>Pantherophis gloyd</i>
HOSN	Eastern Hog-nosed Snake	<i>Heterodon platifrons</i>
MASS	Massasauga	<i>Sistrurus catenatus catenatus</i>
RNSN	Ring-necked Snake	<i>Diadophis punctatus</i>
SGSN	Smooth Greensnake	<i>Opheodrys vernalis</i>
QUSN	Queensnake	<i>Regina septemvittata</i>

DATE	
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September	SE
October	OC
November	NO
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DATE SURVEYED	SURVEY ROUND	TRANSECT OR STATION NUMBER	SPECIES CODE														
			NOSN	EAGA	MISN	BRSN	RBSN	NWSN	RISN	BLRA	BUGA	FOSN	HOSN	MASS	RNSN	SGSN	QUSN
MA 06, 2014	2	CB5	X														
MA 06, 2014	2	CB6	X														
MA 06, 2014	2	CB7	X														
MA 06, 2014	2	CB8	X														
MA 06, 2014	2	CB9	X														

## LEGEND:

SPECIES CODE	COMMON NAME	SCIENTIFIC NAME
NOSN	No Snakes	No snakes despite survey effort
EAGA	Eastern Gartersnake	<i>Thamnophis sirtalis sirtalis</i>
MISN	Eastern Milksnake	<i>Lampropeltis triangulum</i>
BRSN	DeKay's Brownsnake	<i>Storeria dekayi</i>
RBSN	Northern Red-bellied Snake	<i>Storeria occipitomaculata occipitomaculata</i>
NWSN	Northern Watersnake	<i>Nerodia sipedon sipedon</i>
RASN	Gray Ratsnake	<i>Pantherophis spiloides</i>
RISN	Eastern Ribbonsnake	<i>Thamnophis sauritus</i>
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MA 06, 2014	2	CB10	X														
MA 06, 2014	2	CB11	X														
MA 06, 2014	2	CB12	X														
MA 06, 2014	2	CB13	X														
MA 06, 2014	2	CB14	X														

## LEGEND:

SPECIES CODE	COMMON NAME	SCIENTIFIC NAME
NOSN	No Snakes	No snakes despite survey effort
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MA 06, 2014	2	CB16	X															
MA 06, 2014	2	CB17	X															
MA 06, 2014	2	CB18	X															
MA 06, 2014	2	CB19	X															

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SPECIES CODE	COMMON NAME	SCIENTIFIC NAME
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MA 20, 2014	3	CB1	X															
MA 20, 2014	3	CB2	X															
MA 20, 2014	3	CB3	X															
MA 20, 2014	3	CB4	X															

## LEGEND:

SPECIES CODE	COMMON NAME	SCIENTIFIC NAME
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MA 20, 2014	3	CB6	X															
MA 20, 2014	3	CB7	X															
MA 20, 2014	3	CB8	X															
MA 20, 2014	3	CB9	X															

## LEGEND:

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MA 20, 2014	3	CB11	X														
MA 20, 2014	3	CB12	X														
MA 20, 2014	3	CB13	X														
MA 20, 2014	3	CB14	X														

## LEGEND:

SPECIES CODE	COMMON NAME	SCIENTIFIC NAME
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MA 20, 2014	3	CB16	X															
MA 20, 2014	3	CB17	X															
MA 20, 2014	3	CB18	X															
MA 20, 2014	3	CB19	X															

## LEGEND:

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MASS	Massasauga	<i>Sistrurus catenatus catenatus</i>
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MA 20, 2014	3	CB20	X														
JU 02, 2014	4	CB1	X														
JU 02, 2014	4	CB2	X														
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BRSN	DeKay's Brownsnake	<i>Storeria dekayi</i>
RBSN	Northern Red-bellied Snake	<i>Storeria occipitomaculata occipitomaculata</i>
NWSN	Northern Watersnake	<i>Nerodia sipedon sipedon</i>
RASN	Gray Ratsnake	<i>Pantherophis spiloides</i>
RISN	Eastern Ribbonsnake	<i>Thamnophis sauritus</i>
BLRA	Blue Racer	<i>Coluber constrictor foxii</i>
BUGA	Butler's Gartersnake	<i>Thamnophis butleri</i>
FOSN	Eastern Foxsnake	<i>Pantherophis gloyd</i>
HOSN	Eastern Hog-nosed Snake	<i>Heterodon platifrons</i>
MASS	Massasauga	<i>Sistrurus catenatus catenatus</i>
RNSN	Ring-necked Snake	<i>Diadophis punctatus</i>
SGSN	Smooth Greensnake	<i>Opheodrys vernalis</i>
QUSN	Queensnake	<i>Regina septemvittata</i>

DATE	
MONTH	CODE
January	JA
February	FE
March	MR
April	AP
May	MA
June	JN
July	JL
August	AU
September	SE
October	OC
November	NO
December	DE



Table 7: Snake Survey Results

DATE SURVEYED	SURVEY ROUND	TRANSECT OR STATION NUMBER	SPECIES CODE															
			NOSN	EAGA	MISN	BRSN	RBSN	NWSN	RISN	BLRA	BUGA	FOSN	HOSN	MASS	RNSN	SGSN	QUSN	
JU 17, 2014	5	CB5	X															
JU 17, 2014	5	CB6	X															
JU 17, 2014	5	CB7	X															
JU 17, 2014	5	CB8	X															
JU 17, 2014	5	CB9	X															

## LEGEND:

SPECIES CODE	COMMON NAME	SCIENTIFIC NAME
NOSN	No Snakes	No snakes despite survey effort
EAGA	Eastern Gartersnake	<i>Thamnophis sirtalis sirtalis</i>
MISN	Eastern Milksnake	<i>Lampropeltis triangulum</i>
BRSN	DeKay's Brownsnake	<i>Storeria dekayi</i>
RBSN	Northern Red-bellied Snake	<i>Storeria occipitomaculata occipitomaculata</i>
NWSN	Northern Watersnake	<i>Nerodia sipedon sipedon</i>
RASN	Gray Ratsnake	<i>Pantherophis spiloides</i>
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DATE SURVEYED	SURVEY ROUND	TRANSECT OR STATION NUMBER	SPECIES CODE														
			NOSN	EAGA	MISN	BRSN	RBSN	NWSN	RISN	BLRA	BUGA	FOSN	HOSN	MASS	RNSN	SGSN	QUSN
JU 17, 2014	5	CB10	X														
JU 17, 2014	5	CB11	X														
JU 17, 2014	5	CB12	X														
JU 17, 2014	5	CB13	X														
JU 17, 2014	5	CB14	X														

## LEGEND:

SPECIES CODE	COMMON NAME	SCIENTIFIC NAME
NOSN	No Snakes	No snakes despite survey effort
EAGA	Eastern Gartersnake	<i>Thamnophis sirtalis sirtalis</i>
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RISN	Eastern Ribbonsnake	<i>Thamnophis sauritus</i>
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DATE	
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Table 7: Snake Survey Results

DATE SURVEYED	SURVEY ROUND	TRANSECT OR STATION NUMBER	SPECIES CODE														
			NOSN	EAGA	MISN	BRSN	RBSN	NWSN	RISN	BLRA	BUGA	FOSN	HOSN	MASS	RNSN	SGSN	QUSN
JU 17, 2014	5	CB15	X														
JU 17, 2014	5	CB16	X														
JU 17, 2014	5	CB17	X														
JU 17, 2014	5	CB18	X														
JU 17, 2014	5	CB19	X														

## LEGEND:

SPECIES CODE	COMMON NAME	SCIENTIFIC NAME
NOSN	No Snakes	No snakes despite survey effort
EAGA	Eastern Gartersnake	<i>Thamnophis sirtalis sirtalis</i>
MISN	Eastern Milksnake	<i>Lampropeltis triangulum</i>
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Table 7: Snake Survey Results

DATE SURVEYED	SURVEY ROUND	TRANSECT OR STATION NUMBER	SPECIES CODE														
			NOSN	EAGA	MISN	BRSN	RBSN	NWSN	RISN	BLRA	BUGA	FOSN	HOSN	MASS	RNSN	SGSN	QUSN
JU 17, 2014	5	CB20	X														
JU 17, 2014	2	R1	X														

## LEGEND:

SPECIES CODE	COMMON NAME	SCIENTIFIC NAME
NOSN	No Snakes	No snakes despite survey effort
EAGA	Eastern Gartersnake	<i>Thamnophis sirtalis sirtalis</i>
MISN	Eastern Milksnake	<i>Lampropeltis triangulum</i>
BRSN	DeKay's Brownsnake	<i>Storeria dekayi</i>
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RNSN	Ring-necked Snake	<i>Diadophis punctatus</i>
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Common Name	Scientific Name	Provincial Status (S Rank)	Global Status (G Rank)	COSSARO (MNRF)	COSEWIC (Federal)	SWH Indicator Species	Highest Breeding Evidence
<b>Anseriformes</b>							
<b>Anatidae</b>							
Canada Goose	<i>Branta canadensis</i>	S5	G5			X	X
Wood Duck	<i>Aix sponsa</i>	S5	G5			X	P
Mallard	<i>Anas platyrhynchos</i>	S5	G5			X	SH
Hooded Merganser	<i>Lophodytes cucullatus</i>	S5B,S5N	G5			X	SH
<b>Phasianinae</b>							
Ruffed Grouse	<i>Bonasa umbellus</i>	S4	G5			X	FY
Wild Turkey	<i>Meleagris gallopavo</i>	S5	G5			X	SM
<b>Columbiformes</b>							
<b>Columbidae</b>							
Mourning Dove	<i>Zenaidura macroura</i>	S5	G5				P
<b>Apodiformes</b>							
<b>Apodidae</b>							
Chimney Swift	<i>Chaetura pelagica</i>	S4B, S4N	G5	THR	THR		X
<b>Accipitridae</b>							
Broad-winged Hawk	<i>Buteo platypterus</i>	S5B	G5			X	NY
<b>Piciformes</b>							
<b>Picidae</b>							
Downy Woodpecker	<i>Picoides pubescens</i>	S5	G5				T
Hairy Woodpecker	<i>Picoides villosus</i>	S5	G5				SH
<b>Passeriformes</b>							
<b>Tyrannidae</b>							
Yellow-bellied Flycatcher	<i>Empidonax flaviventris</i>	S5B	G5				X
Alder Flycatcher	<i>Empidonax alnorum</i>	S5B	G5				SM
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	S4B	G5				P
Eastern Kingbird	<i>Tyrannus tyrannus</i>	S4B	G5				PO-H
<b>Vireonidae</b>							
Red-eyed Vireo	<i>Vireo olivaceus</i>	S5B	G5				PO-S
<b>Corvidae</b>							
Blue Jay	<i>Cyanocitta cristata</i>	S5	G5				T
American Crow	<i>Corvus brachyrhynchos</i>	S5B	G5				PO-H
<b>Alaudidae</b>							
Horned Lark	<i>Eremophila alpestris</i>	S5B	G5				PR-T
<b>Hirundinidae</b>							
Tree Swallow	<i>Tachycineta bicolor</i>	S4B	G5				OB-X
Barn Swallow	<i>Hirundo rustica</i>	S4B	G5	THR	THR		OB-X
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	S4B	G5			X	SH
<b>Paridae</b>							
Black-capped Chickadee	<i>Poecile atricapillus</i>	S5	G5				PO-S
<b>Sittidae</b>							
White-breasted Nuthatch	<i>Sitta carolinensis</i>	S5	G5				A
<b>Troglodytidae</b>							
House Wren	<i>Troglodytes aedon</i>	S5B	G5				PR-T
<b>Turdidae</b>							
Eastern Bluebird	<i>Sialia sialis</i>	S5B	G5				SM
Swainson's Thrush	<i>Catharus ustulatus</i>	S4B	G5				X
American Robin	<i>Turdus migratorius</i>	S5B	G5				PO-S
<b>Mimidae</b>							
Gray Catbird	<i>Dumetella carolinensis</i>	S4B	G5				T
<b>Bombycillidae</b>							
Cedar Waxwing	<i>Bombycilla cedrorum</i>	S5B	G5				SM
<b>Fringillidae</b>							
Purple Finch	<i>Carpodacus purpureus</i>	S4B	G5				SH
American Goldfinch	<i>Spinus tristis</i>	S5B	G5				PR-T
<b>Parulidae</b>							
Ovenbird	<i>Seiurus aurocapilla</i>	S4B	G5			X	SM
Northern Waterthrush	<i>Parkesia noveboracensis</i>	S5B	G5				SM
Tennessee Warbler	<i>Oreothlypis peregrina</i>	S5B	G5				X
Nashville Warbler	<i>Oreothlypis ruficapilla</i>	S5B	G5				SM

Common Yellowthroat	<i>Geothlypis trichas</i>	S5B	G5				T
Chestnut-sided Warbler	<i>Setophaga pensylvanica</i>	S5B	G5				SM
Pine Warbler	<i>Setophaga pinus</i>	S5B	G5				SM
Lawrence's Warbler	<i>Vermivora chrysoptera x cyanoptera</i>	SNA	G5				SM
<b>Emberizidae</b>							
Chipping Sparrow	<i>Spizella passerina</i>	S5B	G5				PO-S
Field Sparrow	<i>Spizella pusilla</i>	S4B	G5			X	PO-S
Vesper Sparrow	<i>Poocetes gramineus</i>	S4B	G5			X	T
Savannah Sparrow	<i>Passerculus sandwichensis</i>	S4B	G5			X	P
Song Sparrow	<i>Melospiza melodia</i>	S5B	G5				PR-T
Swamp Sparrow	<i>Melospiza georgiana</i>	S5B	G5				T
<b>Cardinalidae</b>							
Scarlet Tanager	<i>Piranga olivacea</i>	S4B	G5			X	SM
Northern Cardinal	<i>Cardinalis cardinalis</i>	S5	G5				PR-P
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	S4B	G5				SM
Indigo Bunting	<i>Passerina cyanea</i>	S4B	G5				PO-S
<b>Icteridae</b>							
Bobolink	<i>Dolichonyx oryzivorus</i>	S4B	G5	THR	THR		PR-P
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	S4	G5				PO-S
Eastern Meadowlark	<i>Sturnella magna</i>	S4B	G5	THR	THR		A
Common Grackle	<i>Quiscalus quiscula</i>	S5B	G5				FY
Brown-headed Cowbird	<i>Molothrus ater</i>	S4B	G5				SM
Baltimore Oriole	<i>Icterus galbula</i>	S4B	G5				P

Species Code

Consistent with the American Ornithologists' Union. 2016. 57th Check-list Supplement of North American Birds. Accessed November 30, 2016. Available online: <http://americanornithology.org/content/aou-checklist-north-and-middle-american-birds-7th-edition-and-supplements/>

Highest Breeding Evidence

Codes assigned for breeding evidence are consistent with the Ontario Breeding Bird Atlas (OBBA). 2012. Breeding Evidence Codes. Accessed January 25, 2014. Available online: <http://www.birdsontario.org/dataentry/codes.jsp?page=breeding/>. Several different types of breeding evidence are often recorded for any given species over the course of surveys - this table reports only the highest level of breeding evidence

S Ranks

Provincial ranks are from the Natural Heritage Information Centre; S1 (critically imperiled), S2 (imperiled), S3 (vulnerable), S4 (apparently secure), S5 (secure); ranks were updated using NHIC species list September 2016

G Ranks

Global ranks are from the Natural Heritage Information Centre; G1 (extremely rare), G2 (very rare), G3 (rare to uncommon), G4 (common), G5 (very common); ranks were updated using NHIC species list September 2016

COSSARO (MNR)

Ontario Species at Risk as listed by the Committee on the Status of Species at Risk in Ontario (from NHIC Table September 2016 and updates posted on Ontario Regulation 230/08 Species at Risk in Ontario website as of September 19, 2016: <https://www.ontario.ca/laws/regulation/080230/>); END - Endangered, THR - Threatened, SC - Special Concern, NAR - Not at Risk

COSEWIC

Assessed Species at Risk at the national level as listed by the Committee on the Status of Endangered Wildlife in Canada (from COSEWIC September 19, 2016: [http://www.cosewic.gc.ca/eng/sct1/searchform\\_e.cfm/](http://www.cosewic.gc.ca/eng/sct1/searchform_e.cfm/)); END - Endangered, THR - Threatened, SC - Special Concern, NAR - Not at Risk

SWH Indicator Species

SWH refers to Significant Wildlife Habitat as defined by the MNR (2015) Significant Wildlife Habitat Criteria Schedules for Ecoregions 7E and 6E (as appropriate for the Subject Lands). SWH indicator species are identified in this table and any potential SWH is discussed in the text of this report.



Table 9: Winter Wildlife List

Transect	NOWI	COYO	DEMO	EACO	EGSQ	MUST SP	LEWE	LOWE	MEVO	MINK	MUSK	RACC	REFO	RESQ	RIOT	SFSQ	STSH	VIOP	WITU	WTDE	CAGO
T1		3																			
T2		1	1																		
T3		1											1								
T4	X																				
T5		3																			
T6		3			1																
T7			1																		
T8		1																			
T9		2																			
T10	X																				
T11																				2	
T12		3																			
T13																				6	
T14		1											1	5						1	
T15		2												1							

## LEGEND:

SPECIES CODE	COMMON NAME	SCIENTIFIC NAME
NOWI	No wildlife observed despite survey effort	
COYO	Coyote	<i>Canis latrans</i>
DEMO	Deer Mouse / White footed Mouse	<i>Peromyscus leucopus</i>
EACO	Eastern Cottontail	<i>Sylvilagus floridanus</i>
EGSQ	Eastern Gray Squirrel	<i>Sciurus carolinensis</i>
MUST SP	Mustela Species	<i>Mustela sp</i>
ERMI	Ermine	<i>Mustela erminea</i>
LEWE	Least Weasel	<i>Mustela nivalis</i>
LOWE	Long-tailed Weasel	<i>Mustela frenata</i>
MEVO	Meadow Vole	<i>Microtus pennsylvanicus</i>
MINK	Mink	<i>Mustela vison</i>
MUSK	Muskrat	<i>Ondatra zibethicus</i>
RACC	Raccoon	<i>Procyon lotor</i>
REFO	Red Fox	<i>Vulpes vulpes</i>
RESQ	Red Squirrel	<i>Tamiasciurus hudsonicus</i>
RIOT	River Otter	<i>Lontra canadensis</i>
SFSQ	Southern Flying Squirrel	<i>Glaucomys volans</i>
STSH	Short-tailed Shrew	<i>Blarina brevicauda</i>
VIOP	Virginia Opossum	<i>Didelphis virginiana</i>
WITU	Wild Turkey	<i>Meleagris gallopavo</i>
WTDE	White-tailed Deer	<i>Odocoileus virginianus</i>

HIBERNATING SPECIES		
(Unlikely to be encountered unless survey occurs during snow event in April or after a considerable warm spell)		
EACH	Eastern Chipmunk	<i>Tamias striatus</i>
GROU	Groundhog /	<i>Marmota monax</i>
STSK	Striped Skunk	<i>Mephitis mephitis</i>
WJMO	Woodland Jumping	<i>Napaeozapus insignis</i>

COMMON NAME	SCIENTIFIC NAME	Provincial S-RANK	Global G-Rank	COSSARO	COSEWIC	Local Status (CVC)
<b>ODONATA</b>						
Emerald Spreadwing	<i>Lestes dryas</i>	S5	G5			
Taiga Bluet	<i>Coenagrion resolutum</i>	S5	G5			
Familiar Bluet	<i>Enallagma civile</i>	S5	G5			
Eastern Forktail	<i>Ischnura verticalis</i>	S5	G5			
Common Green Darner	<i>Anax junius</i>	S5	G5			
Calico Pennant	<i>Celithemis elisa</i>	S5	G5			
Widow Skimmer	<i>Libellula luctuosa</i>	S5	G5			
Twelve-Spotted Skimmer	<i>Libellula pulchella</i>	S5	G5			
Common Whitetail	<i>Plathemis lydia</i>	S5	G5			
White-faced Meadowhawk	<i>Sympetrum obtrusum</i>	S5	G5			
<b>BUTTERFLIES</b>						
Northern Cloudywing	<i>Thorybes pylades</i>	S5	G5			
European Skipper	<i>Thymelicus lineola</i>	SNA	G5			
Tawny-edged Skipper	<i>Polites themistocles</i>	S5	G5			
Long Dash Skipper	<i>Polites mystic</i>	S5	G5			
Hobomok Skipper	<i>Poanes hobomok</i>	S5	G5			
Eastern Tiger Swallowtail	<i>Papilio glaucus</i>	S5	G5			
Pearl Crescent	<i>Phyciodes tharos</i>	S4	G5			
Red Admiral	<i>Vanessa atalanta</i>	S5	G5			
White Admiral	<i>Limenitis arthemis</i>	S5	G5			
Red-spotted Purple	<i>Limenitis arthemis astyanax</i>	S5	G5T5			
Northern Pearly Eye	<i>Enodia anthedon</i>	S5	G5			
Little Wood-Satyr	<i>Megisto cymela</i>	S5	G5			
Common Ringlet	<i>Coenonympha tullia</i>	S5	G5			
Monarch	<i>Danaus plexippus</i>	S4B, S2N	G5	SC	END	1
<b>AMPHIBIANS</b>						
Western Chorus Frog (great lakes - shield)	<i>Pseudacris triseriata</i>	S3	G5TNR	NAR	SC	1
Spring Peeper	<i>Pseudacris crucifer</i>	S5	G5			3
Northern Green Frog	<i>Lithobates clamitans</i>	S5	G5			3
Northern Leopard Frog	<i>Lithobates pipiens</i>	S5	G5			3
<b>REPTILES</b>						
Eastern Gartersnake	<i>Thamnophis sirtalis</i>	S5	G5T5			4
<b>BIRDS</b>						
Canada Goose	<i>Branta canadensis</i>	S5	G5			4
Wood Duck	<i>Aix sponsa</i>	S5	G5			2
Mallard	<i>Anas platyrhynchos</i>	S5	G5			4
Hooded Merganser	<i>Lophodytes cucullatus</i>	S5B, S5N	G5			2
Ruffed Grouse	<i>Bonasa umbellus</i>	S4	G5			2
Wild Turkey	<i>Meleagris gallopavo</i>	S5	G5			3
Turkey Vulture	<i>Cathartes aura</i>	S5B	G5			3
Broad-winged Hawk	<i>Buteo platypterus</i>	S5B	G5			2
Mourning Dove	<i>Zenaidura macroura</i>	S5	G5			4
Chimney Swift	<i>Chaetura pelagica</i>	S4B, S4N	G5	THR	THR	1
Downy Woodpecker	<i>Picoides pubescens</i>	S5	G5			4
Hairy Woodpecker	<i>Picoides villosus</i>	S5	G5			3
Yellow-bellied Flycatcher	<i>Empidonax flaviventris</i>	S5B	G5			3
Alder Flycatcher	<i>Empidonax alhorum</i>	S5B	G5			3
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	S4B	G5			3
Eastern Kingbird	<i>Tyrannus tyrannus</i>	S4B	G5			3
Red-eyed Vireo	<i>Vireo olivaceus</i>	S5B	G5			4
Blue Jay	<i>Cyanocitta cristata</i>	S5	G5			4

American Crow	<i>Corvus brachyrhynchos</i>	S5B	G5			4
Horned Lark	<i>Eremophila alpestris</i>	S5B	G5			3
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	S4B	G5			3
Barn Swallow	<i>Hirundo rustica</i>	S4B	G5	THR	THR	
Black-capped Chickadee	<i>Poecile atricapillus</i>	S5	G5			4
White-breasted Nuthatch	<i>Sitta carolinensis</i>	S5	G5			3
House Wren	<i>Troglodytes aedon</i>	S5B	G5			4
Eastern Bluebird	<i>Sialia sialis</i>	S5B	G5			3
American Robin	<i>Turdus migratorius</i>	S5B	G5			4
Gray Catbird	<i>Dumetella carolinensis</i>	S4B	G5			3
European Starling	<i>Sturnus vulgaris</i>	SNA	G5			5
Cedar Waxwing	<i>Bombycilla cedrorum</i>	S5B	G5			3
Ovenbird	<i>Seiurus aurocapilla</i>	S4B	G5			3
Northern Waterthrush	<i>Parkesia noveboracensis</i>	S5B	G5			3
Tennessee Warbler	<i>Oreothlypis peregrina</i>	S5B	G5			2
Common Yellowthroat	<i>Geothlypis trichas</i>	S5B	G5			4
Chestnut-sided Warbler	<i>Setophaga pensylvanica</i>	S5B	G5			2
Pine Warbler	<i>Setophaga pinus</i>	S5B	G5			3
Lawrence's Warbler	<i>Vermivora chrysoptera x cyanoptera</i>	SNA	G5			
Chipping Sparrow	<i>Spizella passerina</i>	S5B	G5			4
Field Sparrow	<i>Spizella pusilla</i>	S4B	G5			3
Vesper Sparrow	<i>Pooecetes gramineus</i>	S4B	G5			2
Savannah Sparrow	<i>Passerculus sandwichensis</i>	S4B	G5			4
Song Sparrow	<i>Melospiza melodia</i>	S5B	G5			4
Swamp Sparrow	<i>Melospiza georgiana</i>	S5B	G5			4
Scarlet Tanager	<i>Piranga olivacea</i>	S4B	G5			3
Northern Cardinal	<i>Cardinalis cardinalis</i>	S5	G5			4
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	S4B	G5			3
Indigo Bunting	<i>Passerina cyanea</i>	S4B	G5			3
Bobolink	<i>Dolichonyx oryzivorus</i>	S4B	G5	THR	THR	1
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	S4	G5			4
Eastern Meadowlark	<i>Sturnella magna</i>	S4B	G5	THR	THR	3
Common Grackle	<i>Quiscalus quiscula</i>	S5B	G5			4
Brown-headed Cowbird	<i>Molothrus ater</i>	S4B	G5			4
Baltimore Oriole	<i>Icterus galbula</i>	S4B	G5			3
American Goldfinch	<i>Spinus tristis</i>	S5B	G5			4
<b>MAMMALS</b>						
Eastern Chipmunk	<i>Tamias striatus</i>	S5	G5			3
Eastern Gray Squirrel	<i>Sciurus carolinensis</i>	S5	G5			4
Red Squirrel	<i>Tamiasciurus hudsonicus</i>	S5	G5			3
Meadow Vole	<i>Microtus pennsylvanicus</i>	S5	G5			3
Porcupine	<i>Erethizon dorsatum</i>	S5	G5			2
Coyote	<i>Canis latrans</i>	S5	G5			3
Red Fox	<i>Vulpes vulpes</i>	S5	G5			3
Northern Raccoon	<i>Procyon lotor</i>	S5	G5			4
American Mink	<i>Mustela vison</i>	S4	G5			2
Deer Mouse	<i>Peromyscus leucopus</i>	S5	G5			3
White-tailed Deer	<i>Odocoileus virginianus</i>	S5	G5			3

## SUMMARY

Total Odonata: 10  
Total Butterflies: 14  
Total Other Arthropods: 0

Total Amphibians:	8
Total Reptiles:	1
Total Birds:	56
Total Breeding Birds:	49
Total Mammals:	10

#### **SIGNIFICANT SPECIES**

Global:	0
National:	6
Provincial:	5
Regional:	0
Local:	13

#### **EXPLANATION OF STATUS AND ACRONYMS**

COSSARO: Committee on the Status of Species at Risk in Ontario

COSEWIC: Committee on the Status of Endangered Wildlife in Canada

S1: Critically Imperiled—Critically imperiled in the province (often 5 or fewer occurrences)

S2: Imperiled—Imperiled in the province, very few populations (often 20 or fewer),

S3: Vulnerable—Vulnerable in the province, relatively few populations (often 80 or fewer)

S4: Apparently Secure—Uncommon but not rare

S5: Secure—Common, widespread, and abundant in the province

SX: Presumed extirpated

SH: Possibly Extirpated (Historical)

SNR: Unranked

SU: Unrankable—Currently unrankable due to lack of information

SNA: Not applicable—A conservation status rank is not applicable because the species is not a suitable target for conservation activities.

S#S#: Range Rank—A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species

S#B- Breeding status rank

S#N- Non Breeding status rank

?: Indicates uncertainty in the assigned rank

G1: Extremely rare globally; usually fewer than 5 occurrences in the overall range

G1G2: Extremely rare to very rare globally

G2: Very rare globally; usually between 5-10 occurrences in the overall range

G2G3: Very rare to uncommon globally

G3: Rare to uncommon globally; usually between 20-100 occurrences

G3G4: Rare to common globally

G4: Common globally; usually more than 100 occurrences in the overall range

G4G5: Common to very common globally

G5: Very common globally; demonstrably secure

GU: Status uncertain, often because of low search effort or cryptic nature of the species; more data needed.

T: Denotes that the rank applies to a subspecies or variety

Q: Denotes that the taxonomic status of the species, subspecies, or variety is questionable.

END: Endangered

THR: Threatened

SC: Special Concern

NAR: Not At Risk

IND: Indeterminant, insufficient information to assign status

DD: Data Deficient

1: Species of Conservation Concern (CVC)

2: Species of Interest (CVC)

3: Species of Urban Interest (CVC)

4: Secure Species (CVC)

5: Non-native and Non-native Hybrid Species (CVC)

#### **LATEST STATUS UPDATE**

Odonata: April 2017

Butterflies: April 2017

Other Arthropods: April 2017

Amphibians: April 2017

Reptiles: April 2017

Birds: April 2017

Mammals: April 2017

#### **REFERENCES**

##### **COSSARO Status**

Endangered Species Act, 2007 (Bill 184). Species at Risk in Ontario List (O. Reg. 230/08).

##### **COSEWIC Status**

COSEWIC. 2007. Canadian Species at Risk. Committee on the Status of Endangered Wildlife in Canada.

##### **Local Status**

Credit Valley Conservation Authority (CVC). 2011. Field list of species confirmed in the CVC Watershed.

##### **Significant Wildlife Habitat (SWH) Indicator Species**

Ministry of Natural Resources and Forestry (MNRF). 2015. Significant wildlife habitat criteria schedules for ecoregion 6E. Available at: <https://dr6j45jk9xcmk.cloudfront.net/documents/4775/schedule-6e-jan-2015-access-ver-final-s.pdf/>.

MNRF. 2015. Significant wildlife habitat criteria schedules for ecoregion 7E. Available at: <https://dr6j45jk9xcmk.cloudfront.net/documents/4776/schedule-7e-jan-2015-access-vers-final-s.pdf/>.

**Table 11: Headwater Drainage Feature Classification and Management Recommendations**

DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS				
WEST CREDIT RIVER TRIBUTARY						
RA1 (off site)	FT – 1  FC – 4 (Round 1) FC – 4 (Round 2) FC – 4 (Round 3)  Important – flowing water during third round of HDFA	None	6 – Important (Wetland)	2 – Valued  (no fish observed; fish habitat present (pools and undercut banks))	1 – Important  (breeding amphibians found in large quantities in riparian wetlands)	Protection
RB1 (on site)	FT – 2  FC – 4 (Round 1) FC – 1 (Round 2)  Recharge Function – significant reduction in surface flow in this reach, dry during second round of HDFA	Agricultural	3 – Limited (Cropped)	2 – Valued  (small bodied fish observed; fish habitat (riffles and runs) present in early spring)	4 – Limited  (no terrestrial habitat present)	Conservation

**LEGEND:**

FT Feature Types (1-defined natural channel, 2-channelized, 3-multi-thread, 4-no defined feature, 5-tiled drainage, 6-wetland, 7-swale, 8-roadside ditch, 9-online pond outlet)

FC Flow Conditions (1-no surface water, 2-standing water, 3-interstitial flow, 4-surface flow minimal, 5-surface flow substantial)

Note: Codes correspond with Ontario Stream Assessment Protocol (OSAP) guidelines

**Table 12: Significant Wildlife Habitat Assessment**

SIGNIFICANT WILDLIFE HABITAT (SWH) TYPE	ELC ECOSITE(S) PRESENT	HABITAT CRITERIA MET	TARGETED FIELD STUDIES REQUIRED	WILDLIFE SPECIES PRESENT (MINIMUM ABUNDANCES AND/OR DIVERSITY REQUIRED TO CONFIRM SWH)	SWH TYPE PRESENT WITHIN THE SUBJECT LANDS
<b>1. SEASONAL CONCENTRATION AREAS</b>					
Insects					
Migratory Butterfly Stopover Areas	Yes – FOD/FOM/CUP/CUM/CUS present on and within 120 m of the Subject Lands	No The Subject Lands are located outside of 5 km from Lake Ontario.	N/A	N/A	Not present
Reptiles					
Turtle Wintering Areas	Yes – MAS and MAM present on Subject Lands	No – MAS3-1 is a shallow cattail marsh that provides no open water habitat	N/A	N/A	Not present
Reptile Hibernacula	Yes (no specific ELC Ecosite required)	Potential Rock piles present in hedgerows, 5 locations identified during site recon and camera traps were installed in Fall 2017.	Yes	No – No snakes observed during spring or fall studies, or camera trap results.	Not present
Birds					
Waterfowl Stopover and Staging Areas	Yes (CUM1 present on the Subject Lands	No – CUM 1 on the Subject Lands are	N/A	N/A	Not present



SIGNIFICANT WILDLIFE HABITAT (SWH) TYPE	ELC ECOSITE(S) PRESENT	HABITAT CRITERIA MET	TARGETED FIELD STUDIES REQUIRED	WILDLIFE SPECIES PRESENT (MINIMUM ABUNDANCES AND/OR DIVERSITY REQUIRED TO CONFIRM SWH)	SWH TYPE PRESENT WITHIN THE SUBJECT LANDS
(terrestrial)		sloped such that ponding of water on the Subject Lands would not be expected.			
Waterfowl Stopover and Staging Areas (aquatic)	Yes – MAS and MAM present on Subject Lands	No – MAS3-1 is a shallow cattail marsh that provides no open water habitat	N/A	N/A	Not present
Shorebird Migratory Stopover Areas	No	N/A	N/A	N/A	Not present
Migratory Landbird Stopover Areas	Yes – FOD present on Subject Lands and within 120 m.	No The woodlot is not within 5km of Lake Ontario.	N/A	N/A	Not present
Raptor Wintering Areas	Yes – FOD/FOM/ CUM/CUS complex present on Subject Lands and within 120 m.	Yes – Combined areas is greater than 20 ha	Yes (2018)	No hawk or owl species observed during winter wildlife survey in 2014.	Candidate SWH present
Colonial Bird Nesting Sites (bank/cliff; tree/shrub; or ground)	Yes – CUM and CUS present on Subject Lands	No – No exposed soil banks present on Subject Lands	N/A	N/A	Not present
Mammals					
Bat Hibernacula	No	N/A	N/A	N/A	Not present
Bat Maternity Colonies	Yes – FOD/FOM present on Subject Lands and within 120 m.	Potential – Bat habitat assessments were not completed as habitat is not within the proposed	No – Featured treated as candidate SWH	N/A	Candidate SWH present on Subject Lands outside of

SIGNIFICANT WILDLIFE HABITAT (SWH) TYPE	ELC ECOSITE(S) PRESENT	HABITAT CRITERIA MET	TARGETED FIELD STUDIES REQUIRED	WILDLIFE SPECIES PRESENT (MINIMUM ABUNDANCES AND/OR DIVERSITY REQUIRED TO CONFIRM SWH)	SWH TYPE PRESENT WITHIN THE SUBJECT LANDS
		development footprint. Feature treated as candidate SWH			development footprint.
Deer Yarding Areas	N/A – MNRF to determine	N/A – MNRF to determine	N/A	N/A	Not present – determined by MNRF
Deer Winter Congregation Areas	N/A – MNRF to determine	N/A – MNRF to determine	N/A	N/A	Not present – determined by MNRF
<b>2. RARE VEGETATION COMMUNITIES OR SPECIALIZED HABITAT FOR WILDLIFE</b>					
2a. Rare Vegetation Communities					
Rare Vegetation Types (cliffs, talus slopes, sand barrens, alvars, old-growth forests, savannahs, and tallgrass prairies)	Yes (FOD/FOM/FOC)	No – Woodland communities less than 30 ha in size and with less than 10 ha of interior habitat.	N/A	N/A	Not present
Other Rare Vegetation Types	No - S1, S2 or S3 vegetation communities were not identified within the Subject Lands (determined by field studies).	N/A	N/A	N/A	Not present

SIGNIFICANT WILDLIFE HABITAT (SWH) TYPE	ELC ECOSITE(S) PRESENT	HABITAT CRITERIA MET	TARGETED FIELD STUDIES REQUIRED	WILDLIFE SPECIES PRESENT (MINIMUM ABUNDANCES AND/OR DIVERSITY REQUIRED TO CONFIRM SWH)	SWH TYPE PRESENT WITHIN THE SUBJECT LANDS
2b. Specialized Wildlife Habitat					
Vegetation					
Seeps and Springs	Yes - FOD/FOM present on Subject Lands	Yes	Yes	No seeps or springs identified during field surveys	Not present
Amphibians					
Woodland Amphibian Breeding Habitats (within or < 120m from woodland)	Yes – FOD/FOM present on Subject Lands	Yes – MAS community present within 120 m of FOM community on Subject Lands.	Yes	SPPE and CHFR were recorded at the 2 call count stations on the Subject Lands. Call count presence of breeding population threshold not met.	Not present
Wetland Amphibian Breeding Habitats (wetland >120m from woodland)	No – MAS present on Subject Lands is within 120 m of a woodland	N/A	N/A	N/A	Not present
Reptiles					
Turtle Nesting Areas	Yes – MAS habitat present on Subject Lands	No – no exposed sand or gravel on Subject Lands; silty clay loam soils	N/A	N/A	Not present
Birds					
Waterfowl Nesting Area	Yes – MAS and SWT present on Subject Lands	Yes – upland areas present within 120 m of	Yes	No – No waterfowl species observed	Not present

SIGNIFICANT WILDLIFE HABITAT (SWH) TYPE	ELC ECOSITE(S) PRESENT	HABITAT CRITERIA MET	TARGETED FIELD STUDIES REQUIRED	WILDLIFE SPECIES PRESENT (MINIMUM ABUNDANCES AND/OR DIVERSITY REQUIRED TO CONFIRM SWH)	SWH TYPE PRESENT WITHIN THE SUBJECT LANDS
		the wetland		during breeding bird surveys on the Subject Lands.	
Bald Eagle and Osprey Habitats	No – No FOD located adjacent to riparian areas on or within 120 m of the Subject Lands	N/A	N/A	N/A	Not present
Woodland Raptor Nesting Habitat	Yes – FOD/FOM present on Subject Lands and within 120 m.	No – No interior forest habitat present	N/A	N/A	Not present
Woodland Area-Sensitive Bird Breeding Habitat	Yes – FOD present on Subject Lands and within 120 m.	No – No interior forest habitat present	N/A	N/A	Not present
<b>3. SPECIES OF CONSERVATION CONCERN</b>					
Marsh Bird Breeding Habitat	No – MAM present within 120 m of the Subject Lands, but is more than 120 m from the proposed limit of development	N/A	N/A	N/A.	Not present
Open Country Bird Breeding Habitat	Yes – CUM present on Subject Lands and within 120 m	No – CUM communities are less than 30 ha in size	N/A	N/A	Not present
Shrub/Early Successional Bird Breeding Habitat	Yes – CUS present on Subject Lands and within 120 m	No – CUS community is less than 10 ha in size	N/A	N/A	Not present
Terrestrial Crayfish	Yes – MAS present on Subject Lands	Yes	Yes	No – No evidence of terrestrial crayfish	Not present

SIGNIFICANT WILDLIFE HABITAT (SWH) TYPE	ELC ECOSITE(S) PRESENT	HABITAT CRITERIA MET	TARGETED FIELD STUDIES REQUIRED	WILDLIFE SPECIES PRESENT (MINIMUM ABUNDANCES AND/OR DIVERSITY REQUIRED TO CONFIRM SWH)	SWH TYPE PRESENT WITHIN THE SUBJECT LANDS
				observed during surveys on the Subject Lands	
Special Concern and Rare Wildlife Species	N/A	N/A	Yes – Wildlife studies conducted on the Subject Lands	Yes – A Western Chorus Frog was confirmed as breeding within the MAS unit on the Subject Lands  Wood Thrush and Eastern Wood-Pewee detected on adjacent lands in sub-optimal habitat.	Present
<b>4. ANIMAL MOVEMENT CORRIDORS</b>					
Amphibian Movement Corridors	N/A	No – No amphibian breeding SWH identified during the baseline surveys	N/A	N/A	Not present.
Deer Movement Corridors	N/A	No – No deer wintering habitat identified by MNRF.	No	N/A	Not present

**Table 13: Significant Wildlife Habitat Review (ROPA 21B Caledon-Peel Significant Wildlife Habitat Study, 2009)**

SWH TYPE	SWH ANALYSIS
<b>SEASONAL CONCENTRATIONS OF ANIMALS</b>	
A1. Deer wintering area	<b>Not present</b> <ul style="list-style-type: none"> <li>- No deer wintering yard mapped on the Subject Lands</li> </ul>
A2. Colonial bird nesting sites	<b>Not present.</b> <ul style="list-style-type: none"> <li>- No colonially nesting birds sites present on the Subject Lands</li> </ul>
A3. Waterfowl nesting habitat	<b>Not present</b> <ul style="list-style-type: none"> <li>- No evidence of waterfowl nesting noted during breeding bird surveys</li> </ul>
A4i. Landbird migratory stopover areas	<b>Not applicable to Town of Caledon</b>
A4ii. Migratory bat stopover areas	<b>Not applicable</b> <ul style="list-style-type: none"> <li>- The Peel-Caledon SWH Study (2009) does not provide a threshold for this criterion due to insufficient information</li> </ul>
A4iii. Migratory butterfly stopover areas	<b>Not applicable to Town of Caledon</b>
A4iv. Waterfowl Stopover (or staging) areas (terrestrial)	<b>Not present</b>
A4v. Migratory waterfowl stopover (or staging) areas (aquatics)	<b>Not present</b>

**Table 13: Significant Wildlife Habitat Review (ROPA 21B Caledon-Peel Significant Wildlife Habitat Study, 2009)**

SWH TYPE	SWH ANALYSIS
A4vi. Migratory shorebird stopover areas	<b>Not present</b>
A5. Raptor wintering areas	<b>Not present</b> - No raptors were observed during winter wildlife surveys
A6. Snake hibernacula	<b>Not Present</b> - Potential hibernacula locations identified within hedgerows, but no snake species observed on camera traps or during snake surveys
A7. Bat maternal roosts and hibernacula	<b>Potentially Present</b> - FOD/FOM communities present on Subject Lands, however these features are outside of the proposed limit of development. As a result, they are considered to be candidate significant bat maternity colony habitats
A8. Bullfrog concentration areas	<b>Not applicable</b> - The Peel-Caledon SWH Study (2009) incorporated this SWH type into criterion B8ii
A9. Wild turkey winter range	<b>Not applicable</b>
A10. Turkey vulture summer roosting areas	<b>None detected</b> - No observations of this species were made during the field survey work and no summer roosting habitat was identified within the Subject Lands for this species
<b>RARE VEGETATION COMMUNITIES OR SPECIALIZED HABITAT FOR WILDLIFE</b>	
B1. Rare vegetation communities	<b>Not Present</b> - SWT3-2 community was identified on the Subject Lands; however, the



**Table 13: Significant Wildlife Habitat Review (ROPA 21B Caledon-Peel Significant Wildlife Habitat Study, 2009)**

SWH TYPE	SWH ANALYSIS
	features is below the minimum size threshold of 0.5 ha
B2. Forests providing a high diversity of habitats	<b>Not applicable</b> <ul style="list-style-type: none"> <li>- It is assumed that all forests providing a high diversity of habitats will be captured by the suite of significant woodland criteria</li> </ul>
B3. Old-growth or mature forest stands	<b>Not applicable</b> <ul style="list-style-type: none"> <li>- It is assumed that all old-growth and mature forests will be captured by the significant woodlands criteria</li> </ul>
B4. Foraging areas with abundant mast	<b>Not Present</b>
B5. Highly diverse areas	<b>Not applicable</b> <ul style="list-style-type: none"> <li>- The Caledon-Peel SWH study consultant team provided a map to the Town for review regarding the most diverse patches in Caledon / the Region</li> </ul>
B6. Cliffs and caves	<b>None detected</b>
B7. Seeps and springs	<b>Not Present</b>
B8i. Amphibian breeding habitat – forested sites	<b>Not Present</b> <ul style="list-style-type: none"> <li>- No vernal pools present on the Subject Lands</li> </ul>
B8ii. Amphibian breeding habitat – non-forested sites	<b>Not Present</b> <ul style="list-style-type: none"> <li>- Insufficient numbers of calling amphibians detected</li> </ul>
B9. Turtle nesting habitat and turtle overwintering areas	<b>Not present</b> <ul style="list-style-type: none"> <li>- No nesting evidence was directly observed within the Study Area</li> </ul>

**Table 13: Significant Wildlife Habitat Review (ROPA 21B Caledon-Peel Significant Wildlife Habitat Study, 2009)**

SWH TYPE	SWH ANALYSIS
B10. Habitat for area-sensitive forest interior breeding bird species	<b>Not present</b> <ul style="list-style-type: none"> <li>No woodlands with interior forest identified</li> </ul>
B11. Habitat for open country and early successional breeding bird species	<b>Not present</b> <ul style="list-style-type: none"> <li>Portions of the open grassland communities are actively hayed each year</li> </ul>
B12. Habitat for wetland breeding bird species	<b>Not present</b> <ul style="list-style-type: none"> <li>No species observed</li> </ul>
B13i. Raptor nesting habitat – (Raptors associated with wetlands, ponds, and rivers)	<b>Not present</b> <ul style="list-style-type: none"> <li>No Northern Harrier or Osprey nests were detected within the Study Area</li> </ul>
B13ii. Raptor nesting habitat – (Raptors associated with woodland habitats)	<b>Present</b> <ul style="list-style-type: none"> <li>No nests were found that would trigger this SWH type</li> </ul>
B14. Mink, River Otter, Marten and Fisher denning sites	<b>Present - Candidate</b> <ul style="list-style-type: none"> <li>One Mink was observed on wildlife camera traps setup within hedegrows. Den site is unknown; however, it can be assumed denning would occur along the watercourse/wetlands to the north and east of the Subject Lands</li> </ul>
B15. Mineral licks	<b>Not applicable</b> <ul style="list-style-type: none"> <li>Mineral licks are not recommended as an SWH type for the Region of Peel or the Town of Caledon</li> </ul>
<b>SPECIES OF CONSERVATION CONCERN</b>	
C1. Species identified as Nationally Endangered or Threatened by COSEWIC, which are not protected	<b>Not Present</b>

**Table 13: Significant Wildlife Habitat Review (ROPA 21B Caledon-Peel Significant Wildlife Habitat Study, 2009)**

SWH TYPE	SWH ANALYSIS
in regulation under Ontario's Endangered Species Act or Threatened under Ontario's Endangered Species Act	
C2. Species identified as Special Concern based on Species at Risk in Ontario List that is periodically updated by OMNR	<b>Two Special Concern species were recorded within the 120m Adjacent Lands:</b> <ul style="list-style-type: none"> <li>- Wood Thrush was observed in a mature hardwood forest offsite</li> <li>- Eastern Wood-Pewee was observed at a hardwood fencerow between two old fields</li> <li>- Habitat conditions within these features were determined to be suboptimal</li> </ul>
C3. Species that are listed as rare (S1-S3) or historical in Ontario based on records kept by the NHIC in Peterborough	<b>Present</b> <ul style="list-style-type: none"> <li>- Western Chorus Frog observed on Subject Lands within the MAS3-1 wetland unit</li> </ul>
C4. Species whose populations appear to be experiencing substantial declines in Ontario	<b>Not applicable</b> <ul style="list-style-type: none"> <li>- The Peel-Caledon SWH Study (2009) does not provide a threshold for this criterion due to insufficient information</li> </ul>
C5. Species that have a high percentage of their global population in Ontario and are rare or uncommon in the Region of Peel/ Town of Caledon	<b>Not Applicable</b> <ul style="list-style-type: none"> <li>- The Peel-Caledon SWH Study (2009) does not provide a threshold for this criterion due to insufficient information.</li> </ul>
C6. Species that are rare within the Region of Peel or Town of Caledon, even though they may not be provincially rare	<b>Six Locally Rare species</b> <ul style="list-style-type: none"> <li>- The Peel-Caledon SWH Study (2009) does not provide a regionally rare wildlife list due to lack of sufficient information. The plant list produced by Varga et al. (2005) is to be used to identify regionally rare plants. Locally rare species, according to Varga et al. (2005), are provided in the plant species list in <b>Table XX</b></li> </ul>

**Table 13: Significant Wildlife Habitat Review (ROPA 21B Caledon-Peel Significant Wildlife Habitat Study, 2009)**

SWH TYPE	SWH ANALYSIS
C7. Species that are subjects of recovery programs	<b>Present</b> <ul style="list-style-type: none"> <li>- Final Recovery Strategies are available for one species recorded in the Study Area, Western Chorus Frog, which was addressed previously in C3.</li> </ul>
C8. Species considered important to the Region of Peel/ Town of Caledon, based on recommendations from the Conservation Advisory Committee	<b>Not applicable.</b> <ul style="list-style-type: none"> <li>- No Conservation Advisory Committee currently exists in the Region or the Town of Caledon.</li> </ul>
<b>ANIMAL MOVEMENT CORRIDORS</b>	
D. Animal Movement Corridors	<b>Not Present.</b>