Meadowvale Shop Environmental Impact Study

7060 Old Mill Lane, City of Mississauga, Ontario

Final Report

Prepared for the City of Mississauga
Prepared by Credit Valley Conservation and North-South Environmental Inc.

February 2018

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1.0 Introduction

An application for lot line adjustment to create a newly configured lot is proposed at 7060 Old Mill Lane, in the City of Mississauga (herein referred to as the 'subject property'). A Zoning By-law Amendment is also required to update the newly configured lot to appropriate zoning that would permit construction of a single-family residence. North-South Environmental Inc. (NSE) was retained by Credit Valley Conservation (CVC) to assist with the preparation of an Environmental Impact Study (EIS) due to the proximity of natural heritage features. A Terms of Reference (TOR) was submitted to the City of Mississauga and subsequently approved in August 2017 (Appendix 1). Based on the approved TOR, this EIS provides a description of the ecological features and functions, reviews the potential impacts associated with the proposed development, reviews relevant policies and recommends mitigation and compensation measures.

1.1 Subject Property

The subject property, which is approximately 0.13ha in size, is located on Old Mill Lane, north of Old Derry Road and adjacent to CVC's Meadowvale Conservation Area, in the historic Village of Meadowvale in the City of Mississauga (Figure 1). Residential properties with single-family dwellings are located to the north, south and east of the subject property. To the west of the subject property is a cultural woodland that forms part of Meadowvale Conservation Area.

The subject property is presently part of the CVC-owned Meadowvale Conservation Area. The park portion of the Conservation Area is leased to the City of Mississauga. The remainder of the parcel has been retained by CVC to support seasonal operations. There is a building on the subject property that serves as a workshop and storage facility. The area that extends approximately 10m behind the existing shop on the proposed lot has been disturbed by CVC's operational activities. The area shows evidence of soil disturbance and lacks natural vegetation regeneration. CVC uses this area to store restoration materials, monitoring equipment, construction materials, watercraft, etc. There are concrete pads from an old alcohol storage cabinet, a septic tank cover and some old discarded concrete curbs in this area.

1.2 Study Area

The study area of this EIS is defined as the subject property and the adjacent natural area that extends approximately 50m westward toward the Credit River (Figure 1). The study area incorporates the natural heritage features and functions that may be affected by the development proposal.

1.3 Development Proposal

CVC proposes that the subject property be lot line adjusted to recognize a previously existing lot located on Old Mill Lane (municipal address 7060 Old Mill Lane). CVC intends to sell the subject property as a residential lot. The residential use would be consistent with the surrounding residential uses on Old Mill Lane. The subject property would meet the provisions set out for an R1 zone. A Zoning By-law Amendment is needed to update the new lot to appropriate zoning that would permit construction of a new residential home.

CVC recognizes that this property falls within the Heritage Conservation District and as such the Meadowvale Village Policies of the Mississauga Plan apply. CVC recognizes the importance of

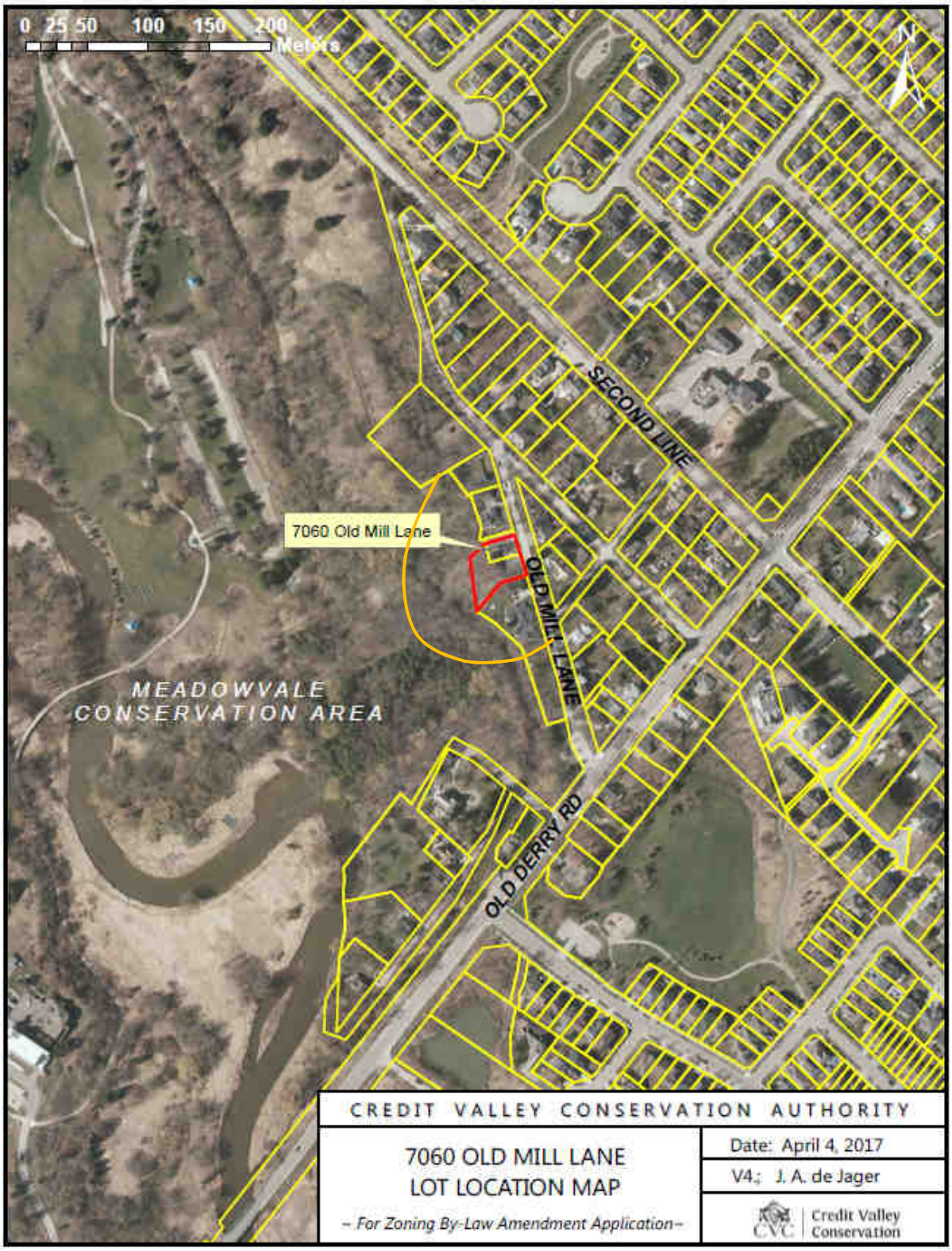


Figure 1. Proposed lot at 7060 Old Mill Lane (shown in red), study area (shown in orange) and site context.

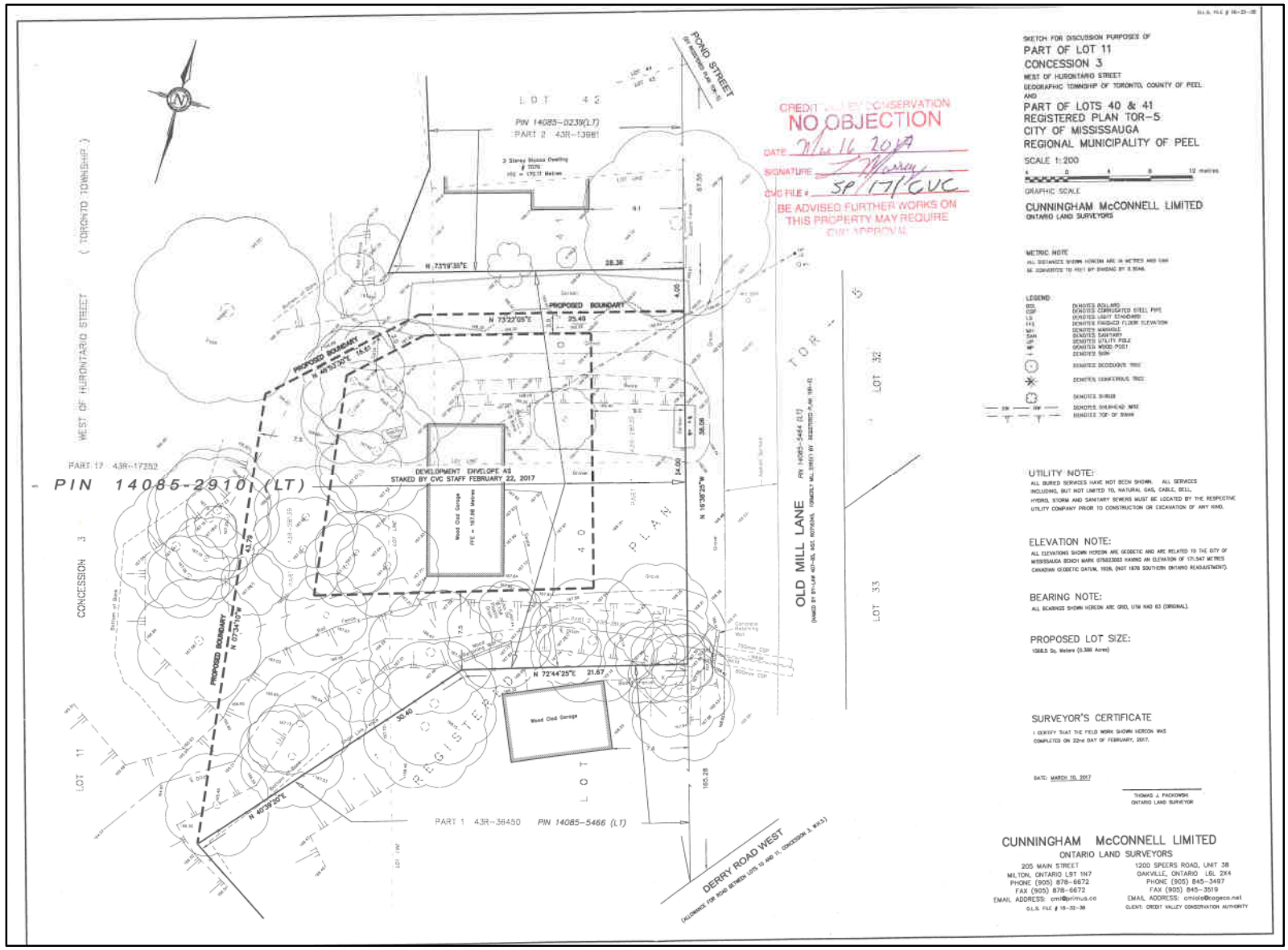


Figure 2. Lot configuration and proposed construction envelope at 7060 Old Mill Lane.

Photograph 1. Rear of existing shop structure, facing southwest.

Photograph 2. Rear of existing shop structure, facing east.

Photograph 3. Rear of existing shop structure, facing northeast.

Photograph 4. Rear of existing shop structure, facing northeast. Proposed lot shown in red. Proposed building envelope shown in blue.

maintaining the character and intent of the village and will work to ensure that the urban design guidelines are respected by the purchaser.

The Ministry of Municipal Affairs and Housing has granted CVC an amendment to the Parkway Belt West Plan July 13, 2004 to re-designate the 0.13ha subject property from Public Open Space and Buffer Area to General Complimentary Use Area most appropriate for a single-family residence.

CVC has consulted appropriate technical and regulatory staff and has staked a proposed building envelope (February 22, 2017) for the proposed lot. The building envelope additionally respects appropriate setbacks from the regulated floodplain (Ontario Reg. 160/06). CVC technical staff have no objection to the proposed building envelope, as evidenced by 'No Objection' by authorized CVC staff on March 15, 2017 (CVC File no. SP 17/CVC) (Figure 2). The construction envelope further respects the requirements of the proposed R1-32 zoning for the lot, which specify front yard, rear yard and side yard setbacks. Figure 2 depicts the proposed construction envelope that complements the R1-32 zone, consistent with Meadowvale Village zoning. CVC's intent is to sell the surplus lands and use the proceeds from the sale to fund additional CVC conservation projects. Prior to any development on site, a site plan which meets the requirements of the Meadowvale Heritage Conservation District Plan must be approved by the City of Mississauga.

2.0 Methods

2.1 Background Review

A review of the following sources of information was completed to gain background information on various aspects of the natural environment:

- City of Mississauga Official Plan (January 10, 2018);
- City of Mississauga Zoning By-Law 0225-2007 (October 2017);
- Provincial Policy Statement (MMAH 2014);
- Natural Heritage Reference Manual (OMNR 2010);
- Significant Wildlife Habitat Technical Guide (OMNR 2000);
- Natural Heritage Information Centre (NHIC) species occurrences;
- Information Request with MNRF regarding records of Species at Risk;
- Credit River Watershed and Region of Peel Natural Areas Inventory – Site Summary for Creditview – Derry (Meadowvale CA), dated December 2016;
- Credit Valley Conservation Natural Heritage Database for Ecological Land Classification (ELC) data and species records;
- Mississauga Natural Areas Survey for CRR1 (North-South Environmental Inc. 2015);
- Credit River Environmentally Significant Areas study (Ecologistics 1979);
- Acoustic Bat Monitoring Report for the Credit River Watershed (Reid and Amelon 2007); and
- The Physiography of Southern Ontario, 3rd Edition (Chapman and Putnam 1984).

2.2 Timing of Field Surveys

A variety of detailed field surveys were completed by CVC between 2014 to 2017 to complement existing information sources (Table 1). This included delineation and classification of the vegetation communities on the subject property, the completion of surveys for plants, birds, bats and Species at Risk, as well as the assessment of potential Significant Wildlife Habitat. Incidental wildlife observations were recorded, and representative site photographs were taken.

Existing ELC, flora and incidental wildlife data collected by CVC's Natural Areas Inventory Team in 2014 were utilized for the study area that extends beyond the subject property.

Table 1. Field survey summary.

Date	Task	Surveyors
8 Sep 2014	ELC of natural area adjacent to proposed lot	CVC: Leanne Wallis, Shannon Ferguson
12 Sep 2014	ELC of natural area adjacent to proposed lot	CVC: Leanne Wallis, Shannon Ferguson
15 Sep 2014	ELC of natural area adjacent to proposed lot	CVC: Leanne Wallis, Shannon Ferguson
2 Jun 2017	Summer botanical survey of proposed lot, ELC	CVC: Heather Lynn, Jessica Consiglio
2 Jun 2017	Assessment of Suitable Maternity Roost Trees for Bats	CVC: Heather Lynn, Jessica Consiglio
6-16 Jun 2017	Acoustic detectors deployed for bat surveys	CVC: Heather Lynn, Jessica Consiglio
16 Jun 2017	Breeding bird survey #1	CVC: Christina Kovacs, Jose Maloles
14 Jul 2017	Breeding bird survey #2	CVC: Christina Kovacs, Sarah Labrie
28 Sep 2017	Fall botanical survey of proposed lot	CVC: Joe Pearson
1 Nov 2017	Verification of ELC communities/NAS inventory adjacent to proposed lot	CVC: Heather Lynn

2.3 Vegetation Community Description - Ecological Land Classification

ELC of vegetation communities was conducted based on the Ecological Land Classification System for Southern Ontario, first approximation (Lee et al. 1998). ELC was completed on the subject property by CVC on June 2, 2017 (Table 1). ELC of the remaining study area was completed by CVC's Natural Areas Inventory program in September 2014 and verified by CVC in the field on November 1, 2017. Physical characteristics and dominant flora species were recorded per ELC protocols. Remarks on natural disturbances (e.g., presence of invasive species), Significant Wildlife Habitat and human-made disturbances (e.g., dumping) were noted if encountered.

Terminology used to describe vegetation communities is based on ELC protocols that collect information on four vegetation layers, which are:

1. **Canopy** consists of tall vegetation which reaches the light first; typically composed of tall trees (in a forest community).

2. **Sub-canopy** includes vegetation growing just under the canopy; vegetation that receives filtered sunlight through the canopy; typically composed of trees and tall shrubs (in a forest community).
3. **Understory** includes vegetation growing below the sub-canopy; typically composed of both tall and low-growing shrubs.
4. **Ground** consists of the vegetation which is closest to, and covering, the ground; typically composed of herbaceous vegetation.

2.4 Inventory of Vascular Plants

CVC conducted an inventory of vascular plants on the subject property on June 2 and September 28, 2017 (Table 1). A spring botanical inventory was not completed; however, remnants of spring ephemerals were observed in the early summer survey completed on June 2, 2017. The inventory of vascular plants for the remaining study area was generated from CVC's 2014 ELC work. The abundance of each vascular plant species was recorded in the corresponding vegetation layer (i.e., canopy, sub-canopy, understory and ground layer). Global Positioning System (GPS) points were recorded for significant species as well as Significant Wildlife Habitat. The GPS units used are accurate to 2-5m. In instances where GPS readings were not accurate (e.g., under a closed canopy within a forest), approximate locations of significant species were mapped on an aerial photograph. The abundance and distribution of each significant vascular plant species was recorded (e.g., widespread, scattered, or localized to one or two clumps).

A comprehensive vascular plant list for the study area, along with conservation status, was compiled and can be found in Appendix 2. Federal species status is based on Committee on the Status of Endangered Wildlife in Canada (COSEWIC) rankings; provincial species status is based on the Species at Risk in Ontario List and S-ranks; regional/local rarity is based on species rarity ranks for the Region of Peel and the Credit Watershed (Kaiser 2001).

2.4.1 Floristic Quality Index

The Floristic Quality Index (FQI) and Native Mean Coefficient of Conservatism (Native Mean C) are used to measure vegetation quality within the study area. These are based on numbers between 1 and 10 which are assigned by the province to each native plant according to its habitat requirements (Oldham et al. 1995). Values of 1 to 3 are assigned to species growing in degraded or non-natural areas. These plants have an affinity for disturbed sites. Species with a value of 4 to 6 are often found in natural areas but can persist with some level of disturbance. Values of 7 to 9 are attributed to plant species that have a fidelity to native lands of high quality with little disturbance. The value of 10 indicates the species is obligate to high quality natural areas and has a narrow range of ecological tolerance. The scores for all plants found at a site are averaged to obtain the Native Mean C and summed and multiplied by the square root of the number of species to obtain the FQI (Oldham et al. 1995). Very high-quality habitats with a high diversity of species requiring a narrow range of habitats have higher FQIs than habitats with fewer species with broad habitat requirements.

2.5 Wildlife Surveys

The woodland at the rear of the proposed lot is contiguous with the surrounding natural area and provides habitat for breeding birds and bats, and other wildlife species. Targeted wildlife surveys were conducted for breeding birds and bats. Incidental observations were also recorded of other wildlife.

2.5.1 Breeding Bird Surveys

Breeding bird surveys were completed by CVC on June 16 and July 14, 2017, following the Birds and Bird Habitats: Guidelines for Wind Power Projects (OMNR 2011) protocol for breeding birds. One point-count survey station was located in the woodland, behind the shop, on the proposed lot (UTM: 602396E, 4831223N). Surveys were completed thirty minutes before sunrise until 4 hours after sunrise, under weather conditions with little to no precipitation, little to no wind (i.e., 3 or less on the Beaufort Scale; <12-19 km/hour) and good visibility (e.g., no fog). A 10-minute survey was conducted at the point-count location. All birds seen or heard during the 10-minute period were recorded and plotted on a map. In addition to location, abundance, sex (if known) and breeding bird evidence were recorded (e.g., singing male, fledged young). The protocol divides breeding bird surveys into two periods for the purpose of estimating abundance and collecting breeding evidence on early breeding and later breeding species, as well as providing an opportunity to increase breeding certainty. Breeding evidence was evaluated using the following guidelines (Ontario Breeding Bird Atlas 2001):

- **Observed** is defined as a species observed in its breeding season outside its nesting habitat (no evidence of breeding).
- **Possible Breeding** is indicated by the presence of a singing male (or breeding calls heard) in suitable habitat or the presence of a bird observed in suitable breeding habitat in its breeding season.
- **Probable Breeding** is defined as an observation of any of the following: (1) a pair in breeding season in suitable habitat; (2) permanent territory presumed through registration of territorial song on at least two days, a week or more apart, at the same place; or (3) courtship or display between a male and a female or two males, including courtship feeding or copulation; visible probable nest site; agitated behavior or anxiety calls of an adult; brood patch on an adult female or cloacal protuberance on an adult male; nest building or excavation of a nest hole.
- **Confirmed Breeding** is defined as observation of any of the following: (1) a distraction display or injury feigning; (2) used nest or egg shell found (occupied or laid within the period of study); (3) recently fledged young or downy young, including young incapable of sustained flight; (4) adults entering or leaving nest site in circumstances indicating occupied nest (e.g., adult carrying fecal sac; adult carrying food for young); or (5) nest containing eggs, or nest with young seen or heard.

In addition, an area search of woodland behind the shop was completed. The intent of the area search was to search for evidence of breeding birds, including searching trees for stick nests.

2.5.2 Bat Maternity Roost Surveys and Bat Acoustic Surveys

An assessment of bat maternity roost habitat was conducted on the proposed lot on June 2, 2017 by CVC using the protocol provided in Bat and Bat Habitat Surveys of Treed Habitats (OMNRF 2017). A second assessment of bat maternity roost habitat during leaf-off condition was not completed.

However, upper canopy defects, such as hollows and cracks, and dead/dying leaves along dead branches were searched for using binoculars during the June 2, 2017 assessment (leaf-on condition).

Bat acoustic surveys were conducted in June 2017 using an acoustic bat detector (SM2BAT SongMeter, Wildlife Acoustics Inc.) equipped with an omni-directional microphone. The SongMeter was placed near four trees that were identified as suitable roosting trees (UTM: 602400E 4831213N). The microphone range is reported to be approximately 30m; therefore, the entire wooded area on the subject property was within recording distance of the SongMeter. The SongMeter was programmed to record between half an hour before sunset to half an hour after sunrise each night over a ten-day period from June 6 to June 16, 2017, from approximately 20:30 to 06:00.

Table 2 provides a summary of weather conditions during the sampling period. Data were obtained from the CVC Meadowvale Office Climate Station, located approximately 700m from the subject property. During the survey period, temperatures were above 10°C on most nights. There were two periods where the temperature dropped below 10°C. On June 7 at 01:40 the temperature dropped below 10°C resulting in only 4.5 hours of monitoring where the temperature was above 10°C. On June 8 at 01:10 the temperature dropped below 10°C resulting in only 4 hours of monitoring where the temperature was above 10°C. Wind speeds were low on all nights. The Beaufort Scale considers a gentle breeze between 12-19 km/hour; the maximum wind speed recorded was 15.8 km/hour. The local rain gauge located approximately 700m from the subject property measured no rain during the 10 survey nights.

Table 2. CVC Meadowvale Office Climate Station Data from June 6-16, 2017 between 20:30 and 05:00.

Start Date Time	End Date Time	High Temp. (°C) [1]	Low Temp. (°C) [1]	Max. Wind (km/hr)	Avg. Wind (km/hr)	Precipitation [2] (mm)
6 June 2017 20:30	7 June 2017 05:00	13.1	8.7	15.8	5.0	0
7 June 2017 20:30	8 June 2017 05:00	15.2	8.1	2.5	0.7	0
8 June 2017 20:30	9 June 2017 05:00	18.0	11.7	1.8	1.1	0
9 June 2017 20:30	10 June 2017 05:00	21.4	13.7	2.9	1.1	0
10 June 2017 20:30	11 June 2017 05:00	25.3	21.4	14.8	5.8	0
11 June 2017 20:30	12 June 2017 05:00	26.3	18.5	10.1	2.5	0
12 June 2017 20:30	13 June 2017 05:00	28.0	22.1	7.6	1.8	0
13 June 2017 20:30	14 June 2017 05:00	20.2	14.4	2.2	1.1	0
14 June 2017 20:30	15 June 2017 05:00	18.3	16.2	10.1	4.3	0
15 June 2017 20:30	16 June 2017 05:00	17.4	15.4	3.2	1.0	0

[1] Temperature collected during sample duration at 10-minute intervals by CVC Climate Station.
[2] Precipitation is the total precipitation collected during sample duration, collected at 5-minute intervals by the rain gauge.

Kaleidoscope Pro 3 (Version 4.3.2, Wildlife Acoustics Inc.) Analysis Software was used to convert WAC files (format which was used for data collection in SM2Bat) to WAV files; subsequently, the files were processed, sorted, and categorized by species using the same software. Qualitative review of data was completed for any call with a characteristic frequency (fc) that exceeded 35 Hz (the range at which the SAR Bats of interest echolocate) prior to final determination of species. For the purpose of this review, all calls assigned by Kaleidoscope as LASBOR (*Lasurius borealis*) and any Myotid or Perimyotid classifications were reviewed individually. In addition to the review of the groups identified above, NSE reviewed all NoID files in order to determine if any identifiable calls were present with an fc at or in excess of 35 Hz.

2.5.3 Incidental Wildlife Observations

Incidental observations of wildlife were recorded throughout the study area during all field surveys completed. Incidental observations included species observations, as well as observations of browse, snags, etc. A list of wildlife observations for the study area is provided in Appendix 3.

2.6 Tree Inventory

A CVC, certified arborist, completed a tree inventory of the study area on June 16, 2017 to determine the composition, character and health of the existing trees and assess opportunities for preservation in relation to the proposed lot. Trees were identified, sized, and assessed for condition. The Tree Inventory report is provided in Appendix 4.

2.7 Species at Risk Screening

Using data from MNRF's NHIC (September 2015) and CVC's Natural Heritage Database, Species at Risk records within 5km of the study area were reviewed. An assessment of habitat suitability within the study area for each Species at Risk was completed and is provided in Appendix 5.

3.0 Results of Field Surveys

3.1 Physiography

The subject property is gently sloping with an elevation ranging from approximately 168m above sea level (asl) in the east to 166m asl in the west (Figures 2 and 3). According to the Soil survey of Peel County the study area has a Chinguacousy clay loam (Chc), which is imperfectly drained and contains few stones (Hoffman et al. 1953).

3.2 Watercourses

The Credit River is approximately 185m southwest of the subject property (Figure 1). The subject property falls partially within CVC's regulation limit, and the 100 Year Floodline extends onto the southwest corner (Figure 3). There is a small drainage ditch located on the southern boundary of the subject property that flows into the old mill raceway. The raceway is located on the western boundary of the subject property and flows into the Credit River. The small drainage ditch and raceway are not considered watercourses or fish habitat.

3.3 Vegetation Community Description

The proposed lot contains a small (0.08ha) Dry-Fresh Sugar Maple Deciduous Forest (FOD5-1) inclusion within a larger (3.3ha) Exotic Cultural Woodland (CUW1-B) that extends beyond the limits of the proposed lot (Figure 4). A very small portion of Fresh-Moist Lowland Deciduous Forest (FOD7-A) covers the southern-most tip of the subject property (Figure 4).

<u>Dry-Fresh Sugar Maple Deciduous Forest (FOD5-1)</u>

The Sugar Maple Deciduous Forest inclusion is dominated almost exclusively by Sugar Maple (*Acer saccharum*). The trees range in height from 20-35m tall and canopy cover is approximately 60 percent.

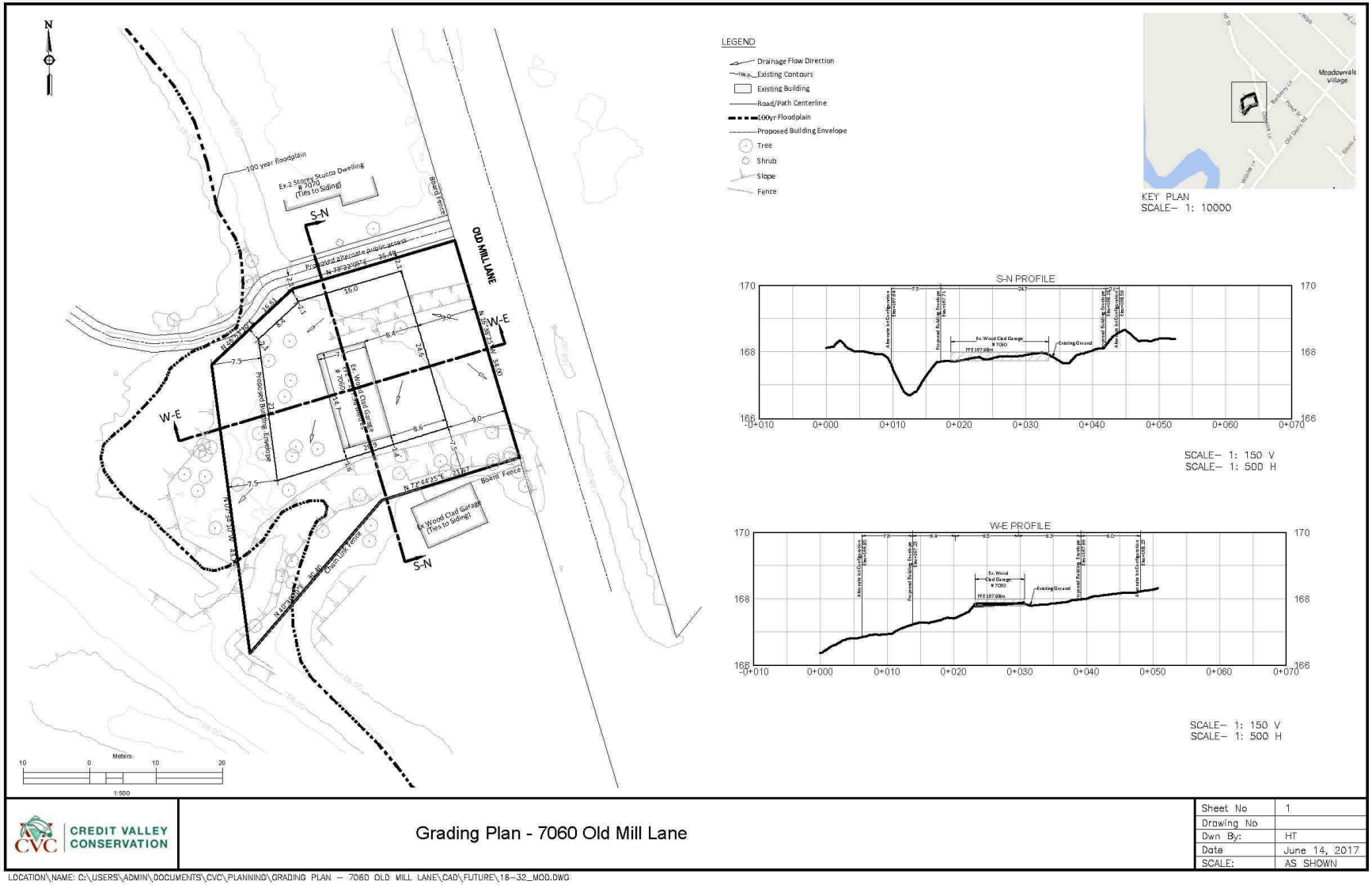


Figure 3. Grading Plan, existing contours, drainage and 100-year floodplain.

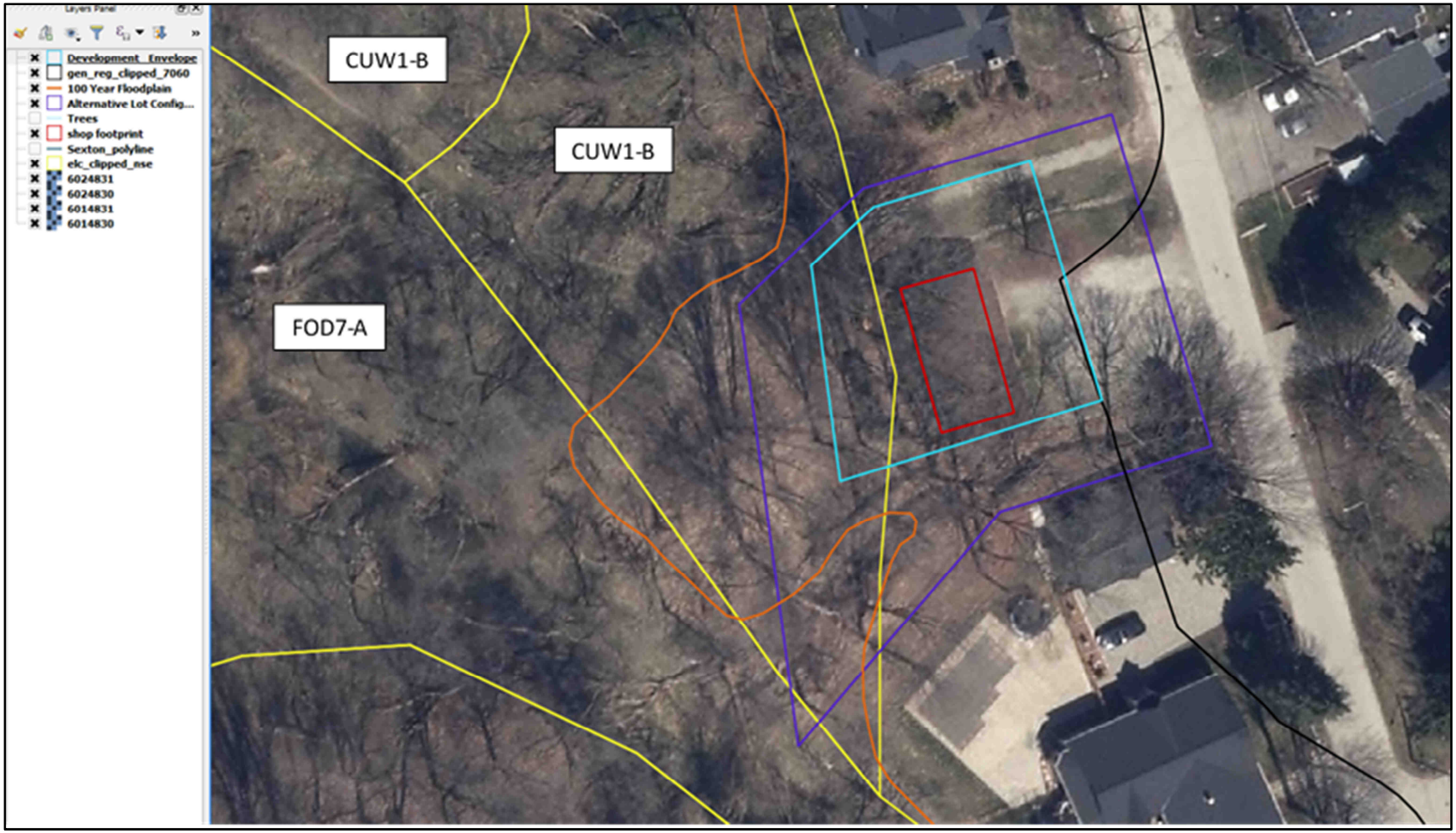


Figure 4. Ecological Land Classification of vegetation communities in the study area.

The sub-canopy and understory are very sparse (<10%), scattered and comprised of Sugar Maple, White Ash (*Fraxinus americana*), European Buckthorn (*Rhamnus cathartica*) and Chokecherry (*Prunus virginiana*). The ground cover is greater than 60 percent and is dominated by Sugar Maple seedlings, Garlic Mustard (*Alliaria petiolata*) and Yellow Avens (*Geum aleppicum*). Of the twenty Sugar Maple trees that occur in the Sugar Maple Deciduous Forest inclusion, dbh ranged from 18-63 cm, with an average of 41 cm dbh.

Exotic Cultural Woodland (CUW1-B)
The Exotic Cultural Woodland is dominated by Manitoba Maple (*A. negundo*) with Sugar Maple and Norway Spruce (*Picea abies*) as less common canopy species.

Fresh-Moist Lowland Deciduous Forest (FOD7-A)
The Fresh-Moist Lowland Deciduous Forest is dominated by Manitoba Maple and willow trees and shrubs (*Salix* spp.). The understory is dominated by Manitoba Maple, European Buckthorn and Riverbank Grape. The ground layer contains Garlic Mustard, Yellow Avens and Manitoba Maple seedlings.

None of these vegetation communities are considered rare by the Province or the Region of Peel.

3.4 Vascular Plants

A total of 134 species were recorded within the study area (Appendix 2). These include 72 (54%) that are native, 52 (39%) introduced and 10 (7%) species that were recorded to genus as they were non-flowering or too young to allow identification. The percentage of native plants is relatively low in comparison with the flora of Ontario as a whole, which has approximately 73% native plant species (Kaiser 1983). The FQI of the study area is 29.33, and the Native Mean C is 3.46. These values indicate that the vascular plants found within the study area consist of adaptable species that can live in a wide range of conditions (low Native Mean C) with broad habitat requirements (low FQI).

3.4.1 Significant Vascular Plants

A total of five significant vascular plants were found within the study area, which include one regionally/locally rare species in the GTA/Credit River Watershed/Region of Peel, four locally rare species in the Credit River Watershed/Region of Peel, and one locally rare species in the City of Mississauga (Table 3). Two vascular plant species found within the proposed lot are considered regionally and locally significant. Pale Jewelweed (*Impatiens pallida*) is considered rare in the Credit River Watershed/Region of Peel. This species is typically associated with forests (especially swampy), stream sides, and ditches and tends toward more mesic habitats (Voss and Reznicek 2012). Finely-nerved Sedge (*Carex leptonervia*) is considered rare in the Credit River Watershed/Region of Peel and in the City of Mississauga (Table 3). This species is typically associated with rich deciduous or mixed forests, and apparently continues to thrive in disturbed areas and clearings (Voss and Reznicek 2012). Federally and/or provincially rare species or Species at Risk were not found within the study area.

Table 3. Significant vascular plants found within the study area.

Scientific Name	Common Name	S-RANK	Regional/ Local Rarity[1]	City of Mississauga Rarity[2]	Within Proposed Lot
Carex leptonervia	Finely-nerved Sedge	S5	L	1	x
Cuscuta gronovii	Swamp Dodder	S5	L	2	
Impatiens pallida	Pale Jewelweed	S4	L	3	x
Physocarpus opulifolius var. opulifolius	Eastern Ninebark	S5	R/L	3	
Viola cucullata	Marsh Blue Violet	S5	L	3	

[1]Kaiser, J. 2001. The Vascular Plant Flora of the Region of Peel and the Credit River Watershed. Prepared for: Credit Valley Conservation, the Regional Municipality of Peel, Toronto and Region Conservation Authority.

R = Regionally rare (rare within GTA)

L = Locally rare (rare within CVC and/or Region of Peel)

[2]City of Mississauga Rarity Rank (2012), Natural Areas Survey Database

0 Extirpated within the City of Mississauga
1 1 to 3 locations within the City, these species are considered locally rare.
2 4 to 10 locations within the City, these species are considered locally significant
3 11 to 39 locations within the City
4 >40 locations within the City

3.5 Fauna

3.5.1 Breeding Birds

In total, 10 bird species were observed (Table 4), including six species with Probable Breeding Status and four species with Possible Breeding Status. Eight of the species observed are general in their habitat requirements and tolerant of anthropogenic disturbance and are considered by CVC to be secure (Species of Conservation Concern (SCC) Tier 4). Two of the species observed are considered species of urban interest by CVC (SCC Tier 3): Great-crested Flycatcher and Indigo Bunting. Species of urban interest are those that are generally secure in rural areas but are declining in urban areas. Great-crested Flycatcher and Indigo Bunting prefer edges of open woodland, habitat that is present at the rear of the proposed lot (Figure 4).

Stick nests were not found within the study area.

3.5.2 Bat Maternity Roost Survey Results

Bat Maternity Roost Surveys identified four Sugar Maple trees within the study area with the potential to be suitable maternity roost trees for bats (Table 5). Three of the suitable maternity roost trees are located within or immediately adjacent to the proposed construction envelope, and one is located to the west of the proposed lot. Figure 5 shows the locations of suitable bat maternity roost trees and the location of the SongMeter. The purpose of identifying suitable maternity roost trees is to inform the best location to place the SongMeter to maximize the quality of bat data collected, and to enable snag density calculations which are used to assess Significant Wildlife Habitat (Section 4.2.2).

Table 4. List of bird species recorded during breeding bird surveys.

Common Name	Scientific Name	Provincial Rank	SCC Tier[1]	Highest Breeding Status[2]	Evidence Observed During Visit 1 (June 16, 2017)	Evidence Observed During Visit 2 (July 14, 2017)
American Goldfinch	*Spinus tristis*	S5B	4	Probable	SH	T
American Robin	*Turdus migratorius*	S5B	4	Probable	SH	T
Black-capped Chickadee	*Poecile atricapillus*	S5	4	Possible	n/a	SM
Brown-headed Cowbird	*Molothrus ater*	S4B	4	Possible	SH	n/a
Blue Jay	*Cyanocitta cristata*	S5	4	Possible	SH	n/a
Blue Jay	*Cyanocitta cristata*	S5	4	Possible	n/a	SH
Great Crested Flycatcher	*Myiarchus crinitus*	S4B	3	Possible	SM	n/a
House Wren	*Troglodytes aedon*	S5B	4	Probable	SM	T
Indigo Bunting	*Passerina cyanea*	S4B	3	Probable	SM	T
Northern Cardinal	*Cardinalis cardinalis*	S5	4	Probable	SM	T
Song Sparrow	*Melospiza melodia*	S5B	4	Probable	SM	T

Table 5. Suitable bat maternity roost trees within the study area.

Tree #	UTM (Easting/Northing)	Tree Species	dbh (cm)[1]	Height Class[2]	Habitat Attributes[3]
29	602389/4831220	*Acer saccharum*	35.0	Co-dominant	Loose bark Decay Class 1
38	602383/4831217	*Acer saccharum*	45.5	Co-dominant	Loose bark on dead branch Decay Class 1
31	602408/4831215	*Acer saccharum*	61.0	Dominant	Loose bark Cavity Decay Class 1 One large broken branch with flaking bark and retaining dead leaves Dead/dying leaf cluster
15	602387/4831220	*Acer saccharum*	55.0	-	Dead/dying leaf cluster One large broken branch retaining dead leaves

[1] dbh: Diameter at Breast Height

[2] 1 = Dominant (trees above canopy); 2 = Co-dominant (trees at canopy height); 3 = Intermediate (just below canopy); 4 = suppressed (well below canopy)

[3]Decay Class: 1 = Healthy, live tree; 2= Declining live tree, part of canopy lost; 3 = Very recently dead, bark intact, branches intact

1 CVC Ranking = CVC Species of Conservation Concern Tier (1 = Species of Conservation Concern, 2 = Species of Interest, 3 = Species of Urban Interest, 4 = Secure Species, 5= Non-Native & Non-Native Hybrid Species)

2 Highest breeding evidence based on the protocol from the Atlas of the Breeding Birds of Ontario

SH = Suitable Habitat; T = Territory; SM = Singing Male

3.5.3 Bat Acoustic Survey Results

Acoustic Analysis (Kaleidoscope Pro)

Commensurate with experience in analyzing calls collected in forested habitats, we observed low identification rates by Kaleidoscope Pro. The acoustic recorder was placed in a wooded area, consistent with current guidance provided by the MNRF, in proximity to trees with suitable characteristics as determined during baseline surveys. Unfortunately, high clutter environments reduce Kaleidoscope Pro's ability to accurately differentiate between species with similar call characteristics. Whereas the location was originally sighted to avoid a high-clutter environment, the nature of wooded areas are such that they are intrinsically high-clutter. The preliminary output by Kaleidoscope Pro with respect to files identified as bat, noID files, and noise files is shown in Table 6.

Table 6. Kaleidoscope preliminary output for acoustic detector at Meadowvale Shop.

	Bat	NoID	Noise	Total
Kaleidoscope Raw Data (SM2Bat)	243	80	378	701

A total of 243 bat passes were identified by Kaleidoscope Pro, by the single acoustic recorder, during the monitoring period. Eighty (80) calls were assigned no identification ("NoID") and did not meet the required parameters established by Kaleidoscope Pro to reliably assign a species to the call. The number of noise files (n=379) identified by Kaleidoscope Pro represents a large proportion of the total number of sound files (n=701). The SM2Bat device scrubs noise files *in situ* – as such, all noise files are completely blank providing no information on the potential trigger that would have initiated the recording. Whereas the noise files are not typically rigorously reviewed, they can provide insight into reasons for false triggers and provide information to refine hardware settings for future deployments. Ultrasonic frequencies that can be picked up by the equipment that are not bat-related and are often classified as noise include vehicle brakes, key rings, rodents, etc.

Table 7 expands on the information provided in Table 6 and shows the raw output from Kaleidoscope prior to undertaking the review of files as described in the methodology, Section 2.5.2. Table 7 identifies the survey nights by date and provides details on the number of passes (or clips of vocalizations) that were recorded for each species over the 11 night survey period.

The following codes (derived from the scientific name of each species) are used:
EPTFUS = Big Brown Bat (*Eptesicus fuscus*)
LASBOR = Eastern Red Bat (*Lasiurus borealis*)
LASCIN = Hoary Bat (*Lasiurus cinereus*)
LASNOC = Silver-haired Bat (*Lasionycterus noctivagans*)
MYOLEI = Eastern Small-footed Myotis (*Myotis leibii*)
MYOLUC = Little Brown Bat (*Myotis lucifugus*)
MYOSEP = Northern Myotis (*Myotis septentrionalis*)

Table 7. Number of passes, by species, for each of the survey nights for SM2Bat detector deployed at Meadowvale Shop (Raw Kaleidoscope Data, unvetted).

Night	EPTFUS	LASBOR	LASCIN	LASNOC	MYOLEI	MYOLUC	MYOSEP	NoID	Noise	Total
06/06/2017	2				20	3		2	8	35
07/06/2017	5			1	2			3	13	24
08/06/2017	6			3		1		2	13	25
09/06/2017	29		1	10	2		1	3	18	64
10/06/2017	32		1	1	3		5	6	22	70
11/06/2017	37		3	8	4	2	2	8	23	87
12/06/2017	9	1	1	3	3	2	2	15	41	77
13/06/2017	4	1		4	2	2	2	27	60	102
14/06/2017	1	2			4	3		4	62	76
15/06/2017	3	1		2	1	2	1	9	60	79
16/06/2017	1				1		1	1	58	62
Grand Total	**129**	**5**	**6**	**32**	**42**	**15**	**14**	**80**	**378**	**701**

Qualitative Review of Kaleidoscope Analysis

The preliminary Kaleidoscope Pro analysis of the acoustic recordings identified seven (7) species of bats on site based on analysis of the call patterns: Big Brown Bat, Eastern Red Bat, Silver-haired Bat, Eastern Small-footed Bat, Little Brown Bat, and Northern Myotis. Kaleidoscope Pro software classified 15 calls as belonging to Little Brown Myotis, 42 to Eastern-small Footed Myotis, and 14 to Northern Myotis; all SAR bats in Ontario.

As part of the qualitative review of the Kaleidoscope output, these calls were assessed further along with the calls that were assigned to LASBOR and NoID. Table 8 below shows the outcome of our qualitative review on the raw output from Kaleidoscope Pro. Given the low overall number of acoustic files, and the low quality of the calls, we elected to manually inspect each file, which accounts for the removal of the LASCIN and LASBOR passes which were mis-classified by Kaleidoscope Pro.

Table 8. Number of passes, by species, for each of the survey nights for SM2Bat detector deployed at Meadowvale Shop (vetted).

Night	EPTFUS/LASNOC	EPTFUS	LASNOC	40kMyotis	NoID	Noise	Grand Total
06/06/2017		2		24	1	8	35
07/06/2017		4	2	2	3	13	24
08/06/2017		6	3	1	2	13	25
09/06/2017	2	28	10	2	4	18	64
10/06/2017	3	34	1	4	6	22	70
11/06/2017	4	37	8	5	10	23	87
12/06/2017	4	9	5	2	16	41	77
13/06/2017	4	5	4	2	27	60	102
14/06/2017		1		9	4	62	76
15/06/2017	1	3	2	1	12	60	79
16/06/2017	1	1		1	1	58	62
Grand Total	**19**	**130**	**35**	**53**	**86**	**378**	**701**

On inspection of the acoustic files it was evident that they were of low quality and reflective of a deployment in a high-clutter environment. Most of the calls were steep with characteristics of bats navigating complicated habitats; in fact, the Big Brown Bat calls were so steep some were mis-classified by Kaleidoscope Pro as Little Brown Myotis. Interestingly, identifiable calls appeared to have an fc approximately 5 Hz higher than is expected given our experience with bat calls in Ontario. Whether this is an issue of clutter or a potential issue with the microphone used (anecdotally, the SMX-US has been previously flagged for this issue), it certainly contributed to Kaleidoscope Pro's identification issues.

All calls with an fc greater than 35 Hz were reviewed and all NoID files were thoroughly screened. There were 86 files for which we were unable to reliably assign an identification. We inspected each of the calls assigned to MYOLEI, MYOLUC, and MYOSEP. As mentioned previously, the characteristics of the bat calls are those of a high clutter environment; distinguishing between Myotis calls in a high clutter environment can be very difficult, and often impossible. To this extent, we have taken the conservative approach and assigned each of the Myotis calls as "40kMyotis". Many of the calls have features that are characteristic of Little Brown Myotis, and to this extent we believe that the majority of the passes can be attributed to this species. The other two Myotis typically have an fc that is higher than the Little Brown Bat, which may account for Kaleidoscope Pro's mis-identification (given our previous discussion of the unusual 5Hz increase in the fc on all files).

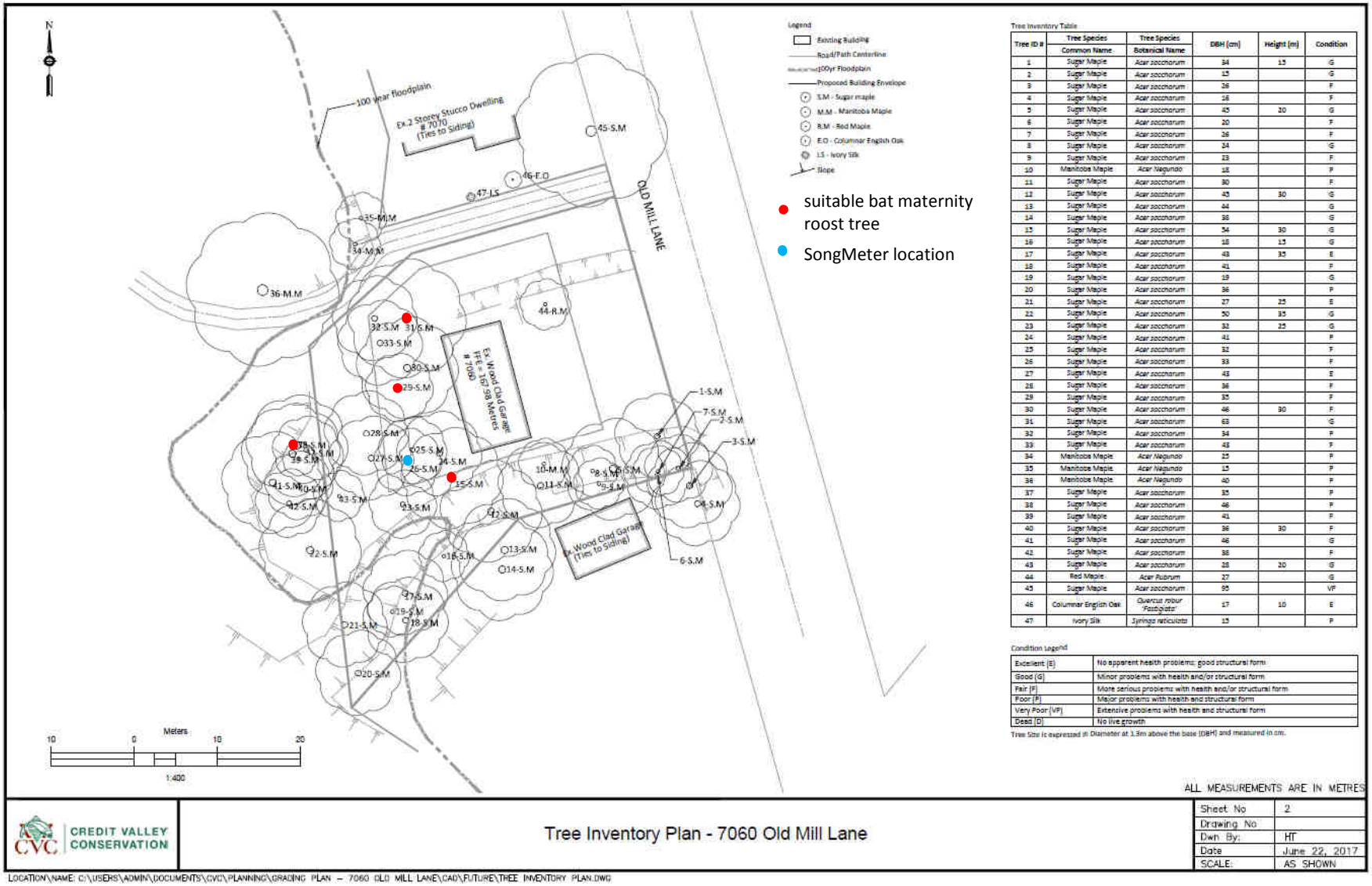
On June 6th, 2017, we observed the greatest number of passes by 40kMyotis (n=24). Looking to the raw data, we can see that 17 of these passes occurred within 3 minutes of each other. We can also see that for the nights of June 9th through 11th we documented the greatest number of passes by EPTFUS and LASNOC. It is important to note that the number of passes or vocalizations cannot be correlated with number of bats. However, evidence of calls across a broad number of nights, as we see in Table 8, is at least indicative of regular use of the area by bats.

Overall, the passively collected acoustic data appear to indicate that the Meadowvale Shop experiences regular activity by at least three (3) species of bats native to Ontario (Big Brown Bat, Silver-haired Bat, and Little Brown Bat). Species at Risk bats are confirmed to be present, although the extent to which the habitat on the subject property is used by these species is not known at this time. Candidate maternity roosting trees may represent suitable locations for roosting by this species, the nearby Credit River represents an attractive linear corridor for foraging, and the subject property's location in the historic area of Mississauga suggests opportunity for roosting in nearby heritage structures. Visual inspection of the shop structure did not indicate any evidence of use by bats (e.g., staining, feces), and suitable entrance and exit points were not observed. Based on this information, we do not think the shop structure is used as habitat for bats.

An assessment of Bat Maternity Colonies per MNRF's Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E (2015) is provided in section 4.2.2.

3.5.4 Incidental Wildlife

Incidental wildlife observations include White-tailed Deer (*Odocoileus virginianus*) browse, and sightings of Eastern Gray Squirrel (*Sciurus carolinensis*).



Tree Inventory Table

Tree ID #	Tree Species Common Name	Tree Species Botanical Name	DBH (cm)	Height (m)	Condition
1	Sugar Maple	Acer saccharum	34	15	G
2	Sugar Maple	Acer saccharum	15		G
3	Sugar Maple	Acer saccharum	16		F
4	Sugar Maple	Acer saccharum	16		F
5	Sugar Maple	Acer saccharum	45	20	G
6	Sugar Maple	Acer saccharum	20		F
7	Sugar Maple	Acer saccharum	26		F
8	Sugar Maple	Acer saccharum	24		G
9	Sugar Maple	Acer saccharum	23		F
10	Manitoba Maple	Acer Negundo	18		P
11	Sugar Maple	Acer saccharum	30		F
12	Sugar Maple	Acer saccharum	45	30	G
13	Sugar Maple	Acer saccharum	44		G
14	Sugar Maple	Acer saccharum	38		G
15	Sugar Maple	Acer saccharum	54	30	G
16	Sugar Maple	Acer saccharum	18	15	G
17	Sugar Maple	Acer saccharum	43	35	E
18	Sugar Maple	Acer saccharum	41		F
19	Sugar Maple	Acer saccharum	19		G
20	Sugar Maple	Acer saccharum	36		P
21	Sugar Maple	Acer saccharum	27	25	E
22	Sugar Maple	Acer saccharum	50	35	G
23	Sugar Maple	Acer saccharum	32	25	G
24	Sugar Maple	Acer saccharum	41		F
25	Sugar Maple	Acer saccharum	32		F
26	Sugar Maple	Acer saccharum	33		F
27	Sugar Maple	Acer saccharum	43		E
28	Sugar Maple	Acer saccharum	36		F
29	Sugar Maple	Acer saccharum	35		F
30	Sugar Maple	Acer saccharum	46	30	F
31	Sugar Maple	Acer saccharum	63		G
32	Sugar Maple	Acer saccharum	34		P
33	Sugar Maple	Acer saccharum	43		F
34	Manitoba Maple	Acer Negundo	25		P
35	Manitoba Maple	Acer Negundo	15		P
36	Manitoba Maple	Acer Negundo	40		P
37	Sugar Maple	Acer saccharum	35		P
38	Sugar Maple	Acer saccharum	46		P
39	Sugar Maple	Acer saccharum	41		F
40	Sugar Maple	Acer saccharum	36	30	F
41	Sugar Maple	Acer saccharum	46		G
42	Sugar Maple	Acer saccharum	38		F
43	Sugar Maple	Acer saccharum	28	20	G
44	Red Maple	Acer Rubrum	27		G
45	Sugar Maple	Acer saccharum	95		VF
46	Columnar English Oak	Quercus robur 'Fastigiata'	17	10	E
47	Ivory Silk	Syringa reticulata	15		P

Condition Legend

Excellent (E)	No apparent health problems; good structural form
Good (G)	Minor problems with health and/or structural form
Fair (F)	More serious problems with health and/or structural form
Poor (P)	Major problems with health and structural form
Very Poor (VP)	Extensive problems with health and structural form
Dead (D)	No live growth

Tree Size is expressed in Diameter at 1.3m above the base (DBH) and measured in cm.

Figure 5. Tree inventory, location of suitable bat maternity roost trees and location of SongMeter.

3.5.5 Significant Fauna Species

Provincially Endangered species at risk bats were noted in the study area (see Section 3.5.3 and Table 8). Area-sensitive species were not noted. Two bird species, Great-crested Flycatcher and Indigo Bunting, are considered species of urban interest in the Credit River Watershed (see Section 3.6.1 and Table 4).

3.6 Species at Risk Screening

Appendix 5 provides the results of the Species at Risk screening. Thirty-one Federal and/or Provincial Species at Risk are known to occur within 5km of the subject property based on data provided by NHIC and CVC. Based on an assessment of habitat suitability within the study area and results of the field surveys, suitable habitat is present for Species at Risk bats (listed as Endangered under the Ontario Endangered Species Act (ESA) and Federal Species at Risk Act (SARA)) (Section 3.5.3).

3.7 Tree Inventory

A total of 47 trees were surveyed in the tree inventory (Figure 5). Five species of trees were identified, including two native species and three non-native species (Table 9). The most dominant species surveyed was Sugar Maple. The majority of trees were evaluated as being in fair to good condition. The tree inventory revealed that four trees were in excellent condition (8.5%), 16 trees were in good condition (34.0%), 16 trees were in fair condition (34.0%), ten trees were in poor condition (21.3%) and 1 tree was in very poor condition (2.1%). A detailed list of all surveyed tree species and recorded parameters is provided in Appendix 4.

Table 9. Summary of inventoried tree species

Common Name	Scientific Name	# of Trees Surveyed
Columnar English Oak	*Quercus robur 'Fastigiata'*	1
Ivory Silk	*Syringa reticulata*	1
Manitoba Maple	*Acer negundo*	4
Red Maple	*Acer rubrum*	1
Sugar Maple	*Acer saccharum*	40
	Total:	**47**

4.0 Evaluation of Significance

The data obtained from the field investigations and review of background studies has been evaluated in order to determine the significance of features and functions. The criteria for determining significant features and functions has been evaluated according to the following guiding documents:

- Natural Heritage Reference Manual (OMNR 2010);
- Significant Wildlife Habitat Technical Guide (OMNR 2000);
- Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E (MNRF 2015);
- Region of Peel Official Plan (consolidation, October 2014) – Chapter 2: The Natural Environment outlines specific objectives, criteria for designation and policies for the Greenlands System in Peel; and

- Mississauga Official Plan (consolidation, August 2, 2017) – Chapter 6: Value the Environment outlines specific objectives, criteria for designation and policies for Significant Natural Areas and their buffers.

4.1 Significant Natural Heritage Features

The following sections assess the significance of natural heritage features found within the study area. The study area is located greater than 120m away from the Provincially Significant Churchville-Norval Wetland Complex located on the west side of the Credit River. Lands within 120m of a Provincially Significant Wetland are considered adjacent lands and are subject to assessment through an Environmental Impact Study. Since the PSW is greater than 120m from the study area, this significant feature is not included in the evaluation of significance for the study area.

4.1.1 Significant Woodland

Section 6.3.12.f of the City of Mississauga Official Plan (OP) provides criteria for evaluating a woodland for significance:

"Significant Woodlands are those that meet one or more of the following criteria:

- woodlands, excluding cultural savannahs, greater than or equal to four hectares;
- woodlands, excluding cultural woodlands and cultural savannahs, greater than or equal to two hectares and less than four hectares;
- any woodland greater than 0.5 hectares that:
    - supports old growth trees (greater than or equal to 100 years old);
    - supports a significant linkage function as determined through an Environmental Impact Study approved by the City in consultation with the appropriate conservation authority;
    - is located within 100 metres of another Significant Natural Area supporting significant ecological relationship between the two features;
    - is located within 20 metres of a watercourse or significant wetland; or
    - supports significant species or communities."

The subject property and broader study area contain woodlands classified as deciduous forest (inclusion), cultural woodland and deciduous forest according to the ELC system (Lee et al. 1998) (Figure 4). Woodlands within the study area are contiguous with the large wooded area located along the Credit River in Meadowvale Conservation Area. Therefore, the woodland communities within the study area, including deciduous forest and cultural woodland, qualify as Significant Woodland.

4.2 Significant Natural Heritage Functions

4.2.1 Habitat for Provincially Endangered Species and Threatened Species

The general habitat of species that are listed as endangered species or threatened species is automatically protected under the Endangered Species Act (ESA), 2007. Specific habitat regulation is proposed through the species Recovery Strategy and is also protected under the ESA. Provincially endangered bat Species at Risk were detected on the subject property (Section 3.5.3).

4.2.2 Significant Wildlife Habitat

The Natural Heritage Reference Manual (MNR 2010) was developed to provide information on technical issues related to natural heritage features of the Provincial Policy Statement (PPS), including Significant Wildlife Habitat. The Significant Wildlife Habitat Technical Guide (SWHTG) (MNR 2000) was developed to support the Natural Heritage Reference Manual and to identify, describe and prioritize Significant Wildlife Habitat. *Significant Wildlife Habitat* has been defined in the SWHTG as *"a natural heritage area for the purposes of Section 2.3 of the PPS"*. *Wildlife* is described as: *"all wild mammals, birds, reptiles, amphibians, fishes, invertebrates, plants, algae, bacteria and other wild organisms"* (Ontario Wildlife Working Group 1991).

The PPS specifically identified *wildlife habitat* as: *"areas where plants, animals and other organisms live, and find adequate amounts of food, water, shelter and space needed to sustain their populations. Specific wildlife habitats of concern may include areas where species concentrate at a vulnerable point in their annual or life cycle; and areas which are important to migratory or non-migratory species"*.

In the PPS, *wildlife habitat* is considered *significant* where it is: *"ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or Natural Heritage System"* (MMAH 2014).

The SWHTG provides criteria that recommend the following four principal criteria be considered:

1. Seasonal concentrations of animals:
2. Animal movement corridors;
3. Rare vegetation communities or specialized habitats; and
4. Habitats of species of conservation concern.

The Ontario Ministry of Natural Resources has recently published the Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E (MNRF 2015) which provide criteria for the evaluation of Significant Wildlife Habitat (SWH). Table 10 provides an assessment of each of the categories of SWH. This analysis determined that Significant Wildlife Habitat, as defined by MNRF in the Criteria Schedules for Ecoregion 7E, is not present on the study area.

4.2.3 Linkages

In policy 6.3.21 of the City of Mississauga's OP, linkages are defined as "… *those areas that are necessary to maintain biodiversity and support ecological functions of Significant Natural Areas and Natural Green Spaces but do not fulfill the criteria of Significant Natural Areas, Natural Green Spaces, Special Management Areas or Residential Woodlands*". Policy 6.3.22 goes on to explain the function of linkages and their important role in sustaining a robust natural heritage system.

The vegetation communities described within the study area are generally contiguous; therefore, there are no natural features identified within the study area that provide a linkage to other natural features or wildlife habitat outside of the natural heritage system.

ldlife Habitat Screening

itat Type	Candidate SWH present within the study area?	Rationale	Confirmed SWH present within the study area?
Areas			
l Staging Areas:	No	No fields with standing water in spring or wetlands suitable for waterfowl.	No
pover Area	No	No shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats present.	No
	No	Combination of fields and woodlands not present.	No
	No	No caves, mine shafts, underground formations or karst present.	No
	No	Mature deciduous and mixed forest stands with >10/ha large diameter (i.e., >25cm dbh) wildlife trees are considered Candidate SWH for Bat Maternity Colonies (MNRF 2015). Three suitable Sugar Maple trees were identified in the deciduous forest inclusion located within a 3.3ha CUW. CUW is not listed as one of the ELC Ecosite Codes for Candidate SWH for Bat Maternity Colonies (MNRF 2015). Furthermore, three suitable trees within a 3.3ha CUW stand equates to 0.9 suitable trees per hectare.	No
	No	No permanent waterbodies, large wetlands, or other habitats for overwintering.	No
	No	No stone or rock piles with deep holes/crevices present.	No
reeding Habitat:	No	No banks, pits, suitable wetlands, rock islands or other suitable habitat present in study area.	No
over Areas	No	Combination of field and forest not present in study area. Study area >5km from Lake Ontario.	No

Significant Wildlife Habitat Type	Candidate SWH present within the study area?	Rationale	Confirmed SWH present within the study area?
Landbird Migratory Stopover Areas	No	Study area >5km from Lake Ontario.	No
Deer Winter Congregation Areas	No	Forested valley system includes deciduous forest, and a small patch (1.0 ha) of naturalized White Pine plantation. Suitable habitat for Deer Winter Congregation Areas not present in study area.	No
Rare Vegetation Communities			
Cliff and Talus Slopes	No	Habitat not present.	No
Sand Barren	No	Habitat not present.	No
Alvar	No	Habitat not present.	No
Old Growth Forest	No	Habitat not present.	No
Savannah	No	Habitat not present.	No
Tallgrass Prairie	No	Habitat not present.	No
Other Rare Vegetation Communities	No	Habitat not present.	No
Specialized Habitat for Wildlife			
Waterfowl Nesting Area	No	Habitat not present.	No
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	No	Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water. Suitable habitat present outside study area, along the Credit River. Stick nests and listed wildlife species not observed during targeted field surveys.	No
Woodland Raptor Nesting Habitat	No	Woodland/forest stands >30ha with >4ha of interior habitat (defined as >200m from forest edge) not present. Suitable habitat not present in study area. Stick nests and listed wildlife species not observed during targeted field surveys.	No
Turtle Nesting Habitat	No	Habitat not present.	No
Seeps and Springs	No	No seeps or springs on subject property or within study area.	No
Amphibian Breeding Habitat: • Woodland	No	Habitat not present.	No

Significant Wildlife Habitat Type	Candidate SWH present within the study area?	Rationale	Confirmed SWH present within the study area?
• Wetlands			
Woodland Area-sensitive Bird Breeding Habitat	No	Large mature (>60 years old) forest stands or woodlots >30ha in size with interior forest habitat (defined as >200m from forest edge) not present. Suitable habitat not present in study area. Listed wildlife species not observed during breeding bird surveys.	No
Habitat for Species of Conservation Concern (Not including END species or THR species)			
Marsh Bird Breeding Habitat	No	Habitat not present. None identified during breeding bird surveys.	No
Open Country Bird Breeding Habitat	No	Habitat not present. None identified during breeding bird surveys.	No
Shrub/Early Successional Bird Breeding Habitat	No	Habitat not present. None identified during breeding bird surveys.	No
Terrestrial Crayfish	No	Habitat not present.	No
Special Concern and Rare Wildlife Species	No	No Special Concern or provincially rare (S1-S3, SH) species included in NHIC element occurrence data. No Special Concern or provincially rare (S1-S3, SH) species observed during field surveys.	No
Animal Movement Corridors			
Amphibian Movement Corridors	No	Habitat not present.	No

4.3 Environmentally Significant Areas

The subject property is located adjacent to the Credit River at Meadowvale Environmentally Significant Area (ESA) (Credit Valley Conservation Authority 1985). This area was designated as an ESA for fulfilling the following criteria:

- hydrologically/hydro-geologically significant;
- rare or endangered indigenous species;
- unusual and/or significant value;
- unusually high diversity of species;
- habitat for rare species; and
- maintain significant natural systems.

4.4 Natural Heritage System

The City of Mississauga's Natural Heritage System (NHS) is composed of the following:

- Significant Natural Areas
- Natural Green Spaces
- Special Management Areas
- Residential Woodlands
- Linkages

Significant Natural Areas include:

- provincially or regionally significant life science areas of natural and scientific interest (ANSI)
- environmentally sensitive or significant areas
- habitat of threatened species or endangered species
- fish habitat
- significant wildlife habitat
- significant woodlands
- significant wetlands
- significant valleylands

Section 4.1 identified Significant Woodland on and adjacent to the subject property. The Significant Woodland is considered a Significant Natural Area and is included as a component of the NHS. Foraging habitat and potentially roosting habitat for provincially endangered species (SAR bats) is also present within the subject property.

5.0 Policy and Legislation Review

Relevant policy and legislation is reviewed below in relation to natural heritage features and functions, and constraints that are applicable at the subject property.

5.1 2014 Provincial Policy Statement

The Provincial Policy Statement (PPS) provides direction on matters of provincial interest, including natural heritage policies for long term protection for natural features (MMAH 2014). The natural heritage policies identify natural features in which development is prohibited. The policies also indicate where development is permitted both within and adjacent to specified features, as long as there are no negative impacts to the features or their ecological functions.

Section 2 of the PPS provides direction for the wise use and management of resources, including the protection of natural areas and features. Relevant natural heritage policies are in Section 2.1 of the PPS.

Policy 2.1.2 of the PPS outlines protection needs related to biodiversity and connectivity, including protection of both ecological features and functions required to maintain biodiversity and functional ecological connectivity.

Policy 2.1.4 lists significant natural heritage features where development is not permitted, including:

- significant wetlands in Ecoregions 5E, 6E and 7E; and
- significant coastal wetlands.

Policy 2.1.5 lists significant natural heritage features where development is not permitted, unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions, including (with respect to Ecoregion 7E):

- significant woodlands in Ecoregions 6E and 7E;
- significant valleylands in Ecoregions 6E and 7E;
- significant wildlife habitat;
- significant areas of natural and scientific interest; and
- coastal wetlands in Ecoregions 5E, 6E and 7E that are not subject to policy 2.1.4.

Policy 2.1.7 states that *"development and site alteration shall not be permitted in habitat of endangered species and threatened species, except in accordance with provincial and federal requirements"*.

Policy 2.1.8 states that *"development and site alteration shall not be permitted on adjacent lands to the natural heritage features and areas identified in policies 2.1.4, 2.1.5 and 2.1.6 unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions"*.

5.1.1 Conformity

The subject property includes a portion of Significant Woodland. As summarized in the preceding section, prior to development or site alteration within or adjacent to natural heritage features, the proponent must demonstrate that there will be no negative impacts on the natural features or their ecological functions.

The construction envelope is proposed within one of natural heritage features identified in policy 2.1.5 and within CVC's regulated area. Construction of a single-family dwelling is consistent with existing use adjacent to the subject property. Section 7 describes alternatives, avoidance, mitigation, and compensation supporting the outcome of no negative impacts.

Nothing precludes development in Significant Woodland so long as it can be demonstrated that no negative impact to the feature or its function will result from the development. The proposed construction envelope is deemed to conform with the natural heritage policies of the PPS (2014).

5.2 City of Mississauga Official Plan (2017)

The study area contains a portion of the City of Mississauga's NHS (Section 4.4). The woodland that occurs on the subject property meets the criteria for defining Significant Woodland provided in Policy 6.3.12.f (Section 4.1.1) and is therefore a Significant Natural Area.

Policy 6.3.27 states that *"Development and site alteration as permitted in accordance with the Greenlands designation within or adjacent to a Significant Natural Area will not be permitted unless all reasonable alternatives have been considered and any negative impacts minimized. Any negative impact that cannot be avoided will be mitigated through restoration and enhancement to the greatest extent possible. This will be demonstrated through a study in accordance with the requirements of the Environmental Assessment Act, and Environmental Impact Study will be required".*

Policy 6.3.29 states that *"Development and site alteration on lands adjacent to … Significant Natural Area[s] will require an Environmental Impact Study, demonstrating no negative impact to the natural heritage features or on their ecological functions, to the satisfaction of the City and appropriate conservation authority".*

Policy 6.3.33 states that *"Environmental Impact Studies will delineate the area to be analysed, describe existing physical conditions, identify environmental opportunities and constraints, and evaluate the ecological sensitivity of the area in relation to a proposal. It will also outline measures to protect, enhance, restore and expand the Natural Heritage System and associated ecological functions."*

Buffers, which are vegetated protection areas that provide a physical separation of development from the limits of natural heritage features and natural hazard lands, shall be determined on a site-specific basis as part of an Environmental Impact Study (policy 6.3.8).

The exact limit of components of the Natural Heritage System are to be determined through site-specific studies such as an Environmental Impact Study (policy 6.3.10).

5.2.1 Conformity

Future development of the proposed lot must conform to the applicable policies of the City of Mississauga's Official Plan (2017). The subject property includes portions of the City's Natural Heritage System (Significant Natural Area – Significant Woodland).

Development or site alteration within or adjacent to Significant Woodlands shall not negatively impact the feature or its functions (policy 6.3.27). Furthermore, development and site alteration within or adjacent to Significant Woodlands shall not be permitted unless the ecological function of the area has been evaluated and it has been demonstrated through an Environmental Impact Study that there will be no negative impacts on the natural feature and its ecological function (policy 6.3.29).

Development is proposed within a Significant Woodland, as defined in policy 6.3.12.f. The proposed lot is consistent with surrounding land use and historic use of the subject property. An analysis of buffers and setbacks is provided in Section 7.1. Sections 6.0 and 7.0 describe alternatives, avoidance, mitigation

and compensation supporting the outcome of no negative impacts. From a policy perspective, no negative impacts resulting from future development proposed on lands within or adjacent to Significant Woodland are anticipated (see Sections 6.0 and 7.0). Therefore, the proposed lot and construction envelope are deemed to conform with the natural heritage policies of the City of Mississauga Official Plan.

5.3 City of Mississauga Zoning By-Law

Currently, zoning for the subject property is split between PB-1 (Parkway Belt West 1 – permitting Conservation and Passive Recreational uses) and PB1-5 (which allows for one detached dwelling and accessory structures legally existing on the date of passing of the by-law). The City of Mississauga zoning office recognizes the dual zoning, which splits the proposed lot. This is the result of historical zoning attributed to the remnant village lot sold in 1988. A lot line adjustment requires a zoning by-law amendment to update the new lot to appropriate zoning that would permit the construction of a new single-family residence. The proposed lot in relation to existing zoning is shown in Figure 6.

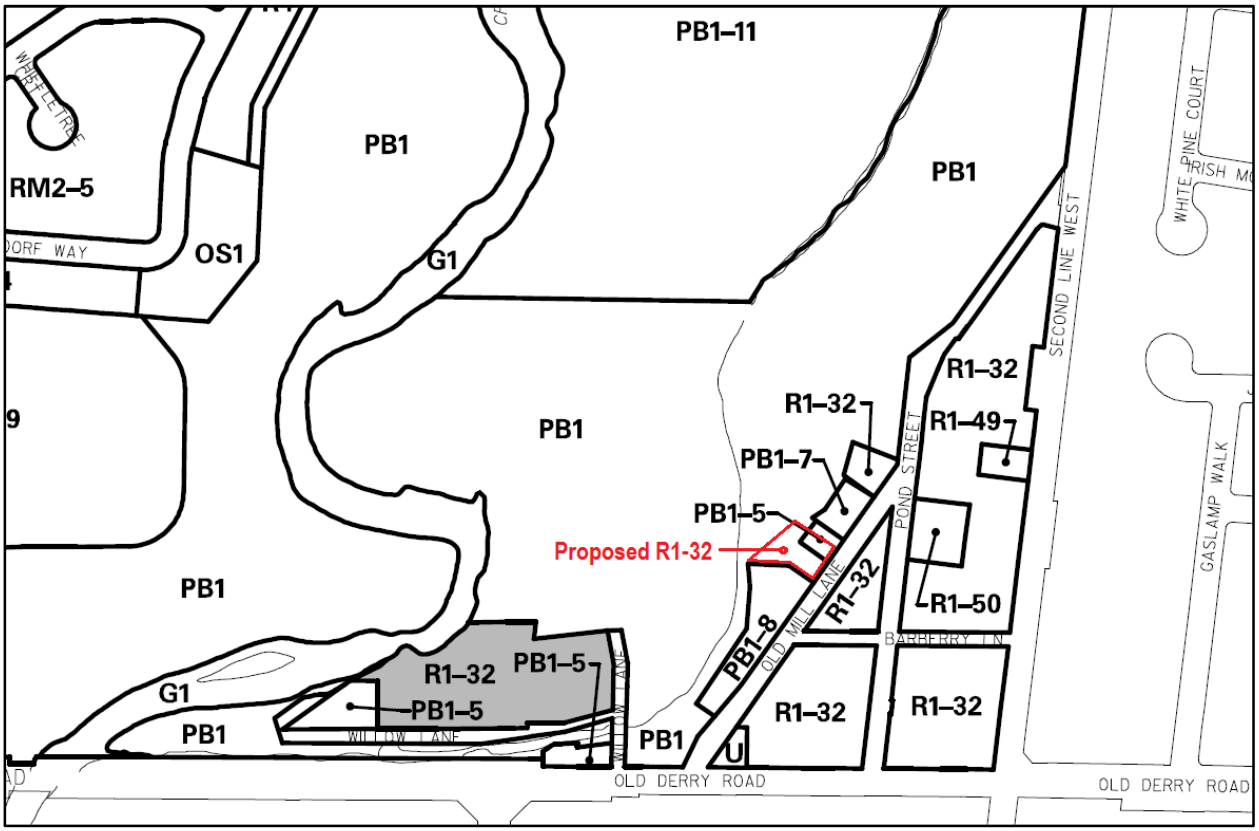


Figure 6. Proposed lot in relation to existing zoning.

5.4 Region of Peel Official Plan (2014)

The subject property is within an area designated as Core Greenlands by the Region of Peel. Policy 2.3.2.2 of the Region of Peel Official Plan defines Core Areas of the Greenlands System as:

- significant wetlands;
- significant coastal wetlands;

- core woodlands;
- Environmentally Sensitive or Significant Areas;
- Provincial Life Science Areas of Natural and Scientific Interest;
- significant habitats of threatened species and endangered species;
- Escarpment Natural Areas of the Niagara Escarpment Plan; and
- core valley and stream corridors.

Table 1 of the Official Plan provides criteria and thresholds for the identification of core woodlands, which are:

- any woodland =/> 4ha in the urban system;
- any woodland =/> 4ha containing at least 0.5ha of woodland in native trees older than 100 years and having late successional characteristics (excludes plantation); or
- any woodland =/> 4 ha that supports any of the following:
    - any G1, G2, G3, S1, S2 or S3 plant or animal species, or community as designated by NHIC; or
    - any species designated by COSEWIC or COSSARO as Threatened, Endangered or of Special Concern; or
    - the following forest communities: FOC1-2, FOM2-1, FOM2-2, FOM6-1, FOD1-1, FOD1-2, FOD1-4, FOD2-2, FOD2-3 or FOD6-2.

Policy 2.3.2.18 states that patch size shall be measured to include all contiguous woodland communities Policy 2.3.2.5 specifies that *"The area municipalities may define local core areas and policies in their Official Plans which will, at a minimum, incorporate the Core Areas of the Greenlands System in Peel"*.

In the Region of Peel, Core Woodlands are included under Core Areas of the Greenlands System. Development and site alteration are prohibited within the Core Areas of the Greenlands System in Peel, except for a few exceptions including minor development and minor site alteration (policy 2.3.2.6), which include: *"a new single residential dwelling on an existing lot of record"* and direct area municipalities to *"adopt appropriate policies to allow the exceptions subject to it being demonstrated that there are no reasonable alternative outside of the Core Area and development and site alteration is directed away from the Core Area feature to the greatest extent possible; and the impact to the Core Area feature is minimized and any impact to the feature or its functions that cannot be avoided is mitigated through restoration or enhancement to the greatest extent possible".*

5.4.1 Conformity

Development is proposed within a Core Woodland, as defined in Table 1 of the Region of Peel's Official Plan. The proposed lot represents an existing lot of record and is consistent with surrounding land use and historic use of the subject property. Sections 6.0 and 7.0 describe alternatives, avoidance, mitigation and compensation supporting the outcome of no negative impacts. From a policy perspective, no negative impacts resulting from future development proposed on the subject property are anticipated. Therefore, the proposed lot and construction envelope are deemed to conform with the Greenlands System policies of the Region of Peel Official Plan.

5.5 Credit Valley Conservation

The adjacent Meadowvale Conservation Area is traversed by the Credit River. The subject property contains portions of the floodplain associated with the Credit River (Figures 1 and 3). Therefore, the subject property is located partially within CVC's regulated area and is subject to CVC Regulation of Development Interference with Wetlands, and Alterations to Shorelines and Watercourses (Ontario Regulation 160/06) and policies outlined in Credit Valley Conservation Watershed Planning and Regulation Policies (CVC 2010), which largely relate to Ontario Regulation 160/06.

Development is generally not permitted in the following features, within regulated areas:

- valleylands;
- ESAs;
- ANSIs;
- significant woodlands;
- wetlands;
- other areas where development could interfere with the hydrologic function of a wetland;
- watercourses and fish habitat; and
- hazardous lands.

Policy 5.3.3.4 Woodlands d) states that *"CVC will not support planning approvals for development and site alteration within significant woodlands, except in accordance with the policies in Chapter 6"*.

Policy 6.2.4 Lot-line Adjustments states that *"in cases where a lot-line adjustment is proposed and both existing lots contain portions of the natural heritage system, including natural heritage features and areas, significant natural areas, hazardous land, erosion access allowances and associated buffers, CVC may support a lot-line adjustment provided:*

i. there will be a suitable building envelope…".

Policy 6.2.2 Building Envelope states that:

a) CVC will recommend that building envelopes are set back from fish habitat a distance to be determined through the completion of a comprehensive environmental study or technical report, to the satisfaction of CVC.
b) CVC will not support the creation of new lots unless it is confirmed that a suitable building envelope exists within the parcel to be created, consistent with relevant CVC and municipal requirements. This includes sufficient space within the suitable building envelope to incorporate necessary infrastructure including, but not limited to, private septic systems, wells, driveways and parking areas.

5.5.1 Conformity

Figure 3 depicts the extent of CVC's regulated area within the subject property, as well as the 100 Year Floodline. The subject property is located partially within CVC's regulated area. The 100 Year Floodline extends approximately 15m onto the south corner of the proposed lot. The 100 Year Floodline is located approximately 4m outside the proposed development envelope. The proposed development envelope respects appropriate setbacks from the regulated floodplain (Ontario Reg. 160/06).

CVC confirmed that a suitable construction envelope exists within the proposed lot (Figure 2). Therefore, the proposed lot and future construction of a single-family dwelling conforms with CVC's policies and regulations.

5.6 Federal and Provincial Legislation

5.6.1 Ontario Endangered Species Act

Under Section 9 of the Endangered Species Act (ESA), species are afforded individual protection providing they are listed as Threatened, Endangered or Extirpated on the Species at Risk in Ontario list. Section 10 of the ESA is in place to protect habitat of Threatened species or Endangered species, where no damage is permitted to the habitat of those species unless under the authorization of the MNRF by way of registration or permit.

Conformity

Species at Risk bats have been identified within the study area (Section 3.5.3). Aurora District MNRF has been engaged in consultation to assess the impacts of the proposed works on Species at Risk. MNRF requires detailed information on the proposed project in order to assess the impacts of the proposed works on Species at Risk (bats and otherwise). MNRF's Information Gathering Form on Species at Risk and this EIS document have been sent to MNRF for their review and direction pertaining to Species at Risk. An addendum to this EIS will be issued once MNRF's response has been received.

At the time of development, should additional SAR be identified on the subject property or species be listed or up-listed under the ESA, then the proponent shall follow the required registrations and/or engage with the MNRF to ensure full compliance.

5.6.2 Federal Species at Risk Act

Only species listed as Threatened, Endangered or Extirpated under Schedule 1 are afforded both individual and habitat protection under the Species at Risk Act (SARA). The SARA applies to federal lands. Generally, compliance with provincial ESA legislation will satisfy the requirements under the SARA.

Conformity

Species at Risk bats have been identified within the study area (Section 3.5.3). The proposed lot is currently owned by CVC and is not federally-owned. Therefore, the proposed lot is considered to comply with SARA.

5.6.3 Migratory Birds Convention Act (MBCA)

The Migratory Birds Convention Act (MBCA) provides protection for (listed) migratory birds in Canada through the conservation of populations, individuals and their nests. These policies and regulations ensure the protection of listed migratory bird species, their nests, eggs and offspring.

Conformity

Mitigations proposed under Section 7.0 that restrict vegetation clearing to the period of the year where migratory birds are not considered to be actively breeding are considered to greatly reduce the potential for contravention of the MBCA. As such, the proposed development is considered to comply with the MBCA.

5.6.4 Fish and Wildlife Conservation Act

The Fish and Wildlife Conservation Act (FWCA) lists specially protected species in Ontario, including mammals, birds, herpetofauna and invertebrates. *"A person shall not hunt or trap specially protected wildlife or any bird that belongs to a species that is wild by nature and is not a game bird".* This includes the nests and eggs of some birds that are not covered under the MBCA.

Conformity

Mitigations proposed under Section 7.0 that restrict vegetation clearing and isolate the limit of construction greatly reduce the potential for contravention of the FWCA. As such, the proposed development is considered to comply with the FWCA.

6.0 Tree Preservation and Vegetation Compensation

An analysis of the location of surveyed trees in relation to the proposed construction envelope was conducted to determine the preservation category for each tree. A minimum tree protection distance of 4.0m was used to determine the preservation category, measured as a radius taken from the edge of the tree trunk outwards towards the canopy dripline.

Tree preservation categories are defined as follows:

- **Preserved:** Trees located ≥4.0m from the perimeter of the proposed construction envelope.
- **Removed:** Trees located ≤3.9m from the perimeter of the proposed construction envelope, and trees located within the footprint of the proposed construction envelope.

6.1 Tree Preservation

Based on the proposed construction envelope, 33 of the surveyed trees (70%) can be preserved and a maximum of 14 (30%) require removal (Tables 11 and 12, and Figure 5).

Table 11. Summary of trees preserved and removed based on proposed construction envelope.

Common Name	Scientific Name	Preserved	Removed
Columnar English Oak	*Quercus robur 'Fastigiata'*	1	
Ivory Silk	*Syringa reticulata*	1	
Manitoba Maple	*Acer negundo*	3	1
Red Maple	*Acer rubrum*		1
Sugar Maple	*Acer saccharum*	28	12
	Total:	**33**	**14**

6.2 Tree Compensation and Woodland Replacement

Based on the proposed construction envelope, a maximum of 14 trees are proposed for removal, which include one Manitoba Maple, one Red Maple and 12 Sugar Maple trees. Three of the trees proposed for removal are in poor condition, six are in fair condition, three are in good condition and one is in excellent condition. In addition, three of the trees proposed for removal include three cavity trees

potentially suitable for bat maternity roosting (Section 3.5.2 and Figure 5). Table 12 provides a summary of trees that require removal, and Appendix 4 provides the tree inventory data collected by CVC.

Table 12. Trees requiring removal based on proposed construction envelope.

Tree ID #	Common Name	Scientific Name	dbh (cm)	Condition	# Replacement Trees Required
10	Manitoba Maple	*Acer negundo*	18	Poor	0
15	Sugar Maple	*Acer saccharum*	54	Good	2
23	Sugar Maple	*Acer saccharum*	32	Good	1
24	Sugar Maple	*Acer saccharum*	41	Poor	0
25	Sugar Maple	*Acer saccharum*	32	Fair	1
26	Sugar Maple	*Acer saccharum*	33	Fair	1
27	Sugar Maple	*Acer saccharum*	43	Excellent	1
28	Sugar Maple	*Acer saccharum*	36	Fair	1
29	Sugar Maple	*Acer saccharum*	35	Fair	1
30	Sugar Maple	*Acer saccharum*	46	Fair	1
31	Sugar Maple	*Acer saccharum*	63	Good	2
32	Sugar Maple	*Acer saccharum*	34	Poor	0
33	Sugar Maple	*Acer saccharum*	43	Fair	1
44	Red Maple	*Acer rubrum*	27	Good	1
35	Manitoba Maple	*Acer negundo*	15	Poor	0
36	Manitoba Maple	*Acer negundo*	40	Poor	0
				Total:	**13**

In general, compensation is required to mitigate impacts that result from the removal of trees. Compensation can be achieved through tree replacement plantings and understory plantings consisting of native species that are suitable for local site conditions. The City of Mississauga Private Tree Protection By-law (0254-2012) states that a permit and replacement trees are required for each tree removal, if three or more trees are removed per calendar year. Healthy trees that are ≤49cm dbh must be replaced by one tree, and healthy trees that are ≥50cm dbh must be replaced by two trees. Replacement trees may be coniferous or deciduous. The City of Mississauga specifies that coniferous replacement trees must be at least 1.8m tall, and deciduous replacement trees must be at least 6cm dbh. Based on these requirements, a total of 13 replacement trees are required (Table 12).

The canopy of the trees proposed for removal are contiguous with the Significant Woodland that extends off the subject property. Tree removals will result in the loss of 0.03ha of woodland. Therefore, woodland replacement to compensate for the loss of trees, understory, herbaceous vegetation and woodland function is recommended.

The proposed construction envelope is in an area where disturbance currently exists (i.e., existing shop structure and equipment storage area), which minimizes impacts to the Significant Woodland and minimizes tree removals to the greatest extent possible (as described in CVC's Tree Inventory Report, Appendix 4). To achieve no negative impact to the Significant Woodland, woodland replacement at a rate of 1,000 native trees per ha is recommended to compensate for the loss of 0.03ha of woodland.

This equates to 30[3] native trees, which should be planted along the newly exposed woodland edge on the subject property to perform a 'buffer' function and within the adjacent natural area. In addition, understory plantings are recommended to mitigate the loss of understory and herbaceous vegetation and improve 'buffer' function.

Per TRCA's Forest Edge Management Plan Guidelines, (1) the density of plantings should afford some immediate level of protection (e.g., trees planted 3m apart on centre); (2) the height of trees should afford some immediate level of protection (i.e., the taller the tree the more protection to the woodland); (3) plant smaller sized material at the front and larger sized material along the existing forest edge to emulate the natural vegetation structure of the forest edge; (4) include a diversity of native species that complement the adjacent woodland community; and (5) plant fast-growing species adapted to forest edges and disturbed areas (TRCA 2004).

The length of the woodland edge along the proposed construction envelope is approximately 25m (Figure 2). Based on a density of one tree for every 3m, a total of 10 trees are required to plant one row along the edge of the woodland. In order to achieve some immediate level of protection, these trees should be at least 2.0m in height. A second row of shrubs should be planted in a higher density in front of the taller row of trees to provide an adequate buffer function. A density of one shrub for every 1.5m is recommended, thus requiring a total of 17 shrubs. These shrubs should be planted off-centre of the back row of trees, and planting stock should be between 0.5 and 1.0m in height. Therefore, a total of 10 trees and 17 shrubs should be planted along the newly created woodland edge (i.e., the western edge of the proposed construction envelope). The remaining 20 trees should be planted within the adjacent natural area within gaps in the woodland canopy. A layer of mulch should be added around plantings to help retain soil moisture. Newly planted material should be adequately watered during dry periods (mainly mid-late summer) to promote survivorship.

The proposed tree planting list includes a diversity of native trees and shrubs that are suitable for growing along the edge and in gaps of woodlands. Table 13 provides a list of recommended trees, shrubs and quantities. This list was produced by considering native species identified within the study area that are compatible with existing environmental characteristics (e.g., moisture regime, shade, soil type), and are fast growing. Cultivars are not acceptable (e.g., cultivars of cherry, *Prunus* sp., should not be used in restoration plantings). Use of native seed and stock of local genetic provenance is encouraged for restoration purposes. The 6th Edition of the Native Plant Resource Guide for Ontario (Society for Ecological Restoration Ontario 2011) includes information and sources of native planting materials for ecological restoration in Ontario including a list of growers and suppliers of native plants and seeds.

Table 13. Recommended planting list for woodland replacement.

Scientific Name	Common Name	Quantity along Edge	Quantity in Adjacent Woodland
Trees			
Pinus strobus	White Pine	2	4
Prunus serotine	Black Cherry	1	2
Quercus rubra	Red Oak	2	4

[3] Since the planting recommendations for woodland replacement (30 trees + understory plantings) exceed Tree Protection By-law replacement plantings (13 trees), compensation recommendations are based on woodland replacement planting recommendations.

Scientific Name	Common Name	Quantity along Edge	Quantity in Adjacent Woodland
Tilia americana	Basswood	1	2
Betula papyrifera	White Birch	1	2
Acer rubra	Red Maple	1	2
Acer saccharum	Sugar Maple	2	4
	Total:	**10**	**20**
Shrubs			
Amelanchier laevis	Smooth Serviceberry	4	
Prunus virginiana	Eastern Choke Cherry	4	
Ribes cynosbati	Prickly Gooseberry	3	
Hamamelis virginiana	American Witch-hazel	3	
Viburnum acerifolium	Maple-leaved Viburnum	3	
	Total:	**17**	

7.0 Impact Assessment

CVC has identified a construction envelope within the proposed lot that minimizes the potential impacts to the natural environment. The proposed construction envelope overlaps an area of existing disturbance where the existing shop and manicured area are located. The proposed future development of a single-family residence, while largely within the existing footprint of the current shop structure, will require removal of trees and understory vegetation within the proposed development envelope shown in Figure 2. In the absence of mitigation, removal of select trees and vegetation may result in a reduction in ecological function associated with woodlands such as nesting and foraging habitat for birds and other fauna.

Where potential impacts exist, largely in relation to the active construction period, a range of mitigation measures are recommended to minimize or eliminate these potential impacts. The significance of the impact of the proposed lot and construction envelope is assessed in the context of the significance of the environmental features and functions present within and adjacent to the proposed construction envelope. Potential impact to environmental features and functions identified in Section 4.0 are assessed.

7.1 Analysis of Buffers and Setbacks

In the Official Plan, the City of Mississauga defines buffers as vegetated protected areas that provide a physical separation of development from the limits of natural heritage features and natural hazard lands. Policy 6.3.8 states that buffers *"shall be determined on a site-specific basis as part of an Environmental Impact Study"*. Policy 6.3.7 states that buffers will be provided to perform the following:

- maintenance of slope stability and reduction of erosion on valley slopes;
- attenuation of stormwater runoff;
- reduction of human intrusion into Significant Natural Areas and allowance for predation habits of pets, such as cats and dogs;
- protection of tree root zones to ensure survival of vegetation;
- provision of a safety zone for tree fall next to woodlands;

- enhancement of woodland interior and edge areas through native species plantings;
- enhanced wildlife habitat and corridors for wildlife movement; and
- opportunities for passive recreational activities, in appropriate locations.

Buffers are typically proposed to protect retained natural features from the potential impacts of adjacent development. Based on a few key considerations, the Significant Woodland that occurs on and adjacent to the subject property does not warrant a typical buffer along its interface with the proposed construction envelope:

- The vegetation within the cultural woodland proposed for removal is of low quality (i.e., predominantly disturbed) and tolerant of disturbance.
- The FQI identified for the adjacent vegetation communities is reflective of a species composition dominated by ubiquitous species tolerant of a wide variety of habitats.
- The proposed construction envelope includes lands that accommodate the existing shop structure and equipment storage area.
- A maximum of 14 trees will be removed from the cultural woodland to accommodate development within the construction envelope.

Per the Natural Heritage Reference Manual (MNR 2010), buffers may contribute to the demonstration of no negative impact – but they are not necessarily required to meet this test. Impacts to the Significant Woodland can be mitigated without the use of a buffer as described in Section 7.2.

Given the current land use, which includes an existing shop structure, equipment storage area and disturbed understory to the base of the trunks of the trees whose canopies are contiguous with the adjacent Significant Woodland, absence of a buffer from the proposed redevelopment will not threaten the health and integrity of the existing features and ecological functions associated with the Significant Woodland provided woodland replacement recommendations are followed (Section 6.2).

In place of a buffer (which is not feasible based on the proposed construction envelope intended for a single-family residence) a reasonable expectation to contribute to the improvement of the form and function of the Significant Woodland would be to restrict mowing below the dripline of the trees to be retained and to plant native vegetation in lieu of maintaining a manicured lawn where the forested area overlaps with the undeveloped portion of the proposed lot (in addition to woodland edge replacement plantings). This will contribute to the protection of soils and tree roots and impacts to the current function of the Significant Woodland are not anticipated. Further details are provided in Section 7.2.

7.2 Direct Impacts

Direct impacts include tree removal, removal of ground vegetation and potential colonization of recently disturbed soils by introduced species. Each potential impact is shown in this section with mitigation discussed for each impact.

7.2.1 Reduction in Forest Cover

Fourteen trees require removal to accommodate the proposed development envelope (Figure 2). This represents approximately 0.03 ha (300 m^2) of woodland cover. Removal of these trees is not anticipated to alter the function of the Significant Woodland (which was identified as such based on its contiguous size), provided that recommended mitigation and compensation measures are followed.

The woodland that occurs on the subject property forms a nearly continuous canopy with the adjacent large tract of woodland to the west. Trees that are proposed for removal are primarily associated with the disturbed portion of the cultural woodland currently used by CVC as equipment storage and where previous tree removals have been undertaken to accommodate the existing shop structure. Interior habitat is not available on or adjacent to the subject property (i.e., no area >100m from the forest edge).

Removal of trees from the edge of the Significant Woodland may result in the following impacts:

- Removal of edge trees may result in reduction of maternity roosting habitat for Species at Risk bats, as three cavity trees are proposed for removal (Figure 5).
- Removal of edge trees may result in reduction of habitat and decrease in quality of remaining habitat for resident wildlife.
- Tree removal from the edge of the Significant Woodland may provide suitable conditions to perpetuate the spread of non-native invasive plant species.
- There is potential for the proposed development to impact trees that are to be retained by damaging the root systems where they occur in the proposed development envelope.

Mitigation and Compensation

Limits of construction shall be clearly identified on the subject property such that trees that are to be preserved are protected from damage and/or disturbance. During site development the installation of tree hoarding should be placed along the perimeter of the woodland to be retained to mitigate potential impacts to trees during construction. Sediment control fencing may serve this purpose in some locations if the proposed hoarding would otherwise overlap with the same area. Tree clearing shall be completed by a qualified contractor in a manner that minimizes disturbance to the adjacent Significant Woodland. Trees should be felled away from the edges of the retained Significant Woodland, lowered in sections to avoid damage to retained vegetation. Trees that die from the effects of damaged root systems should be replaced at the rate of compensation described below.

Tree removal must occur outside the breeding bird and active season for bats and must occur between November and March. Construction activities during the active season for bats (i.e., April 30th to September 30th) should be restricted to daylight hours only and the use of artificial lighting should be avoided.

Woodland replacement plantings recommended in Section 6.2 are required to mitigate impacts associated with the removal of 14 trees and 0.03ha of woodland.

To mitigate the potential for further spread of non-native invasive plant species, invasive species management is recommended within the study area to minimize the spread of non-native invasive plant species which currently suppress the succession of native vegetation. Ontario Invasive Species Council Best Management Practices for invasive species removal should be followed. Native species should be planted between the future single-family residence and the Significant Woodland to protect the root zone of edge trees, filter contaminants from lawn fertilizers and enhance the structure and function of the woodland edge with native vegetation. Plantings should not, however, be placed immediately adjacent to the future single-family residence to reduce the potential for hazard trees.

7.2.2 Removal of Ground Vegetation

Ground vegetation associated with the disturbed portion of the subject property and a small portion of ground vegetation in the cultural woodland will be removed. On the subject property, the cultural woodland understory is sparsely vegetated primarily with non-native species. Reduction in vegetation may result in a reduction of habitat, particularly edge habitat.

Mitigation

The proposed development envelope has been oriented to minimize loss of ground vegetation.

Vegetation removal should occur outside the reproductive window of species known to occur at the subject property. Therefore, vegetation removal should occur between the months of November and March).

All disturbed soils should be revegetated, either with sod in manicured areas or seeded with a native seed mix. This will assist with stabilizing disturbed soils and preventing erosion. This will also prevent the colonization of non-native species in recently disturbed areas.

Prior to development, a plant rescue for Finely-nerved Sedge and Pale Jewelweed is recommended, both of which are considered rare in the City of Mississauga (see Section 3.4.1). The feasibility of seed collection and propagation should also be explored. Patches of these plants should be transplanted to suitable habitats within CVC's Meadowvale Conservation Area, adjacent to the subject property. Finely-nerved Sedge should be relocated to rich deciduous or mixed forests, cedar swamps, disturbed areas or clearings (Voss and Reznicek 2012). Pale Jewelweed should be relocated to moist forests, swamps and stream sides (Voss and Reznicek 2012).

7.2.3 Erosion

Vegetation removal may result in increased erosion. Erosion and deposition of sediment downslope from the proposed development envelope could lead to additional impacts to vegetation, through smothering root systems and burying herbaceous ground flora.

Mitigation

To avoid erosion, an erosion and sediment control plan should be prepared by a qualified practitioner prior to the development of a single-family residence. The erosion and sediment control plan should be followed and enforced through regular inspections to confirm integrity and function. Sediment fencing should be placed at the limits of the proposed construction envelope prior to the commencement of construction activities, be maintained for the duration of construction activities, remain in place until the site is stabilized and revegetated and there is no longer risk of erosion. All erosion and sediment control measures should be removed from site following stabilization and revegetation.

7.2.4 Reduction in Wildlife Habitat

The reduction of 0.03ha of woodland will reduce the area of habitat used by birds for nesting. Most of the birds documented during field investigations are considered common species within the Credit River Watershed (see Section 3.5.5). Habitat is not available on the subject property for area-sensitive species, given the absence of interior forest habitat. The impact of the removal of 14 trees will not threaten the health and integrity of the Significant Woodland or its ecological function and is thus not considered a negative impact.

Mitigation
Removal of vegetation should take place outside of the active breeding period of woodland-breeding bird species, which is recognized as the end of April to mid-September for forested habitats by Environment Canada (2017).

7.2.5 Hydrological and Hydrogeological Impacts

The subject property is approximately 190m from the Credit River at its closest point. The proposed development envelope is intended for a future single-family residence that will be connected to municipal servicing. CVC will encourage those undertaking future development to maintain the current water balance and direct all precipitation to the surrounding substrates which consist of an imperfectly-draining clay loam. CVC will encourage those undertaking future development to incorporate Low Impact Development measures to contain all precipitation on site; as such, a reduction in infiltration of water would not result from future proposed development of a single-family residence.

Mitigation
Erosion and sedimentation should be minimized on the subject property during construction. Soils should be stabilized with sod or native vegetation following the completion of works prior to removing erosion and sediment control fencing. Changes to the natural drainage should be avoided, and the extent of grading should be minimized to the extent feasible.

7.3 Indirect Impacts

7.3.1 Lighting

Lights may be used to illuminate the future single-family residence. These lights can negatively impact wildlife, such as nocturnally migrating song birds, by confusing their orientation and attracting them to insects flying around the lights at night.

Mitigation
Angle lights away from the woodland and use downward pointing lights, such as lighting approved by the International Dark-Sky Association. Restrict construction activities to daylight hours only during the active season for bats (April 30th to September 30th).

7.3.2 Edge Effects

Edge effects refer to the effects of sun and wind on the temperature and moisture regime within the edge of a forest. Due to its size and shape, the microclimate of the woodland on the subject property is currently affected by edge effects. Although the microclimate of the woodland would experience little change due to the clearing of 0.03ha of woodland, the creation of a new edge would expose previously shaded vegetation to direct sunlight. Direct sunlight in the winter can lead to the thaw and freeze of bark that can kill plant tissues and impact the health of trees. In the summer months, sun can damage exposed leaves and lead to loss of foliage.

Mitigation
It is recommended that a screening of shade tolerant trees and shrubs be planted along the edge of the woodland immediately adjacent to the maintained yard of the future single-family residence (Section 6.2). Although vegetation can adapt to changes in light regime, planting will help to minimize edge effects and reduce stress on remaining vegetation. In addition to the proposed edge planting, the area under the dripline of the Significant Woodland should be planted with native vegetation (e.g., perennial forbs, native sedges and grasses) characteristic of the area. A nurse crop should be included in the

planting plan, which will contribute to soil stabilization, prevent erosion and foster the establishment of native species.

7.3.3 Increased Human Presence

Future development of a single-family residence on the proposed lot will result in a small increase in human occupation. There are several ways in which residential landowners have been documented to negatively impact natural areas. The following list includes activities that contribute to these impacts:

- planting non-native invasive species, removal of native vegetation, creation of unsanctioned paths, dumping yard waste (e.g., potted plants, Christmas trees, grass clippings), and locating compost containers/piles within the edge of natural areas;
- building structures (e.g., sheds or forts) and storage of material (e.g., lumber, yard tools) within the natural area; and
- increased predation of native fauna by domestic pets, especially cats.

These activities result in a reduction in the abundance of native flora by smothering existing vegetation. Also, impacts of domestic pets can significantly reduce local populations of small mammals and ground-nesting birds.

Mitigation

In order to mitigate impacts to the natural heritage features and ecological functions resulting from increased human presence, it is recommended that educational material be provided to the future homeowner regarding the sensitivity of the adjacent natural heritage features. This material should include a description of threats to natural heritage features (e.g., use of invasive plant species, such as Periwinkle (*Vinca minor*), in landscaping) and encourage homeowner to be land stewards.

It is recommended that a screening of shade tolerant trees and shrubs be planted along the edge of the woodland immediately adjacent to the maintained yard of the future single-family residence. This dense screening will mitigate edge effects and deter encroachment into the adjacent natural area.

7.4 Short-term Construction Impacts

Potential short-term construction impacts include:

- erosion of soils that may lead to sedimentation;
- soil compaction from use of heavy machinery;
- damage to vegetation from use of heavy machinery;
- contaminant spills;
- interruptions to wildlife; and
- wildlife mortality.

7.4.1 Erosion and Sedimentation

Soil erosion from surficial runoff of precipitation can result in deposition of sediment in the adjacent wetland, which can result is the smothering of fauna and vegetation.

Mitigation
Refer to section 6.2.1 for recommended erosion and sediment control mitigation measures for the direct impact of vegetation removal and the potential for erosion and sedimentation. In addition, topsoil from construction activities should not be stored within the edge of the Significant Woodland, and designated areas for topsoil piles should be indicated on future development plans with erosion and sediment control fencing in place to prevent runoff into the adjacent natural area.

7.4.2 Soil Compaction and Damage to Vegetation

Soil disturbance and damage to vegetation can result from the use of heavy machinery and equipment storage. Soils can be compacted, vegetation can be removed, and roots can be smothered.

Mitigation
Refer to section 7.2.1 for recommended vegetation protection measures (e.g., placement of tree hoarding). The woodland edge to be retained should be fenced off prior to construction. There should be no disturbance to vegetation and soils beyond the approved construction envelope. Stockpiling and staging areas should be clearly identified on plans. All equipment storage and soil stockpiles should be located within the construction envelope or off-site (i.e., not within the woodland).

It is recommended that all areas disturbed by construction be vegetated as soon as possible with locally appropriate plant species that are native to the City of Mississauga, to prevent the establishment and spread of non-native invasive species.

7.4.3 Potential Contaminant Spills

Spills may occur during the re-fueling of construction vehicles, which can lead to soil contamination and impacts to water quality downstream.

Mitigation
Re-fueling should take place outside the study area.

7.4.4 Impacts to Wildlife

Removal of trees may impact nesting birds, depending on timing of tree removals. The Migratory Birds Convention Act (1994) provides for the protection of migratory birds through the Migratory Birds Regulations and the Migratory Birds Sanctuary Regulations by regulating potentially harmful human activities that may impact migratory birds. Activities that are considered harmful include the disturbance, destruction or taking of a nest and/or egg. This would include the removal of a tree that contains an active nest.

Breeding birds in the area will potentially be disrupted by the noise and activity associated with construction; however, these impacts are considered temporary and localized, and are not anticipated to affect future nesting success.

Mitigation
It is recommended that tree removals occur outside the breeding bird window and active season for bats in order to avoid impacting active bird nests and roosting bats, and should occur between November and March.

8.0 Recommendations and Conclusion

Measures for mitigating and compensating for negative impacts are described in Sections 6.0 and 7.0. The primary avoidance strategy when considering best practices for minimizing encroachment into the Significant Woodland was to situate the proposed construction envelope within the area of existing disturbance at the subject property. The following mitigation and compensation measures are recommended to achieve the outcome of no negative impact to the Significant Woodland on and adjacent to the proposed lot:

- require that if any Species at Risk are observed within the construction area at any time, construction must halt and MNRF must be contacted immediately;
- require an Erosion and Sediment Control Plan, completed by a qualified professional, as part of Site Plan Control for future construction of a single-family residence;
- require regular inspection of erosion and sediment control measures throughout the construction period, until soils have stabilized;
- require that removal of vegetation occur between November and March, and outside the breeding bird season;
- require that the construction envelope be fenced with sediment fencing and/or construction hoarding to protect adjacent vegetation and prevent unnecessary encroachment into the Significant Woodland during the construction period;
- require that lighting be directed toward the ground and away from the Significant Woodland;
- require that the area underneath the dripline of the Significant Woodland be planted with native vegetation (e.g., grasses, sedges, forbs, shrubs and trees);
- require that woodland replacement plantings occur along the newly created edge of the Significant Woodland or within Meadowvale Conservation Area; and
- require that invasive species management be undertaken within the study area, prior to construction.

Through the implementation of the recommended mitigation and compensation measures, the proposed lot and construction envelope conform with the applicable policies, legislation and regulations identified and discussed in Section 5.0. Each measure contributes to the outcome of no negative impact to the Significant Woodland or its function on the subject property and in the context of the study area. SAR bats have been detected at the subject property. An addendum to this EIS will be issued pending direction from MNRF.

This report characterizes the existing environmental features and functions of the subject property and assesses the proposed lot and construction envelope in the context of relevant environmental policies, legislation and regulations. The proposed lot and construction envelope, and future construction of a single-family residence, will result in no negative impact to the natural heritage features and their functions within and adjacent to the subject property provided that recommended mitigation and compensation measures are followed. In addition, the proposed lot and construction envelope, and future construction of a single-family residence, are consistent with the PPS, City of Mississauga Official Plan, Region of Peel Official Plan, and CVC policies and regulations.

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Appendix 1: Terms of Reference

City of Mississauga
Environmental Impact Studies
Terms of Reference
2002

1.0 INTRODUCTION

To ensure in so far as possible, both private and public developments are consistent with Natural Heritage and Environmental policies of the Planning Act, the City of Mississauga requires that an Environmental Impact Study be completed for all development proposals where it has been identified that there may be an impact on a natural heritage feature, or area, or the function of the feature. The purpose of an Environmental Impact Study (EIS) is to determine the potential effects of a development proposal on a given natural area and to ensure that a proposal will maintain or enhance the ecological functions of the area in question. In order to make this determination, a number of information items are required of the proponent, to be reviewed by the City and other appropriate agencies where needed. The completion of an EIS does not assure the approval of a development proposal. An EIS provides the mechanism for assessing impacts, and then accepting, modifying or rejecting development proposals in and adjacent to natural areas. In general, the natural areas of concern to the municipality are those indicated as Environmental Areas, Schedule 3 of the Mississauga Plan.

2.0 COMPONENTS OF AN ENVIRONMENTAL IMPACT STUDY SUBMISSION

2.1 Report Outline/Issues Summary Paper

The contents and review process of an EIS will differ depending on the nature of the development proposal and the area affected. To ensure that the EIS will contain relevant information, a Report Outline must first be submitted for approval to the City and other relevant agencies i.e. conservation authorities. This initial focusing is necessary to outline the study area boundaries and the key features or ecological functions of the specific area in question, which will constitute the functions and features of concern to the EIS. The Report Outline will be general and consist of the following:

- description of the development proposal parameters and purpose;
- location map;
- activities associated with the development proposal that may have an environmental impact;
- grading information;
- description of the natural area being affected;
- parameters of proposed environmental inventory;
- proposed methodology and techniques to undertake the environmental inventory;
- timing of the field work and the number of field seasons required (1 field season);
- curriculum vitae of study team members

The Report Outline will determine whether a Full or Scoped EIS is required. A Full EIS is required where negative impacts are anticipated, and a greater amount of inventory and research work is completed. A Scoped EIS is recommended where development proposals are expected to result in minimal or no environmental impacts. This conclusion may be founded in part on the existence of other recent, relevant work and therefore, the same level of detail is not expected in new inventory or research work.

In either case, Full or Scoped, the EIS must adequately address all the parameters of the terms of reference. Also, the report outline will determine whether or not the Full EIS is to be phased.

2.2 Environmental Impact Study

Upon approval of the Report Outline, the proponent should proceed with the necessary inventory work and research. The EIS should consist of the following:

2.2.1. Description of the Proposal

A concise summary of the proposal and the context of the application is to include the following:

- location map;
- purpose of the development proposal;
- conceptual site plan showing expected locations of buildings, roads and other services;
- existing land use, zoning and ownership of site;
- existing land use and zoning of adjacent sites;
- historic land uses of the site and adjacent sites;
- activities associated with the development proposal that may have direct or indirect, short term or ongoing environmental impacts, both during construction and post-construction;
- proposed scheduling, including any phasing;
- general areas of proposed grading and filling and/or landscape modification and/or drainage alterations.

2.2.2. Site Description and Landscape Context

a) A biophysical inventory and analysis of both terrestrial and aquatic communities and physical functions and processes that occur on and beyond the site that will be affected or that might reasonably be expected to be affected, either directly or indirectly. This should include the following categories of information addressing quality and quantity of the resource:

Earth Resources

- topography including a map indicating existing contours

Water Resources

- floodplain
- surface drainage

Vegetation Resources

- inventory of all overstory and ground flora; all layers
- vegetation communities including dominant species abundance, richness and size of community; ELC community
- special emphasis on any rare or uncommon species, their location and distribution;
- health, age and condition of vegetation;
- opportunities for linkages between features; discussion of the Credit River Valley and the relationship of the property

Wildlife Resources

- inventory of all wildlife species identified during site visits and through literature review; birds, SAR, incidentals

- critical habitat units (i.e. Migratory stopover, breeding habitats, winter cover etc.); SWH following the criteria for Ecodistrict 7E
- special emphasis on any rare or uncommon species, their location and distribution

b) A description and analysis of the inter-relationship of the biophysical information, to provide an overview of the existing ecosystem both within the subject site and as it relates to the larger local and regional ecosystem.

c) The present Natural Areas Survey designation of the property and the characteristics of the site which gave rise to the designation. Identification of the key features and functions including:

- whether the feature of function is measurable in its occurrence;
- whether the features or function contributes to the quality and integrity of the area;
- whether the features or functions contribute to the identification of the area as a natural heritage
- feature or area as defined in the policy or;
- whether there is a reasonable expectation that the feature or function may be affected by the development.

d) Description of the methodology, timing, and techniques selected to undertake the environmental inventory. A complete literature review including relevant reports prepared for/by other agencies and the contacting of local naturalists who may be familiar with the site should be part of the study.
e) Complete mapping of all resources including existing grading information and proposed grades at a scale to be determined as appropriate for the given application i.e. site plan scale as opposed to subdivision. The environmental constraints to development should be overlayed onto one map illustrating the subject site and adjacent lands so that the opportunities and constraints can be clearly identified. A current aerial photograph is ideal for this exercise. Mapping should also include an overlay of the proposal onto the opportunities and constraint map. When there is a question whether or not there is adequate area left for development, concept plans for the lots in question will be required showing building envelopes, relevant building setbacks, driveways, parking and location of utilities.

2.2.3. Evaluation of the Effects on the Environment

a) Describe the sensitivity of the features and functions to the development proposal.
b) Describe the environmental effects of the development proposal on the natural areas that might reasonably be expected to occur. This may include the following:

- direct on-site effects
- grading and drainage plan
- a description of municipal requirements, standards, etc. which will affect the development, such as: provision of useable privacy area for residential development, including rear lot grading requirements and the proposed type of dwellings to be constructed (i.e., ground floor area) to fit in with the neighbourhood
- a preliminary grading plan indicating both existing and proposed grades for services and building envelopes, including useable privacy areas, etc.;
- effects on adjacent areas, including transported effects such as sedimentation;
- effects on the key characteristics of the natural area;
- potential for further demand on resources;
- cumulative effects;

- irreversible and reversible effects;
- immediate and long-term effects;
- effects of occupancy (i.e. increased disturbance and indirect impact from increased access etc.).

c) Provide an explanation of the methods used to determine the effects.

2.2.4. Description of Mitigating Measures

This includes the identification and detailed explanation of alternative methods and measures that would mitigate any predicted environmental impacts. This should include modifications to development proposals to avoid or maintain key features or functions, or methods to restore features or functions. Of these, avoidance is preferred. Where avoidance is not possible, alternative methods must include measures to minimize impacts, conditional on subsequent monitoring of effects to ensure successful implementation. This section should include the following:

a) Indicate and explain as many feasible mitigating measures as possible which are relevant to the potential impact of the subject development proposal.
b) Describe in detail the mitigating measures proposed to eliminate or reduce the effects.
c) Describe any proposed compensation for those effects which cannot be mitigated and/or rehabilitation/restoration plans for areas disturbed.

2.2.5. Description of Relevant Municipal and/or Agency Requirements

Describe relevant municipal and/or agency policy requirements which will be applied to the subject property, and when implemented may supplement, supersede and/or affect the potential mitigating measures. The policy requirement described should include those contained within the Official Plan, District Plan or relevant municipal studies (i.e., Natural Area Study); the Comprehensive Policy Statements, including Implementation and Technical guidelines; or local conservation authority policy such as the CVC Watercourse and Valley Land Protection Policies.

2.2.7. Recommendations

a) Recommendations should outline how the proposal can maintain or enhance ecological functions of the natural area and include the following issues:

- should the proposal proceed as planned
- should the proposal be revised to reduce/eliminate effects and if so, how (proposed revisions should be illustrated conceptually on the resource mapping base)
- mitigation measures required

2.2.8. Background Information

a) The EIS should include an appendix of:

- literature cited
- all background data
- list of people contacted during the study or referenced in the report
- curriculum vitae of study team members

b) A statement(s) regarding:

- chief author of report
- whether this report has been edited, by whom and for what purpose, including normal editing which would occur by the chief ecological consultant with respect to the firm=s field staff

2.2.9. Executive Summary
Include a summary at the front of the report that contains a description of the proposed development, the effects on the environment and all recommendations.

3.0 APPROVAL OF AN ENVIRONMENTAL IMPACT STUDY

3.1. Determination of the Need for an EIS

Prior to proceeding with a development proposal, landowners or applicants should contact the Planning and Building Department to determine whether or not a EIS would be required. It is recommended that the Opportunities and Constraints be determined prior to determining the details of a development application so that any mitigating measures can be incorporated into the initial proposal. In order to assist in reaching timely decisions, the EIS should be submitted with development applications

3.2. Initial On-Site Meeting

Landowners should be encouraged to contact the municipality (and agency if appropriate), to undertake an initial site inspection of the property to review environmental features of a site, both hazards and natural areas. At this time, relevant environmental features of a property could be identified/staked, including top of bank of corridors, flood hazards, limits of E.S.A.s, woodlands, wetlands, etc.) and discuss the documentation which will be required to address these concerns, such as: top of bank survey, geotechnical report, Full or Scoped EIS.

An initial site inspection is the opportunity for municipal and agency staff to identify key features of the natural area which are of concern to them; verbally highlight section of the EIS where particular care should be taken to address these features and provide relevant information; and provide additional municipal and agency policies or standards which would affect the development such as: buffers, setbacks, rear yard requirements, services including stormwater management, or parkland dedication.

3.3. Timing of Submission

The EIS must be approved in the early stages of a proposal's consideration by the municipality. Its purpose is to guide the design and parameters of a proposal from an ecological perspective and therefore it cannot be dealt with as an afterthought to the project. EIS's must be approved by the municipality in consultation with other agencies prior to the following relevant stages in a proposal's schedule:

- public meetings for rezonings, Official Plan Amendments and subdivisions;
- draft plan approval for subdivisions;
- engineering lot grade plan finalization;
- "satisfactory for landscape and grading approval" stage in site plan approval.

3.4. Implementation
The recommendations of final approved version of the EIS will be incorporated into development related legal agreements between the City and the proponent at the discretion of the municipality.

4.0 PROCEDURAL NOTES

4.1. Exemptions

An EIS is not required when a written Environmental Assessment has been completed and approved in accordance with the Ontario Environmental Assessment Act or Canadian Environmental Assessment Act. Other environmental planning processes may incorporate the elements of an EIS and serve the same purpose. For example, where detailed development criteria have been applied to a site through a mechanism such as a comprehensive planning process, a comprehensive EIS, or on the basis of a watershed or subwatershed plan, a site-specific EIS may not be required. The waiver of the EIS requirement will be at the discretion of the Commissioner of Planning and Building or his/her designate in consultation with other relevant agencies.

4.2. Other Studies

Following the approval of an EIS, there may be a need for more detailed studies, such as Preliminary Tree Preservation Plans, Tree Preservation Plans and Individual Lot/Block Preservation Plans. Requirements for these reports can be found in the Community Services Department Subdivision Requirements Manual.

4.3. Revisions

If a development proposal is significantly revised after approval of the EIS, an updated study may be required.

4.4. Consultants

It is the responsibility of the owner to retain a team of qualified consultants as deemed appropriate by the City. This may include ecologists, biologists, environmental planners, landscape architects, engineers, arborists or hydrogeologists. The City reserves the right to review the credentials of the consultants for ensuring that relevant experience and expertise will be brought to the EIS preparation. The owner/applicant is advised to review the credentials of the consultants with the relevant City departments involved prior to initiating the required studies.

4.5. Number of Copies

Five copies of Environmental Impact Studies shall be submitted to the Planning and Building Department. Distribution of the EIS to the appropriate agencies will be done by the Planning and Building Department.

Appendix 2: Vascular Plant Species List

Appendix 1. Vascular Plant Species List

Scientific Name ("+" = non-native/introduced)		Common Name	S-RANK	Regional/ Local Rarity[1]	City of Mississauga Rarity[2]
	Acer negundo	Manitoba Maple	S5		4
	Acer nigrum	Black Maple	S4?		3
+	Acer platanoides	Norway Maple	SNA		3
	Acer rubrum	Red Maple	S5		4
	Acer saccharinum	Silver Maple	S5		4
	Acer saccharum	Sugar Maple	S5		4
+	Acer tataricum ssp. ginnala	Amur Maple	SNA		3
+	Aegopodium podagraria	Goutweed	SNA		3
+	Aesculus hippocastanum	Horse Chestnut	SNA		3
	Ageratina altissima	White Snakeroot	S5		3
+	Agrostis gigantea	Redtop	SNA		4
+	Alliaria petiolata	Garlic Mustard	SNA		4
	Ambrosia artemisiifolia	Annual Ragweed	S5		4
	Ambrosia trifida	Great Ragweed	S5		3
	Anemone canadensis	Canada Anemone	S5		3
+	Arctium lappa	Great Burdock	SNA		4
	Asclepias syriaca	Common Milkweed	S5		4
	Athyrium filix-femina var. angustum	Northeastern Lady Fern	S5		4
	Betula papyrifera	Paper Birch	S5		4
	Bidens frondosa	Devil's Beggarticks	S5		3
	Carex sp.	Sedge species			-
	Carex leptonervia	Finely-nerved Sedge	S5	L	1
+	Cichorium intybus	Chicory	SNA		4
	Cicuta maculata var. maculata	Spotted Water-hemlock	S5		3
	Circaea canadensis	Broad-leaved Enchanter's Nightshade	S5		4
+	Cirsium arvense	Canada Thistle	SNA		4
	Cornus alternifolia	Alternate-leaved Dogwood	S5		3
	Cornus stolonifera	Red-osier Dogwood	S5		4
	Crataegus sp.	Hawthorn species			-
	Cuscuta gronovii	Swamp Dodder	S5	L	2
+	Cynoglossum officinale	Common Hound's-tongue	SNA		2
+	Dactylis glomerata	Orchard Grass	SNA		4
+	Daucus carota	Wild Carrot	SNA		4
+	Dipsacus fullonum	Common Teasel	SNA		4
	Echinocystis lobata	Wild Mock-cucumber	S5		4
+	Elaeagnus umbellata	Autumn Olive	SNA		3

Scientific Name ("+" = non-native/introduced)		Common Name	S-RANK	Regional/ Local Rarity[1]	City of Mississauga Rarity[2]
	Elymus virginicus var. virginicus	Virginia Wildrye	S5		3
	Erigeron annuus	Annual Fleabane	S5		4
	Erigeron philadelphicus	Philadelphia Fleabane	S5		4
	Fragaria virginiana	American Woodland Strawberry	S5		3
	Fraxinus americana	White Ash	S4		4
	Fraxinus pennsylvanica	Green Ash	S4		4
+	Galeopsis tetrahit	Common Hemp-nettle	SNA		2
	Galium palustre	Marsh Bedstraw	S5		2
	Geranium robertianum	Herb-robert	S5		4
	Geum aleppicum	Yellow Avens	S5		4
	Geum sp.	Avens Species			-
+	Glechoma hederacea	Ground Ivy	SNA		3
	Gleditsia triacanthos	Honey-locust	S2?		3
+	Glyceria maxima	Rough Mannagrass	SNA		3
	Hackelia virginiana	Virginia Stickseed	S5		3
+	Hemerocallis fulva	Orange Daylily	SNA		3
+	Hesperis matronalis	Dame's Rocket	SNA		3
	Hydrophyllum virginianum	Virginia Waterleaf	S5		3
	Impatiens capensis	Spotted Jewelweed	S5		4
+	Impatiens glandulifera	Purple Jewelweed	SNA		3
	Impatiens pallida	Pale Jewelweed	S4	L	3
+	Inula helenium	Elecampane	SNA		3
	Juglans nigra	Black Walnut	S4?		3
+	Lactuca serriola	Prickly Lettuce	SNA		3
	Laportea canadensis	Wood Nettle	S5		3
+	Lapsana communis	Common Nipplewort	SNA		2
	Larix laricina	American Larch	S5		3
+	Leonurus cardiac	Common Motherwort	SNA		4
+	Linaria vulgaris	Butter-and-eggs	SNA		4
+	Lonicera sp. (Exotic)	Exotic Honeysuckle species			-
+	Lonicera tatarica	Tartarian Honeysuckle	SNA		4
+	Lycopus europaeus	European Water-horehound	SNA		2
+	Lysimachia nummularia	Creeping Jennie	SNA		3
+	Lythrum salicaria	Purple Loosestrife	SNA		4
+	Malus pumila	Common Apple	SNA		3
+	Medicago lupulina	Black Medic	SNA		4
+	Myosotis scorpioides	True Forget-me-not	SNA		3
	Myosotis sp.	Forget-me-not species			-

Scientific Name ("+" = non-native/introduced)		Common Name	S-RANK	Regional/ Local Rarity[1]	City of Mississauga Rarity[2]
	Oenothera biennis	Common Evening Primrose	S5		3
	Oxalis stricta	Upright Yellow Wood-sorrel	S5		4
	Parthenocissus vitacea	Thicket Creeper	S5		4
+	Pastinaca sativa	Wild Parsnip	SNA		3
	Phalaris arundinacea var. arundinacea	Reed Canary Grass	S5		4
+	Phleum pratense	Common Timothy	SNA		4
	Physocarpus opulifolius var. opulifolius	Eastern Ninebark	S5	R/L	3
+	Picea abies	Norway Spruce	SNA	L	3
+	Picea glauca	White Spruce	S5	L	3
+	Picea pungens	Blue Spruce	SNA		4
+	Pinus nigra	Black Pine	SNA		1
	Pinus strobus	Eastern White Pine	S5		4
+	Poa pratensis ssp. pratensis	Kentucky Bluegrass	SNA		4
	Podophyllum peltatum	May-apple	S5		4
+	Populus alba	White Poplar	SNA		3
+	Populus x canadensis	Canada Poplar	SNA		2
	Potentilla simplex	Old-field Cinquefoil	S5		3
	Prunella vulgaris	Self-heal	S5		4
	Prunus virginiana	Choke Cherry	S5		4
	Quercus macrocarpa	Bur Oak	S5		4
	Quercus rubra	Northern Red Oak	S5		4
	Ranunculus hispidus var. caricetorum	Northern Swamp Buttercup	S5		3
+	Rhamnus cathartica	Common Buckthorn	SNA		4
	Rhus typhina	Staghorn Sumac	S5		4
	Ribes triste	Swamp Red Currant	S5		3
+	Rosa multiflora	Multiflora Rose	SNA		3
	Rosa sp.	Rose species			-
	Rubus idaeus ssp. strigosus	Wild Red Raspberry	S5		4
	Rubus occidentalis	Black Raspberry	S5		4
	Salix eriocephala	Heart-leaved Willow	S5		4
+	Salix sp. (Exotic)	Exotic Willow Tree species			-
	Sambucus canadensis	Common Elderberry	S5		3
+	Securigera varia	Common Crown-vetch	SNA		3
+	Solanum dulcamara	Climbing Nightshade	SNA		4
	Solidago altissima var. altissima	Eastern Tall Goldenrod	S5		4
	Solidago gigantea	Giant Goldenrod	S5		3
	Solidago sp.	Goldenrod species			-
+	Sonchus arvensis ssp. arvensis	Glandular Field Sow-thistle	SNA		3

	Scientific Name ("+" = non-native/introduced)	Common Name	S-RANK	Regional/ Local Rarity[1]	City of Mississauga Rarity[2]
+	Sorbus aucuparia	European Mountain-ash	SNA		3
	Symphyotrichum lanceolatum ssp. lanceolatum	Panicled Aster	S5		3
	Symphyotrichum lateriflorum	Calico Aster	S5		3
	Symphiotrichum sp.	Aster species			-
	Symphyotrichum novae-angliae	New England Aster	S5		4
+	Taraxacum officinale	Common Dandelion	SNA		4
	Thalictrum pubescens	Tall Meadow-rue	S5		3
	Thuja occidentalis	Eastern White Cedar	S5		4
+	Torilis japonica	Erect Hedge-parsley	SNA		1
+	Typha angustifolia	Narrow-leaved Cattail	SNA		3
	Typha latifolia	Broad-leaved Cattail	S5		4
	Ulmus americana	American Elm	S5		4
+	Ulmus pumila	Siberian Elm	SNA		3
	Ulmus rubra	Slippery Elm	S5		3
	Urtica dioica ssp. gracilis	Slender Stinging Nettle	S5		4
	Verbena urticifolia	White Vervain	S5		3
+	Viburnum opulus ssp. opulus	Guelder Rose	SNA		3
	Viburnum opulus ssp. trilobum	Highbush Cranberry	S5		3
+	Vicia cracca	Tufted Vetch	SNA		4
	Viola cucullata	Marsh Blue Violet	S5	L	3
	Viola sp.	Violet species			-
	Vitis riparia	Riverbank Grape	S5		4

[1]Kaiser, J. 2001. The Vascular Plant Flora of the Region of Peel and the Credit River Watershed. Prepared for: Credit Valley Conservation, the Regional Municipality of Peel, Toronto and Region Conservation Authority.

R = Regionally rare (rare within GTA)

L = Locally rare (rare within CVC and/or Region of Peel)

[2]City of Mississauga Rarity Rank (2012), Natural Areas Survey Database

0 Extirpated within the City of Mississauga

1 1 to 3 locations within the City, these species are considered locally rare.

2 4 to 10 locations within the City, these species are considered locally significant

3 11 to 39 locations within the City

4 >40 locations within the City

Appendix 3: Tree Inventory and Assessment

Tree Inventory and Assessment

Prepared by: Credit Valley Conservation
Jake Burleigh Forest Management Technician
ISA Certified Arborist # ON-1855A, Ontario
Chapter Mem. # 233925
Jamie Wilton Forestry Crew Leader

Date: June 16th, 2017

Location: 7060 Old Mill Lane, Mississauga, Ontario

TREE INVENTORY AND ASSESSMENT

The assessment presented in this report has been made using accepted standard arboriculture techniques as outlined in Council of Tree & Landscape Appraisers Guide for Plant Appraisal, 9th Edition (2000). These techniques include visual examination of above-ground parts of each tree. The trees observed were not climbed, probed, cored, or dissected, and excavation for detailed root crown inspection was not performed. Since some symptoms may only be present seasonally, the extent of observations that can be made may be limited by the time of year in which the inspection took place. It must be realized that trees are living organisms, and their health and vigour continually change over time due to seasonal variations, changes in site conditions, and other factors. For this reason, the assessment presented in this report is valid at the time of inspection, and no guarantee is made about the continued health of trees that are deemed to be in good condition. It is recommended that the trees be re-assessed periodically. While every standing tree has the potential for failure and therefore poses some risk, a tree assessment is a good indication of present health and potential problems that could arise in the future.

Trees were identified, sized, and assessed for condition. Each tree was given a subjective condition rating of Excellent, Good, Fair, Poor, Very Poor, or Dead. Following is a summary of how the ratings were determined:

Excellent (E) no apparent health problems; good structural form
Good (G) minor problems with health and/or structural form
Fair (F) more serious problems with health and/or structural form
Poor (P) major problems with health and structural form
Very Poor (VP) extensive problems with health and structural form
Dead (D) no live growth

Tree size is expressed in Diameter at 1.3m above the base (DBH) and measured in cm.

Tree locations are shown on the topographical maps provided (Appendix C, Appendix D). The following chart summarizes the observations made concerning species, size and condition.

Tree ID #	Common Name	Scientific Name	DBH (cm)	Height (m)	Condition	Comments
1	Sugar Maple	*Acer saccharum*	34	15	G	Larger corner-lot tree; consider protection & retention for property separation, privacy, and erosion control of ditch
2	Sugar Maple	*Acer saccharum*	15		G	Growing in ditch
3	Sugar Maple	*Acer saccharum*	26		F	Outside property-line
4	Sugar Maple	*Acer saccharum*	16		F	Outside property-line; co-dominant stems
5	Sugar Maple	*Acer saccharum*	45	20	G	Well-spaced, healthy crown; consider retention-privacy
6	Sugar Maple	*Acer saccharum*	20		F	Competing with adjacent tree (7); future stem

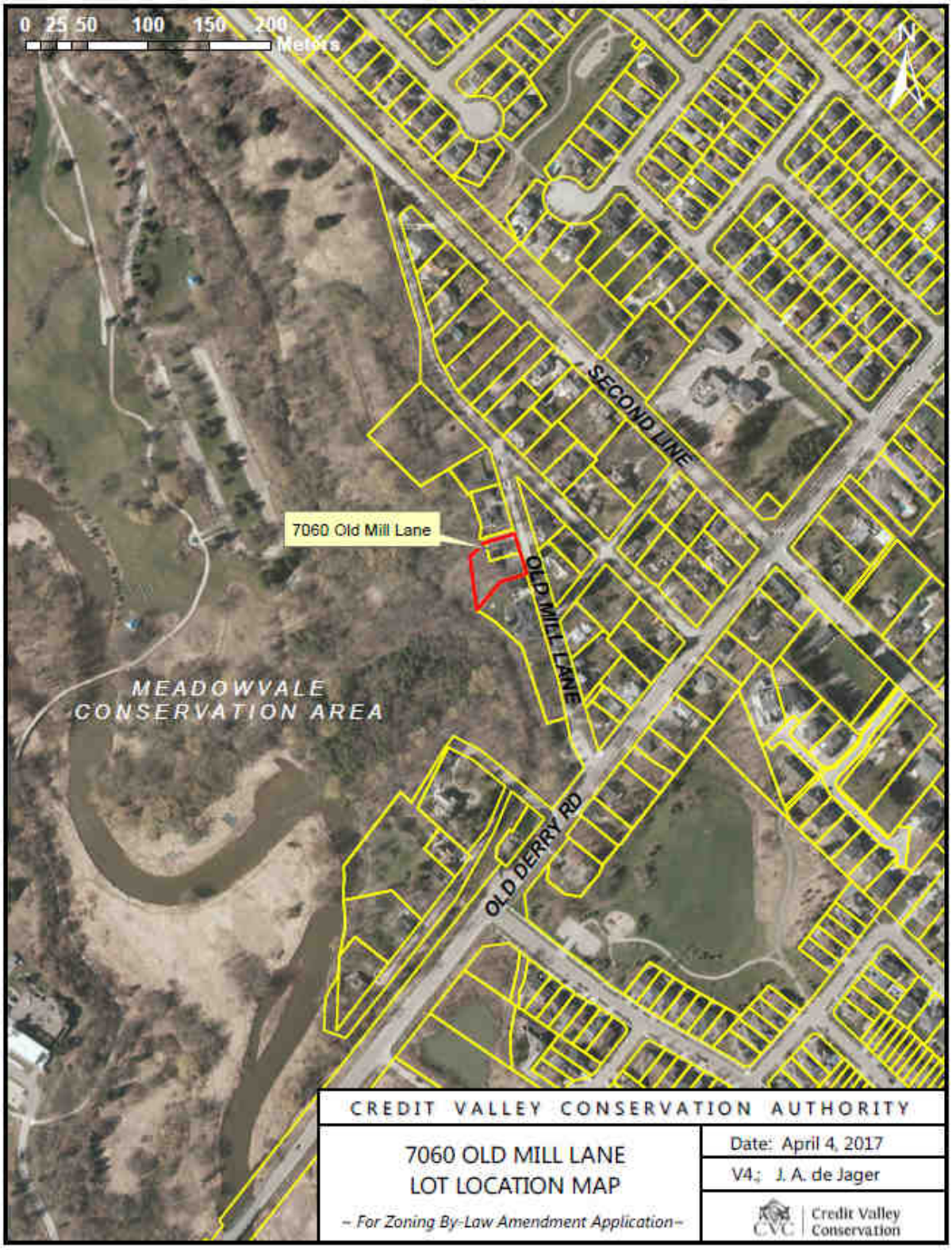
Tree ID #	Common Name	Scientific Name	DBH (cm)	Height (m)	Condition	Comments
						inclusion; branches overhanging neighboring home; overcrowding of nearby stems; consider removal
7	Sugar Maple	*Acer saccharum*	26		F	Competing with adjacent tree (6); future stem inclusion; branches overhanging neighboring home; overcrowding of nearby stems; consider removal
8	Sugar Maple	*Acer saccharum*	24		G	
9	Sugar Maple	*Acer saccharum*	23		F	Some branches overhanging neighboring home
10	Manitoba Maple	*Acer Negundo*	18		P	Heavy lean towards driveway area, invasive species; Remove
11	Sugar Maple	*Acer saccharum*	30		F	Some deadwood in crown + overhanging current structure; consider pruning
12	Sugar Maple	*Acer saccharum*	45	30	G	Good shape and structure; consider retention for erosion control and privacy
13	Sugar Maple	*Acer saccharum*	44		G	Outside property-line
14	Sugar Maple	*Acer saccharum*	38		G	Outside property-line
15	Sugar Maple	*Acer saccharum*	54	30	G	Larger tree, some deadwood and hangers, overhanging current structure; removal may be required for future development
16	Sugar Maple	*Acer saccharum*	18	15	G	Prune to remove smaller competing stem for proper form; well-spaced; retain for erosion control and privacy
17	Sugar Maple	*Acer saccharum*	43	35	E	Good shape, form, condition; possible controlling further erosion to neighboring property
18	Sugar Maple	*Acer saccharum*	41		F	

Tree ID #	Common Name	Scientific Name	DBH (cm)	Height (m)	Condition	Comments
19	Sugar Maple	*Acer saccharum*	19		G	
20	Sugar Maple	*Acer saccharum*	36		P	Vertical crack (healing), cavity, old pruning wounds, minor decay; corner property line
21	Sugar Maple	*Acer saccharum*	27	25	E	On embankment; may prevent future erosion of ditch; outside property-line
22	Sugar Maple	*Acer saccharum*	50	35	G	Few broken branches; some pruning may be required; well-spaced; healthy crown; outside property-line
23	Sugar Maple	*Acer saccharum*	32	25	G	Minor deadwood; may require protection from development
24	Sugar Maple	*Acer saccharum*	41		P	Broken branches + overhanging current structure: removal may be required for future development
25	Sugar Maple	*Acer saccharum*	32		F	Heavy lean towards current structure; recommend removal
26	Sugar Maple	*Acer saccharum*	33		F	Possible removal for future development
27	Sugar Maple	*Acer saccharum*	43		E	Good shape and form, but removal may be needed for future development; consider protecting if possible
28	Sugar Maple	*Acer saccharum*	36		F	Asymmetrical; removal may be required for future development
29	Sugar Maple	*Acer saccharum*	35		F	Co-dominant stems; removal may be required for future development
30	Sugar Maple	*Acer saccharum*	46	30	F	Overhanging current structure, split lower limb, deadwood + hangers + included bark; possible removal for future development
31	Sugar Maple	*Acer saccharum*	63		G	Larger tree, seperates

Tree ID #	Common Name	Scientific Name	DBH (cm)	Height (m)	Condition	Comments
						property from public pathway, large hanger, old pruning wounds; removal may be required for future development; consider protecting if possible
32	Sugar Maple	*Acer saccharum*	34		P	Deadwood+ decay; obstructing footpath; remove
33	Sugar Maple	*Acer saccharum*	43		F	Possible removal for future development
34	Manitoba Maple	*Acer negundo*	25		P	Leaning, obstructing footpath, massive sucker growth, invasive species; Remove
35	Manitoba Maple	*Acer negundo*	15		P	Leaning, obstructing footpath, massive sucker growth, invasive species; Remove
36	Manitoba Maple	*Acer negundo*	40		P	Multi-stemmed, broken top, invasive species; Remove
37	Sugar Maple	*Acer saccharum*	35		P	Asymmetrical + deadwood, slight lean towards current structure; outside property line
38	Sugar Maple	*Acer saccharum*	46		P	Co-dominant stems, very included bark + decay, hazardous; outside property line
39	Sugar Maple	*Acer saccharum*	41		F	Some deadwood, included bark + girdling roots; outside property line
40	Sugar Maple	*Acer saccharum*	36	30	F	Large dead stem; outside property line
41	Sugar Maple	*Acer saccharum*	46		G	Good forest cover and canopy spread, minor deadwood; outside property line
42	Sugar Maple	*Acer saccharum*	38		F	
43	Sugar Maple	*Acer saccharum*	28	20	G	Well-spaced, Retain
44	Red Maple	*Acer rubrum*	27		G	Small broken branch, conflicting with hydro service line; removal may

Tree ID #	Common Name	Scientific Name	DBH (cm)	Height (m)	Condition	Comments
						be required for future development; consider protecting if possible
45	Sugar Maple	*Acer saccharum*	~95		VP	Large tree, 50% canopy, large dead stem, large cavity, bird and insect damage; habitat tree; outside of property line
46	Columnar English Oak	*Quercus robur 'Fastigiata'*	17	10	E	Good form and condition; Retain and protect during future development; outside of property line
47	Ivory Silk	*Syringa reticulata*	15		P	*Attention required* cage girdling stem- must be removed, minor deadwood, split bark, still flowering; pruning may be required; outside of property line

APPENDIX A


0 25 50 100 150 200
Meters
N
SECOND LINE
7060 Old Mill Lane
OLD MILL LANE
MEADOWVALE
CONSERVATION AREA
OLD DERRY RD
CREDIT VALLEY CONSERVATION AUTHORITY
7060 OLD MILL LANE
LOT LOCATION MAP
– For Zoning By-Law Amendment Application–
Date: April 4, 2017
V4; J. A. de Jager
CVC Credit Valley Conservation

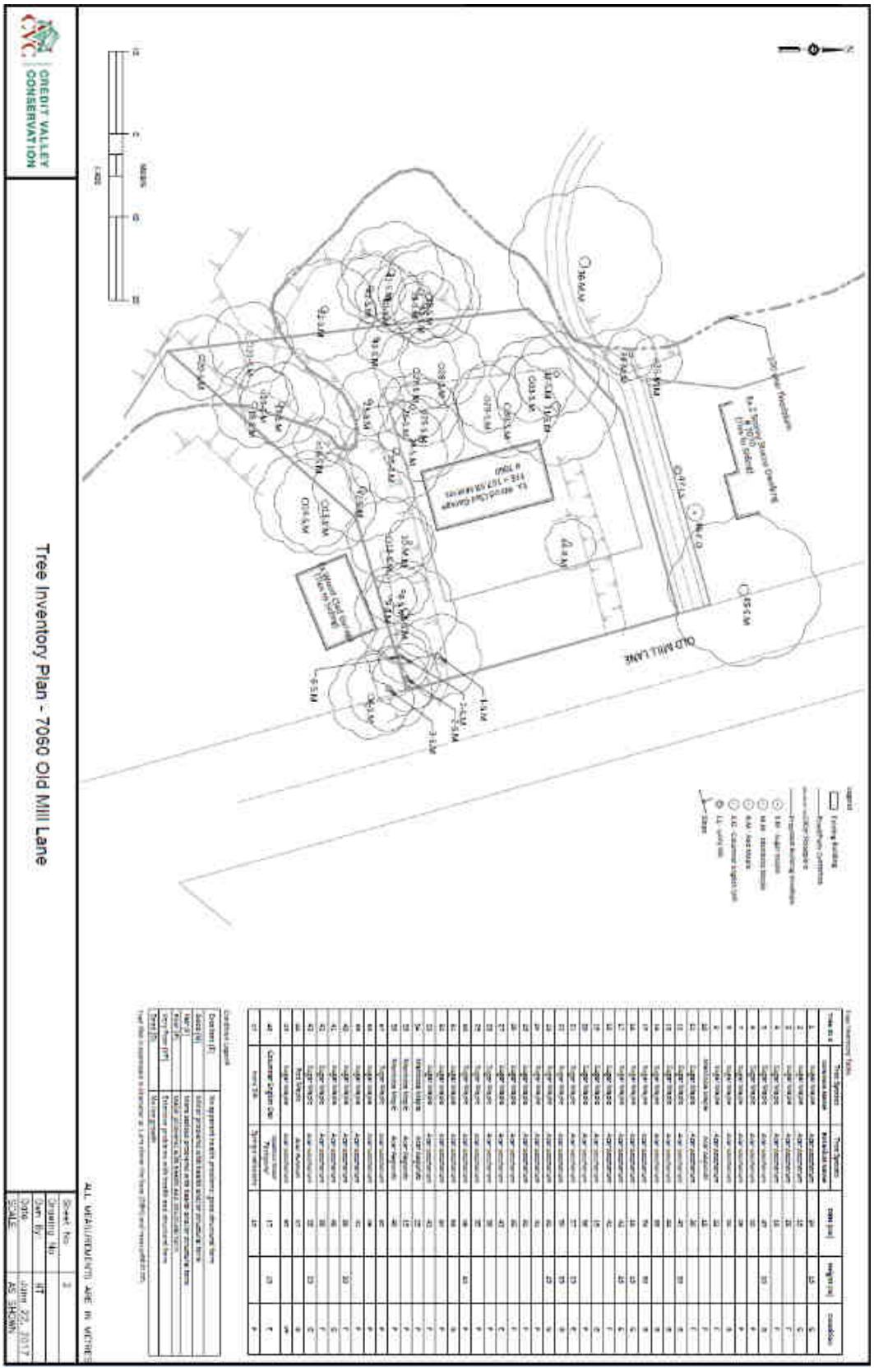
APPENDIX B


Legend
Pedestrian Access Trail
Proposed Lot Configuration (0.4 ac)
CVC Property Boundary
0
5
10
20
Meters
Shop
OLD MILL LANE
CREDIT VALLEY CONSERVATION AUTHORITY
SKETCH OF 7060 OLD MILL LANE
[CVC MEADOWVALE SHOP]
– For Disposition Planning Purposes –
Date: June 6, 2016
V4; J. A. de Jager
Credit Valley Conservation

APPENDIX C


N
Legend
Existing Building
Road/Path Centerline
100yr Floodplain
Proposed Building Envelope
S.M - Sugar maple
M.M - Manitoba Maple
R.M - Red Maple
E.O - Columnar English Oak
I.S - Ivory Silk
Slope
100 year floodplain
Ex. 2 Storey Stucco Dwelling # 7070 (Ties to Siding)
OLD MILL LANE
Ex. Wood Clad Garage FFE = 167.58 Metres # 7060
Ex. Wood Clad Garage (Ties to Siding)
45-S.M
46-E.O
47-I.S
35-M.M
34-M.M
36-M.M
44-R.M
32-S.M
31-S.M
33-S.M
30-S.M
29-S.M
28-S.M
1-S.M
7-S.M
2-S.M
3-S.M
4-S.M
6-S.M
5-S.M
8-S.M
9-S.M
10-M.M
11-S.M
12-S.M
13-S.M
14-S.M
15-S.M
16-S.M
17-S.M
18-S.M
19-S.M
20-S.M
21-S.M
22-S.M
23-S.M
24-S.M
25-S.M
26-S.M
27-S.M
38-S.M
39-S.M
41-S.M
42-S.M
43-S.M
Meters
10
0
10
20
1:400

APPENDIX D


CREDIT VALLEY CONSERVATION
Tree Inventory Plan - 7060 Old Mill Lane
Sheet No: 2
Drawing No:
Drawn By: HT
Date: June 22, 2017
Scale: AS SHOWN
OLD MILL LANE
ALL MEASUREMENTS ARE IN METRES

Appendix 4. Wildlife Species List

Appendix 4. Wildlife Species List

Common Name	Scientific Name	Evidence (Highest Code Recorded)	COSEWIC	SARA	SARO	Provincial Rank
BIRDS						
American Goldfinch	*Spinus tristis*	T				S5B
American Robin	*Turdus migratorius*	T				S5B
Black-capped Chickadee	*Poecile atricapillus*	SM				S5
Blue Jay	*Cyanocitta cristata*	SH				S5
Brown-headed Cowbird	*Molothrus ater*	SH				S4B
Great Crested Flycatcher	*Myiarchus crinitus*	SM				S4B
House Wren	*Troglodytes aedon*	T				S5B
Indigo Bunting	*Passerina cyanea*	T				S4B
Northern Cardinal	*Cardinalis cardinalis*	T				S5
Song Sparrow	*Melospiza melodia*	T				S5B
MAMMALS						
Big Brown Bat	*Eptesicus fuscus*	VO				S4
Eastern Gray Squirrel	*Sciurus carolinensis*	NN				S5
Hoary Bat	*Lasiurus cinereus*	VO				S4
Little Brown Myotis	*Myotis lucifugus*	VO	END	END (Sch 1)	END	S4
Silver Haired Bat	*Lasionycteris noctivagans*	VO				S4
White-tailed Deer	*Odocoileus virginianus*	FE				S5

Appendix 5: Species at Risk Screening

Risk Screening

uitability within the study area for Species at Risk known to occur within 5km of the proposed lot. Pink highlighting abitat is present and the species is known to occur within the study area.

	Common Name	NHIC dataset	CVC dataset	COSEWIC	SARA	SARO	S-Rank	Assessment of Habitat Suitability
um	Jefferson Salamander	x	x	END	END (Sch 1)	END	S2	No suitable habitat exists on site. Foraging and overwintering habitat exists adjacent to the study area.
	Great Egret		x				S2B	No suitable habitat exists on site. Prefer open water.
	Lilypad Clubtail		x				S3	No suitable habitat exists on site. Prefer marshy ponds, lakes and sluggish streams with floating vegetation.
	Unicorn Clubtail		x				S2S3	No suitable habitat exists on site. Prefer ponds and sluggish streams with mucky bottoms and little emergent vegetation.
	Short-eared Owl		x	SC	SC (Sch 1)	SC	S2N,S4B	No suitable habitat exists on site. Prefer treeless areas such as marshes and grasslands.
	Rough-legged hawk		x	NAR		NAR	S1B,S4N	No suitable habitat exists on site. Prefer large open fields for foraging.
	Canada Warbler		x	THR	THR (Sch 1)	SC	S4B	The records for this species are for spring and fall migration. No suitable habitat exists on site. Prefer a dense shrub layer within a forest or a thicket.
	American Chestnut		x	END	END (Sch 1)	END	S1S2	A botanical inventory was completed, and this species was not observed in the study area.

Scientific Name	Common Name	NHIC dataset	CVC dataset	COSEWIC	SARA	SARO	S-Rank	Assessment of Habitat Suitability
Chaetura pelagica	Chimney Swift		x	THR	THR (Sch 1)	THR	S4B, S4N	No suitable habitat exists on site. Roost and nest in cavities with a vertical entry, such as chimneys.
Chelydra serpentina	Snapping Turtle	x	x	SC	SC (Sch 1)	SC	S3	No suitable habitat exists on site. Prefer wetlands.
Chordeiles minor	Common Nighthawk		x	THR	THR (Sch 1)	SC	S4B	No suitable habitat exists on site. Prefer rock barrens and open gravel. May nest on flat roofs.
Clinostomus elongatus	Redside Dace	x		END	END (Sch 1)	END	S2	No suitable habitat exists on site. Require aquatic habitat.
Contopus cooperi	Olive-sided Flycatcher		x	THR	THR (Sch 1)	SC	S4B	No suitable habitat exists on site. Uncommon migrant that typically resides in central and northern Ontario.
Contopus virens	Eastern Wood-pewee		x	SC	SC (Sch 1)	SC	S4B	No suitable habitat exists on site. Prefers deciduous and mixed woods, away from development.
Crataegus brainerdii	Brainerd's Hawthorn		x				S2	A botanical inventory was completed, and this species was not observed on site.
Crataegus pruinosa var. dissona	Northern Hawthorn	x					S3	A botanical inventory was completed, and this species was not observed on site.
Danaus plexippus	Monarch		x	END	SC (Sch 1)	SC	S2N,S4B	No suitable habitat exists on site. Prefer open meadow.
Epiaeschna heros	Swamp Darner		x				S2S3	No suitable habitat exists on site. Prefer woodland pools and swamps.
Euphagus carolinus	Rusty Blackbird		x	SC	SC (Sch 1)	NAR	S4B	No suitable habitat exists on site. Uncommon migrant that typically resides in boreal and northern Ontario.

Scientific Name	Common Name	NHIC dataset	CVC dataset	COSEWIC	SARA	SARO	S-Rank	Assessment of Habitat Suitability
Haliaeetus leucocephalus	Bald Eagle		x	NAR		SC	S2N, S4B	No suitable habitat exists on site. Both observations for Bald Eagle were flyovers in the winter.
Hirundo rustica	Barn Swallow		x	THR	THR (Sch 1)	THR	S4B	No suitable habitat exists on site. Nest under eaves of buildings. Nests not observed in shop structure during breeding bird surveys completed in 2017.
Hylocichla mustelina	Wood Thrush		x	THR	THR (Sch 1)	SC	S4B	No suitable habitat exists on site. Prefer shady woods with leafy understory, which is lacking on this site.
Juglans cinerea	Butternut		x	END	END (Sch 1)	END	S2?	Habitat is suitable; however, a botanical inventory was completed, and this species was not observed on site.
Lampropeltis triangulum	Milksnake	x	x	SC	SC (Sch 1)	NAR	S4	Habitat is suitable; however, areas underneath objects and debris were searched during field surveys completed in 2017 and this species was not observed on site.
Lestes eurinus	Amber-winged Spreadwing		x				S3	No suitable habitat exists on site. Prefer small bog-margined lakes and temporary ponds.
Myotis lucifugus	Little Brown Myotis		x	END	END (Sch 1)	END	S4	Habitat is suitable. Prefer to forage over water for aquatic insects. Typically roost and form maternity colonies in houses and human-made structures, especially hot attics. Acoustic detectors

Scientific Name	Common Name	NHIC dataset	CVC dataset	COSEWIC	SARA	SARO	S-Rank	Assessment of Habitat Suitability
								detected Little Brown Myotis.
Myotis septentrionalis	Northern Myotis		x	END	END (Sch 1)	END	S3	Habitat is suitable. Prefer upland forest for foraging, and mature trees with loose bark, houses and human-made structures for roosting/maternity colonies. Acoustic detectors did not detect Northern Myotis.
Nycticorax nycticorax	Black-crowned Night-heron		x				S3B,S3N	No suitable habitat exists on site. Prefer open water and wetlands.
Pseudacris triseriata	Western Chorus Frog		x	THR	THR (Sch 1)	NAR	S3	No suitable habitat exists on site. Prefer marshes, meadows and swales.
Riparia riparia	Bank Swallow		x	THR	THR (Sch 1)	THR	S4B	No suitable habitat exists on site. Nest in holes in sandbanks.
Sturnella magna	Eastern Meadowlark	x		THR	THR (Sch 1)	THR	S4B	No suitable habitat exists on site. Prefer open, grassy habitats.