Submitted to:
Vandyk Group
c/o Chris Langley
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1345 Lakeshore Road East
Environmental Impact Study

A report submitted by:
Aquafor Beech Limited

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This report was prepared for Vandyk Group of Companies

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Executive Summary

Vandyk Group is proposing to redevelop an existing commercial property located at 1345 Lakeshore Road East in Mississauga, Ontario (herein referred to as the subject property). The property is zoned as "Mixed Use – Special Site 8" and currently contains a defunct car dealership. The proposed development consists of mixed residential and commercial buildings, the tallest of which is 12 storeys high. The proposed development also includes a landscaped courtyard, green roofs, and underground parking. Vandyk Group is also proposing channel restoration of the north half of Applewood Creek on the property, which extends south to adjoin previously-completed restoration work completed by Credit Valley Conservation (CVC). Restoration of the creek channel will retain the regulatory flows below the top of slope and within the riparian corridor, in order to address revised floodplain mapping which shows increased flood risks to the subject property. Channel restoration will involve removal of gabion baskets, large angular stone, and invasive trees, and will provide a stable channel morphology which offers Natural Channel Design application, with underlying engineering to ensure long term erosion hazard protection.

The trigger for this Environmental Impact Study is the subject property's proximity to the Applewood Creek corridor, which is located directly adjacent to the west side of the subject property. The corridor consists of a narrow, wooded valley which contains Applewood Creek and is part of the City of Mississauga's Natural Heritage System (NHS). The natural heritage form and function of this area is limited to the provision of habitat for urban-adapted species, fish habitat, function as a north-south linkage, and contribution to the urban forest canopy. Significant portions of the creek and valley walls are made of gabion baskets, and the woodland within the corridor is dominated by habitat generalists and exotic species (i.e., Manitoba maple (*Acer negundo*) and Norway Maple (*Acer platanoides*). The boundary between the aforementioned natural area and the subject property is demarcated by an existing chain link fence along the western boundary of the subject property. Natural lands south of Lakeshore Rd. E. consist of a diversity of habitat types including forest, treed swamp, thicket, and meadow which qualifies as Confirmed Significant Wildlife Habitat. Species-at-Risk (SAR) were not identified on or adjacent to the subject property and there is little to no potential for occurrence within or directly adjacent to the subject property.

It is not anticipated that the proposed development will have an adverse impact on the natural lands south of Lakeshore Rd. E, within the Applewood Creek corridor. Proposed channel restoration will improve the form and function of the woodland and watercourse. Impacts to valued ecological features and functions in the study area can be mitigated through erosion and sediment controls, bird-friendly building design, and implementation of a 6-10 m wide buffer alongside the boundary of the wooded corridor. Impacts to the urban tree canopy resulting from the removal of street trees will be mitigated through landscaping associated with the development. Impacts and mitigation measures are detailed in **Section 5**, **Table 5.1**. This table is reproduced on the proceeding page.

As a portion of the subject property is regulated by the CVC, owing to the presence of floodplain and the top-of slope, the development proponent will be required to get a permit from CVC prior to development. It is understood that Cole Engineering is currently working with review agencies to address issues related to the floodplain. Permits from the City of Mississauga will be required to support planned tree removals within streetscape areas.

Feature and/or Function	Impact(s)	Recommended Mitigation Measure(s)
Loss of existing trees along streetscape	Temporary reduction in urban canopy.	**Landscaping, street scaping, and buffer plantings** within the subject property will off-set temporary reduction in urban canopy cover and, over the medium to long-term, result in an overall increase in urban canopy cover. It is further recommended that proposed plantings areas be subject to aeration to mitigate extant soil compaction and that which will be exacerbated by the proposed construction activities.
Trees within adjacent wooded corridor	Removal of approximately 58 trees.	• Channel restoration activities are to occur from the north end of the property and extend down to the previous creek work completed by CVC (**Figure 4.4 to 4.11**). • Removed trees are mostly exotic species, Manitoba maple (*Acer negundo*), and are to be compensated for at a 3:1 ratio with native species. • Overhanging branches should be trimmed by or under the supervision of a certified arborist according to standard arboricultural practices. For further recommendations related to trees, see mitigation measures under "*Breeding Birds*" below. • Hoarding will be erected along the property boundary where the plan abuts the existing park block (Appledale Park) and along the dripline of any vegetation within the natural area that may be impacted.
Migratory and breeding birds; SWH: Confirmed Migratory Landbird Stopover Area	Potential for birds to strike buildings, especially during migration periods.	Use of **bird-friendly window glazing or other window treatments** will likely result in a significant reduction of bird strikes. In accordance with the City of Mississauga's Green Development Standards (2012), the following is recommended: • Treat glass on buildings with a density pattern between 10-28 cm apart for a minimum of the first 10-12 m above grade; or, • Mute reflections for a minimum of the first 10-12 m portion of a building above grade. Where a green roof is constructed adjacent to glass surfaces, ensure that the glass is treated to a height of at least 12 m above the level of the green roof; and, • Where exhaust/ventilation grates can not be avoided at ground level, design the grates to have a porosity of less than 2 cm x 2 cm. City of Toronto's Bird-Friendly Best Practices Glass (2016) provides the same recommendations.
	It is possible that tree removals may negatively impact breeding birds that may be nesting. Thus, there is potential for contravention of the Migratory Birds Convention Act (2010). This impact is considered acute and temporary.	It is recommended that if possible, **tree removals be avoided during the general breeding bird nesting period (April 15 to August 15)**. If site works must occur during the generalized nesting period, a qualified avian ecologist must conduct an active nest survey immediately prior to site disturbances or alterations (e.g. tree removal). It is further recommended that the proponent establish temporary Nest Protection Zones for any nests, which will remain in place until all young birds have fledged as confirmed by a qualified wildlife biologist. These measures will ensure that site alteration does not contravene the federal Migratory Birds Convention Act (2010), which protects the nests of most breeding bird species in Ontario.
	Reduction in foraging potential along linkage area	Significant Wildlife Habitat Mitigation Support Tool (MNRF, 2014) provides the following mitigation recommendations: • Channel restoration and proposed development cannot cause the water quality to decrease. Proposed channel design will likely support a higher diversity of aquatic invertebrates by removing the Gabion and creating a more naturalized creek. • Sediment control measures including silt fencing must be installed to avoid any construction related sediment enters the watercourse outside of the channel restoration area.
Applewood Creek and associated wooded corridor	Channel restoration will require the removal of vegetation (ground layer, shrubs, and trees) and alteration to fish habitat.	• 866 m^2 of watercourse and 1,412 m^2 of woodland habitat are proposed as a part of the restoration plan to mitigated the removal of 350 and 385 m^2 of watercourse and cultural woodland respectively (Figure XX). • As stated previously, trees are to be replaced at a 3:1 ratio with native trees, as per CVC planting guidelines. Shrubs will be planted at a spacing 0.5m and disturbed areas along the banks and floodplain will be Terraseeded with herbaceous seed mix of native species. • Gabion baskets and large angular stone will be removed and new creek bed will match the existing creek bottom with approximately 4.4:1 side slope on the Eastside Creek Bank and will maintain the slope on the Westside Creek Bank resulting in higher quality aquatic fish habitat. • Channel was designed using Natural Channel Design (NCD) and will result in a stable stream morphology with underlying engineering to ensure long term erosion hazard protection.
	Encroachment into the Natural Heritage System - Reduction in quality of aquatic and terrestrial habitat, trampling, dumping,	Fencing along the western boundary of the subject property and the planted buffer strip will discourage encroachment into the NHS. It is recommended that **fencing be installed prior to building occupancy**. Furthermore, it is recommended that all landscaping contain non-invasive species. The **buffer plantings should consist of site-appropriate locally native species**.

Feature and/or Function	Impact(s)	Recommended Mitigation Measure(s)
	invasive species, etc. upon occupancy and is expected to continue indefinitely.	Lighting should be limited to reduce the potential indirect impact to wildlife using the watercourse as a linkage or as habitat.
	Potential for siltation/sedimentation during construction.	Installation of **erosion & controls** are required well in advance of construction activities and should remain in place until vegetation has become established. The following mitigating measures are proposed: • Place sediment traps to receive storm runoff during construction; • Provide tire washing facilities for construction vehicles that exit the sites; • Install silt fencing along the perimeters of the work sites where appropriate to prevent migration of sediment-laden storm runoff; • Cover exposed excavated material to prevent erosion by rain and wind; and • Water or other dust suppressants to be employed during construction to control release of dust particles to the air.
	Potential for fuel to enter waterway.	• Construction vehicles to be refueled a minimum of 30 m away from Applewood Creek; • Spill containment for on-site storage tanks; and, • Develop a spill clean-up contingency plan.
Tertiary local movement corridor	Channel restoration will alter corridor	Construction activities should occur in a manor that will reduce the potential for conflict with wildlife such as installation of silt fencing prior to any vegetation removal to inhibit movement of wildlife through the construction site.
SWH: Candidate Bat Maternity Roost Habitat	Removal of approximately 58 trees that may result in the loss of some maternity roost trees.	No targeted surveys were completed to determine if maternity roost habitat is present. Installation of a **Rocket-Box bat house** within the restoration area will compensate for any potential habitat that may be removed as a part of the channel restoration. Channel design is to include planting of native species that will promote a higher diversity and abundance of insects, therefore improving the foraging potential along the watercourse
SWH: Special Concern and Rare Wildlife Species - Eastern wood-pewee habitat	Channel restoration will occur within candidate SWH. Limited potential for temporary disturbance of wooded corridor due to construction noise. Given how narrow the corridor is and the surrounding land uses, it is not anticipated that light attenuation would make a difference to the ecological function of the site.	• Channel restoration must result in a net gain of eastern wood-peewee habitat. • Channel restoration design should account for habitat needs of eastern wood-peewee and include plants that promote a diverse insect community as well as raspberry (*Rubus* spp.), blueberry (Vaccinium spp.), and dogwood (Cornus spp.). • The provision of habitat within the proposed planted buffer area may result in a net benefit to Eastern wood-pewee and other avifauna. As previously stated, it is suggested that berry-bearing shrubs such as raspberry and dogwood species be included in the buffer plantings.
SWH: Raptor Wintering Area; Migratory Butterfly Stopover Areas; Landbird Migratory Stopover Areas; Waterfowl Nesting Areas; Woodland Amphibian Breeding Habitat; & Terrestrial Crayfish.	None anticipated – potential candidate SWH are located far enough from the subject property that the proposed development will not impact SW	• Mitigation and/or avoidance measures are not applicable. • The provision of habitat within the proposed planted buffer area and channel restoration area may result in a net benefit to butterflies and other wildlife. As previously stated, it is suggested that berry-bearing shrubs such as raspberry and dogwood species as well as species preferred by butterflies, including but not limited to aster, monar, and milkweed be includein the buffer and channel restoration plantings.

1 Introduction

Aquafor Beech Limited was retained by Vandyk Group to prepare an Environmental Impact Study (EIS) in support of the redevelopment of an existing 1.626 ha commercial property located at 1345 Lakeshore Road East, in Mississauga, Ontario **(Figure 1-1**). The subject property, zoned as 'Mixed Use", currently contains a non-operational car dealership and is surrounded by commercial and residential lands (**Figure 1-2**). The trigger for this EIS is the property's proximity to the Applewood Creek corridor, which borders the subject property on the west.

VanDyk Group proposes to develop the subject property in one phase as a residential condominium that would consists of one eight storey mixed-use residential commercial building (Building A) fronting onto Dixie Rd. and Lakeshore Rd. E. and a twelve-storey residential high-rise building (Building B) fronting onto St. James Ave. and Dixie Rd. As a part of the development the channel adjacent to the site will be restored from the north property line down to where previous channel restoration associated with the Lakeshore Road culvert upgrade works.

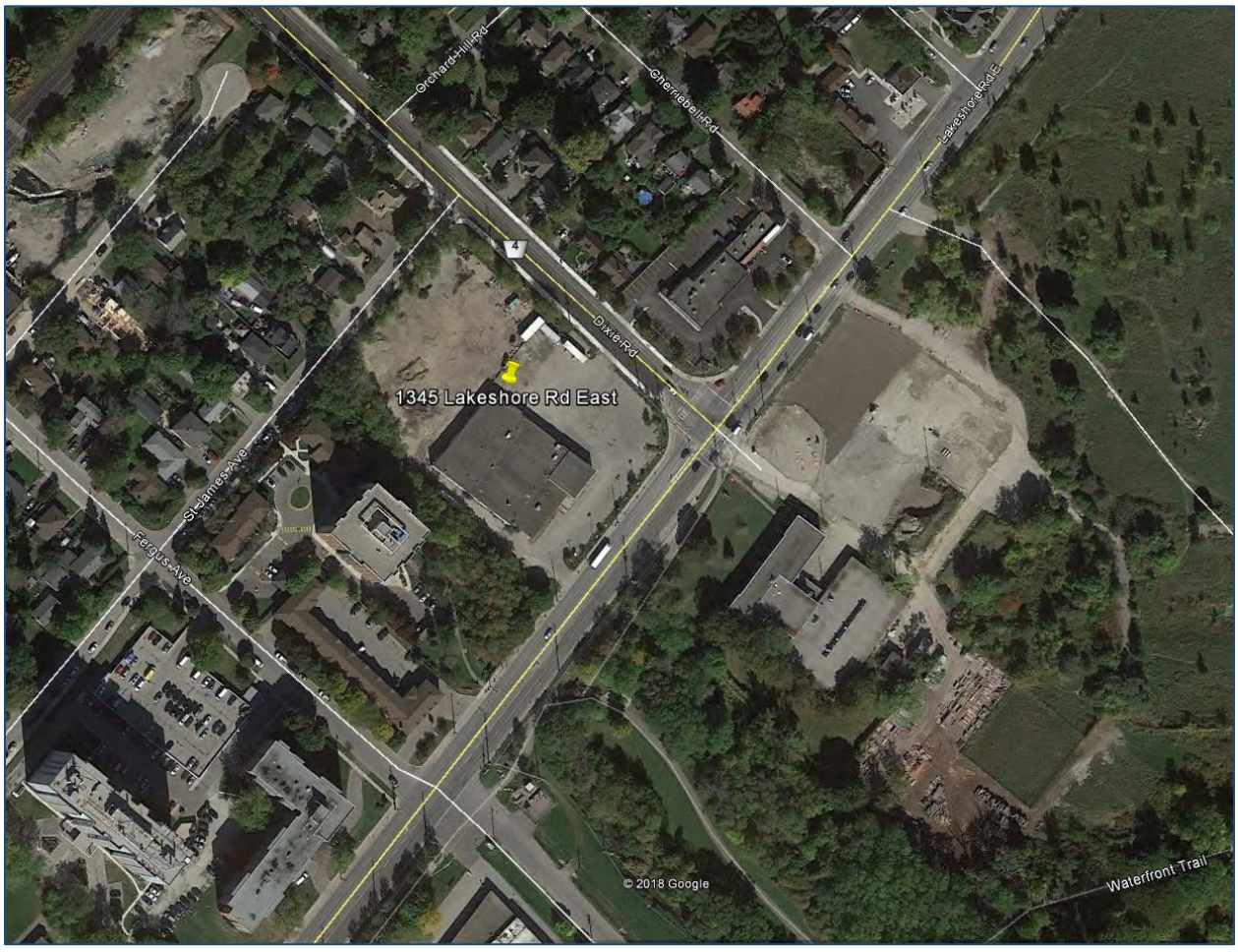


Figure 1-1: 1345 Lakeshore Road East (source, Google Earth)

Figure 1-2: Subject property (right), Applewood Creek corridor (left)

The purpose of this EIS is to define the natural heritage features and functions of the subject property and adjacent lands, and to assess and mitigate the potential impacts resulting from the proposed development.

The work plan detailed herein follows the draft study Terms of Reference (provided as **Appendix A**). The following report sections describe the natural heritage features and functions within and adjacent to the study area, relevant planning context, potential impacts and mitigation measures, constraints and opportunities to development, as well as recommendations for further study, as applicable.

2 Policies and Legislative Framework

This section details the planning and environmental policies relevant to the proposed development. The study area is outside of the Greenbelt Planning Area and as such related policies are not discussed.

2.1 Region of Peel Official Plan

The Natural Heritage System (NHS) in Peel, known as the Greenlands System, consists of Core Areas, Natural Areas and Corridors, and Potential Natural Areas and Corridors (Region of Peel, 2016). Core Areas are protected per the Region of Peel's Official Plan and in area municipal official plans (e.g. the City of Mississauga's 2018 Official Plan). Natural Areas and Corridors as

well as Potential Natural Areas and Corridors will be interpreted, protected, and shown, as appropriate, in area municipal plans.

According to the Region of Peel, Core Areas of the Greenlands System have previously been identified south of Lakeshore Rd. E. (**Figure 2-1**). This area is captured within the City of Mississauga's Green System (see **Figure 2-3**). The Region of Peel's OP does not identify other Core Areas of the Greenlands System associated with Applewood Creek.

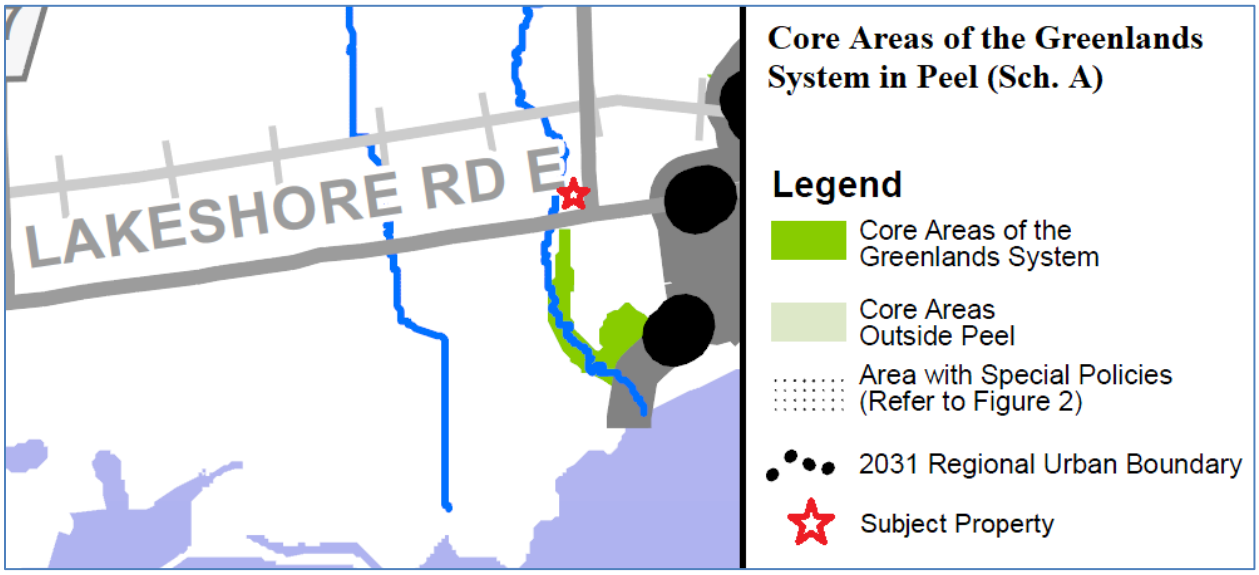


Figure 2-1: Region of Peel Schedule A Official Plan Mapping (augmented from the Region of Peel's OP (2013))

2.2 City of Mississauga Official Plan

The City of Mississauga recognizes the importance of its natural environment as an integral component of its city, providing economic vitality and an overall health to its citizens. Located on the north shore of Lake Ontario, the City of Mississauga is partially within the Carolinian Zone; the most biologically diverse ecoregion in Canada, and the most threatened ecological region in Ontario. As the city continues to grow, the natural environment and the climate must not be compromised in that growth (City of Mississauga, 2018).

The Natural Heritage System is a component of the City's Green System; a comprehensive lands strategy that also includes The Urban Forest, Natural Hazard Lands, and Parks and Open Spaces. According to the Official Plan (2018), "The Green System is a response to the challenge of achieving a high level of ecological function and connectivity of natural heritage features within an urban environment. Natural heritage features which are important for their environmental and social values … are recognized within the Natural Heritage System". **Figure 2-2** illustrates the components of the Green System, including how the NHS relates to the overall Green System planning framework.

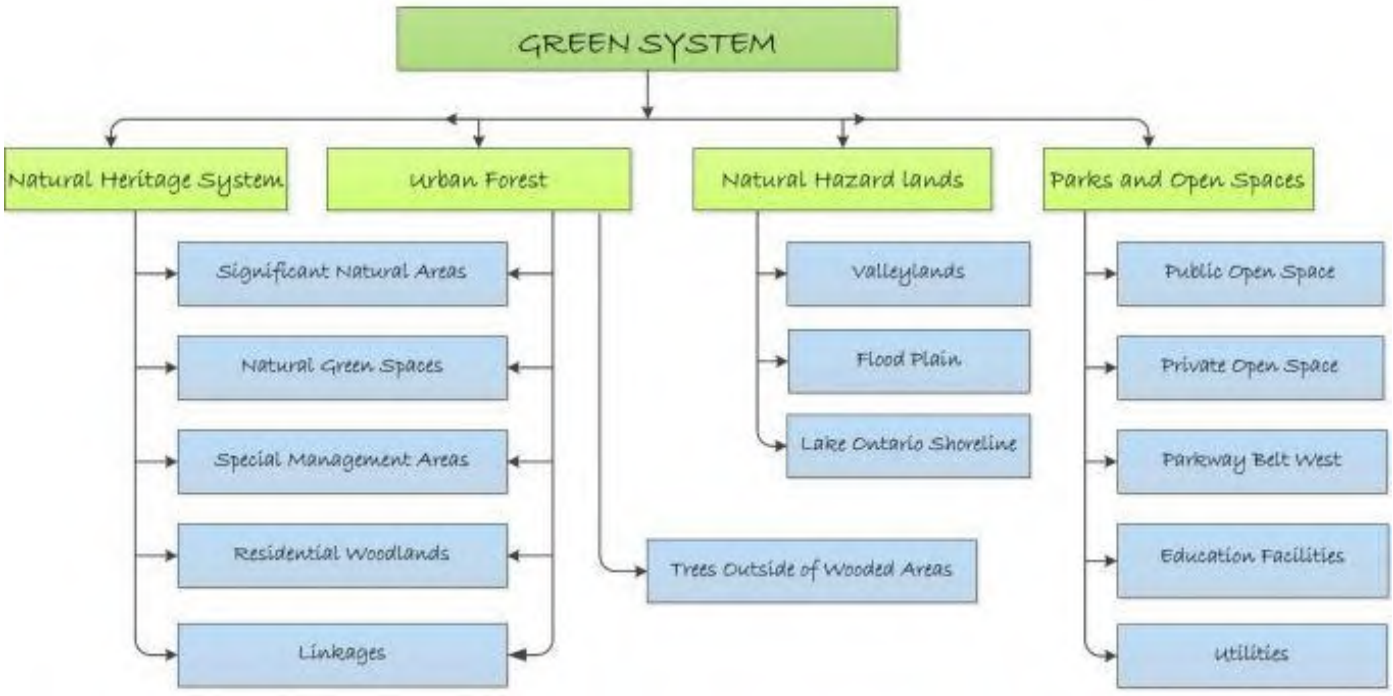


Figure 2-2: City of Mississauga NHS approach (Figure 6-5 in the City's OP)

The City's NHS is composed of the following:

- Significant Natural Areas;
  - Provincially or regional significant life science areas of natural and scientific interest (ANSI);
  - Environmentally sensitive or significant areas;
  - Habitat of threatened or endangered species;
  - Fish habitat;
  - Significant wildlife habitat;
  - Significant woodlands – are those that meet one or more of the following criteria:
    - Woodlands, excluding cultural savannahs, greater than or equal to four (4) ha;
    - Woodlands, excluding cultural woodlands and cultural savannahs, greater than or equal to two (2) ha and less than four (4) ha;
    - Any woodland greater than 0.5 ha 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 m of another Significant Natural Area supporting a significant ecological relationship between the two features;
      - Is located within 30 m of a watercourse or significant wetland; or
      - Supports significant species or communities;
  - Significant wetlands – are one of the following:
    - Provincially significant coastal wetlands;
    - Provincially significant wetlands;
    - Coastal wetlands;
    - Other wetlands greater than 0.5 ha; and,
  - Significant valleylands – are associated with the main branches, major tributaries and other tributaries and watercourse corridors draining directly into Lake Ontario including the Credit River, Etobicoke Creek, Mimico Creek, and Sixteen Mile Creek.
- Natural Green Spaces;
  - Woodlands greater than 0.5 ha that do not fulfill the requirements of a significant woodland;
  - Wetlands that do not fulfill the requirements of a significant wetland;
  - Watercourses that do not fulfill the requirements of a significant valleyland, even if they are predominantly engineered; and,
  - All natural areas greater than 0.5 ha that have vegetation that is uncommon in the city.
- Special Management Areas;

Defined as lands adjacent to or near Significant Natural Areas or Natural Green Spaces and will be managed or restored to enhance and support the significant Natural Area or Natural Green Space.

- Residential Woodlands;

  Defined as areas with large lots that have mature trees forming a fairly continuous canopy and minimal native understory due to the maintenance of lawns and landscaping; and,

- Linkages

  Defined as 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.

Mapping of the NHS is contained in Schedule 3 of the OP. The following figure (**Figure 2-3**, augmented from the Schedule 3 map) illustrates the type and limits of the NHS and natural hazards on and adjacent to the subject property. As shown below, natural heritage features are not present on the subject property. "Significant Natural Areas and Natural Green Spaces" are present in the creek corridor immediately west and south of the subject property; a "Linkage" is present in the creek corridor north of St. James Ave.

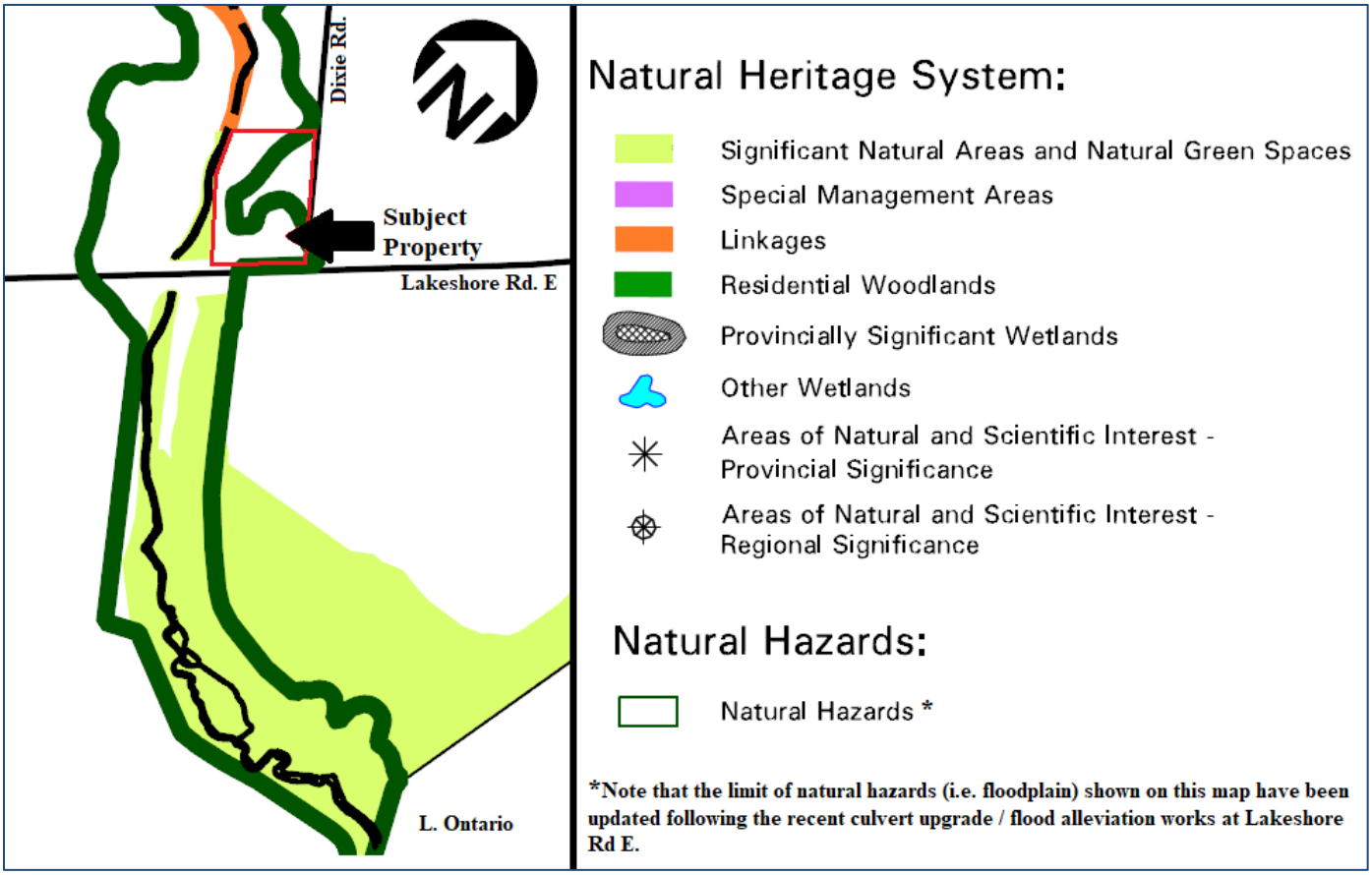


Figure 2-3: City of Mississauga's Natural Heritage System (map augmented from the City of Mississauga's OP (2016))

2.3 City of Mississauga Tree Protection Policies

Streetscape trees are present along the south and west property boundary. Furthermore, trees have grown up along/within the fence line at the north boundary of the property. Trees straddling the property boundary are jointly owned by the City of Mississauga and VanDyk Group. Trees within the property parcel are privately owned, while those within the road right-of-way are owned by the City. As discussed below, the City's tree protection policies vary according to tree ownership.

2.3.1 Private Tree Protection By-law (0254-2012)

According to the City's private tree protection by-law, a permit to remove trees on private property is need if three (3) or more trees 15 cm and greater at the diameter-at-breast height (DBH), including dead and/or dying trees, will be removed per calendar year. This by-law is inclusive of each private lot. Heritage trees cannot be removed unless approval is received under the Ontario Heritage Act, 2005.

A permit is not required,

(a) if the number of trees with a diameter greater than 15 cm being injured or destroyed on the Lot in a calendar year is two (2) or less;
(b) where the tree has a tree diameter of 15 cm or less;
(c) for emergency work;
(d) as a result of activities or matters undertaken by a governmental body or a school board for the construction of a school building or part thereof;
(e) for the purpose of pruning the tree;
(f) for trees located on rooftop gardens, interior courtyards, or solariums;
(g) for trees on a nursery or golf course;
(h) by a person licensed under the Surveyors Act to engage in the practice of cadastral surveying or his agent while making a survey;
(i) for the purpose of satisfying a condition to a development permit authorized by regulation made under Section 70.2 of the Planning Act, as may be amended or replaced from time to time, or as a requirement of an agreement entered into under the regulation;
(j) for the purpose of satisfying a condition to the approval of a site plan, a plan of subdivision, or a consent under Sections 41, 51, and 53 of the Planning Act, as may be amended or replaced from time to time, or as a requirement of a site plan or subdivision agreement under those sections of the Act;
(k) where the removal of a tree(s) is specifically required in an order made under the City's Property Standards By-law;
(l) by a transmitter or distributor as defined in the Electricity Act, 1998 for the purpose of constructing and maintaining a transmission system or a distribution system, as defined under that Act;
(m) if an approval has been provided under subsection 6(1); or
(n) where an owner is required to comply with the requirements of a Province of Ontario forest management plan that specifically encompasses the Owner's Lot. - Part V (3).

If three (3) or more healthy trees are removed on private property, replacement trees are required for each tree removed. Replacement trees must be at least 1.8 m tall for coniferous species and at

least 6 cm DBH for deciduous species. Healthy trees 49 cm DBH and less must be replaced by a minimum of one (1) tree and healthy trees 50 cm DBH and greater must be replaced by a minimum of two (2) trees. The alternative to replanting is to pay a predetermined fee (set by the City) for a tree to be planted by City staff on City-owned property.

2.3.2 City of Mississauga Tree Inspection Request

Removal of trees located on City-owned property will require that the proponent request an inspection from the City's Parks and Forestry Department. Parks & Forestry may be contacted by dialing 3-1-1 (within City limits) or 905-615-4311 (outside of the City's limits). Fees associated with a City inspection of healthy trees may be found at the following web address: http://www7.mississauga.ca/documents/Parks/forestry/2018_FeesandCharges_web.pdf

2.4 Credit Valley Conservation Authority Policies

The purpose of the Conservation Authorities Act (1990) is to prevent the loss of life and property due to flooding and erosion; and, the conservation and enhancement of natural resources.

The Credit Valley Conservation Authority (CVC) is responsible for the administration and implementation of Ontario Regulation 160/06 under the Conservation Authorities Act. CVC also provides technical planning review in partnership with the City of Mississauga and other municipal partners. Ontario Regulation 160/06 establishes Regulated Areas where development could be subject to flooding, erosion or dynamic beaches, or where interference with wetlands or alterations to watercourses might have an adverse effect (CVC, 2011).

A portion of the subject property is regulated by CVC due to the presence of floodplain and a stable top of slope. Development within lands regulated by CVC will require a permit from the Authority.

2.5 Endangered Species Act

The protection of Species at Risk (SAR) in Ontario is dictated primarily by the *Endangered Species Act* (ESA). The ESA originally received royal assent in 1971. On account of numerous deficiencies and implementation constraints, the ESA's scope and stringency were strengthened significantly in 2007 following a protracted review. The stated purposes of the ESA are:

1. *To identify species at risk based on the best available scientific information, including information obtained from community knowledge and aboriginal traditional knowledge.*
2. *To protect species that are at risk and their habitats, and to promote the recovery of species that are at risk.*
3. *To promote stewardship activities to assist in the protection and recovery of species that are at risk.*

A scientific body known as the Committee on the Status of Species at Risk in Ontario (COSSARO) is tasked with identifying threats to species in Ontario and classifying those deemed at risk as extirpated, endangered, threatened or special concern. Endangered and threatened species receive recovery strategies, which offer science-based recommendations that aid in their protection and future recovery. These species are also protected from being killed, harmed or harassed (s. 9) and receive habitat protection (s. 10). Alternatively, special concern species receive management plans

rather than recovery strategies and are not subject to species or habitat protection under the Act. Rather, their habitat is protected under the Planning Act.

A regulation specifying a species' habitat must be developed by the second anniversary (endangered) or third anniversary (threatened) of the date the species is officially listed. Before the habitat regulation has been devised, a general definition of habitat is employed and defined as:

> *"[A]n area on which the species depends, directly or indirectly, to carry on its life processes, including life processes such as reproduction, rearing, hibernation, migration or feeding"* - Section 2(b).

Any activity that constitutes harm to an endangered or threatened species or damages its habitat must receive approval from the Ministry of the Environment, Conservation, and Parks (MECP) (formerly from the Ministry of Natural Resources and Forestry [MNRF]) under section 17(2)(c) of the ESA. In order to obtain a 17(2)(c) authorization proponents must demonstrate how an overall net benefit for the species will be attained, which often involves rehabilitation or restoration activities and monitoring.

3 Natural Heritage Characterization

Characterization of the NHS relied upon field surveys and available background information sources listed below. Natural heritage characterization field work conducted by Aquafor Beech Limited in support of this EIS include a site reconnaissance visit to confirm previously designated vegetation community classifications (per the City's Natural Areas Survey), inventory vascular plants, and make general observations of the character of the Applewood Creek corridor and the subject property. The site visit occurred on May 1st, 2018. Field notes and representative photos taken during the site visit are contained within **Appendix B**.

Background information sources reviewed to date include:

- The Physiography of Southern Ontario: Third Edition (Putnam and Chapman, 1984);
- City of Mississauga Natural Areas Survey mapping and fact sheet for Natural Area LV1 (City of Mississauga, 2016);
- Department of Fisheries and Oceans (DFO) Aquatic Species at Risk Mapping (DFO, 2017); and,
- The Ontario government's Natural Heritage Information Centre (NHIC) online database and make-a-map tool.

Fisheries information was solicited from the CVC; to date, this information has not been received. **It is expected that this EIS may need to be updated following the receipt of background data from CVC.**

3.1 Geology, Physiography, & Soils

Physiography, commonly referred to as physical geography, is the study of the physical features of the earth's surface and the classification, mapping and grouping of landforms based on their geologic structures and age. According to *The Physiography of Southern Ontario* (Chapman & Putnam, 1984), the study area is situated within the Iroquois Plain, physiographic region of southern Ontario formed during the last glaciation when Lake Iroquois drained eastward towards New York State. Features of this region include old shores, cliffs, bars, beaches, drumlins, and boulder pavements.

The City of Mississauga Natural Areas Survey (NAS) fact sheet for Natural Area LV1 (2016) states that soils in the area consist of imperfectly drained Chinguacousy clay loams that developed within deposits of the Halton till plain. The deposits are underlain by bedrock geology consisting of the grey shales of the Georgian Bay Formation.

Based on observations made on site, it is likely that the surface soils of the creek corridor consist of fill.

3.2 Vegetation Communities & Flora

Information regarding vegetation communities and flora within and adjacent to the study area is detailed under the following subheadings. Confirmation of the vegetation community designation per the City of Mississauga's NAS data, and a vascular plants inventory, was completed on May 1st 2018.

3.2.1 Vegetation Communities

The application of Ecological Land Classification (ELC) for Southern Ontario consists of describing, classifying and delineating ecological units under the guidance of a standardized protocol (Lee et al., 1998). As part of vegetation community classification field activities, site-specific information is collected on an array of biophysical parameters – substrate type and depth, moisture regime, topography, floral composition, and stand structure and disturbance, amongst others – to produce detailed accounts of individual vegetation communities. This approach allows for a comprehensive and consistent approach to ecosystem classification.

According to the City's NAS (2016), the creek corridor abutting and extending onto the west side of the subject property is characterized by a Fresh-Moist Lowland Deciduous Forest Ecosite (FOD7). This forest community extends from St. James Avenue south to approximately 185 m south of Lakeshore Road East (see **Figure 3-1**). The following vegetation community description, taken directly from the NAS Fact Sheet for LV1, is mostly accurate as confirmed through the site visit conducted on May 1st, 2018:

Fresh-Moist Lowland Deciduous Forest Ecosite (FOD7)
Lowland deciduous forest is located at the north end of the site and this community crosses Lakeshore Road. The canopy is dominated by Manitoba Maple (*Acer negundo*) and Green Ash. Canopy trees are 10-25 m in height and cover greater than 60% of the community. The sub-canopy is dominated by Manitoba Maple and which are 2-10 m in height and cover less than 10% of the community. The understory is dominated by European Buckthorn (*Rhamnus cathartica*) and Tartarian Honeysuckle. Understory shrubs are 1-2 m in height and cover 25-60% of the forest. The ground layer consists of Garlic Mustard, Canada Goldenrod, Yellow Avens and Bittersweet Nightshade (*Solanum dulcamara*). Ground layer vegetation is 0.5-1 m in height and covers greater than 60% of the community.

In the opinion of Aquafor Beech Limited, the vegetation community within the creek corridor between St. James Ave. and Lakeshore Road E. would more accurately be described as a Cultural Woodland (CUW) dominated by Manitoba maple (*Acer negundo*). Some of the dominant canopy species characteristic of Fresh-Moist Lowland Forest Ecosites (per Lee et al., 1998), such as willow (*Salix* sp.) and green ash (*Fraxinus pennsylvanica*), are present on occasion within the woodland, but are not dominant. Tree cutting has thinned the canopy and, judging by the presence of spray painted markings on many trees within the corridor (see **Appendix B**, Photo F), is likely to continue; further reducing canopy coverage. Furthermore, another deviation from the NAS description above is that within the creek corridor between St. James Avenue and Lakeshore Road East, the ground layer vegetation covers between approx. 25-60%. The relative lack of ground vegetation is likely due to the presence of unauthorized trails near St. James Avenue and the fact that most of the valley walls with the creek corridor consist of gabion baskets (see Photos F and G in **Appendix B**). South of Lakeshore Road E., the ground layer vegetation coverage is as described in the NAS.

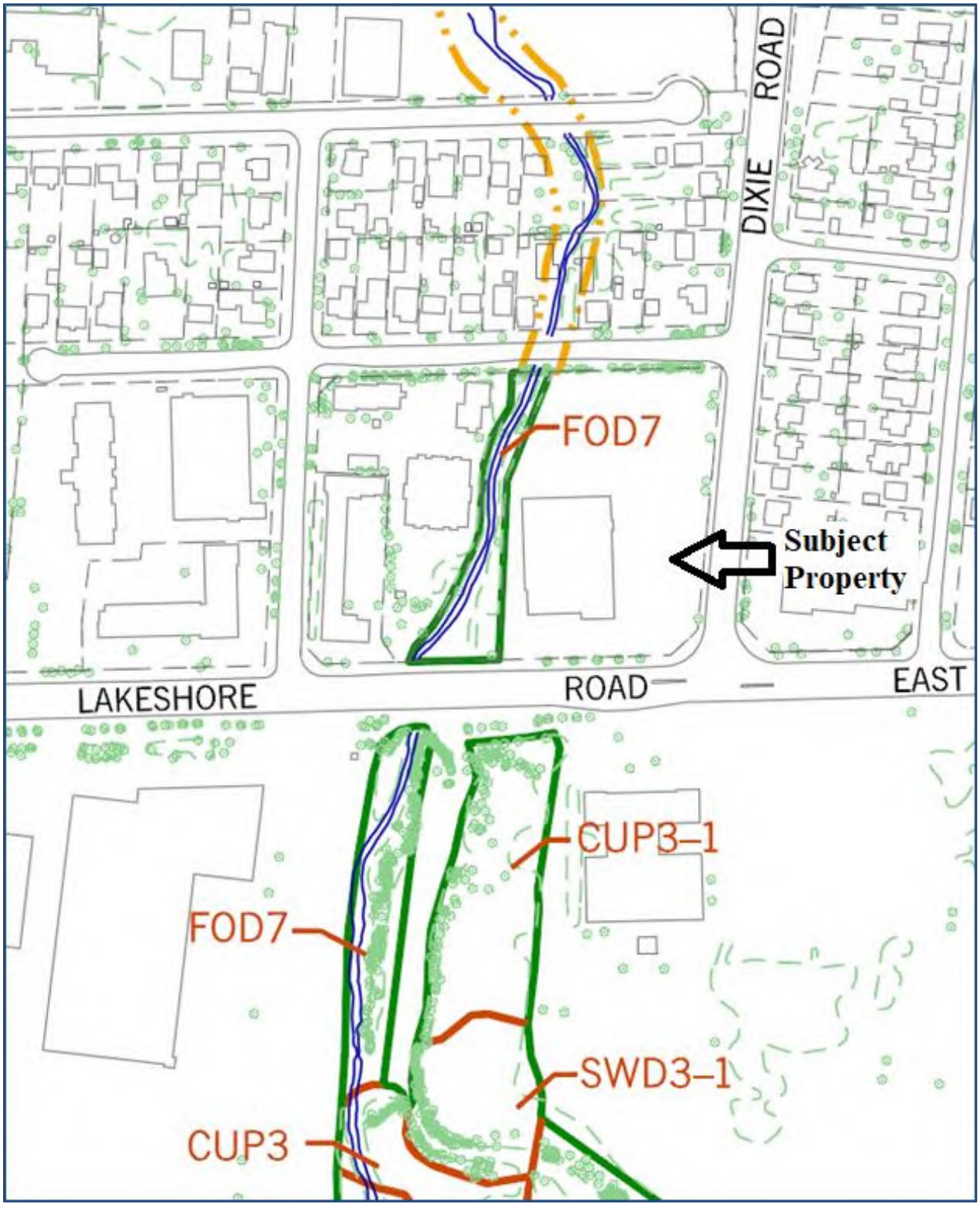


Figure 3-1: Vegetation Community Mapping (adapted from City of Mississauga, 2016)

3.2.2 Flora

A botanical inventory was undertaken within the creek corridor between St. James Avenue and Lakeshore Road East on May 1st, 2018 using an area search methodology. The area search method was also used to identify the potential for butternut (*Juglans cinerea*) within the aforementioned creek corridor and the subject property.

In total, thirty-five (35) species of vascular plants were identified to the species level, plus an additional two (2) identified to genus due to a lack of unidentifiable diagnostic features at the time of survey. Twelve (12) of the species are native (34%), and twenty-three (23) are introduced (66%). **The majority of the species observed in the creek corridor are disturbance-tolerant exotic species. No Species at Risk (SAR) or other species of conservation concern were identified.** An annotated list of the vascular plants identified within the study area is contained in **Appendix C**.

3.3 Wildlife

Wildlife within the study area was characterized using background information and incidental observations recorded during the reconnaissance field visit in 2018. Wildlife known or suspected to occur within or adjacent to the subject property are detailed in the following subsections. Species at Risk and other species of conservation concern are discussed in **Section 3.4**.

3.3.1 Fish

Fisheries information has been solicited from the CVC. To date, information has not been received. Aquatic SAR mapping (DFO, 2017) for the area indicates that SAR fish are not known from Applewood Creek (see map in **Appendix D**).

Between seven (7) and nine (9) large white suckers (*Catostomus commersonii*) were observed during the site reconnaissance visit on May 1st, 2018 (**Appendix B**). White suckers are highly adaptable and robust native fish that can tolerate conditions that many other fish cannot (Fisheries and Oceans Canada, 2016).

Figure 3-2: White sucker (centre), swimming upstream in the lower reach of Applewood Creek.

3.3.2 Avifauna

The exterior of the existing building on site and the culverts at St. James Ave. and Lakeshore Rd. E. (**Figure 3-3**) were searched for evidence of barn swallow (*Hirundo rustica*), a Threatened species. Evidence of barn swallow nesting was not observed. Formal surveys for breeding birds were not completed as part of this study.

Figure 3-3: Culverts at Lakeshore Rd. E (left) and St. James Ave. (right)

3.3.3 Mammals

No mammals were observed during the field visit. Given the habitat types present within the creek corridor, typical urban-adapted species such as eastern grey squirrel (*Sciurus carolinensis*) and raccoon (*Procyon lotor*) could be present. The low habitat quality and narrow linear configuration of the corridor likely means that these lands are unattractive to summer-roosting bat species. It is more likely that habitat opportunities for wildlife, including and not limited to mammals, are more abundant in the natural area south of Lakeshore Rd. E. Opportunities for wildlife habitat within the subject property are very limited due to the presence of existing development and lack of natural heritage features.

3.4 Species at Risk and other Species of Conservation Concern

For the purposes of this study, SAR are defined as those listed under the ESA and/or the federal *Species at Risk Act* (SARA) as Endangered, Threatened, or Special Concern. Species of conservation concern (SOCC) are defined as those species with provincial rankings of S1-S3 (indicating they are considered rare or uncommon in the province) or those indicated as being of local/regional concern by applicable literature.

Records of SAR and SOCC were gathered from the NHIC database. Species records obtained from the NHIC database include the following:

- Redside dace (*Clinostomus elongatus*); END, S2; Obs. date: 1927-08-14; and
- Henslow's sparrow (*Ammadramaus henslowii*); END, SHB; Obs. Date: 1932-07-11.

A SAR information request was submitted to MNRF on April 26th, 2018 and a response was received on June 5th, 2018 (**Appendix G**) with the following additional species to be considered:

- Eastern small-footed myotis (*Myotis leibii*)– END;
- Little brown myotis (*Myotis lucifugus*)– END;
- Northern myotis (*Myotis septentrionalis*)– END; and
- Tri-colored bat (*Perimyotis subflavus*) – END.

A consolidated list of all potential SAR and other SOCC obtained from the NHIC query, MNRF information request, and Aquafor Beech Limited's own expertise concerning SAR typically found in a variety of wooded habitat types, along with an assessment of each species' presence within the study area, is contained in **Appendix D.** Based on the site conditions and Aquafor Beech Limited's assessment, **it is highly unlikely that the subject property supports SAR and SOCC.** SAR and SOCC that are confirmed to occur or that have the potential to occur adjacent to the subject property include the following:

Endangered Bats (Myotis and Perimyotis spp.)

According to the MNRF Guelph District Office's *Survey Protocol for Species at Risk Bats within Treed Habitats* (MNRF, 2017), "any coniferous, deciduous, or mixed wooded ecosite, including treed swamps, that includes trees at least 10 cm DBH should be considered suitable maternity roost habitat". In accordance with this definition, potentially suitable habitat within the study area includes all treed habitats in the natural area south of Lakeshore Rd. E, as well as the narrow wooded corridor between St. James Ave. and Lakeshore Rd. E. However, as previously stated, the habitat quality of the woodland north of Lakeshore Rd. E is very poor and unlikely to support bat roosting. It is more likely that bats, if present, would favor the larger natural area south of Lakeshore Rd. E. over the aforementioned. Impacts south of Lakeshore Rd. E. will not occur as part of this project.

As Endangered species, bats and their habitat are protected under the ESA as well as the City of Mississauga's Official Plan. Endangered bat species currently receive general habitat protection, which means the area in which a species requires to fulfill its life processes. This may include the vegetation community they are found within for breeding, rearing young, and feeding.

As part of the study for this project, a tree inventory assessment was conducted by Baker Turner Inc. (BTI) ISA Certified Arborist in May 2018. A tree inventory was undertaken within the study area where trees may be affected by proposed channel restoration works. A total of 73 trees (**Error! Reference source not found.**) were inventoried in the study area along the creek and in any potentially suitable access and staging areas, of which 29 are to be removed. Of the 29 that are to be removed

<u>Special Concern Species</u>

Eastern Wood-pewee (Special Concern)

Although not previously documented in the study area by MNRF/NHIC records, Aquafor Beech Limited noted that the habitat present in the area could be suitable for this species. Eastern wood-pewee (*Contopus virens*) prefers mature or intermediate-aged deciduous and mixed forests, as well as forest clearings and edges with little understory. They are also commonly found in park settings. The birds perch on dead branches in the mid-canopy where they "sally out" for flying insects. In

addition to insects, the eastern wood-pewee will also take advantage of seasonal berries and seeds from raspberry (*Rubus* spp.), blueberry (*Vaccinium* spp.), and dogwood (*Cornus* spp.).

Potentially suitable habitat is for Eastern wood-pewee is present within the wooded areas south of Lakeshore Rd. E. There is some potential for the wooded corridor north of Lakeshore Rd. E. to also support this species, however it is likely that lands south of Lakeshore Rd. E. would be favoured over the aforementioned corridor as the opportunities for foraging are greater and the natural area more extensive and intact. Impacts to these areas are not anticipated.

As a species of Special Concern, the habitat of eastern wood-pewee qualifies as significant wildlife habitat (SWH). SWH is protected under the City of Mississauga's Official Plan.

3.5 Provincial Significant Wildlife Habitat Criteria

Significant Wildlife Habitat is broadly categorized by the MNRF as:

i. *Seasonal concentration areas;*
ii. *Rare vegetation communities or specialized habitats for wildlife;*
iii. *Habitats of species of conservation concern, excluding the habitats of endangered and threatened species; and*
iv. *Animal movement corridors* (MNR, 2000).

Using primary and secondary information sources, Aquafor Beech Limited assessed the potential occurrence of the above SWH categories within and adjacent to the subject property in accordance with the SWH criteria for Ecosite 7E (MNRF, 2015). The detailed SWH screening assessment is found in **Appendix E**.

Based on the listed provincial criteria and Aquafor Beech Limited's assessment, SWH is not present on the subject property. The following types of Candidate SWH are potentially present on lands adjacent to the subject property:

Bat Maternity Colonies - Candidate

Bat maternity colonies may be present in wooded habitats south of Lakeshore Rd. E. Candidate bat maternity roost habitat (i.e., trees with cavities, loose bark, crevices, and snags) were not surveyed for this report. Tree removals within natural areas are not proposed as part of the development but will be a part of the channel restoration. The narrow linear wooded ravine corridor with small \sized treesshould be considered candidate Bat Maternity Roost Habitat as it will support the natural lands south of Lakeshore Rd. E. which are more suitable for bat maternity roosting.

Special Concern and Rare Wildlife Species - Candidate

All Special Concern and provincially rare (S1-S3) plant and animal species' habitats are considered SWH. Eastern wood-pewee (SC, S4B) has the potential to occur adjacent to the subject property.

The habitat needs and potential for the occurrence of Eastern wood-pewee adjacent to the subject property was detailed in **Section 3.4**, above. If eastern wood-pewee were present, it would most likely be located within the natural area south of Lakeshore Rd. E.; there is limited potential for

the species to occur in the wooded ravine corridor located directly west of the subject property as it is very narrow and contains mostly young small trees

Raptor Wintering Area; Migratory Butterfly Stopover Area; Landbird Migratory Stopover Area; Waterfowl Nesting Area; Amphibian Breeding Habitat (woodland); Terrestrial Crayfish; Special Concern and Rare Wildlife Species - Candidate

As detailed in **Appendix E**, the above listed candidate SWH types are potentially present within natural lands between Lakeshore Rd. E. and Lake Ontario. There is no potential for the proposed development to impact SWH south of Lakeshore Rd. E. In addition, there is very limited to no potential for the occurrence of SWH within the wooded ravine directly west of the subject property.

3.6 Peel-Caledon Significant Woodlands and Significant Wildlife Habitat Study

The Region of Peel provides refined criteria and thresholds for identifying significant woodlands and SWH in the Region of Peel and the Town of Caledon (North-South Environmental Inc. *et al.* 2009). According to this document, **the cultural woodland along the watercourse is confirmed SWH for Landbird Migratory Stopover Area** as it is a natural area within 2 km of Lake Ontario.

The same cultural woodland further meets the Region's definition of a tertiary local movement corridor as it provides important habitat for the movement of songbirds.

3.7 City of Mississauga Significant Woodlands

As stated in **Section 2.1**, the City of Mississauga defines Significant Woodlands as woodlands that meet one or more of the following criteria:

- *Woodlands, excluding cultural savannahs, greater than or equal to four (4) ha;*
- *Woodlands, excluding cultural woodlands and cultural savannahs, greater than or equal to two (2) ha and less than four (4) ha;*
- *Any woodland greater than 0.5 ha 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 m of another Significant Natural Area supporting a significant ecological relationship between the two features;*
  - *Is located within 30 m of a watercourse or significant wetland; or*
  - *Supports significant species or communities.*

The wooded corridor along Applewood Creek is considered a Significant Natural Area as it is confirmed landbird migratory stopover habitat. The feature on the subject property measured approximately 0.30 ha *prior* to the tree removals which occurred as part of the Lakeshore Road culvert upgrade works. Given that Lakeshore Rd. E. presents an approx. 25 m break in canopy cover, the area of woodland south of Lakeshore Rd. E. was not considered contiguous with the woodland on the subject property and was not included in the total area calculation. **Due to its small size, the woodland between St. James Ave. and Lakeshore Rd. E. is ineligible for status as a Significant Woodland.**

3.8 Natural Areas

Natural lands associated with Applewood Creek south of St. James Avenue to the Lake Ontario near shore area are considered part of Natural Area LV1, or 'Lakeview 1'. A narrow linear extension of the Natural Area, extending between St. James Ave. and Lakeshore Rd. E., directly abuts the western boundary of the subject property (Error! Reference source not found.). As a whole, Natural Area LV1 is bounded to the south by Lake Ontario and is connected to Natural Area LV14 to the north via the Applewood Creek corridor. Natural Areas LV2 and ETO8 are located approx. 500 m to the west and northeast, respectively.

According to the NAS (City of Mississauga, 2016), a total of 240 species of flora and 77 species of fauna have been recorded at Natural Area LV1. In addition, seven (7) vegetation communities have been documented. The Area is considered significant due to the presence of locally significant species (those considered rare or uncommon in Mississauga and the Credit Valley watershed), the presence of mature canopy trees in the Dry-Fresh Sugar Maple Beech Deciduous Forest (FOD5-2), diversity of species and vegetation communities (see **Figure 3-1**), provision of floodplain storage, linkage function and proximity of other natural features (e.g. Lake Ontario, other Natural Areas). In addition, one (1) provincially significant fauna species and two (2) provincially significant flora species have been documented from the site.

The portion of Natural Area LV1 that is adjacent to the study area is narrow, highly disturbed, and is of very low quality and habitat value. Its ecological function consists of floodplain storage; aquatic and, to a lesser degree, terrestrial north-south linkage along Applewood Creek. Given the highly disturbed conditions and lack of diversity of habitats of the aforementioned compared to the portion of Natural Area LV1 located south of Lakeshore Rd. E., it is the opinion of Aquafor Beech Limited that the wooded ravine corridor adjacent to the subject property likely does not have comparable ecological function(s) to that of the natural lands to the south.

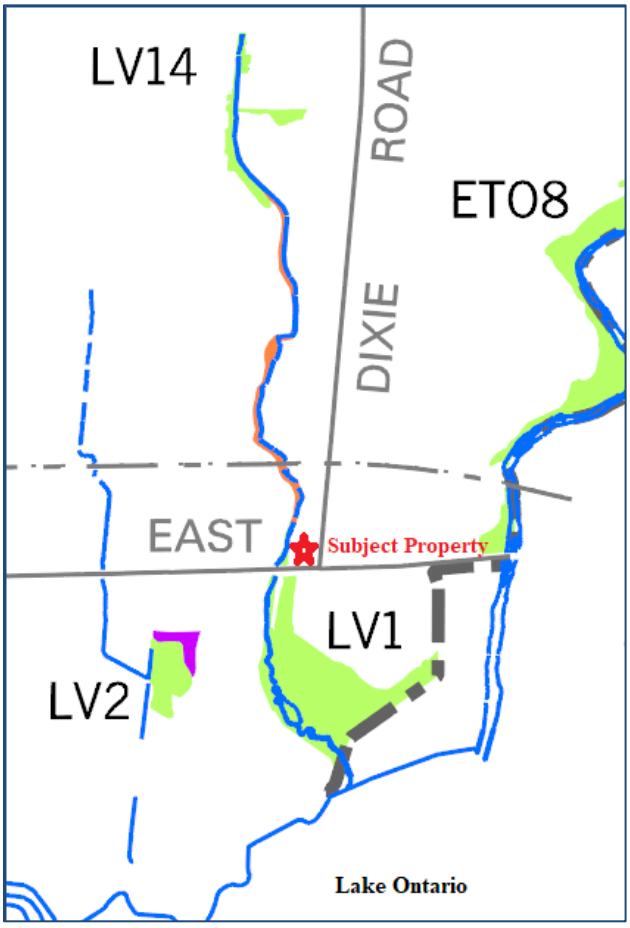


Figure 3-4: Figure 3 4: Natural Areas (augmented from City of Mississauga, 2016)

4 Proposed Development

As illustrated in **Figure 4-1** and **Figure 4-2**, VanDyk Group proposes to develop the subject property in one phase as a residential condominium that would consists of one 8-storey mixed-use residential commercial building (Building A) fronting onto Dixie Rd. and Lakeshore Rd. E. and a 12-storey residential high-rise building (Building B) fronting onto St. James Ave. and Dixie Rd. The development will have private driveways linking the site to St. James Ave. Parking will be provided above and underground and outdoor amenity space is also planned.

Channel restoration work is proposed along the watercourse to address flooding issues and limit spilling to the adjacent property, and convey all flows including the regulatory storm flows (**Figure 4.4 to 4.11**). Activities include:

1. Excavation and modification of the main channel and easterly bank:
    a. Removal of gabion baskets along the channel bed and the east bank. In-channel work bed structure will be rebuilt with deep riffle stone placement of 1 m on the main channel. Five (5) riffles and four (4) pools have been designed.
    b. The banks and slope will be built as a stable channel morphology that provides underlying engineering to the Natural Channel Design to ensure long-term erosion protection. The slope will be constructed with vegetated buttresses consisting of roundstone layers with the void space filled with smaller roundstone and native soil. The surface of the buttress will be amended with topsoil, and planted with 1 L potted shrubs planted at 0.5 m spacing.
2. Removal of mostly non-native trees and riparian vegetation on the easterly bank of Applewood Creek (to allow for construction works and access) followed by revegetation with native shrubs and trees.

The proposed development also allows for a 6 m wide buffer strip along the western boundary of the subject property that will widen to a 10 m or greater buffer south of the area where channel restoration will occur (which coincides with the edge of the woodland and the valley slope top-of-bank). The buffer will be naturalized with site-appropriate native plantings. Landscaping within the developed portion of the subject property (i.e., courtyard, green roofs, and streetscape) is also proposed. For an overview, see **Figure 4-3**.

All disturbed areas will be restored following the completion of construction. A total of 58 trees will be removed for the works on Applewood Creek. Restoration planting will include a total of 174 trees (i.e., a replacement ratio of 3:1) and 820 shrubs. Plantings will include native shrubs and trees along the banks and in the floodplain. All disturbed areas along the banks and floodplain will be Terraseeded with a herbaceous seed mix of native species. A two-year annual monitoring plan should be completed to assess the efficacy of restoration plants.

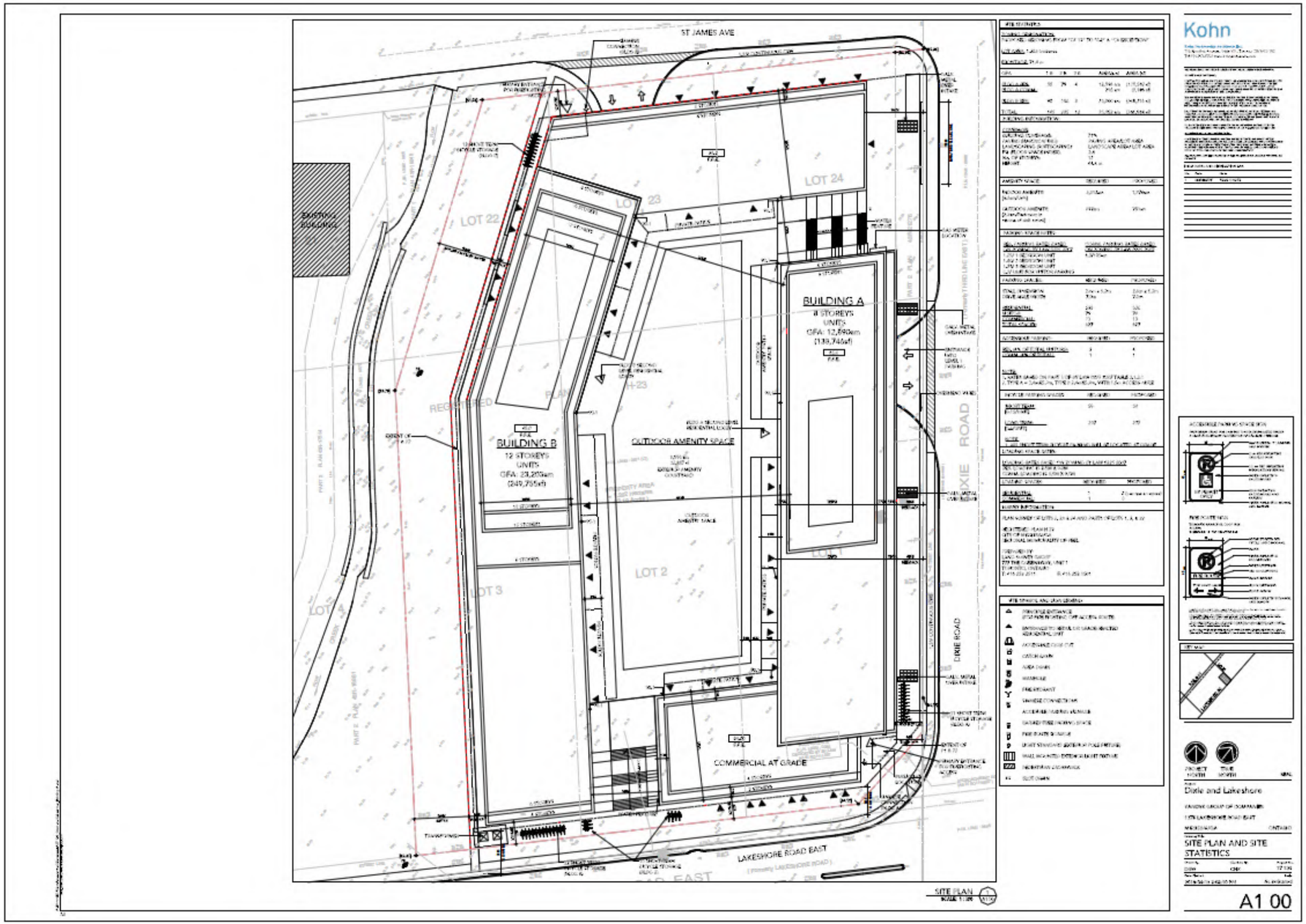


Figure 4-1: Proposed Site Plan

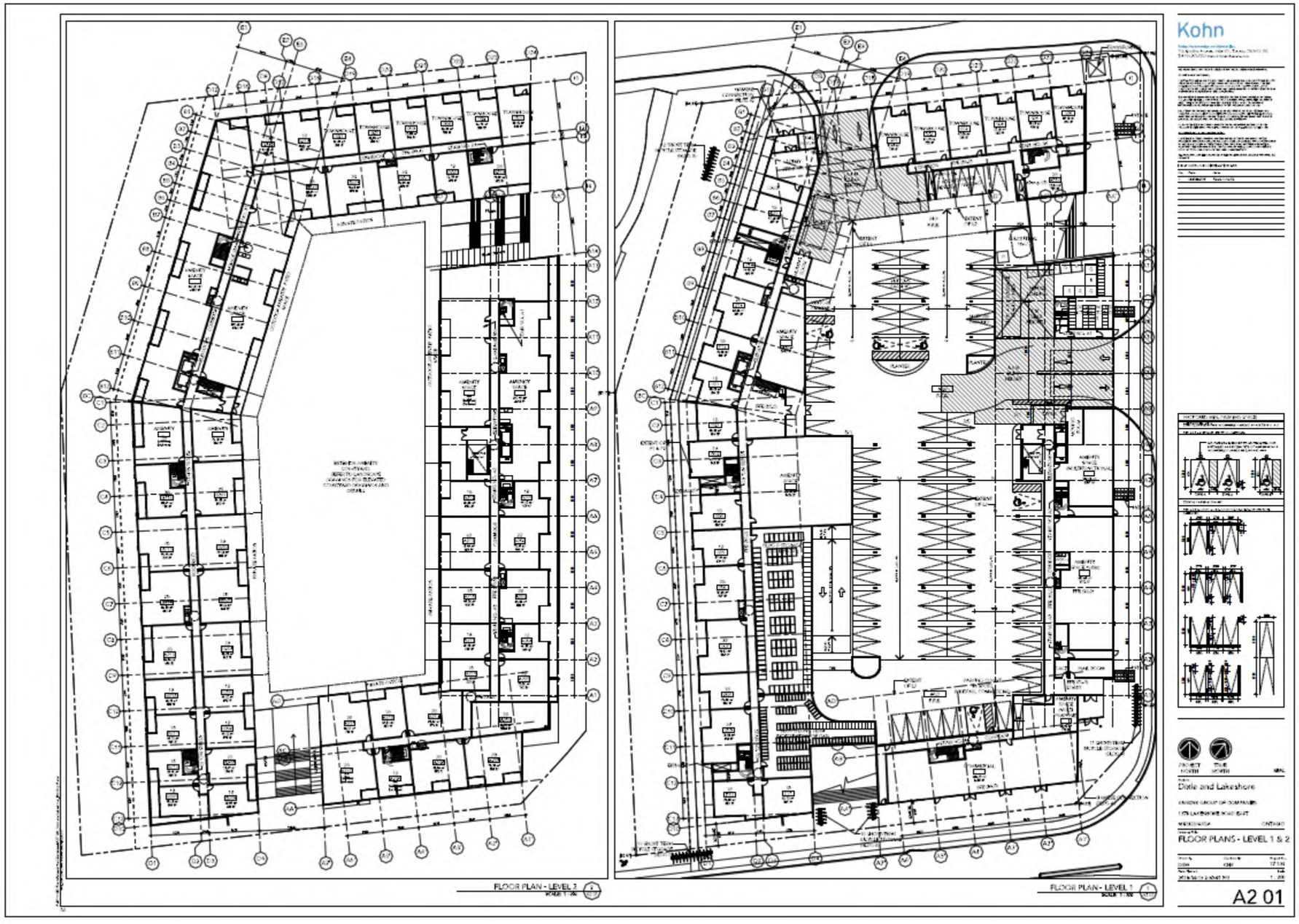


Figure 4-2: Floor Plans, Levels 1 & 2

Figure 4-3: Landscape Concept Plan (Baker Turner Inc.)

Figure 4-4: Channel Restoration General Plan - Proposed

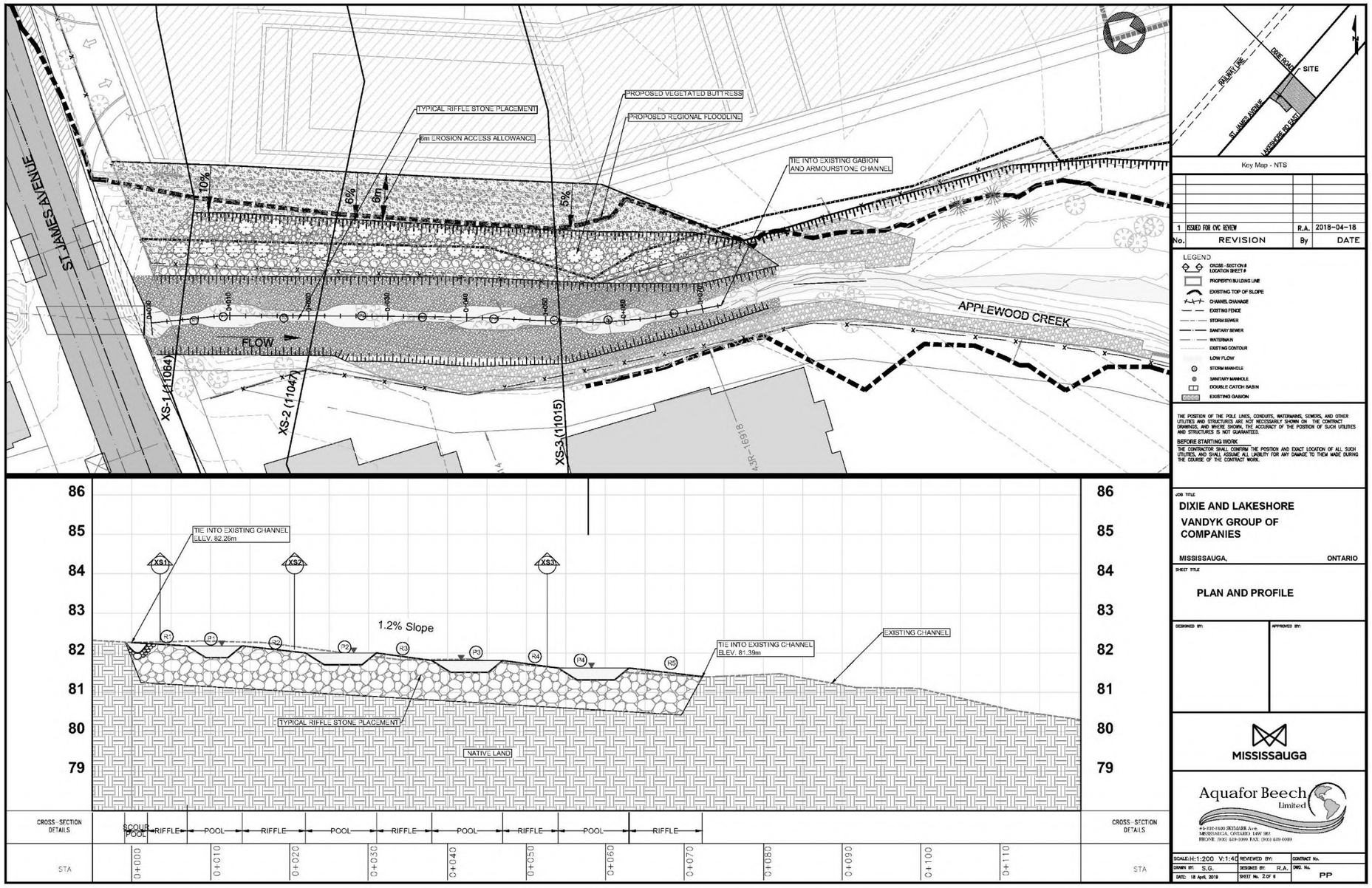


Figure 4-5: Channel Restoration: Plan and Profile

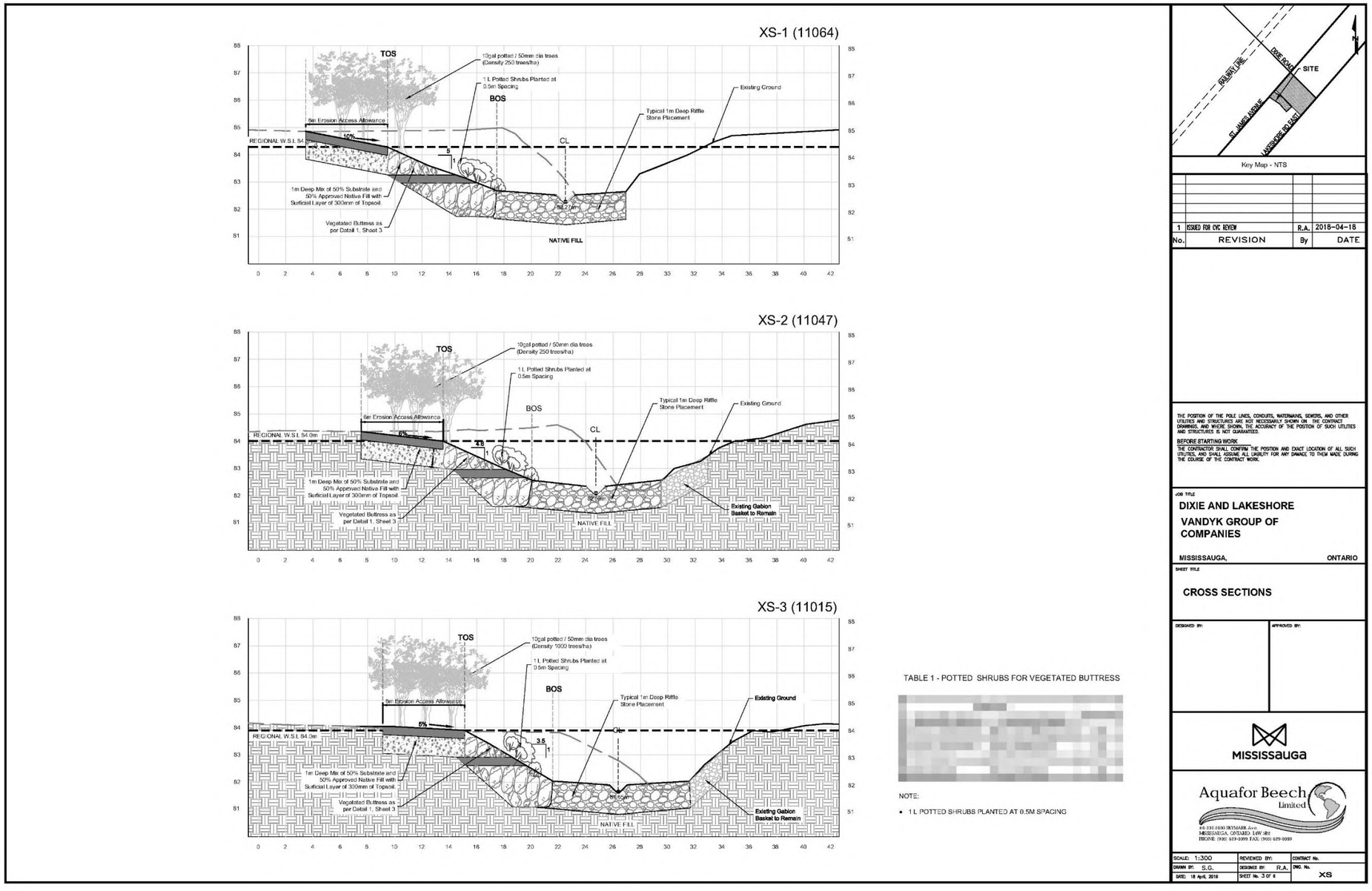
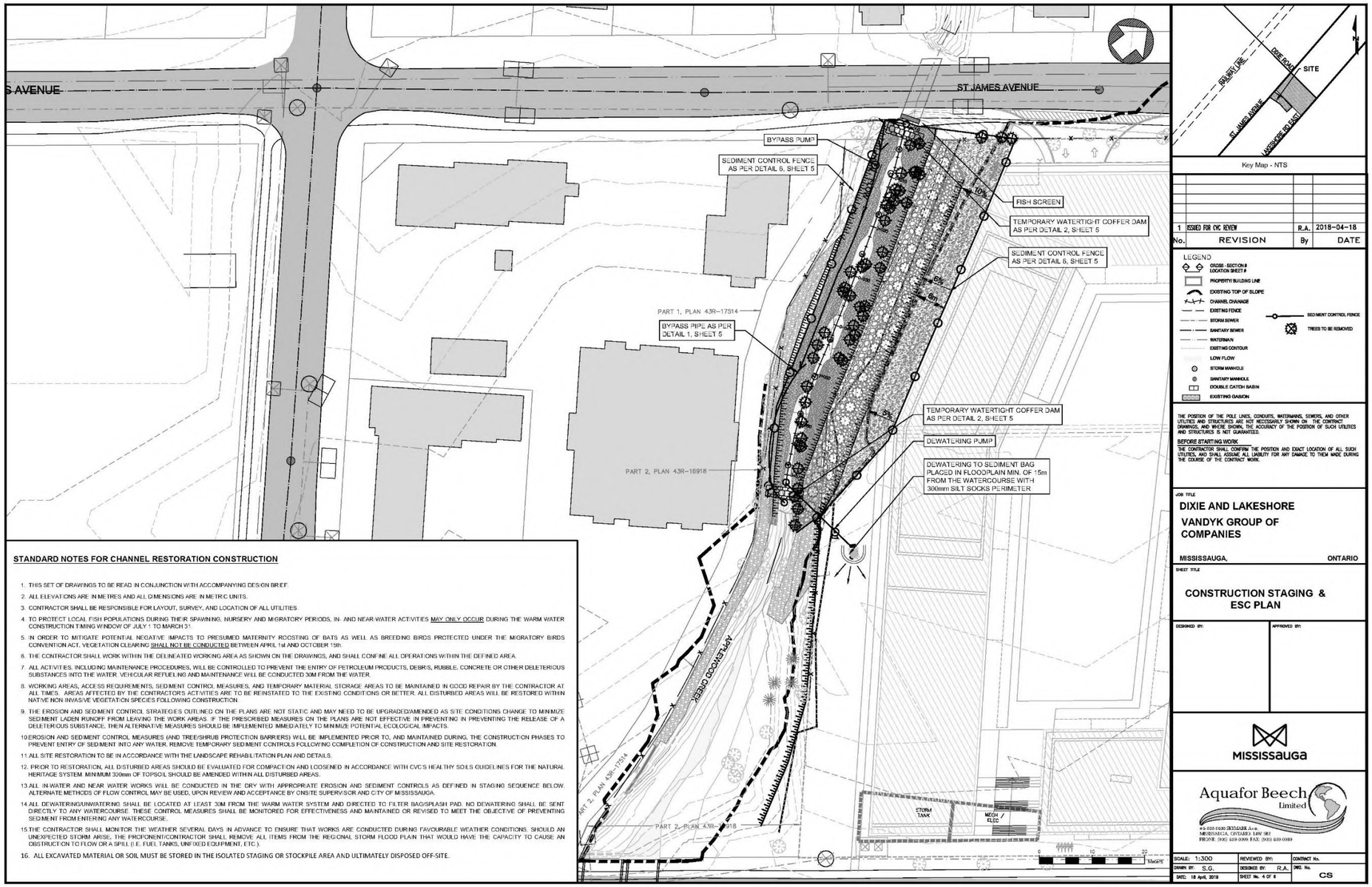


Figure 4-6: Channel Restoration: Cross Sections



STANDARD NOTES FOR CHANNEL RESTORATION CONSTRUCTION

1. THIS SET OF DRAWINGS TO BE READ IN CONJUNCTION WITH ACCOMPANYING DESIGN BRIEF.
2. ALL ELEVATIONS ARE IN METRES AND ALL DIMENSIONS ARE IN METRIC UNITS.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR LAYOUT, SURVEY, AND LOCATION OF ALL UTILITIES.
4. TO PROTECT LOCAL FISH POPULATIONS DURING THEIR SPAWNING, NURSERY AND MIGRATORY PERIODS, IN- AND NEAR-WATER ACTIVITIES MAY ONLY OCCUR DURING THE WARM WATER CONSTRUCTION TIMING WINDOW OF JULY 1 TO MARCH 31.
5. IN ORDER TO MITIGATE POTENTIAL NEGATIVE IMPACTS TO PRESUMED MATERNITY ROOSTING OF BATS AS WELL AS BREEDING BIRDS PROTECTED UNDER THE MIGRATORY BIRDS CONVENTION ACT, VEGETATION CLEARING SHALL NOT BE CONDUCTED BETWEEN APRIL 1st AND OCTOBER 15th.
6. THE CONTRACTOR SHALL WORK WITHIN THE DELINEATED WORKING AREA AS SHOWN ON THE DRAWINGS, AND SHALL CONFINE ALL OPERATIONS WITHIN THE DEFINED AREA.
7. ALL ACTIVITIES, INCLUDING MAINTENANCE PROCEDURES, WILL BE CONTROLLED TO PREVENT THE ENTRY OF PETROLEUM PRODUCTS, DEBRIS, RUBBLE, CONCRETE OR OTHER DELETERIOUS SUBSTANCES INTO THE WATER. VEHICULAR REFUELING AND MAINTENANCE WILL BE CONDUCTED 30M FROM THE WATER.
8. WORKING AREAS, ACCESS REQUIREMENTS, SEDIMENT CONTROL MEASURES, AND TEMPORARY MATERIAL STORAGE AREAS TO BE MAINTAINED IN GOOD REPAIR BY THE CONTRACTOR AT ALL TIMES. AREAS AFFECTED BY THE CONTRACTOR'S ACTIVITIES ARE TO BE REINSTATED TO THE EXISTING CONDITIONS OR BETTER. ALL DISTURBED AREAS WILL BE RESTORED WITHIN NATIVE NON-INVASIVE VEGETATION SPECIES FOLLOWING CONSTRUCTION.
9. THE EROSION AND SEDIMENT CONTROL STRATEGIES OUTLINED ON THE PLANS ARE NOT STATIC AND MAY NEED TO BE UPGRADED/AMENDED AS SITE CONDITIONS CHANGE TO MINIMIZE SEDIMENT LADEN RUNOFF FROM LEAVING THE WORK AREAS. IF THE PRESCRIBED MEASURES ON THE PLANS ARE NOT EFFECTIVE IN PREVENTING IN PREVENTING THE RELEASE OF A DELETERIOUS SUBSTANCE, THEN ALTERNATIVE MEASURES SHOULD BE IMPLEMENTED IMMEDIATELY TO MINIMIZE POTENTIAL ECOLOGICAL IMPACTS.
10. EROSION AND SEDIMENT CONTROL MEASURES (AND TREE/SHRUB PROTECTION BARRIERS) WILL BE IMPLEMENTED PRIOR TO, AND MAINTAINED DURING, THE CONSTRUCTION PHASES TO PREVENT ENTRY OF SEDIMENT INTO ANY WATER. REMOVE TEMPORARY SEDIMENT CONTROLS FOLLOWING COMPLETION OF CONSTRUCTION AND SITE RESTORATION.
11. ALL SITE RESTORATION TO BE IN ACCORDANCE WITH THE LANDSCAPE REHABILITATION PLAN AND DETAILS.
12. PRIOR TO RESTORATION, ALL DISTURBED AREAS SHOULD BE EVALUATED FOR COMPACTION AND LOOSENED IN ACCORDANCE WITH CVC'S HEALTHY SOILS GUIDELINES FOR THE NATURAL HERITAGE SYSTEM. MINIMUM 300mm OF TOPSOIL SHOULD BE AMENDED WITHIN ALL DISTURBED AREAS.
13. ALL IN-WATER AND NEAR WATER WORKS WILL BE CONDUCTED IN THE DRY WITH APPROPRIATE EROSION AND SEDIMENT CONTROLS AS DEFINED IN STAGING SEQUENCE BELOW. ALTERNATE METHODS OF FLOW CONTROL MAY BE USED, UPON REVIEW AND ACCEPTANCE BY ONSITE SUPERVISOR AND CITY OF MISSISSAUGA.
14. ALL DEWATERING/UNWATERING SHALL BE LOCATED AT LEAST 30M FROM THE WARM WATER SYSTEM AND DIRECTED TO FILTER BAG/SPLASH PAD. NO DEWATERING SHALL BE SENT DIRECTLY TO ANY WATERCOURSE. THESE CONTROL MEASURES SHALL BE MONITORED FOR EFFECTIVENESS AND MAINTAINED OR REVISED TO MEET THE OBJECTIVE OF PREVENTING SEDIMENT FROM ENTERING ANY WATERCOURSE.
15. THE CONTRACTOR SHALL MONITOR THE WEATHER SEVERAL DAYS IN ADVANCE TO ENSURE THAT WORKS ARE CONDUCTED DURING FAVOURABLE WEATHER CONDITIONS. SHOULD AN UNEXPECTED STORM ARISE, THE PROPONENT/CONTRACTOR SHALL REMOVE ALL ITEMS FROM THE REGIONAL STORM FLOOD PLAIN THAT WOULD HAVE THE CAPACITY TO CAUSE AN OBSTRUCTION TO FLOW OR A SPILL (I.E. FUEL TANKS, UNFIXED EQUIPMENT, ETC.).
16. ALL EXCAVATED MATERIAL OR SOIL MUST BE STORED IN THE ISOLATED STAGING OR STOCKPILE AREA AND ULTIMATELY DISPOSED OFF-SITE.

Figure 4-7: Channel Restoration: Construction Staging & ESC Plan

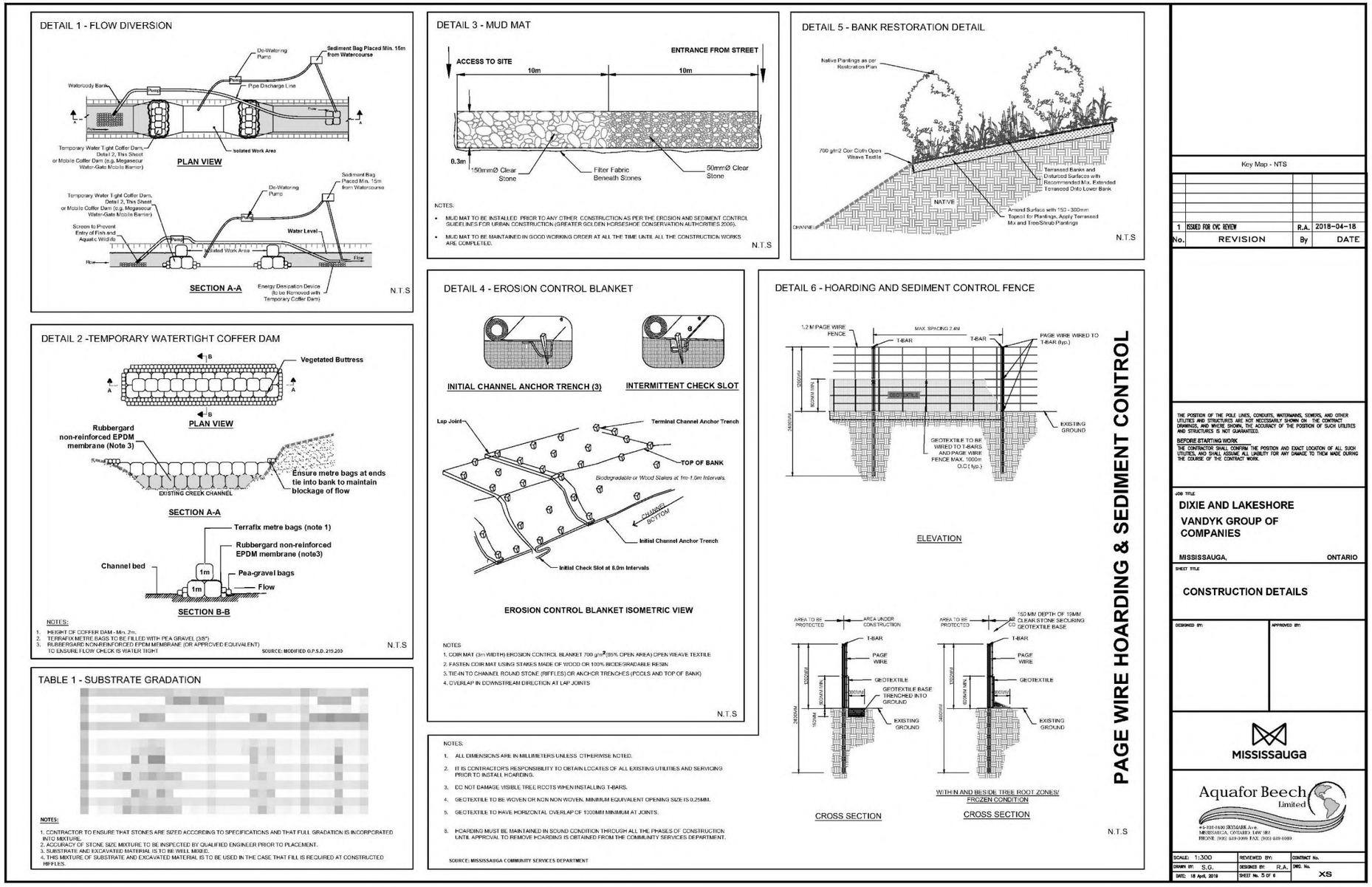


Figure 4-8: Channel Restoration: Construction Details

Figure 4-9: Channel Restoration Area Removals

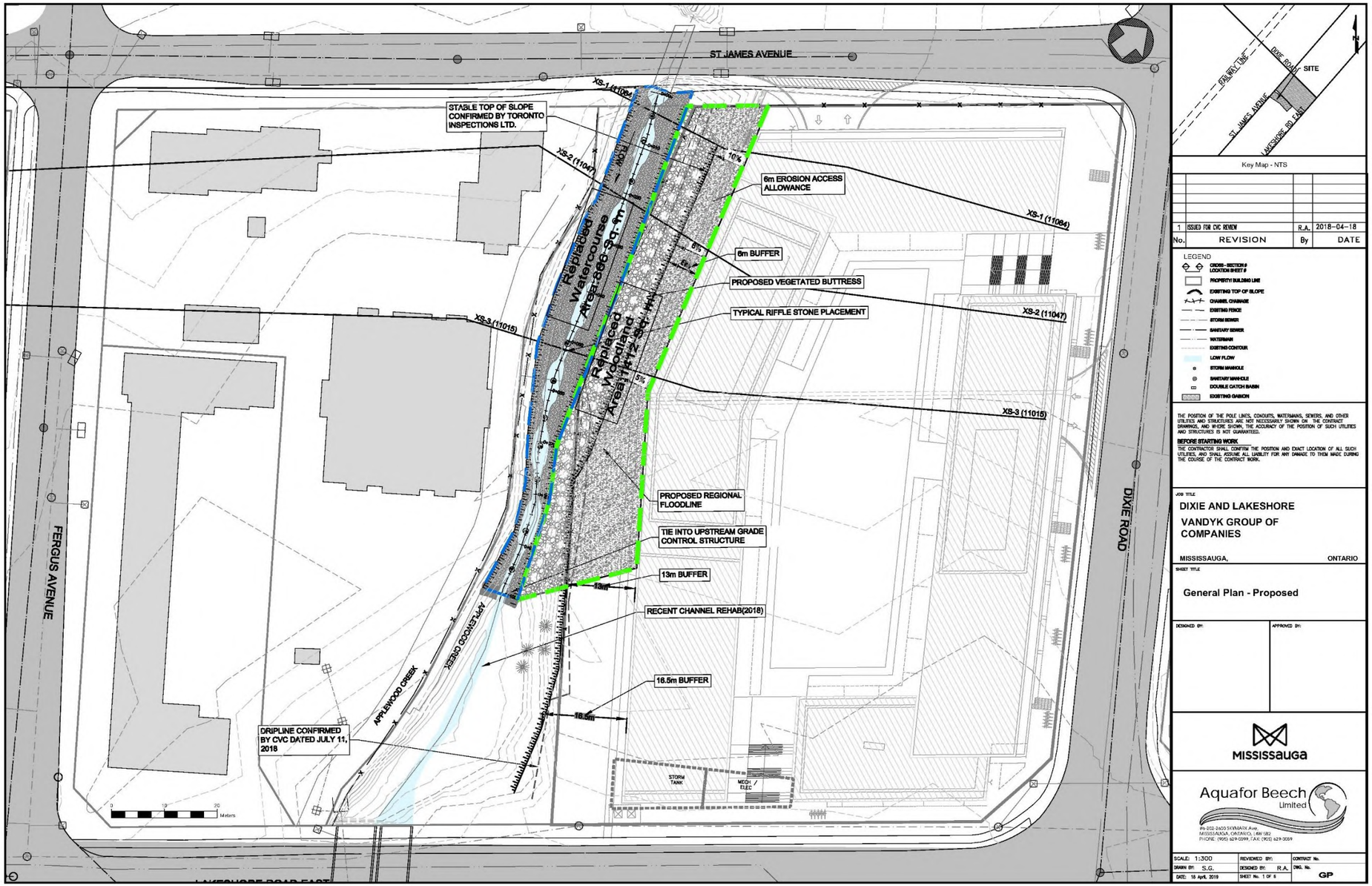


Figure 4-10: Channel Restoration Replacement Area

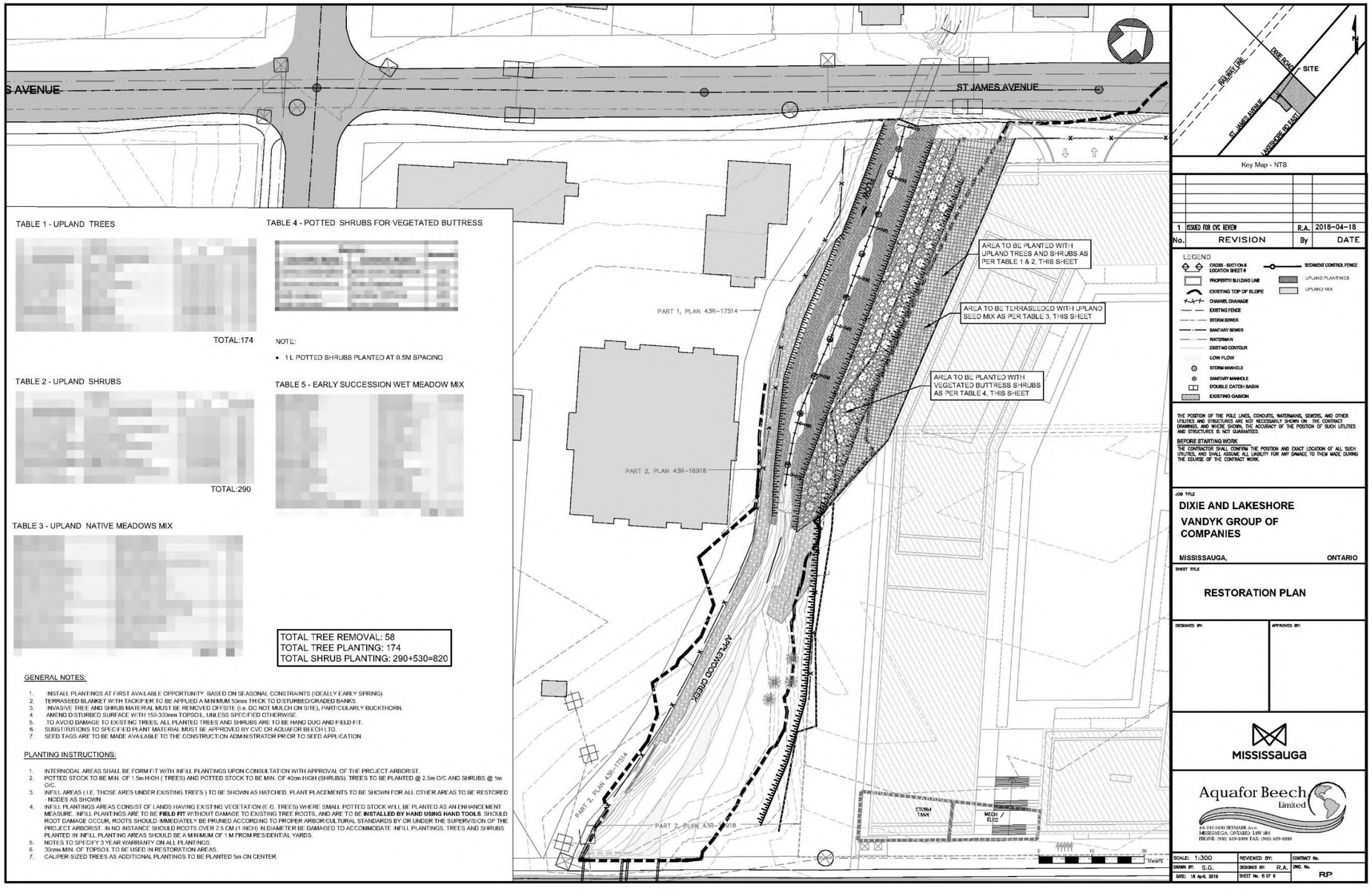


Figure 4-11: Channel Restoration: Restoration Plan

5 Potential Impacts and Associated Mitigation Measures

As detailed in the above sections, the natural heritage form and function of the wooded corridor west of the subject property is limited to the provision of habitat for urban-adapted species, fish habitat, function as a north-south linkage, and contribution to the urban forest canopy. Significant portions of the creek and valley walls are made of gabion baskets, and the woodland within the corridor is dominated by habitat generalist and exotic species. The boundary between the aforementioned natural area and the subject property is demarcated by an existing chain link fence along the western boundary of the subject property. Natural lands south of Lakeshore Rd. E. consist of a diversity of habitat types (e.g., forest, treed swamp, thicket, and meadow) and likely qualify as Significant Wildlife Habitat. There is little to no potential for Species at Risk to occur on or adjacent to the subject property, based on the type and quality of habitat that is present.

Potential negative impacts to natural heritage features and functions identified within and adjacent to the subject property that could potentially be influenced by the proposed development, along with associated mitigation measures, are described in **Table 5.1**, below.

Table 5.1: Potential Impacts and Recommended Mitigation Measures

Feature and/or Function	Impact(s)	Recommended Mitigation Measure(s)
Loss of existing trees along streetscape	Temporary reduction in urban canopy.	**Landscaping, streetscaping, and buffer plantings** within the subject property will offset the temporary reduction in urban canopy cover and, over the medium to long-term, result in an overall increase in both quality and quantity of urban canopy cover. It is further recommended that proposed plantings areas be subject to aeration to mitigate extant soil compaction and that which will be exacerbated by the proposed construction activities.
Trees within adjacent wooded corridor	Removal of approximately 58 trees.	• Channel restoration activities are to occur from the north end of the property and extend down to the previous creek work completed by CVC (**Figure 4.4 to 4.11**). • Removed trees are mostly Manitoba maple (*Acer negundo*) and are to be compensated for at a 3:1 ratio with native species. • Overhanging branches should be trimmed by or under the supervision of a certified arborist according to standard arboricultural practices. Further recommendations related to tree removals are discussed under "Migratory and Breeding Birds", below. • Protective fencing will be erected along the property boundary where the plan abuts the existing park block (Appledale Park) and along the dripline of any vegetation within the natural area that may be impacted.
Migratory and breeding birds; SWH: Confirmed Migratory Landbird Stopover Area	Potential for birds to strike buildings, especially during migration periods.	Use of **bird-friendly window glazing or other window treatments** is recommended to mitigate the risk of bird strikes on windows of the new buildings. In accordance with the City of Mississauga's *Green Development Standards* (2012), the following is recommended: • Treat glass on buildings with a density pattern between 10-28 cm apart for a minimum of the first 10-12 m above grade; or, • Mute reflections for a minimum of the first 10-12 m portion of a building above grade. Where a green roof is constructed adjacent to glass surfaces, ensure that the glass is treated to a height of at least 12 m above the level of the green roof; and, • Where exhaust/ventilation grates can not be avoided at ground level, design the grates to have a porosity of less than 2 cm x 2 cm. • The City of Toronto's *Bird-Friendly Best Practices: Glass* (2016) provides the same recommendations.
	Tree removals may damage or destroy active birds nests in contravention of the *Migratory Birds Convention Act* (2010). This impact is considered acute and temporary.	If possible, **tree removals should be avoided during the general breeding bird nesting period (April 15th to August 15th)**. If removals must occur during this period, a qualified avian ecologist must conduct a nest survey immediately prior to site disturbances or alterations (e.g., tree removal) and confirm a lack of active nests in the removal area. Confirmed nest locations should be protected by the establishment of temporary Nest Protection Zones, which will remain in place until all young birds have fledged as confirmed by a qualified wildlife biologist. These measures will ensure that site alteration does not contravene the federal *Migratory Birds Convention Act* (2010), which protects the nests of most breeding bird species in Ontario.
	Reduction in foraging potential along linkage area	Significant Wildlife Habitat Mitigation Support Tool (MNRF, 2014) provides the following mitigation recommendations: • Channel restoration and proposed development cannot cause the water quality to decrease. Proposed channel design will likely support a higher diversity of aquatic invertebrates by removing the Gabion and creating a more naturalized creek. • Sediment control measures including silt fencing must be installed to avoid any construction related sediment enters the watercourse outside of the channel restoration area.

Feature and/or Function	Impact(s)	Recommended Mitigation Measure(s)
Applewood Creek and associated wooded corridor	Channel restoration will require the removal of vegetation (ground layer, shrubs, and trees) and alteration to fish habitat.	• 866 m^2 of watercourse and 1,412 m^2 of woodland habitat are proposed as a part of the restoration plan to mitigated the removal of 350 and 385 m^2 of watercourse and cultural woodland respectively (Figure 4-9 and 4-10). • As stated previously, trees are to be replaced at a 3:1 ratio with native trees, as per CVC planting guidelines. Shrubs will be planted at a spacing of 0.5 m and disturbed areas along the banks and floodplain will be Terraseeded with a herbaceous seed mix of native species. • Gabion baskets and large angular stone will be removed and new creek bed will match the existing creek bottom with approximately 4.4:1 side slope on the Eastside Creek Bank and will maintain the slope on the Westside Creek Bank resulting in higher quality aquatic fish habitat. • Channel was designed using Natural Channel Design (NCD) and will result in a stable stream morphology with underlying engineering to ensure long term erosion hazard protection.
	Encroachment into the Natural Heritage System - Reduction in quality of aquatic and terrestrial habitat, trampling, dumping, invasive species, etc. upon occupancy and is expected to continue indefinitely.	• Fencing along the western boundary of the subject property and the planted buffer strip will discourage encroachment into the NHS. It is recommended that **fencing be installed prior to building occupancy**. • Furthermore, it is recommended that all landscaping contain non-invasive species. The **buffer plantings should consist of site-appropriate locally native species**. • Lighting should be limited to reduce the potential indirect impact to wildlife using the watercourse as a linkage or as habitat.
	Potential for siltation/sedimentation during construction.	Installation of **erosion & sediment controls** are required well in advance of construction activities and should remain in place until vegetation has become established. The following mitigating measures are proposed: • Place sediment traps to receive storm runoff during construction; • Provide tire washing facilities for construction vehicles that exit the sites; • Install silt fencing along the perimeters of the work sites where appropriate to prevent migration of sediment-laden storm runoff; • Cover exposed excavated material to prevent erosion by rain and wind; and • Water or other dust suppressants to be employed during construction to control release of dust particles to the air.
	Potential for fuel to enter waterway.	• Construction vehicles to be refueled a minimum of 30 m away from Applewood Creek; • Spill containment for on-site storage tanks; and, • Develop a spill clean-up contingency plan.
Tertiary local movement corridor	Channel restoration will alter corridor	Construction activities should occur in a manner that will reduce the potential for conflict with wildlife such as installation of silt fencing prior to any vegetation removal to inhibit movement of wildlife through the construction site.
SWH: Candidate Bat Maternity Roost Habitat	Removal of approximately 58 trees that may result in the loss of some maternity roost trees (targeted surveys for roost trees were not completed).	Installation of a "**Rocket Box" bat house** within the restoration area will compensate for any potential habitat that may be removed as a part of the channel restoration. Channel design is to include planting of native species that will promote a higher diversity and abundance of insects, therefore improving the foraging potential along the watercourse in the long term.

Feature and/or Function	Impact(s)	Recommended Mitigation Measure(s)
SWH: Special Concern and Rare Wildlife Species - Eastern wood-pewee habitat	Channel restoration will occur within candidate SWH. Limited potential for temporary disturbance of wooded corridor due to construction noise. Given how narrow the corridor is and the surrounding land uses, it is not anticipated that light attenuation would make a difference to the ecological function of the site.	• Channel restoration must result in a net gain of eastern wood-peewee habitat. • Channel restoration design should account for habitat needs of eastern wood-pewee and include plants that promote a diverse insect community as well as raspberry (*Rubus* spp.), blueberry (Vaccinium spp.), and dogwood (Cornus spp.). • The provision of habitat within the proposed planted buffer area may result in a net benefit to eastern wood-pewee and other avifauna. As previously stated, it is suggested that berry-bearing shrubs such as raspberry and dogwood species be included in the buffer plantings to improve wildlife habitat.
SWH: Raptor Wintering Area; Migratory Butterfly Stopover Areas; Landbird Migratory Stopover Areas; Waterfowl Nesting Areas; Woodland Amphibian Breeding Habitat; & Terrestrial Crayfish.	None anticipated – potential candidate SWH are located far enough from the subject property that the proposed development will not impact SWH.	• Mitigation and/or avoidance measures are not applicable. • The provision of habitat within the proposed planted buffer area and channel restoration area may result in a net benefit to butterflies and other wildlife. As previously stated, it is suggested that berry-bearing shrubs such as raspberry and dogwood species as well as species preferred by butterflies, including but not limited to aster, monarda, and milkweed be included in the buffer and channel restoration plantings.

6 Limitations and Opportunities to Development

Natural heritage features on adjacent lands that abut the western limit of the study area consist of Applewood Creek and its associated wooded valley. The limits of this feature are defined by the stable top of slope delineated by City and CVC staff on July 11th, 2018.

In accordance with the definitions provided in the City of Mississauga's OP (2018), constraints to development within the study area consist of the wooded ravine corridor directly west of the subject property and its associated buffer as well as hazard lands. Applewood Creek, which is contained within the wooded valley corridor, provides direct fish habitat and therefore qualifies as a Significant Natural Area in accordance with the definitions of the City of Mississauga's OP. The wooded valley does not qualify as a Significant Natural Area; however, it does function as a Linkage. Development within these areas are prohibited under the City of Mississauga's Official Plan.

Owing to the presence of a flood hazard and restoration potential, the aforementioned corridor meets the criteria for 'Associated Ravines' of Core Valley and Stream Corridors per the Region of Peel's Official Plan (2016).

Development (i.e., construction of residential/commercial buildings) will occur on lands outside of the aforementioned natural heritage features and hazard lands which include floodplain and valleylands. **Development is not proposed within the ravine corridor. However, channel restoration is proposed to occur in the north half of the watercourse.** The purpose of the channel restoration is to retain the regulatory flows below the top of slope and within the riparian corridor, in order to address the increased flood risks to the adjacent property to the east.

6.1 Buffers

Buffers are vegetated physical separations between natural features and development areas intended to preserve the ecological integrity of natural features and their associated processes (Ontario Ministry of Natural Resources, 2013). Per Section 6.3.8 of the City of Mississauga's OP (2018), buffers shall be determined on a site-specific basis. Furthermore, as indicated by the CVC, a 10 m setback from the limit of greatest hazard is required and no development is allowed within the setback (DARC 18-14 W1, Project Status Report dated March 14th, 2018).

Buffers are areas of self-sustaining vegetation situated adjacent to natural heritage features included as part of the NHS. Like hazard lands, **buffers will be designated as Greenlands** and will be zoned to protect life and property. Uses will be limited to conservation, flood and/or erosion control, essential infrastructure and passive recreation (City of Mississauga, 2018). The applicability of the stated intent of buffers, per the City's OP, are detailed below in **Table 6.1**.

Buffers should not include any above or below grade encroachments including shoring and tiebacks from the proposed underground parking. Adequate setback should be maintained between the underground parking structure and the buffer to allow for future underground maintenance access. No unapproved material (e.g., topsoil stockpiling, construction trailers, construction materials and debris, signage) or structures are permitted within the Greenbelt and its associated

buffer at any stage of development. LID and trail systems should be designed outside of the buffer area.

It is recommended that a minimum buffer width of 10 m, measured from the dripline delineated by City and CVC staff on July 11th, 2018, be applied to the NHS directly adjacent to the subject property and 6 m adjacent to the restoration (Figure 4-9).

Soil may require analysis and amendment as to adhere to CVC's Health Soils Guideline for the Natura Heritage System (2017).

Buffer Planting Prescriptions

Buffers are to provide a transition between the urban activities and the natural communities they are protecting. Buffers for forested communities are often shrub dominate with native species that compliment the adjacent natural feature and help support local wildlife, specifically SAR. As previously mentioned, shrub species such as raspberries and dogwoods provide alternate food sources for Eastern wood-pewee and thus would represent an enhancement to the NHS. Species that attract insects should also be planted to provide additional food sources for any migratory birds and Myotis that may be present or will use the watercourse as a linkage between habitats. CVC's Plant Selection Guideline: Species List for Planting Plans within the Credit River Watershed (2018) provides a long list of recommendations for plants to be placed in buffers that provide the above-mentioned habitat enhancements.

The entirety of the buffer should be planted in self-sustaining vegetation. As stated in **Table 5.1**, it is recommended that planting areas be subject to aeration so that soils are better equipped to support vegetation. All planted material should consist of locally native site-appropriate species. It is further recommended that VPZs be planted shortly after site grading is completed.

Table 6.1: Buffer Functions

Intent of Buffer (per City of Mississauga, 2018)	Applicability to Proposed Development
Maintenance of slope stability and reduction of erosion on valley slopes	Given that a significant portion of the vegetated corridor consists of gabion baskets, erosion is not a great concern.
Attenuation of stormwater runoff	Some surface runoff will likely be attenuated by a 6 and 10 m buffer. The forthcoming FSR from Cole Engineering will address stormwater management.
Reduction of human intrusion into Significant Natural Areas and allowance for predation habits of pets, such as cats and dogs	Fencing along the western property limit will be the primary deterrent to people and pets entering the NHS. Plantings within the buffer will also act as a deterrent, especially is thorny or prickly species are used.
Protection of tree root zones to ensure survival of vegetation	The trees within the wooded corridor are young. Roots, if they extend underneath the existing paved areas in the subject property, will be adequately captured within a 6 and 10 m buffer.
Provision of a safety zone for tree fall next to woodlands	Trees within the wooded corridor are on a slope and likely would fall westward towards the creek. Nevertheless, branches and the odd tree could

Intent of Buffer (per City of Mississauga, 2018)	Applicability to Proposed Development
	fall within the subject property. A 6 and 10 m buffer is recommended to accommodate the tree fall zone.
Enhancement of woodland interior and edge areas through native species plantings	As detailed in **Sections 3.4** and **3.5** and **Appendices D** and **E**, there is limited potential for significant species and/or SWH within the wooded ravine directly west of the subject property. Wildlife use is likely limited to urban adapted, disturbance-tolerant species. Inclusion of diverse native plantings, including but not limited to those which produce berries, will enhance terrestrial wildlife habitat and increase the wooded area. The plants within the buffer plantings may eventually spread into the adjacent corridor, enhancing both fish and terrestrial habitat. Given the urban context/limitations of the site, a buffer width of 6 and 10 m from the property line is adequate to provide physical functional enhancement.
Enhanced wildlife habitat and corridors for wildlife movement	
Opportunities for passive recreational activities, in appropriate locations	The buffer associated with this development includes a passive walking trail that links sidewalks on St. James Ave. and Lakeshore Rd. E. Due to the low sensitivity of the wooded corridor adjacent to the buffer, it is not anticipated that the trail will impact the ecological form and/or function of the NHS. Passive recreational activities for future residents will be also afforded by the central open amenity space within the development and parks south of Lakeshore Rd. E.

6.2 Channel Restoration

Applewood Creek, which is contained within the wooded valley corridor, provides direct fish habitat and therefore qualifies as a Significant Natural Area in accordance with the definitions of the City of Mississauga's OP (2018). The wooded valley does not qualify as a Significant Natural Area; however, it does function as a Linkage.

The current form and function of the channel does provide fish habitat to white suckers, a highly adaptable and robust native fish that is tolerant of highly disturbed conditions. The proposed channel design proposes the removal gabion baskets and large angular stone resulting in a higher quality habitat that will likely support a wider variety of fish species.

The creek corridor is well vegetated with mostly exotic species, twelve (12) of the species are native (34%), and twenty-three (23) are introduced (66%). All disturbed areas will be restored following completion of construction. Approximately 58 trees will be removed for the works on Applewood Creek. Restoration planting adhere to a replacement ratio of 3:1, planted to removed. Planting include native shrubs and trees along the banks and in the floodplain. All disturbed areas along the banks and floodplain will be Terraseeded with herbaceous seed mix of native species.

An Adaptive Monitoring plan along the channel restoration will be required and will be designed as a part of detailed design.

7 Closing

The subject property consists of an abandoned commercial development (zoned as "mixed Use – Special Site 8") and does not contain natural heritage features. Channel restoration on the adjacent

property will not only mitigate future flood spilling onto adjacent lands, it will improve fish habitat and remove exotic vegetation.

It is the opinion of Aquafor Beech Limited that the proposed development will not result in negative impacts to the form and/or function of the adjacent NHS provided that the mitigation measures in **Section 5** of this report are adhered to, the channel restoration adheres to the Applewood Creek Channel Restoration – St. James Avenue to Lakeshore Road East: Conceptual Design Brief (April, 2019), and the 6 and 10 m buffer (described in **Section 6.1**) is applied. Due to the distance between the subject property and the natural lands to the south, it is not anticipated that the proposed development will have an adverse impact on these lands.

7.1 Policy Conformance, Permits, and Approvals

As detailed in **Section 6**, constraints to development consist of the wooded ravine associated with Applewood Creek and natural hazards (i.e. floodplain and valley slopes). The lands within the ravine corridor are considered **Core Valley and Stream Corridors** per the Region of Peel's Official Plan (2016) and a **Significant Natural Area** per the City of Mississauga's Official Plan (2018). No development or site alteration are proposed within the aforementioned ravine corridor, and a buffer of 6 m adjacent to the restoration area and 10 m to the south has been applied to the outer edge of the feature (note: the limits of the feature will be staked in consultation with the City of Mississauga and the CVC prior to development).

Definition of hazards lands is currently ongoing. It is understood that Cole Engineering is working with the CVC and City of Mississauga towards an engineered solution to address areas of the floodplain that are within table lands (i.e. outside of the ravine corridor).

Approval of this EIS will be required from the City of Mississauga and the CVC.

While it is recognised that a response from the MNRF has not yet been received, based on the extant conditions within the subject property and of the adjacent ravine corridor, it is not anticipated that SAR are present on or directly adjacent to the subject property. It is not anticipated that development within the subject property would influence natural lands south of Lakeshore Rd. E. As such, it is unlikely that the proposed development has the potential to contravene the Endangered Species Act.

Permits

As detailed in **Section 2**, permits from the City of Mississauga will be required prior to tree removals. Furthermore, as the proposed development is within lands regulated by the CVC, a permit from the Authority will be required to support the development.

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Appendix A: Study Terms of Reference (updated)

EIS Terms of Reference:
1345 Lakeshore Road E EIS

May 10th, 2018

Ms. Sangita Manandhar
Planner, Community Services
City of Mississauga
P: 905-615-3200 x 3997
E: sangita.manadhar@mississauga.ca

Dear Ms. Manandhar:

Re: Revised Terms of Reference for EIS in Support of Proposed Development at 1345 Lakeshore Road East, Mississauga

Aquafor Beech Limited has been retained by Vandyk Group of Companies ("the proponent") to complete an Environmental Impact Study (EIS) in support of the development of a mixed use residential and commercial property at 1345 Lakeshore Road East in Mississauga, Ontario. The proposed development plan is contained in **Appendix A**. The limits and location of the subject property are shown in **Figure 1**, below:

Figure 1: Study Area

This document constitutes a draft Terms of Reference for the EIS. The EIS will be completed in accordance with the City of Mississauga's EIS Guidelines (2002). A draft Table of Contents for the EIS is contained within **Appendix B**. The proposed workplan is detailed below.

The EIS will be made available in electronic (PDF) and hard copy formats.

Natural heritage features are not present on the subject property. However, lands owned by the City of Mississauga that abut the western boundary of the subject property contain a wooded ravine (Applewood Creek) that is part of Appledale Park. This property, separated from the subject property by an existing chain link fence, is zoned as G1. The wooded ravine is considered part of the City's Natural Heritage System: Significant Natural Areas and Natural Green Spaces and is also considered part of Natural Area LV1. The wooded ravine links the portion of Natural Area LV1 that lies south of Lakeshore Road with Natural Area LV14 to the north (**Figure 2**).

Currently, the subject property is paved and contains a defunct car dealership building (**Figure 3**). City-owned (e.g. boulevard) and private trees are located at (e.g. growing through the fence on the northern edge of the subject property) or adjacent to the perimeter of the subject property.

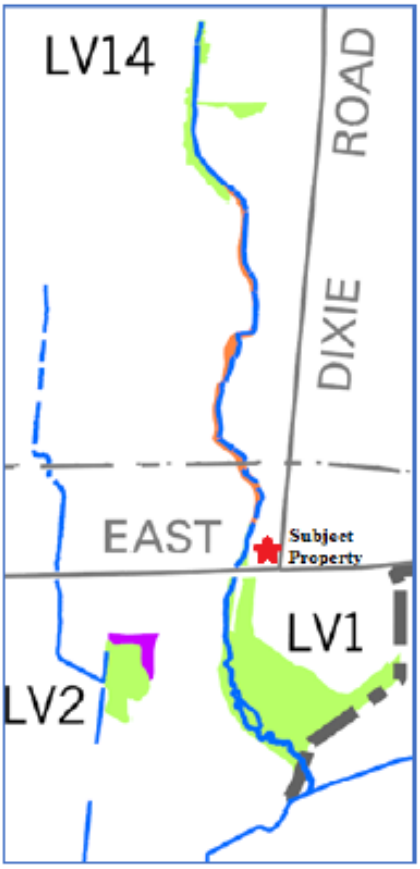

Figure 2: Natural Areas Survey Mapping (City of Mississauga, 2001), amended to show Subject Property

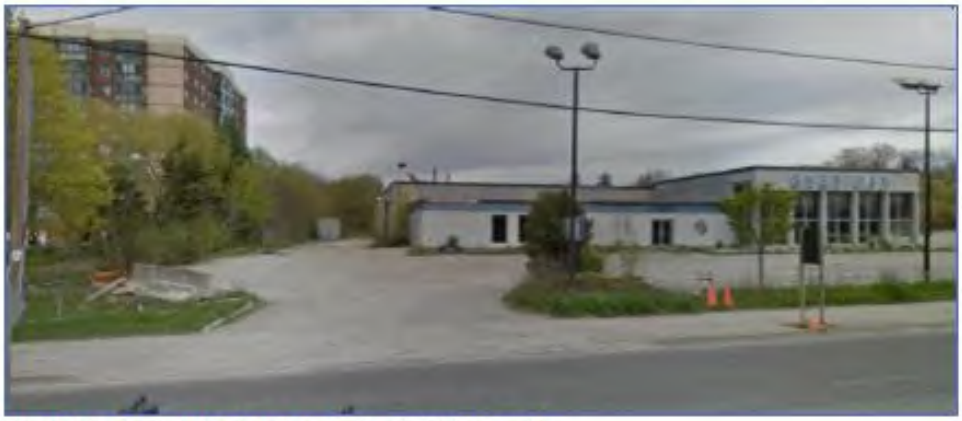

Figure 3: Current view of Subject Property from Lakeshore Road E

1 Work Plan

The purpose of the following work plan is to characterize the ecological features and functions on the subject property. Following the ecological characterization, Aquafor Beech Limited will summarize the data and provide a comprehensive analysis of the potential impacts to natural heritage features and functions resulting from the proposed development. Mitigation recommendations will also be included in the report. The work plan is thus divided into six (6) sections as follows:

- Existing Conditions Characterization
- Functional Assessment
- Impact Analysis
- Mitigation Strategy
- Policies and Legislative Framework
- Species-at-Risk

1.1 Existing Conditions Characterization

Characterization of existing ecological conditions within and adjacent to the subject property will involve the review of available background information and a scoped field visit. Further detail is provided in the subsections below.

1.1.1 Background Information Review

Background information reviewed shall include the following:

I. Review of relevant planning policy documents and Guidelines;
II. Review of relevant air photos, soil maps, etc.;
III. Review of Mississauga's Natural Areas Inventory factsheet and mapping for LV1;
IV. Review of online Natural Heritage Information Centre (NHIC) database; and,

V. Solicitation of natural heritage information from the Ministry of Natural Resources and Forestry (MNRF), the City of Mississauga, and the Credit Valley Conservation Authority (CVC).

1.1.2 Biophysical Inventories

Due to the lack of natural heritage features on the subject property and the limited potential for impacts, biophysical surveys are limited to confirmation of vegetation communities previously assessed under the Natural Areas Study (NAS). The subject property and the adjacent ravine within Appledale Park will also be subject to a butternut area search. The location(s) of species-at-risk and other species of conservation concern, if found, will be recorded using a hand-held GPS unit. Incidental observations of wildlife will be recorded as applicable.

1.2 Functional Assessment

Using a combination of background information and the results of biophysical inventories, Aquafor Beech Limited will provide a description and analysis of significance of the natural heritage features and functions as they relate to subject property, the greater Natural Heritage System (NHS), and the proposed development. The Functional Assessment will determine the components and boundaries of the NHS on the subject property, as well as constraints and opportunities. Lands outside of the subject property and Appledale Park will be characterized using secondary sources. **An assessment of Significant Wildlife Habitat and a species-at-risk screening exercise will be included in the functional assessment.** The Functional Assessment will also inform the subsequent final development options (as applicable), the Impact Analysis, and the Mitigation Strategy.

1.3 Impact Analysis

The potential impacts of proposed residence as it relates to natural heritage features and functions will be described in detail. Site plan drawings of the proposed development plan will be superimposed over an air photo showing the subject property and adjacent lands. The following elements will also be included on the map:

- Roads and existing infrastructure
- Natural Heritage System (defined earlier in the EIS)
- Opportunities and constraints to development

Aquafor Beech Limited will evaluate the potential immediate, short-term, long-term, and cumulative impacts on the form and function of the NHS resulting from the proposed development. Should the EIS recommend that the proposed building works be located in a location outside of the initially cleared development area, additional mitigation measures may be required (tree preservation plan and/or edge management plan). Vegetation Protection Zone recommendations will be discussed, as applicable.

1.4 Mitigation and Monitoring Strategy

Aquafor Beech Limited will provide a detailed analysis and description of recommended mitigation measures that would mitigate any predicted potential impacts

to the ecological features and functions of the NHS. It is anticipated that mitigation measures will focus on potential impacts to trees, the adjacent natural area (Appledale Park), and migratory birds.

In addition, an adaptive monitoring plan will be developed, as applicable. High-level recommendations for naturalization plantings within the buffer will also be provided.

1.5 Policies and Legislative Framework

A description of policies and legislative frameworks relevant to the development proposal, as well as an assessment of the development proposal's compliance with the aforementioned, will be included in the EIS. Results from the EIS as applied to the relevant policies and legislative framework will help delineate and quantify the minimum and maximum developable area available to development.

1.6 Species-at-Risk

Endangered and Threatened species and their habitats are protected under the Endangered Species Act (2007). Harm to Endangered and Threatened species and/or their habitats is prohibited under the Act. A preliminary review of the NHIC database shows that there are records of two (2) species-at-risk (SAR) recorded within 1 km of the subject property (**Table 1-1**). All of the records are considered historic.

Table 1-1: Species Records Obtained from the NHIC

Species		COSEWIC Status	COSSARO Status	S-Rank	Observation Date
Common Name	Scientific Name				
Redside Dace	*Clinostomus elongatus*	END	END	S2	1927-08-14
Henslow's Sparrow	*Ammodramus henslowii*	END	END	HSB	1932-07-11

Correspondence has not yet been received from the Aurora District MNRF.

To assess the potential for the occurrence of SAR on the subject property, Aquafor Beech Limited will undergo a comprehensive approach consisting of a combination of SAR screening exercises and field surveys, cross-referencing the habitats present within the subject property with the habitat requirements of species known or suspected to occur in the area. Targeted surveys for SAR are not proposed at this time. SAR or other species of conservation concern observed during the proposed surveys outlined above in **Section 1.1.2** will be recorded using a hand-held GPS unit, as applicable.

2 Meetings

It is anticipated that a site visit for the purpose of staking the limits of the NHS (i.e. the woodland boundary) will be required prior to the acceptance of the final EIS. Additional site visits and/or meetings are not proposed.

Please direct all inquiries and correspondence to the undersigned.

Sincerely,
AQUAFOR BEECH LIMITED

Ash Baron, B.E.S, C.E.E.R.R.
Ecology Lead
P: (519) 224-3733
E: baron.a@aquaforbeech.com

CC: Sarah Piett, City of Mississauga
Ken Thajer, Credit Valley Conservation Authority
Robert Amos, Aquafor Beech Ltd.
Chris Langley, Vandyk Group

Appendix A:

Proposed Development

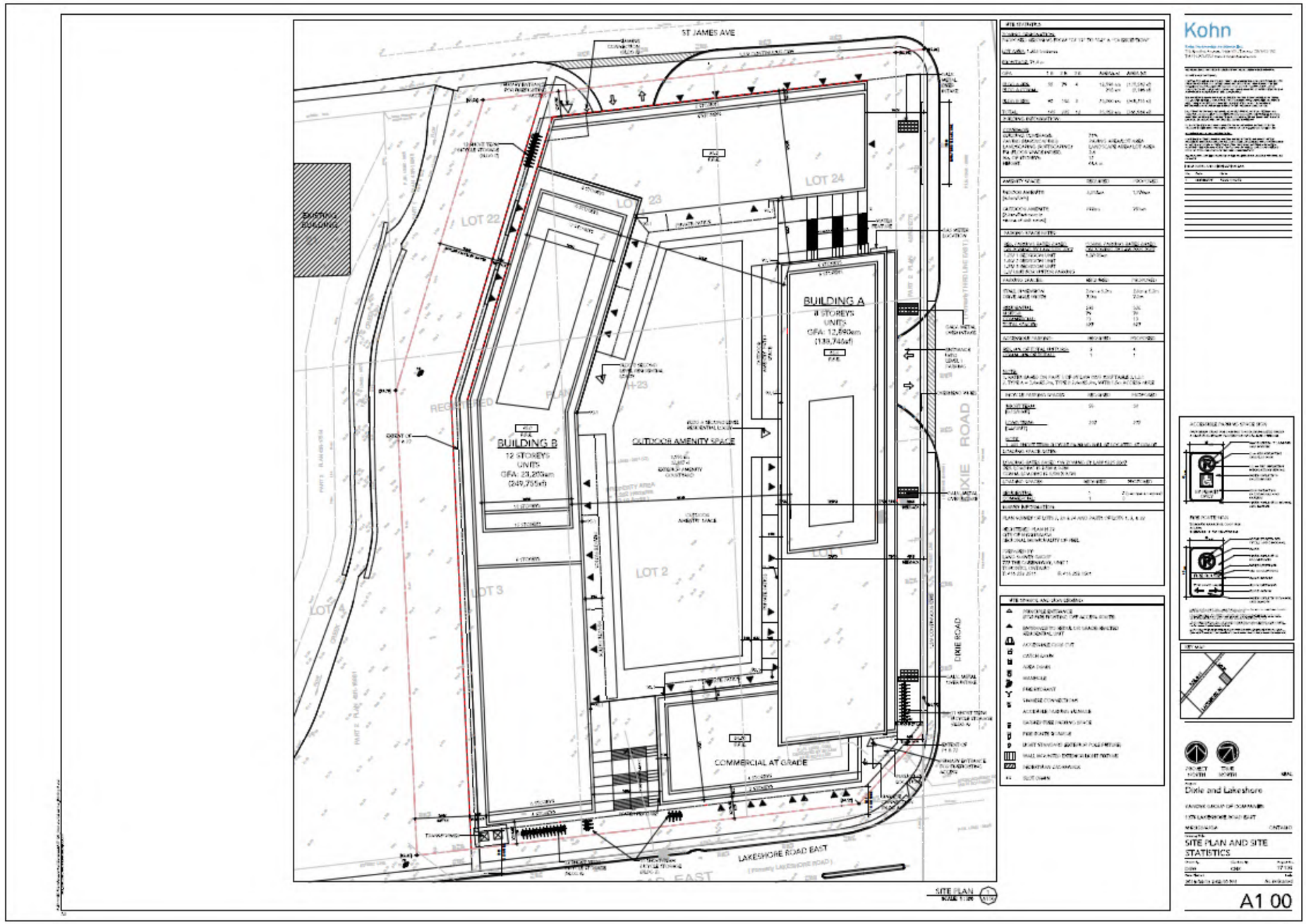

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Photo A: North end of subject property. Photo taken facing west.

Photo B: West side of subject property. Photo taken facing south.

Photo C: West side of subject property. Property line is demarcated by the chain link fence. Photo taken facing north.

Photo D: Creek corridor immediately south of St. James Ave., Photo taken facing north west.

Photo E: Creek corridor immediately south of St. James Ave. It is at this point that the woodland is widest. Photo taken facing south.

Photo F: Creek corridor approx. mid-way between St. James Ave. and Lakeshore Rd. E. Photo taken facing north.

Photo G: Creek corridor mid-way between St. James Ave. and Lakeshore Rd. E. Photo taken facing south. Note that the creek bed and valley slopes consist of gabion baskets.

Photo H: Creek bed

Photo I: Recent restoration on Applewood Creek just north of Lakeshore Rd E.

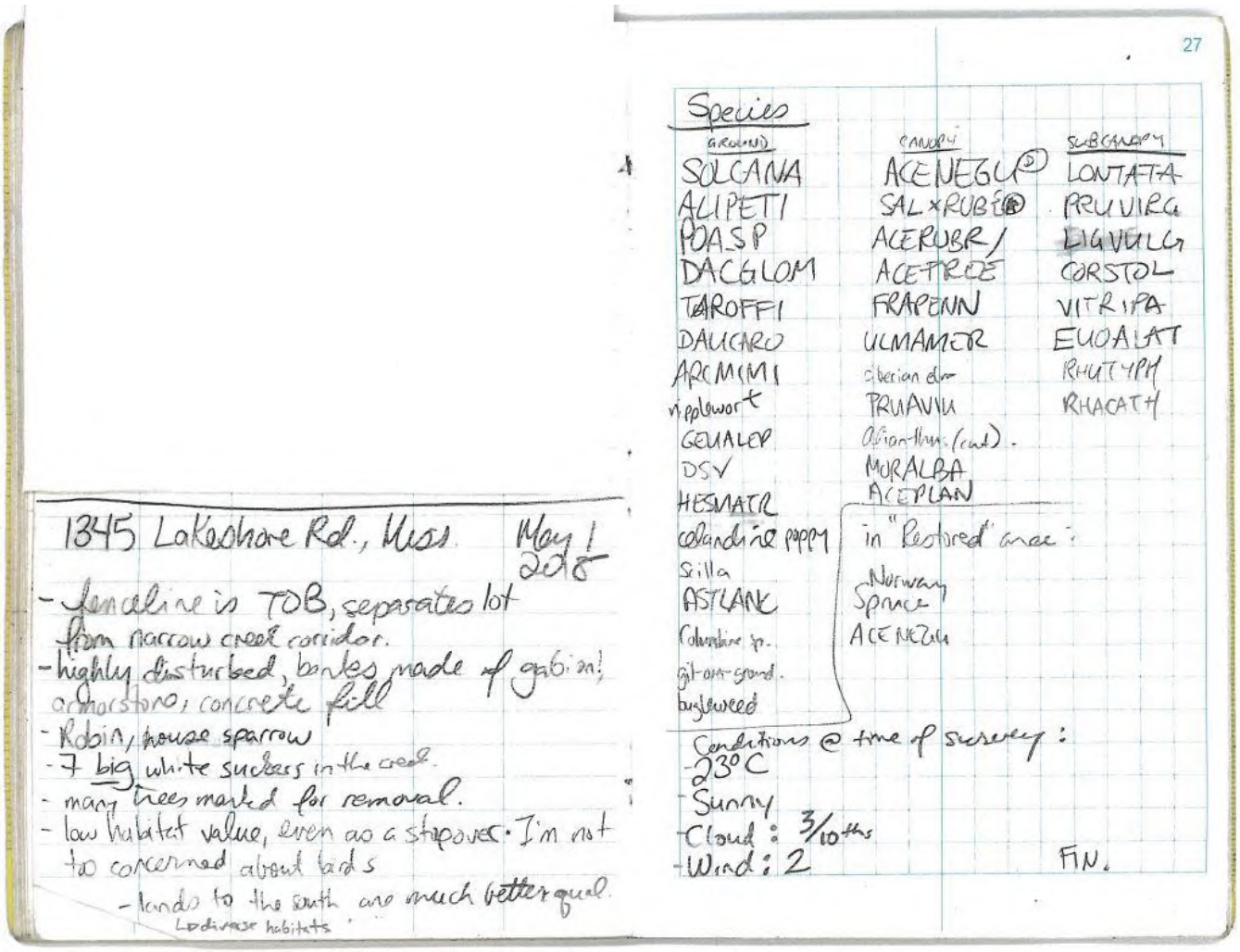
Photo J: Trees along fence at northern property limit (fronting on St. James St.). Photo taken facing west.

Photo K: Privately-owned trees along eastern property limit. Photo taken facing south.

Photo L: Southern property limit. Photo taken facing east.

Photo M: South west side of subject property. Photo taken facing north.

Field Notes:



1345 Lakeshore Rd., Miss. May 1 2018

- Jenckline is TOB, separates lot from narrow creek corridor.
- highly disturbed, banks made of gabion/ armorstone, concrete fill
- Robin, house sparrow
- 7 big white suckers in the creek.
- many trees marked for removal.
- low habitat value, even as a stepover. I'm not too concerned about birds
- lands to the south are much better qual. Biodiverse habitats

27

Species

GROUND	CANOPY	SUBCANOPY
SOLCANA	ACENEGU (D)	LONTATA
ALIPETI	SAL×RUBI (D)	PRUVIRG
POA SP	ACERUBR/	LIGVULG
DACGLOM	ACETREE	CORSTOL
TARAOFFI	FRAPENN	VITRIPA
DAUCARO	ULMAMER	EUOALAT
ARCMINI	siberian elm	RHUTYPH
nipplewort	PRUAVIU	RHACATH
GEUALEP	Ailanthus (cad).	
DSV	MORALBA	
HESMATR	ACEPLAN	
coltsfoot poppy		
Scilla		
ASTLANC		
Columbine sp.		
garlic-mustard.		
bugleweed		

in "Restored" area:
Norway Spruce
ACENEGU

Conditions @ time of survey:
- 23°C
- Sunny
- Cloud: 3/10ths
- Wind: 2

FIN.

Appendix C: Annotated List of Flora

Table C: Flora recorded within corridor between St. James Ave. and Lakeshore Rd. E. on May 1 2018

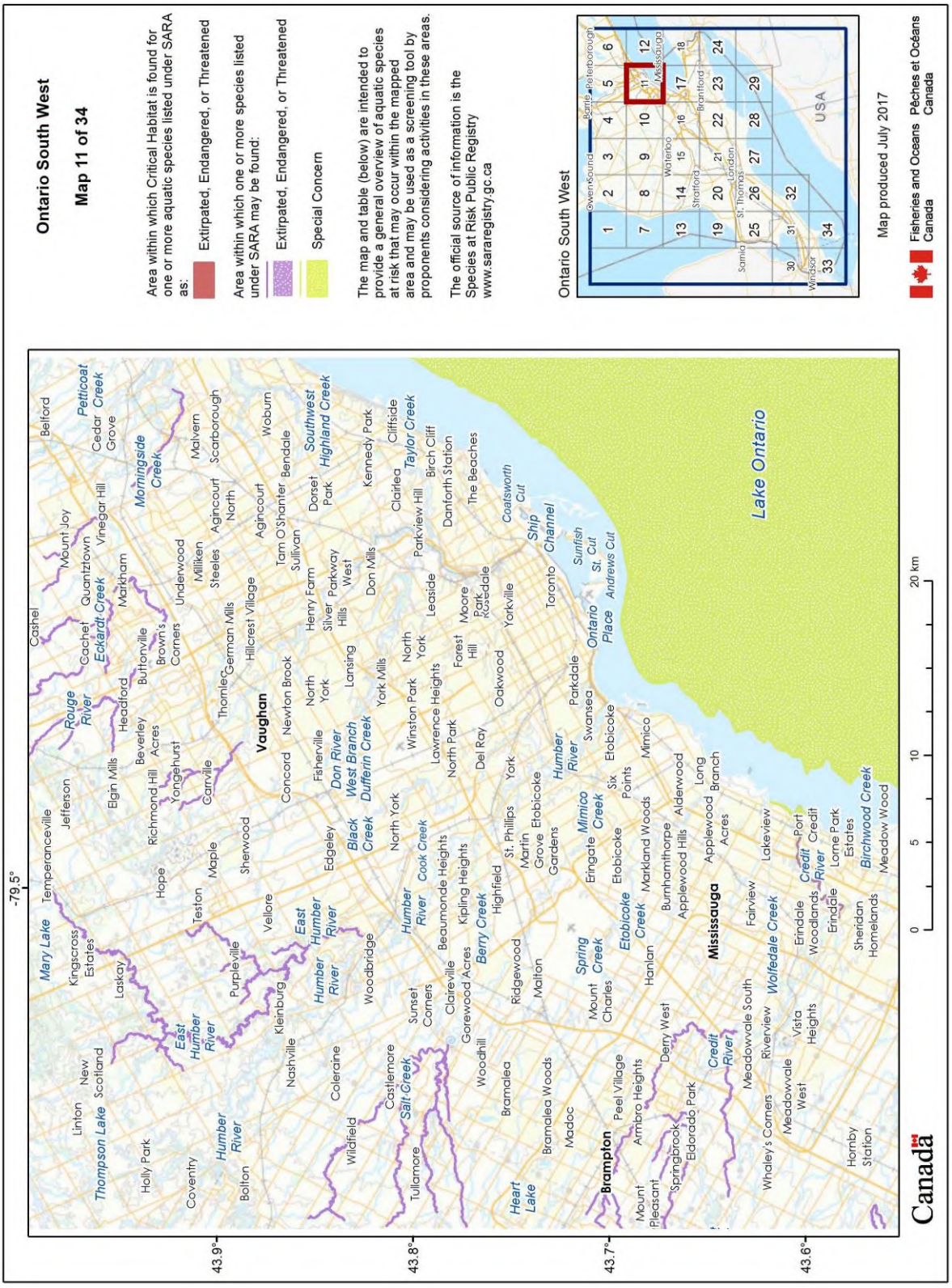
Species Name		Coefficient of Conservation	Coefficient of Wetness	Ranking				Introduced (0=yes, I=no)
Scientific Name	Common Names			COSEWIC	COSSARO	S-Rank	G-Rank	
Acer negundo	Manitoba Maple	0	-2	-	-	S5	G5	I
Acer platanoides	Norway Maple	0	5	-	-	SE5	G?	I
Acer rubrum	Red Maple	4	0	-	-	S5	G5	0
Acer X *freemanii*	Freeman's Maple	-	-	-	-	S5	G?	0
Ailanthus altissima	Tree-of-heaven	0	5	-	-	SE5	G?	I
Ajuga reptans	Common Bugle	0	5	-	-	SE2	G?	I
Alliaria petiolata	Garlic Mustard	0	0	-	-	SE5	G?	I
Aquilegia sp.	Columbine species	-	-	-	-	-	-	-
Arctium minus ssp. *minus*	Common Burdock	0	5	-	-	SE5	G?	I
Chelidonium majus	Celandine	0	5	-	-	SE5	G?	I
Cornus stolonifera	Red-osier Dogwood	2	-3	-	-	S5	G5	0
Cynanchum rossicum	White Swallow-wort	0	5	-	-	SE5	G?	I
Dactylis glomerata	Orchard Grass	0	3	-	-	SE5	G?	I
Daucus carota	Wild Carrot	0	5	-	-	SE5	G?	I
Euonymus alata	Winged Euonymus	0	5	-	-	SE2	G?	I
Fraxinus pennsylvanica	Red Ash	3	-3	-	-	S5	G5	0
Geum aleppicum	Yellow Avens	2	-1	-	-	S5	G5	0
Glechoma hederacea	Ground Ivy	0	3	-	-	SE5	G?	I
Hesperis matronalis	Dame's Rocket	0	5	-	-	SE5	G4G5	I
Lapsana communis	Nipplewort	0	5	-	-	SE5	G?	I
Ligustrum vulgare	Common Privet	0	1	-	-	SE5	G?	I
Lonicera tatarica	Tartarian Honeysuckle	0	3	-	-	SE5	G?	I
Morus alba	White Mulberry	0	0	-	-	SE5	G?	I
Picea abies	Norway Spruce	0	5	-	-	SE3	G?	I
Poa sp.	Blue Grass Species	-	-	-	-	-	-	-
Prunus avium	Sweet Cherry	0	5	-	-	SE4	G?	I
Prunus virginiana ssp. *virginiana*	Choke Cherry	2	1	-	-	S5	G5	0
Rhamnus cathartica	Common Buckthorn	0	3	-	-	SE5	G?	I
Rhus typhina	Staghorn Sumac	1	5	-	-	S5	G5	0
Salix X *rubens*	Hybrid White Willow	0	-4	-	-	SE4	G?	I
Scilla sibirica	Squill	0	5	-	-	SE2	G?	I
Solidago canadensis var. *canadensis*	Canada Goldenrod	1	3	-	-	S5	G5	0
Symphyotrichum lanceolatum var. *lanceolatum*	Panicled Aster	3	-3	-	-	S5	G5	0
Taraxacum officinale	Common Dandelion	0	3	-	-	SE5	G5	I
Ulmus americana	White Elm	3	-2	-	-	S5	G5?	0
Ulmus pumila	Siberian Elm	0	5	-	-	SE3	G?	I
Vitis riparia	Riverbank Grape	0	-2	-	-	S5	G5	0

Appendix D: Species-at-Risk Screening

Table D: Species at Risk Screening

Species		Status				Last Observation Date	Source	Habitat Description*	Assessment of Species Occurrence in Study Area
Common Name	Scientific Name	S-Rank	G-Rank	COSEWIC	COSSARO				
Butternut	*Juglans cinerea*	S2?	G4	END	END	-	Aquafor Beech Ltd.	Generally grows in rich, moist, and well-drained soils often found along streams. It may also be found on well-drained gravel sites, especially those made up of limestone. It is also found, though seldomly, on dry, rocky and sterile soils. In Ontario, the Butternut generally grows alone or in small groups in deciduous forests as well as in hedgerows. MNRF considers Butternut habitat includes suitable lands within 50 m of a Butternut tree.	**Not Present**: Species was not identified during the site visit.
Redside Dace	*Clinostomus elongatus*	S2	G3G4	END	END	1927-08-14	NHIC	According to the Department of Fisheries and Oceans Canada, "The Redside Dace is a coolwater minnow found in pools and slow-flowing areas of small and clear headwater streams over substrates (stream bottoms) of silt, gravel or boulders. Overhanging grasses and shrubs, as well as undercut banks, are an important part of their habitat, as are in-stream boulders and large woody debris. In May, spawning occurs in shallow riffle areas and eggs are often deposited in the gravel nests of other minnows" (DFO, 2017).	**Not Present:** Habitat quality in Applewood Creek is low and unsuitable for this species. In addition, the DFO Aquatic Species at Risk Mapping for Ontario South West (Map 11 of 34) indicates that SAR are not present in Applewood Creek (DFO, 2017).
Barn Swallow	*Hirundo rustica*	S4B	G5	THR	THR	-	Aquafor Beech Ltd.	Prefers farmland, lake/river shorelines, wooded clearings, urban populated areas, rocky cliffs and wetlands. They nest inside or outside buildings, under bridges and in road culverts, or on rock faces and caves.	**Not present**: No nests were observed in the upstream and downstream culverts.
Eastern wood-pewee	*Contopus virens*	S4B	G5	SC	SC	-	Aquafor Beech Ltd.	Eastern wood-pewee lives in the mid-canopy later of forest clearings and edges of deciduous and mixed forests. It is most abundant in intermediate-age mature forest stands with little understory vegetation. The bird can also be found in parks.	**Potentially Present on Adjacent Lands**: Potentially suitable habitat is present within Natural Area LV1, especially in mature and diverse forest areas south of Lakeshore Rd. E. There is a possibility that Eastern wood-pewee would use the wooded corridor directly west of the subject property, however to the disturbed and narrow nature of the aforementioned, it is more likely that birds would favour lands south of Lakeshore Rd. E.
Henslow's Sparrow	*Ammodramus henslowii*	SHB	G4	END	END	1932-07-11	NHIC	According to Bezener (2000), this species prefers "large, fallow or wild grassy fields and meadows with a matted ground layer of vegetation and scattered shrub or herb perches; often in moist grassey areas".	**Not Present**: This species was not identified during breeding bird surveys.
Eastern Small-footed Bat	*Mytois leibii*	S2S3	G4	END	END	-	MNRF information request	In the spring and summer, eastern small-footed bats will roost in a variety of habitats, including in or under rocks, in rock outcrops, in buildings, under bridges, or in caves, mines, or hollow trees. In the winter, these bats hibernate, most often in caves and abandoned mines. They seem to choose colder and drier sites than similar bats and will return to the same spot each year.	**Potentially Present on Adjacent Lands**: Potentially suitable maternity roosting sites (trees with cavities, loose bark, snags, and/or crevices; and mature oaks and maples) are present within wooded habitats in the natural area south of Lakeshore Rd. E. The wooded corridor located between Lakeshore Rd. E. and St. James Ave. contains small-diametre trees and is unlikely to host bats. Cavity trees were not observed in this area. In addition, potentially suitable overwintering habitat is not present within or adjacent to the subject property.
Little Brown Myotis	*Myotis lucifugus*	S4	G3	END	END	-	MNRF information request	Overwintering habitat: Caves and mines that remain above freezing. Maternal roosts: Often associated with buildings (attics, barns, etc.). Occasionally found in trees 25-44 cm dbh.	
Northern Myotis	*Myotis septentrionalis*	S3	G1G2	END	END	-	MNRF information request	Northern long-eared bats are associated with boreal forests, choosing to roost under loose bark and in the cavities of trees. These bats hibernate from October or November to March or April, most often in caves or abandoned mines.	
Tri-coloured Bat	*Perimyotis subflavus*	S3?	G2G3	END	END	-	MNRF information request	Overwintering habitat: Caves and mines that remain above freezing. Maternal roosts: Often associated with buildings (attics, barns, etc.) and found in oak and maple trees under leaf clusters.	

*All habitat descriptions are from the MNRF unless stated otherwise.


Ontario South West
Map 11 of 34
Area within which Critical Habitat is found for one or more aquatic species listed under SARA as:
Extirpated, Endangered, or Threatened
Area within which one or more species listed under SARA may be found:
Extirpated, Endangered, or Threatened
Special Concern
The map and table (below) are intended to provide a general overview of aquatic species at risk that may occur within the mapped area and may be used as a screening tool by proponents considering activities in these areas.
The official source of information is the Species at Risk Public Registry
www.sararegistry.gc.ca
Ontario South West
Map produced July 2017
Fisheries and Oceans Canada
Pêches et Océans Canada
Canada
Lake Ontario
Vaughan
Brampton
Mississauga
-79.5°
43.9°
43.8°
43.7°
43.6°
0
5
10
20 km

Appendix E: Significant Wildlife Habitat Assessment

Table E: Significant Wildlife Habitat Assessment

Significant Wildlife Habitat Type: Seasonal Concentrations of Animals					
Wildlife Habitat	**Wildlife Species**	**Candidate SWH**		**Confirmed SWH**	**Potential for Candidate and/or Confirmed SWH on Subject Property and Adjacent Lands**
		ELC Ecosite Codes	**Habitat Criteria and Info. Sources**	**Defining Criteria**	
Waterfowl Stopover and Staging Areas (Terrestrial) **Rationale:** Habitat important to migrating waterfowl.	American Black Duck Northern Pintail Gadwall Blue-winged Teal Green-winged Teal American Wigeon Northern Shoveler Tundra Swan	CUM1 CUT1 Plus evidence of annual spring flooding from melt water or run-off within these Ecosites. - Fields with seasonal flooding and waste grains in the Long Point, Rondeau, Lk. St. Clair, Grand Bend and Pt. Pelee areas may be important to Tundra Swans.	Fields with sheet water during Spring (mid-March to May). •Fields flooding during springmelt and run-off provide important invertebrate foraging habitat for migrating waterfowl. • Agricultural fields with waste grains are commonly used by waterfowl, these are not considered SWH unless they have spring sheet water available.	Studies carried out and verified presence of an annual concentration of any listed species, evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" • Any mixed species aggregations of 100 or more individuals required. • The flooded field ecosite habitat plus a 100-300m radius, dependant on local site conditions and adjacent land use is the significant wildlife habitat. • Annual use of habitat is documented from information sources or field studies (annual use can be based on studies or determined by past surveys with species numbers and dates). •SWH MISTIndex #7 provides development effects and mitigation measures.	**Not Present**: Potentially suitable habitat not present within the subject property or adjacent lands. Peel-Caledon Criteria: Not present
Waterfowl Stopover and Staging Areas (Aquatic) **Rationale:** Important for local and migrant waterfowl populations during the spring or fall migration or both periods combined. Sites identified are usually only one of a few in the eco-district.	Canada Goose Cackling Goose Snow Goose American Black Duck Northern Pintail Northern Shoveler American Wigeon Gadwall Green-winged Teal Blue-winged Teal Hooded Merganser Common Merganser Lesser Scaup Greater Scaup Long-tailed Duck Surf Scoter White-winged Scoter Black Scoter Ring-necked duck Common Goldeneye Bufflehead Redhead Ruddy Duck Red-breasted Merganser Brant Canvasback Ruddy Duck	MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7	Ponds, marshes, lakes, bays, coastal inlets, and watercourses used during migration. Sewage treatment ponds and storm water ponds do not qualify as a SWH, however a reservoir managed as a large wetland or pond/lake does qualify. • These habitats have an abundant food supply (mostly aquatic invertebrates and vegetation in shallow water)	Studies carried out and verified presence of: Aggregations of 100 or more of listed species for 7 days, results in > 700 waterfowl use days. • Areas with annual staging of ruddy ducks, canvasbacks, and redheads are SWH • The combined area of the ELC ecosites and a 100m radius area is the SWH • Wetland area and shorelines associated with sites identified within the SWHTG Appendix K are significant wildlife habitat. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" • Annual Use of Habitat is Documented from Information Sources or Field Studies (Annual can be based on completed studies or determined from past surveys with species numbers and dates recorded). • SWH MIST Index #7 provides development effects and mitigation	**Not Present:** Potentially suitable habitat not present within the subject property or adjacent lands. The Mississauga NAS does not identify that the small swamps south of Lakeshore Rd. E. provide staging habitat and, due to the lack of evidence of standing water, these features are unlikely to support staging. Peel-Caledon Criteria: Not present

Significant Wildlife Habitat Type: Seasonal Concentrations of Animals					
Wildlife Habitat	**Wildlife Species**	**Candidate SWH**		**Confirmed SWH**	**Potential for Candidate and/or Confirmed SWH on Subject Property and Adjacent Lands**
		ELC Ecosite Codes	**Habitat Criteria and Info. Sources**	**Defining Criteria**	
Shorebird Migratory Stopover Area **Rationale:** High quality shorebird stopover habitat is extremely rare and typically has a long history of use.	Greater Yellowlegs Lesser Yellowlegs Marbled Godwit Hudsonian Godwit Black-bellied Plover American Golden- Plover Semipalmated Plover Solitary Sandpiper Spotted Sandpiper Semipalmated Sandpiper Pectoral Sandpiper White-rumped Sandpiper Baird's Sandpiper Least Sandpiper Purple Sandpiper Stilt Sandpiper Short-billed Dowitcher Red-necked Phalarope Whimbrel Ruddy Turnstone Sanderling Dunlin	BBO1 BBO2 BBS1BBS2 BBT1 BBT2 SDO1 SDS2 SDT1 MAM1 MAM2 MAM3 MAM4 MAM5	Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats. • Great Lakes coastal shorelines, including groynes and other forms of armour rock lakeshores, are extremely important for migratory shorebirds in May to mid-June and early July to October. • Sewage treatment ponds and storm water ponds do not qualify as a SWH. Information Sources • Western hemisphere shorebird reserve network. • Canadian Wildlife Service (CWS) Ontario Shorebird Survey. • Bird Studies Canada • Ontario Nature • Local birders and naturalist clubs • Natural Heritage Information Centre (NHIC) Shorebird Migratory Concentration Area	Studies confirming: Presence of 3 or more of listed species and > 1000 shorebird use days during spring or fall migration period. (shorebird use days are the accumulated number of shorebirds counted per day over the course of the fall or spring migration period) • Whimbrel stop briefly (<24hrs) during spring migration, any site with >100 Whimbrel used for 3 years or more is significant. • The area of significant shorebird habitat includes the mapped ELC shoreline ecosites plus a 100m radius area • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" • SWH MIST Index #8 provides development effects and mitigation measures.	**Not Present**: Potentially suitable habitat not present within the subject property or adjacent lands. Peel-Caledon Criteria: Not present
Raptor Wintering Area **Rationale:** Sites used by multiple species, a high number of individuals and used annually are most significant	Rough-legged Hawk Red-tailed Hawk Northern Harrier American Kestrel Snowy Owl **Special Concern:** Short-eared Owl Bald Eagle	Hawks/Owls: Combination of ELC Community Series; need to have present one Community Series from each land class; Forest: FOD, FOM, FOC. Upland: CUM; CUT; CUS; CUW. Bald Eagle: Forest community Series: FOD, FOM, FOC, SWD, SWM or SWC on shoreline areas adjacent to large rivers or adjacent to lakes with open water (hunting area).	• The habitat provides a combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors. Raptor wintering (hawk/owl) sites need to be > 20 ha with a combination of forest and upland. • Least disturbed sites, idle/fallow or lightly grazed field/meadow (>15ha) with adjacent woodlands • Field area of the habitat is to be wind swept with limited snow depth or accumulation. • Eagle sites have open water and large trees and snags available for roosting Information Sources: • OMNRF Ecologist or Biologist • Naturalist clubs • Natural Heritage Information Centre (NHIC) Raptor Winter Concentration Area • Data from Bird Studies Canada • Results of Christmas Bird Counts • Reports and other information available from Conservation Authorities.	Studies confirm the use of these habitats by: One or more Short-eared Owls or; One of more Bald Eagles or; At least 10 individuals and two of the listed hawk/owl species • To be significant a site must be used regularly (3 in 5 years) for a minimum of 20 days by the above number of birds. • The habitat area for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" • SWH MIST Index #10 and • #11 provides development effects and mitigation measures.	**Potentially Present south of Lakeshore Rd:** Potentially suitable habitat is present on lands south of Lakeshore Rd. E. Natural Area LV1 is 12.94 ha in size (City of Mississauga, 2016) and, combined with the natural lands in Lakeshore Park, exceed the minimum size criteria. Peel-Caledon Criteria: Same as SWHTG criteria.

Significant Wildlife Habitat Type: Seasonal Concentrations of Animals					
Wildlife Habitat	**Wildlife Species**	**Candidate SWH**		**Confirmed SWH**	**Potential for Candidate and/or Confirmed SWH on Subject Property and Adjacent Lands**
		ELC Ecosite Codes	**Habitat Criteria and Info. Sources**	**Defining Criteria**	
Bat Hibernacula **Rationale:** Bat hibernacula are rare habitats in all Ontario landscapes.	Big Brown Bat Tri-coloured Bat	Bat Hibernacula may be found in these ecosites: CCR1 CCR2 CCA1 CCA2 (Note: buildings are not considered to be SWH)	• Hibernacula may be found in caves, mine shafts, underground foundations and Karsts. • Active mine sites should not be considered as SWH • The locations of bat hibernacula are relatively poorly known. Information Sources • OMNRF for possible locations and contact for local experts • Natural Heritage Information Centre (NHIC) Bat Hibernaculum • Ministry of Northern Development and Mines for location of mine shafts. • Clubs that explore caves (eg. Sierra Club) • University Biology Departments with bat experts.	• All sites with confirmed hibernating bats are SWH. • The area includes 200m radius around the entrance of the hibernaculum for most development types and 1000m for wind farms. • Studies are to be conducted during the peak swarming period (Aug. – Sept.). Surveys should be conducted following methods outlined in the "Bats and Bat Habitats: Guidelines for Wind Power Projects". • SWH MIST Index #1 provides development effects and mitigation measures.	**Not present**: Characteristic habitats not present within or adjacent to the subject property. Peel-Caledon Criteria: Same as SWHTG criteria.

Bat Maternity Colonies
 	
Rationale: Known locations of forested bat maternity colonies are extremely rare in all Ontario landscapes.
	Big Brown Bat
	Silver-haired Bat
		Maternity colonies considered SWH are found in forested Ecosites.
		
		All ELC Ecosites in ELC Community Series:
		FOD FOM SWD SWM
			• Maternity colonies can be found in tree cavities, vegetation and often in buildings (buildings are not considered to be SWH).
			• Maternity roosts are not found in caves and mines in Ontario.
			• Maternity colonies located in Mature deciduous or mixed forest stands with >10/ha large diameter (>25cm dbh) wildlife trees.
			• Female Bats prefer wildlife tree (snags) in early stages of decay, class 1-3 or class 1 or 2.
			• Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest areas with at least 21 snags/ha are preferred.
			Information Sources
			• OMNRF for possible locations and contact for local experts
			• University Biology Departments with bat experts.
				• Maternity Colonies with confirmed use by;
				  • >10 Big Brown Bats
				  • >5 Adult Female Silver- haired Bats
				• The area of the habitat includes the entire woodland or a forest stand ELC Ecosite or an Ecoelement containing the maternity colonies. Evaluation methods for maternity colonies should be conducted following methods outlined in the "Bats and Bat Habitats: Guidelines for Wind Power Projects".
				• SWH MIST Index #12 provides development effects and mitigation measures.
					Potentially Present south of Lakeshore Rd: The treed communities south of Lakeshore Rd. E. consist of a diversity of habitat types and, in the case of FOD5-2, contains large-diametre mature trees between 60-100 years of age.
					
					Trees within the narrow, wooded corridor directly west of the subject property are of small diametre and likely would not provide habitat for bats. In addition, foraging opportunities in this area are very limited.
					
					Peel-Caledon Criteria: Same as SWHTG criteria.

Significant Wildlife Habitat Type: Seasonal Concentrations of Animals					
Wildlife Habitat	**Wildlife Species**	**Candidate SWH**		**Confirmed SWH**	**Potential for Candidate and/or Confirmed SWH on Subject Property and Adjacent Lands**
		ELC Ecosite Codes	**Habitat Criteria and Info. Sources**	**Defining Criteria**	
Turtle Wintering Areas **Rationale:** Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant.	Midland Painted Turtle **Special Concern:** Northern Map Turtle Snapping Turtle	Snapping and Midland Painted Turtles; ELC Community Classes; SW, MA, OA and SA, ELC Community Series; FEO and BOO Northern Map Turtle; Open Water areas such as deeper rivers or streams and lakes with current can	• For most turtles, wintering areas are in the same general area as their core habitat. Water has to be deep enough not to freeze and have soft mud substrates. • Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate Dissolved Oxygen • Man-made ponds such as sewage lagoons or storm	• Presence of 5 over-wintering Midland Painted Turtles is significant. • One or more Northern Map Turtle or Snapping Turtle over-wintering within a wetland is significant. • The mapped ELC ecosite area with the over wintering turtles is the SWH. If the hibernation site is within a	**Not Present**: Potentially suitable overwintering habitat for turtles is not present within or adjacent to the subject property. Due to the lack of evidence of standing water in the swamp communities present south of Lakeshore Rd. E., these features are unlikely to support overwintering. Peel-Caledon Criteria: Not present

Significant Wildlife Habitat Type: Seasonal Concentrations of Animals					
Wildlife Habitat	**Wildlife Species**	**Candidate SWH**		**Confirmed SWH**	**Potential for Candidate and/or Confirmed SWH on Subject Property and Adjacent Lands**
		ELC Ecosite Codes	**Habitat Criteria and Info. Sources**	**Defining Criteria**	
		also be used as over-wintering habitat.	water ponds should not be considered SWH. Information Sources: EIS studies carried out by Conservation Authorities. • Field Naturalists Clubs • OMNRF Ecologist or Biologist Natural Heritage Information Centre (NHIC)	stream or river, the deep- water pool where the turtles are over wintering is the SWH. • Over wintering areas may be identified by searching for congregations (Basking Areas) of turtles on warm, sunny days during the fall (Sept. – Oct.) or spring (Mar. – May). Congregation of turtles is more common where wintering areas are limited and therefore significant. • SWH MIST Index #28 provides development effects and mitigation measures for turtle wintering habitat.	
Reptile Hibernaculum **Rationale:** Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant.	**Snakes:** Eastern Gartersnake Northern Watersnake Northern Red-bellied Snake Northern Brownsnake Smooth Green Snake Northern Ring-necked Snake **Special Concern:** Milksnake Eastern Ribbonsnake	For all snakes, habitat may be found in any ecosite other than very wet ones. Talus, Rock Barren, Crevice, Cave, and Alvar sites may be directly related to these habitats. Observations or congregations of snakes on sunny warm days in the spring or fall is a good indicator.	• For snakes, hibernation takes place in sites located below frost lines in burrows, rock crevices and other natural or naturalized locations. The existence of features that go below frost line; such as rock piles or slopes, old stone fences, and abandoned crumbling foundations assist in identifying candidate SWH. • Areas of broken and fissured rock are particularly valuable since they provide access to subterranean sites below the frost line. Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover. Information Sources • In spring, local residents or landowners may have observed the emergence of snakes on their property (e.g. old dug wells). • Reports and other information available from Conservation Authorities. • Field Naturalist Clubs • University herpetologists • Natural Heritage Information Centre (NHIC)	Studies confirming: • Presence of snake hibernacula used by a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. • Congregations of a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. near potential hibernacula (eg. foundation or rocky slope) on sunny warm days in Spring (Apr/May) and Fall (Sept/Oct) • Note: If there are Special Concern Species present, then site is SWH Note: Sites for hibernation possess specific habitat parameters (e.g. temperature, humidity, etc.) and consequently are used annually, often by many of the same individuals of a local population (i.e. strong hibernation site fidelity). Other critical life processes (e.g. mating) often take place in close proximity to hibernacula. The feature in which the hibernacula is located plus a 30 m radius area is the SWH • SWH MIST Index #13 provides development effects and mitigation measures for snake hibernacula.	**Not Present:** Potentially suitable habitat is not present within the subject property or adjacent lands. Peel-Caledon Criteria: Not present

Significant Wildlife Habitat Type: Seasonal Concentrations of Animals					
Wildlife Habitat	**Wildlife Species**	**Candidate SWH**		**Confirmed SWH**	**Potential for Candidate and/or Confirmed SWH on Subject Property and Adjacent Lands**
		ELC Ecosite Codes	**Habitat Criteria and Info. Sources**	**Defining Criteria**	
Colonially - Nesting Bird Breeding Habitat (Bank and Cliff) **Rationale:** Historical use and number of nests in a colony make this habitat significant. An identified colony can be very important to local populations. All swallow population are declining in Ontario.	Cliff Swallow Northern Rough- winged Swallow (this species is not colonial but can be found in Cliff Swallow colonies)	Eroding banks, sandy hills, borrow pits, steep slopes, and sand piles cliff faces, bridge abutments, silos, barns. Habitat found in the following ecosites: CUM1 CUT1 CUS1 BLO1 BLS1 BLT1 CLO1 CLS1 CLT1	• Any site or areas with exposed soil banks, undisturbed or naturally eroding that is not a licensed/permitted aggregate area. • Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles. • Does not include a licensed/permitted Mineral Aggregate Operation. Information Sources Reports and other information available from Conservation Authorities. • Ontario Breeding Bird Atlas • Bird Studies Canada; *NatureCounts* http://www.birdscanada.org/birdmon/ • Field Naturalist Clubs.	Studies confirming: • Presence of 1 or more nesting sites with 8[cxlix] or more cliff swallow pairs and/or rough-winged swallow pairs during the breeding season. • A colony identified as SWH will include a 50m radius habitat area from the peripheral nests[ccvii] Field surveys to observe and count swallow nests are to be completed during the breeding season. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" • SWH MIST Index #4 provides development effects and mitigation measures	**Not Present**: Potentially suitable habitat is not present within the subject property or adjacent lands. Peel-Caledon Criteria: No criteria
Colonially - Nesting Bird Breeding Habitat (Tree/Shrubs) **Rationale:** Large colonies are important to local bird population, typically sites are only known colony in area and are used annually.	Great Blue Heron Black-crowned Night-Heron Great Egret Green Heron	SWM2 SWM3 SWM5 SWM6 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7 FET1	• Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used. • Most nests in trees are 11 to 15 m from ground, near the top of the tree. Information Sources • Ontario Breeding Bird Atlas, colonial nest records. • Ontario Heronry Inventory 1991 available from Bird Studies Canada or NHIC (OMNRF). • Natural Heritage Information Centre (NHIC) Mixed Wader Nesting Colony • Aerial photographs can help identify large heronries. • Reports and other information available from Conservation Authorities. • MNRF District Offices. • Field Naturalist Clubs.	Studies confirming: • Presence of 2 or more active nests of Great Blue Heron or other listed species. • The habitat extends from the edge of the colony and a minimum 300m radius or extent of the Forest Ecosite containing the colony or any island <15.0ha with a colony is the SWH • Confirmation of active heronries are to be achieved through site visits conducted during the nesting season (April to August) or by evidence such as the presence of fresh guano, dead young and/or eggshells • SWH MIST Index #5 provides development effects and mitigation measures.	**Not present**: Potentially suitable habitat is present in swamps south of Lakeshore Rd. E., however nests were not observed during the field visit. Peel-Caledon Criteria: No criteria

Significant Wildlife Habitat Type: Seasonal Concentrations of Animals					
Wildlife Habitat	**Wildlife Species**	**Candidate SWH**		**Confirmed SWH**	**Potential for Candidate and/or Confirmed SWH on Subject Property and Adjacent Lands**
		ELC Ecosite Codes	**Habitat Criteria and Info. Sources**	**Defining Criteria**	
Colonially - Nesting Bird Breeding Habitat (Ground) **Rationale:** Colonies are important to local bird population, typically sites are only known colony in area and are used annually.	Herring Gull Great Black-backed Gull Little Gull Ring-billed Gull Common Tern Caspian Tern Brewer's Blackbird	Any rocky island or peninsula (natural or artificial) within a lake or large river (two-lined on a 1;50,000 NTS map). Close proximity to watercourses in open fields or pastures with scattered trees or shrubs (Brewer's Blackbird) MAM1 – 6; MAS1 – 3; CUM CUT CUS	• Nesting colonies of gulls and terns are on islands or peninsulas associated with open water or in marshy areas. • Brewers Blackbird colonies are found loosely on the ground in or in low bushes in close proximity to streams and irrigation ditches within farmlands. Information Sources • Ontario Breeding Bird Atlas, rare/colonial species records. • Canadian Wildlife Service • Reports and other information available from Conservation Authorities. • Natural Heritage Information Centre (NHIC) Colonial Waterbird Nesting Area • MNRF District Offices. • Field Naturalist Clubs.	Studies confirming: • Presence of > 25 active nests for Herring Gulls or Ring-billed Gulls, >5 active nests for Common Tern or >2 active nests for Caspian Tern. • Presence of 5 or more pairs for Brewer's Blackbird. • Any active nesting colony of one or more Little Gull, and Great Black-backed Gull is significant. • The edge of the colony and a minimum 150m radius area of habitat, or the extent of the ELC ecosites containing the colony or any island <3.0ha with a colony is the SWH • Studies would be done during May/June when actively nesting. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" • SWH MIST Index #6 provides development effects and mitigation measures.	**Not present**: Representative habitats not present within or adjacent to the subject property. Peel-Caledon Criteria: Not present
Migratory Butterfly Stopover Areas **Rationale:** Butterfly stopover areas are extremely rare habitats and are biologically important for butterfly species that migrate south for the winter.	Painted Lady Red Admiral Special Concern Monarch	Combination of ELC Community Series; need to have present one Community Series from each land class: Field: CUM CUT CUS Forest: FOC FOD FOM CUP Anecdotally, a candidate site for butterfly stopover will have a history of butterflies being observed.	A butterfly stopover area will be a minimum of 10 ha in size with a combination of field and forest habitat present, and will be located within 5 km of Lake Erie or Lake Ontario. • The habitat is typically a combination of field and forest, and provides the butterflies with a location to rest prior to their long migration south. The habitat should not be disturbed, fields/meadows with an abundance of preferred nectar plants and woodland edge providing shelter are requirements for this habitat. • Staging areas usually provide protection from the elements and are often spits of land or areas with the shortest distance to cross the Great Lakes. Information Sources • MNRF District Offices • Natural Heritage Information Centre (NHIC) • Agriculture Canada in Ottawa may have list of butterfly experts. • Field Naturalist Clubs • Toronto Entomologists Association • Conservation Authorities	Studies confirm: The presence of Monarch Use Days (MUD) during fall migration (Aug/Oct). MUD is based on the number of days a site is used by Monarchs, multiplied by the number of individuals using the site. Numbers of butterflies can range from 100-500/day, significant variation can occur between years and multiple years of sampling should occur. • Observational studies are to be completed and need to be done frequently during the migration period to estimate MUD. • MUD of >5000 **or** >3000 with the presence of Painted Ladies or Red Admiral's is to be considered significant. • SWH MIST [cxlix] Index #16 provides development effects and mitigation measures.	**Potentially present south of Lakeshore Rd. E.:** Cultural meadow, cultural thicket, and cultural plantation habitats are present south of Lakeshore Rd. E.; their combined size is over 10 ha. Lakeshore Park could function as butterfly habitat. Butterflies were not observed during the field visit on May 1 2018, though it was likely too early in the season for observations. Peel-Caledon Criteria: No criteria

Significant Wildlife Habitat Type: Seasonal Concentrations of Animals					
Wildlife Habitat	**Wildlife Species**	**Candidate SWH**		**Confirmed SWH**	**Potential for Candidate and/or Confirmed SWH on Subject Property and Adjacent Lands**
		ELC Ecosite Codes	**Habitat Criteria and Info. Sources**	**Defining Criteria**	
Landbird Migratory Stopover Areas **<u>Rationale:</u>** Sites with a high diversity of species as well as high numbers are most significant.	All migratory songbirds. Canadian Wildlife Service Ontario website: http://www.ec.gc.ca/nature/default.asp?lang=En&n=421B7A9D-1 All migrant raptors species: Ontario Ministry of Natural Resources: Fish and Wildlife Conservation Act, 1997. Schedule 7: Specially Protected Birds (Raptors)	All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD	• Woodlots >5 ha in size and within 5 km of Lake Erie and Lake Ontario. If woodlands are rare in an area of shoreline, woodland fragments 2-5 ha can be considered for this habitat • If multiple woodlands are located along the shoreline those Woodlands <2 km from Lake Erie and Lake Ontario are more significant • Sites have a variety of habitats; forest, grassland and wetland complexes. • The largest sites are more significant • Woodlots and forest fragments are important habitats to migrating birds, these features located along the shore and located within 5 km of Lake Erie and Lake Ontario are Candidate SWH. <u>Information Sources</u> • Bird Studies Canada • Ontario Nature • Local birders and field naturalist clubs • Ontario Important Bird Areas (IBA) Program	Studies confirm: • Use of the habitat by >200 birds/day and with >35 spp with at least 10 bird spp. recorded on at least 5 different survey dates. This abundance and diversity of migrant bird species is considered above average and significant. • Studies should be completed during spring (Mar to May) and fall (Aug to Oct) migration using standardized assessment techniques. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" • SWH MIST Index #9 provides development effects and mitigation measures.	**Potentially present south of Lakeshore Rd. E.:** A variety of habitat types (i.e. forest, treed swamp, cultural meadow and thicket, and plantation) are present between Lakeshore Rd. E. and the Lake Ontario shoreline. Collectively, these contiguous vegetation communities are over 10 ha in size. As stated in **Section 0**, the narrow woodland between St. James Ave. and Lakeshore Rd. E. is less than 0.3 ha in size and is not contiguous with the rest of Natural Area LV1. As such, it is unlikely that migratory birds would this area. It is more likely that the larger and higher-quality habitat block south of Lakeshore Rd. E. would be favoured over the aforementioned. **<u>Peel-Caledon Criteria</u>: Confirmed.** The cultural woodland adjacent to the study area is a 'natural area' within 2km of Ontario.
Deer Winter Congregation Areas **<u>Rationale:</u>** Deer movement during winter in the southern areas of Eco-region 7E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands to reduce or avoid the impacts of winter conditions cxlviii.	White-tailed Deer	All Forested Ecosites with these ELC Community Series; FOC FOM FOD SWC SWM SWD Conifer plantations much smaller than 50 ha may also be used.	• Woodlots >100 ha in size or if large woodlots are rare in a planning area woodlots >50 ha • Deer movement during winter in the southern areas of Ecoregion 7E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands. • Large woodlots > 100ha and up to 1500 ha are known to be used annually by densities of deer that range from 0.1-1.5 deer/ha . • Woodlots with high densities of deer due to artificial feeding are not significant. <u>Information Sources</u> • MNRF District Offices. • LIO/NRVIS	Studies confirm: • Deer management is an MNRF responsibility, deer winter congregation areas considered significant will be mapped by MNRF. • Use of the woodlot by white- tailed deer will be determined by MNRF, all woodlots exceeding the area criteria are significant, unless determined not to be significant by MNRF • Studies should be completed during winter (Jan/Feb) when >20cm of snow is on the ground using aerial survey techniques, ground or road surveys. or a pellet count deer density survey. • SWH MIST Index #2 provides development effects and mitigation measures.	**Not Present:** Potentially suitable habitat is not present within the subject property or adjacent lands. <u>Peel-Caledon Criteria:</u> No criteria

Significant Wildlife Habitat Type: Rare Vegetation Communities or Specialized Habitat for Wildlife					
Rare Vegetation Community	**Candidate SWH**			**Confirmed SWH**	**Potential for Candidate and/or Confirmed SWH on Subject Property and Adjacent Lands**
	ELC Ecosite Code	**Habitat Description**	**Detailed Information and Sources**	**Defining Criteria**	
Cliffs and Talus Slopes **Rationale:** Cliffs and Talus Slopes are extremely rare habitats in Ontario.	Any ELC Ecosite within Community Series: TAO CLO TAS CLS TAT CLT	A Cliff is vertical to near vertical bedrock >3m in height. A Talus Slope is rock rubble at the base of a cliff made up of coarse rocky debris	Most cliff and talus slopes occur along the Niagara Escarpment. Information Sources The Niagara Escarpment Commission has detailed information on location of these habitats. • OMNRF Districts • Natural Heritage Information Centre (NHIC) has location information available on their website • Field Naturalist Clubs • Conservation Authorities	• Confirm any ELC Vegetation Type for Cliffs or Talus Slopes • SWH MIST Index #21 provides development effects and mitigation measures.	**Not Present**: This vegetation community type was not identified during vegetation community surveys competed as part of the Natural Areas Survey. Peel-Caledon Criteria: Not present
Sand Barren **Rationale:** Sand barrens are rare in Ontario and support rare species. Most Sand Barrens have been lost due to cottage development and forestry	ELC Ecosites: SBO1 SBS1 SBT1 Vegetation cover varies from patchy and barren to continuous meadow (SBO1), thicket- like (SBS1), or more closed and treed (SBT1). Tree cover always ≤ 60%.	Sand Barrens typically are exposed sand, generally sparsely vegetated and caused by lack of moisture, periodic fires and erosion. Usually located within other types of natural habitat such as forest or savannah. Vegetation can vary from patchy and barren to tree covered, but less than 60%.	A sand barren area >0.5ha in size. Information Sources • OMNRF Districts. • Natural Heritage Information Centre (NHIC) has location information available on their website. • Field Naturalist Clubs • Conservation Authorities	• Confirm any ELC Vegetation Type for Sand Barrens • Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). • SWH MIST[cxlix] Index #20 provides development effects and mitigation measures.	**Not Present**: This vegetation community type was not identified during vegetation community surveys completed as part of the Natural Areas Survey. Peel-Caledon Criteria: Not present
Alvar **Rationale:** Alvars are extremely rare habitats in Ecoregion 7E.	ALO1 ALS1 ALT1 FOC1 FOC2 CUM2 CUS2 CUT2-1 CUW2 **Five Alvar Indicator Species:** 1) *Carex crawei* 2) *Panicum philadelphicum* 3) *Eleocharis compressa* 4) *Scutellaria parvula* 5) *Trichostema brachiatum* These indicator species are very specific to Alvars	An alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. The hydrology of alvars is complex, with alternating periods of inundation and drought. Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plants. Undisturbed alvars can be phyto- and zoogeographically diverse, supporting many uncommon or are relict plant and animals species. Vegetation cover varies from patchy to barren with a less than 60% tree cover.	An Alvar site > 0.5 ha in size. Alvar is particularly rare in Ecoregion 7E where the only known sites are found in the western islands of Lake Erie. Information Sources • Alvars of Ontario (2000), Federation of Ontario Naturalists. • Ontario Nature – Conserving Great Lakes Alvars. • Natural Heritage Information Centre (NHIC) has location information available on their website. • OMNRF Staff. • Field Naturalist Clubs. • Conservation Authorities.	• Field studies that identify four of the five **Alvar Indicator Species** at a Candidate Alvar site is Significant. • Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). • The alvar must be in excellent condition and fit in with surrounding landscape with few conflicting land uses • SWH MIST Index #17 provides development effects and mitigation measures.	**Not Present:** This vegetation community type was not identified during vegetation community surveys completed as part of the Natural Areas Survey. Peel-Caledon Criteria: Not present

	within Ecoregion 7E				
Significant Wildlife Habitat Type: Rare Vegetation Communities or Specialized Habitat for Wildlife					
Rare Vegetation Community	**Candidate SWH**			**Confirmed SWH**	**Potential for Candidate and/or Confirmed SWH on Subject Property and Adjacent Lands**
	ELC Ecosite Code	**Habitat Description**	**Detailed Information and Sources**	**Defining Criteria**	
Old Growth Forest **Rationale:** Due to historic logging practices and land clearance for agriculture, old growth forest is rare in Ecoregion 7E.	Forest Community Series: FOD FOC FOM SWD SWC SWM	Old Growth forests are characterized by heavy mortality or turnover of over- storey trees resulting in a mosaic of gaps that encourage development of a multi-layered canopy and an abundance of snags and downed woody debris.	Woodland area is >0.5ha Information Sources • OMNRF Forest Resource Inventory mapping • OMNRF Districts. • Field Naturalist Clubs • Conservation Authorities • Sustainable Forestry Licence (SFL) companies will possibly know locations through field operations. • Municipal forestry departments	Field Studies will determine: • If dominant trees species of the are >140 years old, then the area containing these trees is Significant Wildlife Habitat • The forested area containing the old growth characteristics will have experienced no recognizable forestry activities (cut stumps will not be present) • The area of forest ecosites combined or an eco-element within an ecosite that contain the old growth characteristics is the SWH. • Determine ELC vegetation types for the forest forest area containing the old growth characteristics • SWH MIST Index #23 provides development effects and mitigation measures.	**Not Present**: This vegetation community type was not identified during vegetation community surveys completed as part of the Natural Areas Survey. Peel-Caledon Criteria: Not present
Savannah **Rationale:** Savannahs are extremely rare habitats in Ontario.	TPS1 TPS2 TPW1 TPW2 CUS2	A Savannah is a tallgrass prairie habitat that has tree cover between 25 – 60% In ecoregion 7E, known Tallgrass Prairie and savannah remnants are scattered between Lake Huron and Lake Erie, near Lake St. Clair, north of and along the Lake Erie shoreline, in Brantford and in the Toronto area (north of Lake Ontario).	No minimum size to site Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. Information Sources Natural Heritage Information Centre (NHIC) has location data available on their website. • OMNRF Districts. • Field Naturalists Clubs. • Conservation Authorities.	Field studies confirm one or more of the Savannah indicator species listed in Appendix N should be present Note: Savannah plant spp. list from Ecoregion 7E should be used· • Area of the ELC Ecosite is the SWH. Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). • SWH MIST Index #18 provides development effects and mitigation measures.	**Not Present:** This vegetation community type was not identified during vegetation community surveys completed as part of the Natural Areas Survey. Peel-Caledon Criteria: Not present

Tallgrass Prairie **Rationale:** Tallgrass Prairies are extremely rare habitats in Ontario.	TPO1 TPO2	A Tallgrass Prairie has ground cover dominated by prairie grasses. An open Tallgrass Prairie habitat has < 25% tree cover In ecoregion 7E, known Tallgrass Prairie and savannah remnants are scattered between Lake Huron and Lake Erie, near Lake St. Clair, north of and along the Lake Erie shoreline, in Brantford and in the Toronto area (north of Lake Ontario).	No minimum size to site. Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. Information Sources • OMNRF Districts. • Natural Heritage Information Centre (NHIC) has location information available on their website. • Field Naturalists Clubs. • Conservation Authorities.	Field studies confirm one or more of the Prairie indicator species listed in Appendix N should be present. Note: Prairie plant spp. list from Ecoregion 7E should be used • Area of the ELC Ecosite is the SWH. • Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). • SWH MIST Index #19 provides development effects and mitigation measures.	**Not Present:** This vegetation community type was not identified during vegetation community surveys completed as part of the Natural Areas Survey. Peel-Caledon Criteria: Not present

Significant Wildlife Habitat Type: Rare Vegetation Communities or Specialized Habitat for Wildlife					
Rare Vegetation Community	**Candidate SWH**			**Confirmed SWH**	**Potential for Candidate and/or Confirmed SWH on Subject Property and Adjacent Lands**
	ELC Ecosite Code	**Habitat Description**	**Detailed Information and Sources**	**Defining Criteria**	
Other Rare Vegetation Communities **Rationale:** Plant communities that often contain rare species which depend on the habitat for survival.	Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of the SWHTG. Any ELC Ecosite Code that has a possible ELC Vegetation Type that is Provincially Rare is Candidate SWH.	Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.	ELC Ecosite codes that have the potential to be a rare ELC Vegetation Type as outlined in appendix M The OMNRF/NHIC will have up to date listing for rare vegetation communities. Information Sources • Natural Heritage Information Centre (NHIC) has location information available on their website. • OMNRF Districts. • Field Naturalists Clubs. • Conservation Authorities.	Field studies should confirm if an ELC Vegetation Type is a rare vegetation community based on listing within Appendix M of SWHTG. • Area of the ELC Vegetation Type polygon is the SWH. • SWH MIST Index #37 provides development effects and mitigation measures.	**Not Present:** Provincially rare vegetation communities were not identified during vegetation community surveys completed as part of the Natural Areas Survey. Peel-Caledon Criteria: Not present

Specialized Habitat for Wildlife					
Specialized Wildlife Habitat	**Wildlife Species**	**Candidate SWH**		**Confirmed SWH**	**Potential for Candidate and/or Confirmed SWH on Subject Property and Adjacent Lands**
		ELC Ecosite Codes	**Habitat Criteria and Info. Sources**	**Defining Criteria**	
Waterfowl Nesting Area **Rationale:** Important to local waterfowl populations, sites with greatest number of species and highest number of individuals are significant.	American Black Duck Northern Pintail Northern Shoveler Gadwall Blue-winged Teal Green-winged Teal Wood Duck Hooded Merganser Mallard	All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SWT1 SWT2 SWD1 SWD2 SWD3 SWD4 **Note: includes adjacency to Provincially Significant Wetlands**	A waterfowl nesting area extends 120 m from a wetland (> 0.5 ha) or a wetland (>0.5ha) and any small wetlands (0.5ha) within 120m or a cluster of 3 or more small (<0.5 ha) wetlands within 120 m of each individual wetland where waterfowl nesting is known to occur. • Upland areas should be at least 120 m wide so that predators such as racoons, skunks, and foxes have difficulty finding nests. • Wood Ducks and Hooded Mergansers utilize large diameter trees (>40cm dbh) in woodlands for cavity nest sites. Information Sources • Ducks Unlimited staff may know the locations of particularly productive nesting sites. • OMNRF Wetland Evaluations for indication of significant waterfowl nesting habitat.Reports and other information available from Conservation Authorities	Studies confirmed: • Presence of 3 or more nesting pairs for listed species excluding Mallards, or; • Presence of 10 or more nesting pairs for listed species including Mallards. • Any active nesting site of an American Black Duck is considered significant. • Nesting studies should be completed during the spring breeding season (April - June). Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" • A field study confirming waterfowl nesting habitat will determine the boundary of the waterfowl nesting habitat for the SWH, this may be greater or less than 120 m from the wetland and will provide enough habitat for waterfowl to successfully nest. • SWH MIST Index #25 provides development effects and mitigation measures.	**Potentially present south of Lakeshore Rd. E.:** Wetlands (SWD3-1 and SWD3-2) are present south of Lakeshore Rd. E. and are located within a matrix of other habitat types. Currently, waterfowl nesting data is unavailable. Peel-Caledon Criteria: No criteria

Specialized Habitat for Wildlife					
Specialized Wildlife Habitat	**Wildlife Species**	**Candidate SWH**		**Confirmed SWH**	**Potential for Candidate and/or Confirmed SWH on Subject Property and Adjacent Lands**
		ELC Ecosite Codes	**Habitat Criteria and Info. Sources**	**Defining Criteria**	
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat **Rationale:** Nest sites are fairly uncommon in Ecoregion 7E and are used annually by these species. Many suitable nesting locations may be lost due to increasing shoreline development pressures and scarcity of habitat.	Osprey **Special Concern** Bald Eagle	ELC Forest Community Series: FOD FOM FOC SWD SWM SWC directly adjacent to riparian areas – rivers, lakes, ponds and wetlands	Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water. • Osprey nests are usually at the top a tree whereas Bald Eagle nests are typically in super canopy trees in a notch within the tree's canopy. • Nests located on man-made objects are not to be included as SWH (e.g. telephone poles and constructed nesting platforms). Information Sources • Natural Heritage Information Centre (NHIC) compiles all known nesting sites for Bald Eagles in Ontario. MNRF values information (LIO/NRVIS) will list known nesting locations. Note: data from NRVIS is provided as a point and does not represent all the habitat. • Nature Counts, Ontario Nest Records Scheme data. • OMNRF District. • Check the Ontario Breeding Bird Atlas or Rare Breeding Birds in Ontario for species documented • Reports and other information available from Conservation Authorities. • Field Naturalists clubs	Studies confirm the use of these nests by: • One or more active Osprey or Bald Eagle nests in an area. • Some species have more than one nest in a given area and priority is given to the primary nest with alternate nests included within the area of the SWH. • For an Osprey, the active nest and a 300 m radius around the nest or the contiguous woodland stand is the SWH, maintaining undisturbed shorelines with large trees within this area is important. • For a Bald Eagle the active nest and a 400-800 m radius around the nest is the SWH. Area of the habitat from 400-800m is dependant on site lines from the nest to the development and inclusion of perching and foraging habitat • To be significant a site must be used annually. When found inactive, the site must be known to be inactive for ≥ 3 years or suspected of not being used for >5 years before being considered not significant. • Observational studies to determine nest site use, perching sites and foraging areas need to be done from early March to mid August. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" SWH MIST Index #26 provides development effects and mitigation measures	**Not Present**: While potentially suitable habitat exists south of Lakeshore Rd. E., large raptor nests were not observed during the reconnaissance field visit on May 1 2018. Peel-Caledon Criteria: No criteria

Specialized Habitat for Wildlife					
Specialized Wildlife Habitat	**Wildlife Species**	**Candidate SWH**		**Confirmed SWH**	**Potential for Candidate and/or Confirmed SWH on Subject Property and Adjacent Lands**
		ELC Ecosite Codes	**Habitat Criteria and Info. Sources**	**Defining Criteria**	
Woodland Raptor Nesting Habitat **Rationale:** Nests sites for these species are rarely identified; these area sensitive habitats are often used annually by these species	Northern Goshawk Cooper's Hawk Sharp-shinned Hawk Red-shouldered Hawk Barred Owl Broad-winged Hawk	May be found in all forested ELC Ecosites. May also be found in SWC SWM SWD CUP3	• All natural or conifer plantation woodland/forest stands >30ha with >4ha of interior habitat. Interior habitat determined with a 200m buffer • Stick nests found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within tops or crotches of trees. Species such as Coopers hawk nest along forest edges sometimes on peninsulas or small off-shore islands. • In disturbed sites, nests may be used again, or a new nest will be in close proximity to old nest. Information Sources • OMNRF Districts. • Check the Ontario Breeding Bird Atlas [ccv] or Rare Breeding Birds in Ontario for species documented. • Check data from Bird Studies Canada. • Reports and other information available from Conservation Authorities.	Studies confirm: • Presence of 1 or more active nests from species list is considered significant. Red-shouldered Hawk and Northern Goshawk – A 400m radius around the nest or 28 ha area of habitat is the SWH [ccvii]. (the 28 ha habitat area would be applied where optimal habitat is irregularly shaped around the nest) • Barred Owl – A 200m radius around the nest is the SWH • Broad-winged Hawk and Coopers Hawk,– A 100m radius around the nest is the SWH. • Sharp-Shinned Hawk – A 50m radius around the nest is the SWH. • Conduct field investigations from early March to end of May. The use of call broadcasts can help in locating territorial (courting/nesting) raptors and facilitate the discovery of nests by narrowing down the search area. • SWH MIST Index #27 provides development effects and mitigation measures.	**Not Present**: While potentially suitable habitat exists south of Lakeshore Rd. E., the area does not meet the minimum size criteria. Peel-Caledon Criteria: No criteria

Specialized Habitat for Wildlife					
Specialized Wildlife Habitat	**Wildlife Species**	**Candidate SWH**		**Confirmed SWH**	**Potential for Candidate and/or Confirmed SWH on Subject Property and Adjacent Lands**
		ELC Ecosite Codes	**Habitat Criteria and Info. Sources**	**Defining Criteria**	
Turtle Nesting Areas **Rationale:** These habitats are rare and when identified will often be the only breeding site for local populations of turtles.	Midland Painted Turtle Special Concern Species Northern Map Turtle Snapping Turtle	Exposed mineral soil (sand or gravel) areas adjacent (<100m) or within the following ELC Ecosites: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 BOO1 FEO1	Best nesting habitat for turtles are close to water and away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals. • For an area to function as a turtle- nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas. Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH. • Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used. Information Sources • Use Ontario Soil Survey reports and maps to help find suitable substrate for nesting turtles (well- drained sands and fine gravels). • Check the Ontario Herpetofaunal Summary Atlas records or other similar atlases for uncommon turtles; location information may help to find potential nesting habitat for them. • Natural Heritage Information Centre (NHIC) • Field Naturalist Clubs	Studies confirm: Presence of 5 or more nesting Midland Painted Turtles • One or more Northern Map Turtle or Snapping Turtle nesting is a SWH. • The area or collection of sites within an area of exposed mineral soils where the turtles nest, plus a radius of 30-100m around the nesting area dependant on slope, riparian vegetation and adjacent land use is the SWH. • Travel routes from wetland to nesting area are to be considered within the SWH as part of the 30-100m area of habitat. • Field investigations should be conducted in prime nesting season typically late spring to early summer. Observational studies observing the turtles nesting is a recommended method. • SWH MIST Index #28 provides development effects and mitigation measures for turtle nesting habitat.	**Not Present**: Potentially suitable habitat (i.e. sandy soil communities) is not present within the subject property. The Lake Ontario shoreline presents some opportunity for nesting (sandy soils), however due to the dynamic nature of the shoreline (e.g. wave action, etc.), it is unlikely that nesting would be successful. Peel-Caledon Criteria: No criteria

Specialized Habitat for Wildlife					
Specialized Wildlife Habitat	**Wildlife Species**	**Candidate SWH**		**Confirmed SWH**	**Potential for Candidate and/or Confirmed SWH on Subject Property and Adjacent Lands**
		ELC Ecosite Codes	**Habitat Criteria and Info. Sources**	**Defining Criteria**	
Seeps and Springs **Rationale:** Seeps/Springs are typical of headwater areas and are often at the source of coldwater streams.	Wild Turkey Ruffed Grouse Spruce Grouse White-tailed Deer Salamander spp.	Seeps/Springs are areas where ground water comes to the surface. Often they are found within headwater areas within forested habitats. Any forested Ecosite within the headwater areas of a stream could have seeps/springs.	Any forested area (with <25% meadow/field/pasture) within the headwaters of a stream or river system. Seeps and springs are important feeding and drinking areas especially in the winter will typically support a variety of plant and animal species. Information Sources • Topographical Map. • Thermography. • Hydrological surveys conducted by Conservation Authorities and MOE. • Field Naturalists Clubs and landowners. • Municipalities and Conservation Authorities may have drainage maps and headwater areas mapped.	Field Studies confirm: Presence of a site with 2 or more seeps/springs should be considered SWH. • The area of a ELC forest ecosite or an ecoelement within ecosite containing the seeps/springs is the SWH. The protection of the recharge area considering the slope, vegetation, height of trees and groundwater condition need to be considered in delineation the habitat. • SWH MIST Index #30 provides development effects and mitigation measures	**Not Present**: Seeps and springs were not identified during the field reconnaissance site visit on May 1 2018. Peel-Caledon Criteria: Not present

Specialized Habitat for Wildlife					
Specialized Wildlife Habitat	**Wildlife Species**	**Candidate SWH**		**Confirmed SWH**	**Potential for Candidate and/or Confirmed SWH on Subject Property and Adjacent Lands**
		ELC Ecosite Codes	**Habitat Criteria and Info. Sources**	**Defining Criteria**	
Amphibian Breeding Habitat (Woodland). **Rationale:** These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations	Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Western Chorus Frog Wood Frog	All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD Breeding pools within the woodland or the shortest distance from forest habitat are more significant because they are more likely to be used due to reduced risk to migrating amphibians	• Presence of a wetland, pond or woodland pool (including vernal pools) >500m2 (about 25m diameter) within or adjacent (within 120m) to a woodland (no minimum size). Some small wetlands may not be mapped and may be important breeding pools for amphibians. • Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat Information Sources • Ontario Herpetofaunal Summary Atlas (or other similar atlases) for records • Local landowners may also provide assistance as they may hear spring-time choruses of amphibians on their property. • OMNRF Districts and wetland evaluations • Field Naturalist clubs • Canadian Wildlife Service Amphibian Road Call Survey • Ontario Vernal Pool Association: http://www.ontariovernalpools.org	Studies confirm; • Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog species with Call Level Codes of 3. A combination of observational study and call count surveys will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands. • The habitat is the wetland area plus a 230m radius of woodland area . If a wetland area is adjacent to a woodland, a travel corridor connecting the wetland to the woodland is to be included in the habitat. • SWH MIST cxlix Index #14 provides development effects and mitigation measures.	**Potentially present south of Lakeshore Rd. E.:** Potentially suitable habitat (i.e. wetlands >500m^2 that are adjacent to treed communities) is present within Lakeshore Park, directly adjacent to LV1 south of Lakeshore Rd. E. Use of the area by amphibians is currently unknown. Peel-Caledon Criteria: Same as above.

Specialized Habitat for Wildlife					
Specialized Wildlife Habitat	**Wildlife Species**	**Candidate SWH**		**Confirmed SWH**	**Potential for Candidate and/or Confirmed SWH on Subject Property and Adjacent Lands**
		ELC Ecosite Codes	**Habitat Criteria and Info. Sources**	**Defining Criteria**	
Amphibian Breeding Habitat (Wetlands) **Rationale:** Wetlands supporting breeding for these amphibian species are extremely important and fairly rare within Central Ontario landscapes.	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Treefrog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	ELC Community Classes SW, MA, FE, BO, OA and SA. Typically these wetland ecosites will be isolated (>120m) from woodland ecosites, however larger wetlands containing predominantly aquatic species (e.g. Bull Frog) may be adjacent to woodlands.	• Wetlands>500m^2 (about 25m diameter), supporting high species diversity are significant; some small or ephemeral habitats may not be identified on MNRF mapping and could be important amphibian breeding habitats. • Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators. • Bullfrogs require permanent water bodies with abundant emergent vegetation. Information Sources • Ontario Herpetofaunal Summary Atlas (or other similar atlases) • Canadian Wildlife Service Amphibian Road Surveys and Backyard Amphibian Call Count. • OMNRF Districts and wetland evaluations. • Reports and other information available from Conservation Authorities.	Studies confirm: • Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog/toad species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog/toad species with Call Level Codes of 3. **or;** Wetland with confirmed breeding Bullfrogs are significant. The ELC ecosite wetland area and the shoreline are the SWH. • A combination of observational study and call count surveys will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the wetlands. • If a SWH is determined for Amphibian Breeding Habitat (Wetlands) then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. • SWH MIST Index #15 provides development effects and mitigation measures.	**Not Present:** Potentially suitable habitat (i.e. wetlands) >500m^2 that are isolated from woodlands are not within or adjacent to the subject property. Peel-Caledon Criteria: Not present.

Significant Wildlife Habitat Type: Habitats of Species of Conservation Concern Considered SWH					
Wildlife Habitat	**Wildlife Species**	**Candidate SWH**		**Confirmed SWH**	**Potential for Candidate and/or Confirmed SWH on Subject Property and Adjacent Lands**
		ELC Ecosite Codes	**Habitat Criteria and Info. Sources**	**Defining Criteria**	
Woodland Area-Sensitive Bird Breeding Habitat **Rationale:** Large, natural blocks of mature woodland habitat within the settled areas of Southern Ontario are important habitats for area sensitive interior forest song birds.	Yellow-bellied Sapsucker Red-breasted Nuthatch Veery Blue-headed Vireo Northern Parula Black-throated Green Warbler Blackburnian Warbler Black-throated Blue Warbler Ovenbird Scarlet Tanager Winter Wren Pileated Woodpecker **Special Concern:** Cerulean Warbler Canada Warbler	All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD	• Habitats where interior forest breeding birds are breeding, typically large mature (>60 yrs old) forest stands or woodlots >30 ha. • Interior forest habitat is at least 200 m from forest edge habitat. Information Sources • Local birder clubs. • Canadian Wildlife Service (CWS) for the location of forest bird monitoring. • Bird Studies Canada conducted a 3-year study of 287 woodlands to determine the effects of forest fragmentation on forest birds and to determine what forests were of greatest value to interior species Reports and other information available from Conservation Authorities.	Studies confirm: • Presence of nesting or breeding pairs of 3 or more of the listed wildlife species. • Note: any site with breeding Cerulean Warblers or Canada Warblers is to be considered SWH. Conduct field investigations in spring and early summer when birds are singing and defending their territories. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" • SWH MIST Index #34 provides development effects and mitigation measures.	**Not Present:** Potentially suitable habitat (i.e. interior forest) is not present within or adjacent to the subject property. Peel-Caledon Criteria: Same as above.

Significant Wildlife Habitat Type: Habitats of Species of Conservation Concern Considered SWH					
Wildlife Habitat	**Wildlife Species**	**Candidate SWH**		**Confirmed SWH**	**Potential for Candidate and/or Confirmed SWH on Subject Property and Adjacent Lands**
		ELC Ecosite Codes	**Habitat Criteria and Info. Sources**	**Defining Criteria**	
Marsh Breeding Bird Habitat **Rationale:** Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes.	American Bittern Virginia Rail Sora Common Moorhen American Coot Pied-billed Grebe Marsh Wren Sedge Wren Common Loon Green Heron Trumpeter Swan **Special Concern:** Black Tern Yellow Rail	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SAS1 SAM1 SAF1 FEO1 BOO1 For Green Heron: All SW, MA and CUM1 sites.	• Nesting occurs in wetlands. • All wetland habitat is to be considered as long as there is shallow water with emergent aquatic vegetation present. • For Green Heron, habitat is at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Less frequently, it may be found in upland shrubs or forest a considerable distance from water. Information Sources • OMNRF District and wetland evaluations. • Field Naturalist clubs • Natural Heritage Information Centre (NHIC) Records. • Reports and other information available from Conservation Authorities. • Ontario Breeding Bird Atlas.	Studies confirm: • Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren **or** breeding by any combination of 4 or more of the listed species. • Note: any wetland with breeding of 1 or more Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is SWH. • Area of the ELC ecosite is the SWH. • Breeding surveys should be done in May/June when these species are actively nesting in wetland habitats. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" • SWH MIST Index #35 provides development effects and mitigation measures	**Not present**: Characteristic vegetation communities are not present within or adjacent to the subject property. Peel-Caledon Criteria: Not present

Specialized Habitat for Wildlife					
Specialized Wildlife Habitat	**Wildlife Species**	**Candidate SWH**		**Confirmed SWH**	**Potential for Candidate and/or Confirmed SWH on Subject Property**
		ELC Ecosite Codes	**Habitat Criteria and Info. Sources**	**Defining Criteria**	
Open Country Bird Breeding Habitat **Rationale:** This wildlife habitat is declining throughout Ontario and North America. Species such as the Upland Sandpiper have declined significantly the past 40 years based on CWS (2004) trend records.	Upland Sandpiper Grasshopper Sparrow Vesper Sparrow Northern Harrier Savannah Sparrow **Special Concern** Short-eared Owl	CUM1 CUM2	• Large grassland areas (includes natural and cultural fields and meadows) >30 ha • Grasslands not Class 1 or 2 agricultural lands, and not being actively used for farming (i.e. no row cropping or intensive hay or livestock pasturing in the last 5 years). • Grassland sites considered significant should have a history of longevity, either abandoned fields, mature hayfields and pasturelands that are at least 5 years or older. • The Indicator bird species are area sensitive requiring larger grassland areas than the common grassland species. Information Sources • Agricultural land classification maps, Ministry of Agriculture. • Local bird clubs. • Ontario Breeding Bird Atlas • EIS Reports and other information available from Conservation Authorities.	Field Studies confirm: • Presence of nesting or breeding of 2 or more of the listed species. • A field with 1 or more breeding Short-eared Owls is to be considered SWH. • The area of SWH is the contiguous ELC ecosite field areas. • Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" • SWH MIST Index #32 provides development effects and mitigation measures	**Not present**: Characteristic vegetation communities are present adjacent to the subject property, however the meadowlands in Lakeshore Park do not meet the minimum size criteria. Peel-Caledon Criteria: Not present

Specialized Habitat for Wildlife					
Specialized Wildlife Habitat	**Wildlife Species**	**Candidate SWH**		**Confirmed SWH**	**Potential for Candidate and/or Confirmed SWH on Subject Property**
		ELC Ecosite Codes	**Habitat Criteria and Info. Sources**	**Defining Criteria**	
Shrub/Early Successional Bird Breeding Habitat **Rationale:** This wildlife habitat is declining throughout Ontario and North America. The Brown Thrasher has declined significantly over the past 40 years based on CWS (2004) trend records.	Indicator Spp: Brown Thrasher Clay-coloured Sparrow Common Spp. Field Sparrow Black-billed Cuckoo Eastern Towhee Willow Flycatcher **Special Concern:** Yellow- breasted Chat Golden-winged Warbler	CUT1 CUT2 CUS1 CUS2 CUW1 CUW2 Patches of shrub ecosites can be complexed into a larger habitat for some bird species	Large field areas succeeding to shrub and thicket habitats >10 ha in size. • Shrub land or early successional fields, not class 1 or 2 agricultural lands, not being actively used for farming (i.e. no row- cropping, haying or live- stock pasturing in the last 5 years). • Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species. • Shrub and thicket habitat sites considered significant should have a history of longevity, either abandoned fields or pasturelands. Information Sources • Agricultural land classification maps, Ministry of Agriculture. • Local bird clubs. • Ontario Breeding Bird Atlas • Reports and other information available from Conservation Authorities.	Field Studies confirm: Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species. • A habitat with breeding Yellow- breasted Chat or Golden-winged Warbler is to be considered as Significant Wildlife Habitat. • The area of the SWH is the contiguous ELC ecosite field/thicket area. • Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" • SWH MIST Index #33 provides development effects and mitigation measures.	**Not present**: Characteristic vegetation communities are present adjacent to the subject property, however the thickets in LV1 do not meet the minimum size criteria.

Specialized Habitat for Wildlife					
Specialized Wildlife Habitat	**Wildlife Species**	**Candidate SWH**		**Confirmed SWH**	**Potential for Candidate and/or Confirmed SWH on Subject Property and Adjacent Lands**
		ELC Ecosite Codes	**Habitat Criteria and Info. Sources**	**Defining Criteria**	
Terrestrial Crayfish **Rationale:** Terrestrial Crayfish are only found within SW Ontario in Canada and their habitats are very rare.	Chimney or Digger Crayfish; (Fallicambarus fodiens) Devil Crayfish or Meadow Crayfish; (Cambarus diogenes)	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 MAS1 MAS2 MAS3 SWD SWT SWM CUM1 with inclusions of above meadow marsh ecosites can be used by terrestrial crayfish.	Wet meadow and edges of shallow marshes (no minimum size) should be surveyed for terrestrial crayfish. • Constructs burrows in marshes, mudflats, meadows, the ground can't be too moist. Can often be found far from water. • Both species are a semi- terrestrial burrower which spends most of its life within burrows consisting of a network of tunnels. Usually the soil is not too moist so that the tunnel is well formed. Information Sources • Information sources from "Conservation Status of Freshwater Crayfishes" by Dr. Premek Hamr for the WWF and CNF March 1998	Studies Confirm: • Presence of 1 or more individuals of species listed or their chimneys (burrows) in suitable meadow marsh, swamp or moist terrestrial sites Area of ELC ecosite or an ecoelement area of meadow marsh or swamp within the larger ecosite area is the SWH. • Surveys should be done April to August in temporary or permanent water. Note the presence of burrows or chimneys are often the only indicator of presence, observance or collection of individuals is very difficult SWH MIST Index #36 provides development effects and mitigation measures.	**Potentially present south of Lakeshore Rd. E.:** Potentially suitable habitat is present south of Lakeshore Rd. E. Peel-Caledon Criteria: Same as above.

Specialized Habitat for Wildlife					
Specialized Wildlife Habitat	**Wildlife Species**	**Candidate SWH**		**Confirmed SWH**	**Potential for Candidate and/or Confirmed SWH on Subject Property and Adjacent Lands**
		ELC Ecosite Codes	**Habitat Criteria and Info. Sources**	**Defining Criteria**	
Special Concern and Rare Wildlife Species **Rationale:** These species are quite rare or have experienced significant population declines in Ontario.	All Special Concern and Provincially Rare (S1-S3, SH) plant and animal species. Lists of these species are tracked by the Natural Heritage Information Centre (NHIC).	All plant and animal element occurrences (EO) within a 1 or 10km grid. Older element occurrences were recorded prior to GPS being available, therefore location information may lack accuracy	When an element occurrence is identified within a 1 or 10 km grid for a Special Concern or provincially Rare species; linking candidate habitat on the site needs to be completed to ELC Ecosites. Information Sources • Natural Heritage Information Centre (NHIC) will have Special Concern and Provincially Rare (S1-S3, SH) species lists with element occurrences data. • NHIC Website "Get Information": http://nhic.mnr.gov.on.ca • Ontario Breeding Bird Atlas • Expert advice should be sought as many of the rare spp. have little information available about their requirements.	Studies Confirm: • Assessment/inventory of the site for the identified special concern or rare species needs to be completed during the time of year when the species is present or easily identifiable. • The area of the habitat to the finest ELC scale that protects the habitat form and function is the SWH, this must be delineated through detailed field studies. The habitat needs be easily mapped and cover an important life stage component for a species e.g. specific nesting habitat or foraging habitat. SWH MIST Index #37 provides development effects and mitigation measures.	**Potentially present south of Lakeshore Rd. E.:** There is very little to no potential for Special Concern (SC) and rare wildlife species to inhabit the subject property. However, it is possible that SC and rare species inhabit lands adjacent to the subject property, namely the natural lands south of Lakeshore Rd. E. See **Section 3.4** for further information. Peel-Caledon Criteria: Same as above.

Appendix F: Staff CVs

Ash Baron, B.E.S., C.E.E.R.R.
Ecology Lead

EXPERIENCE AND ACCOMPLISHMENTS

Ms. Baron has over 12 years' experience with botany, zoology, **restoration ecology, species-at-risk, and natural heritage planning** in both the public and private sectors, and has been qualified as an expert in arboriculture and ecology by the Ontario Municipal Board. She has extensive knowledge of ecological research techniques such as experimental design, data collection, statistical analysis, and scientific writing; as well as current environmental legislation such as the Endangered Species Act and the Species at Risk Act. Her skills are continually strengthened through independent research and field experience. Ms. Baron's **prior experience as a Terrestrial Planning Ecologist with Conservation Halton** included both technical and planning review for Subwatershed Studies, EAs, EISs, monitoring plans and results, restoration plans, tree protection plans, permits under the Conservation Authorities Act, Permits to Take Water, updating the *Landscaping and Tree Preservation Guidelines* (2010), as well as direct involvement with natural areas management and species-at-risk monitoring. She has also developed, executed, and managed over 40 gravel pit and quarry restoration plans across eastern and southern Ontario.

As a member of Aquafor Beech Limited, Ms. Baron's primary responsibilities include natural heritage planning, environmental impact assessments, project management, the review of scientific literature, and life science inventories such as the design of technical study protocols, the collection and analysis of ecological data, species-at-risk assessments, restoration/rehabilitation plans, invasive species management plans, and report preparation. She regularly conducts wetland evaluations, wildlife surveys, Ecological Land Classification, comprehensive botanical inventories, floristic quality analyses, tree inventories and compensation plans, and habitat assessments. She also contributes to the development and implementation of interdisciplinary mitigation measures to reduce the impacts of development on wildlife and natural heritage features and functions, and has been the project manager and primary author of the natural heritage components of **multiple Subwatershed Studies**.

EMPLOYMENT CHRONOLOGY

- 2011 – present. Aquafor Beech Limited. Ecology Lead
- 2010 – 2011. Conservation Halton. Terrestrial Planning Ecologist
- 2009. The Management of Abandoned Aggregate Properties Program. Field Technician/Botanist (Contract)
- 2007 – 2008. Thompson Environmental. Restoration Ecologist
- 2005 – 2006. Native Plant Source. Assistant Environmental Biologist

EDUCATION AND PROFESSIONAL MEMBERSHIPS

- University of Waterloo, Waterloo, Ontario - BES. (Hons. Environment and Resource Studies, Biology minor)
- Natural Channel Design Course, Department of Fisheries and Oceans
- Construction Impacts to Habitat Course, Department of Fisheries and Oceans
- Natural Heritage Systems Planning Workshop, Ontario Nature
- Sedge Identification Workshop, Toronto and Region Conservation Authority
- MNR Butternut Health Assessor Update Course, 2013
- Horticultural Outreach Collaborative, Member
- Field Botanists of Ontario, Member
- New England Botanical Society, Member
- North American Native Plant Society, Member
- Ontario Chapter of the Society for Ecological Restoration International, Executive Board Member
- Guelph Environmental Advisory Committee, Member

CERTIFICATIONS

- Certificate of Excellence in Ecological Restoration and Rehabilitation (CEERR), University of Waterloo
- International Society of Arboriculture (ISA) Certified Arborist
- Ministry of Natural Resources certified Ontario Wetland Evaluator
- Ministry of Natural Resources certified Butternut Health Assessor
- Ministry of Natural Resources certificate in Ecological Land Classification
- Tallgrass Ontario certified Seed Collector
- WHMIS

PROJECT EXPERIENCE

During her career, Ms. Baron has participated in a range of projects in the academic, private and public sectors, including work within the Region of Halton. Some examples by category are listed below.

Ash Baron, B.E.S., C.E.E.R.R.
Ecology Lead

Subwatershed Studies, Environmental Assessments and Environmental Impact Statements

Elfrida Subwatershed Study (City of Hamilton, Ontario) – Acted as project lead for the natural heritage components of the study, collaborating with other disciplines and directing technical staff. Responsible for classifying and assessing the significance of natural heritage features in order to develop a comprehensive natural heritage system for the study area. Rehabilitation and enhancement plans, buffer recommendations, significant wildlife habitat assessments, species-at-risk screening and habitat assessments, as well as terrestrial and aquatic monitoring plans were also completed.

Dingman Creek Subwatershed: Stormwater Servicing Strategy (ongoing) (City of London, Ontario) – Acted as the project's Natural Heritage Lead, collaborating with other disciplines and directing technical staff. As part of a team, developed a set of study goals, objectives, and targets as they relate to natural heritage. Responsible for classifying and assessing the significance of natural heritage features in order to develop a comprehensive natural heritage system for the study area. Rehabilitation and enhancement plans, buffer recommendations, species-at-risk habitat assessments, as well as terrestrial and aquatic monitoring plans will be developed.

East Side Lands Subwatershed Study and Master Drainage Plan (Region of Waterloo, Ontario) – Characterization of terrestrial resources involving Ecological Land Classification, 3-season vegetation inventories, species-at-risk surveys and assessments, wetland evaluations (OWES), and evaluation of Significant Wildlife Habitat as part of the natural heritage characterization for the Subwatershed Study; site-specific buffer recommendations; and Natural Heritage System development.

Port Robinson West Secondary Plan Update and Servicing Study (Port Robinson, Ontario) – Responsible for classifying and assessing the significance of natural heritage features in order to develop a comprehensive natural heritage system for the Port Robinson West Subwatershed. Additional responsibilities included species-at-risk surveys, wetland boundary delineations, significant wildlife habitat assessments, landowner contact, buffer recommendations, the development of rehabilitation and enhancement plans, and development of adaptive monitoring plans.

Area 47 Subwatershed Study (Brampton, Ontario) – Developed a comprehensive natural heritage assessment plan in coordination with staff from other disciplines, and contributed to botanical inventories and vegetation community delineations and assessments. Supervised staff in the completion of the natural heritage assessment and planning components of the report. Developed a target natural heritage system and restoration plan for the subwatershed.

Greensville/Mid-Spencer Creek Subwatershed Study and EA (Hamilton, Ontario) – Responsible for assessing the significance of natural heritage features in order to develop a natural heritage system for the Greensville/Mid-Spencer Creek Subwatershed in accordance with the City of Hamilton's Rural and Urban Official Plans. Rehabilitation and enhancement plans, buffer recommendations, species-at-risk habitat assessments, as well as terrestrial and aquatic monitoring plans were also developed.

Stoney Creek Urban Boundary Expansion Subwatershed Study (Hamilton, Ontario) – Responsible for assessing the significance of natural heritage features in order to develop a natural heritage system for the SCUBE Subwatershed in accordance with the City of Hamilton's Rural and Urban Official Plans. Rehabilitation and enhancement plans, species-at-risk habitat assessments, and monitoring plans were also developed. The report saw several updates following the receipt of updated breeding bird surveys, which were completed to determine the potential for open-country species-at-risk birds within areas of development interest.

Whitewater Subwatershed Study (City of Greater Sudbury, Ontario) – Discipline lead for the terrestrial natural heritage components of an interdisciplinary subwatershed study. Key tasks included completion of a background information review and data gap analysis, characterization of existing conditions (including species-at-risk screening), and a scoped impact assessment and related recommendations for mitigation measures.

Ramsey Lake Subwatershed Study (City of Greater Sudbury, Ontario) – Discipline lead for the terrestrial natural heritage components of an interdisciplinary subwatershed study. Key tasks included completion of a background information review and data gap analysis, characterization of existing conditions (including species-at-risk screening), and a scoped impact assessment and related recommendations for mitigation measures.

Lawrence Park Neighbourhood EA (Toronto, Ontario) – Updated the comprehensive tree inventory for over 2,500 street trees. In addition, Ash completed Environmental Impact Studies (EIS) for the four (4) preferred alternatives selected under the EA. Studies completed as part of the EIS include species-at-risk screening and surveys, Significant Wildlife Habitat assessments, vegetation community classification, and wildlife surveys. The results of the EISs were incorporated in to the evaluation of alternatives in the EA.

Block 2 Servicing Strategy (Stoney Creek, Ontario) – Discipline lead for the natural heritage components of the block plan. Tasks included natural her triage characterization, species-at-risk surveys and compensation, and natural heritage planning.

Taplow Creek Reaches 24 and 25 Valley Wall Erosion Rehabilitation (Oakville, Ontario) – Completion of natural heritage assessments and tree inventory in support of an erosion protection EA. In collaboration with the project geomorphologist, developed a riparian restoration plan which included the creation of wetlands and restoration of the creek in accordance with restoration best practices and Conservation Halton's landscaping guidelines.

Fourteen Mile Creek Flood Control EA (Oakville, Ontario) – Completed scoped species-at-risk surveys, ecological land classification, and a significant woodland assessment. Also assessed potential impacts and related mitigation measures.

Tuck Creek Flood Control EA (Burlington, Ontario) – Completed scoped species-at-risk surveys, ecological land classification, Butternut health assessments, and a significant woodland assessment. Also assessed potential impacts and related mitigation measures including the development of an adaptive management framework.

Tuck Creek Erosion Control Municipal Class EA (Burlington, Ontario) – Completed comprehensive surveys for species-at-risk within the study area and characterized the natural heritage features on site using ELC. Ms. Baron also developed a creek restoration plan which established wildlife habitat on site, wetland creation, and mitigation erosion issues post-construction.

Roseland Creek Erosion Control EA (Burlington, Ontario) – Developed a site-specific revegetation plan using locally native species following the provisions of Conservation Halton's Landscaping Guidelines.

Mill Creek EA (Orangeville, Ontario) – Completed comprehensive tree inventories, Butternut Health Assessments, species-at-risk screening, vegetation community classification, and comprehensive riparian rehabilitation plans for a 1.4 km stretch of Mill Creek as part of a multi-stakeholder creek rehabilitation project.

MNRF and DFO Permits for Culvert Replacements, Ditching and Wendakee Dr. (Hamilton, Ontario) – Completed species-at-risk and DFO screening in support of over 45 ditching and culvert replacements throughout the City of Hamilton. Liaised with MNRF to secure permitting for work to occur within species-at-risk habitat. This project was completed under the City of Hamilton Roster category 21.

Clair Road Peer Review and EIS (Guelph, Ontario) – Responsible for 3-season botanical inventories, Ecological Land Classification, wetland evaluations, and buffer assignment for a potential development property. This study also involved peer review of the City of Guelph's draft Natural Heritage Strategy (part of the Official Plan).

Ancaster Memorial School EIS (Hamilton, Ontario) – Carry out field studies, screen for species-at-risk, and develop natural heritage system in support of the expansion/redevelopment of the Ancaster Memorial School building. The project involved preparation of a presentation for the Hamilton Environmentally Significant Areas Impact Evaluation Group (ESAIEG) and ongoing communication and coordination with City of Hamilton staff.

EIS for Private Client (Hamilton, Ontario) – Carry out field studies, screen for species-at-risk, and develop natural heritage system for a development proposal for a private client. The project involved preparation of a field trip and presentation for the Hamilton Environmentally Significant Areas Impact Evaluation Group (ESAIEG) and ongoing communication and coordination with City of Hamilton staff.

EIS for Private Client (Brampton, Ontario) – Negotiate an appropriate Terms of Reference with TRCA staff, and use the results of field studies to develop a natural heritage system in support of the development of a place of worship. Project involved collaboration with the MNRF, TRCA as well as mitigation and compensation for the endangered Redside Dace.

EIS for Private Client (Bowmanville, Ontario) – Negotiate terms of reference with agency staff, carry out field studies, screen and survey for species-at-risk, characterize ecohydrology of wetlands, explore SWM options, and **develop a natural heritage system** for a residential development. Prepared a comprehensive management and preservation plan for the provincially rare Rough Hawthorn (*Crataegus scabrida* var. *asperifolia*) as a follow-up project.

Natural Resource Management

Upper Blair Creek State of the Watershed (Kitchener, Ontario) – Project lead for an interdisciplinary watershed-wide data management, analysis, and interpretation report for Upper Blair Creek. A major component of this project involved the identification of **multi-disciplinary goals, objectives, and targets**. Part of this project involved developing an Index of Biological Integrity (IBI) for terrestrial natural heritage resources within the study area. Project deliverables include a monitoring efficiency assessment, adaptive monitoring/management plans, and implementation of project recommendations for pre-, during, and post-construction monitoring data.

South Waterdown Monitoring Program (Hamilton, Ontario) – Responsible for the long-term monitoring of terrestrial resources including wetlands, woodlands, forests, and hedgerows; data analysis, data interpretation, and adaptive management.

Ash Baron, B.E.S., C.E.E.R.R.
Ecology Lead

MOECC Stormwater Management Planning and Design Manual (2018 update) – Provided input to the updated provincial Stormwater Management Planning and Design Manual from a natural heritage planning perspective.

City of Kitchener Stormwater Masterplan (Kitchener, Ontario) – Using available background information, identified the Natural Heritage System within the City of Kitchener. A **species-at-risk (SAR) screening exercise**, which covered the entire City, was also completed. Using Environment Canada's guidelines, **natural cover and connectivity targets** were developed for terrestrial systems. Metrics used to **evaluate aquatic health** include species richness, tolerance to disturbance, and habitat sensitivity. Using these targets, Ms. Baron identified opportunities for ecological enhancements and restoration that could be tied to stormwater management projects in each subwatershed within the City.

City of Waterloo Stormwater Masterplan (Kitchener, Ontario) – Using available background information, identified the Natural Heritage System within the City of Waterloo. Identified opportunities for ecological enhancements and restoration that could be tied to stormwater management projects.

Fourteen Mile Creek Redside Dace Habitat Compensation Plan (Oakville, Ontario) – Developed a rehabilitation plan for a select reach of Fourteen Mile Creek as a means to providing an overall benefit to Redside Dace, an aquatic species-at-risk. The plan included locally native plantings in riparian and upland areas specifically selected to provide stream cover, attract Redside Dace food sources to the site, and be an aesthetically pleasing element in a public space.

Ward's and Brigadoon Ponds Monitoring Program (Kitchener, Ontario) – Developed and implemented a short-term (3-year) monitoring plan to assess the success of a stream and wetland rehabilitation project designed by Aquafor Beech Ltd.

Niagara River Site K Restoration (Niagara, Ontario) – Developed a restoration plan to aid in erosion abatement works.

Restoration Plantings and Rough Hawthorn Monitoring Plan (Bowmanville, Ontario) – Provided recommendations and prescriptions for the restoration of forest and thicket habitats. The plan also included the development of a transplant, aftercare, and monitoring plan for Rough Hawthorn (*Crataegus scabrida* var. *asperifolia*). An adaptive monitoring plan for the forest and thicket restoration plantings was also developed and implemented.

Snapping Turtle Habitat and Population Restoration Project (Baden, Ontario) - Developed a plan to create habitat to re-establish a viable population of snapping turtles at Foxboro Green Adult Lifestyle Community. Study components included on-site data analysis, communication with experts and locals, public education and outreach, and an ongoing monitoring plan involving radio telemetry.

Herpetofauna Surveys and Habitat Creation (private client, Honey Harbor) – conducted surveys for herpetofauna, including species-at-risk including Blanding's Turtle, Stinkpot Turtle, Spiny Softshell Turtle, and Massasauga Rattlesnake. The report included detailed requirements for turtle nesting site creation, monitoring, and management.

Wetland Assessment and Rehabilitation Plan (Markdale, Ontario) – Working with the Saugeen Valley Conservation Authority and a private landowner, Ms. Baron developed a rehabilitation plan for riparian and closed system wetlands that had undergone significant impacts including dredging, filling, and bisection via a road. Baseline information including a species-at-risk habitat assessment and a life science inventory were also completed as part of the study. The project also included hydroperiod investigation, a restoration planting and grading plan, as well as adaptive monitoring and management.

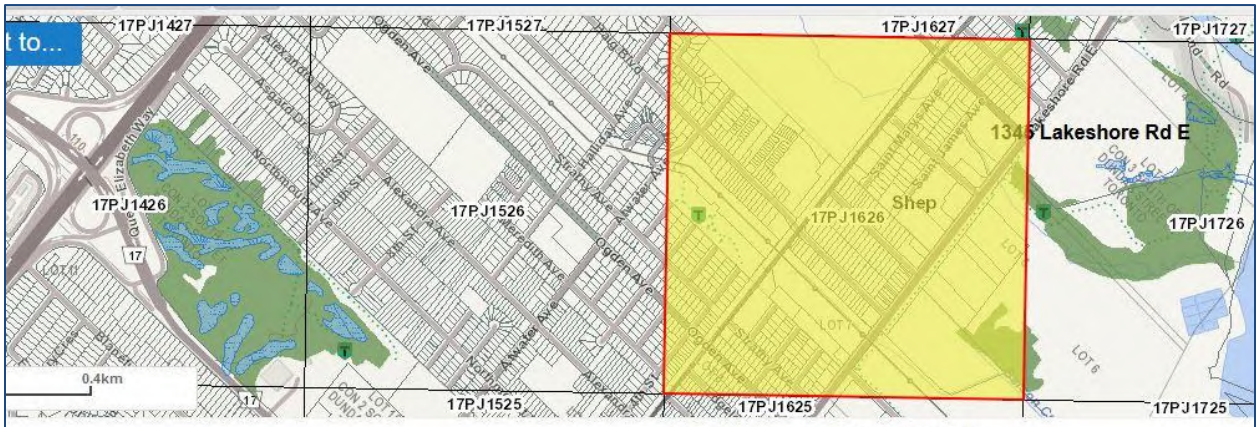
Aggregate Extraction Sites Rehabilitation Projects (Grey, Dufferin, Victoria, Lanark, Renfrew, and Ottawa Counties, Ontario) – Initiated, led, and implemented numerous abandoned aggregate pit rehabilitation projects with an emphasis on site-specific habitat creation, long-term ecological sustainability, aesthetics, and safety. Rehabilitated sites resulted in forest, prairie, and wetland habitat creation. Assisted engineering staff with contract development, pre-bid meetings, and construction supervision. (for the Ontario Aggregate Resources Corporation)

Jefferson Salamander Monitoring (Halton Region, Ontario) – Monitoring activities included catch and release surveys, tail tip collection for DNA analysis, and road mortality surveys.

Appendix G: Background Information Sources

Contents:

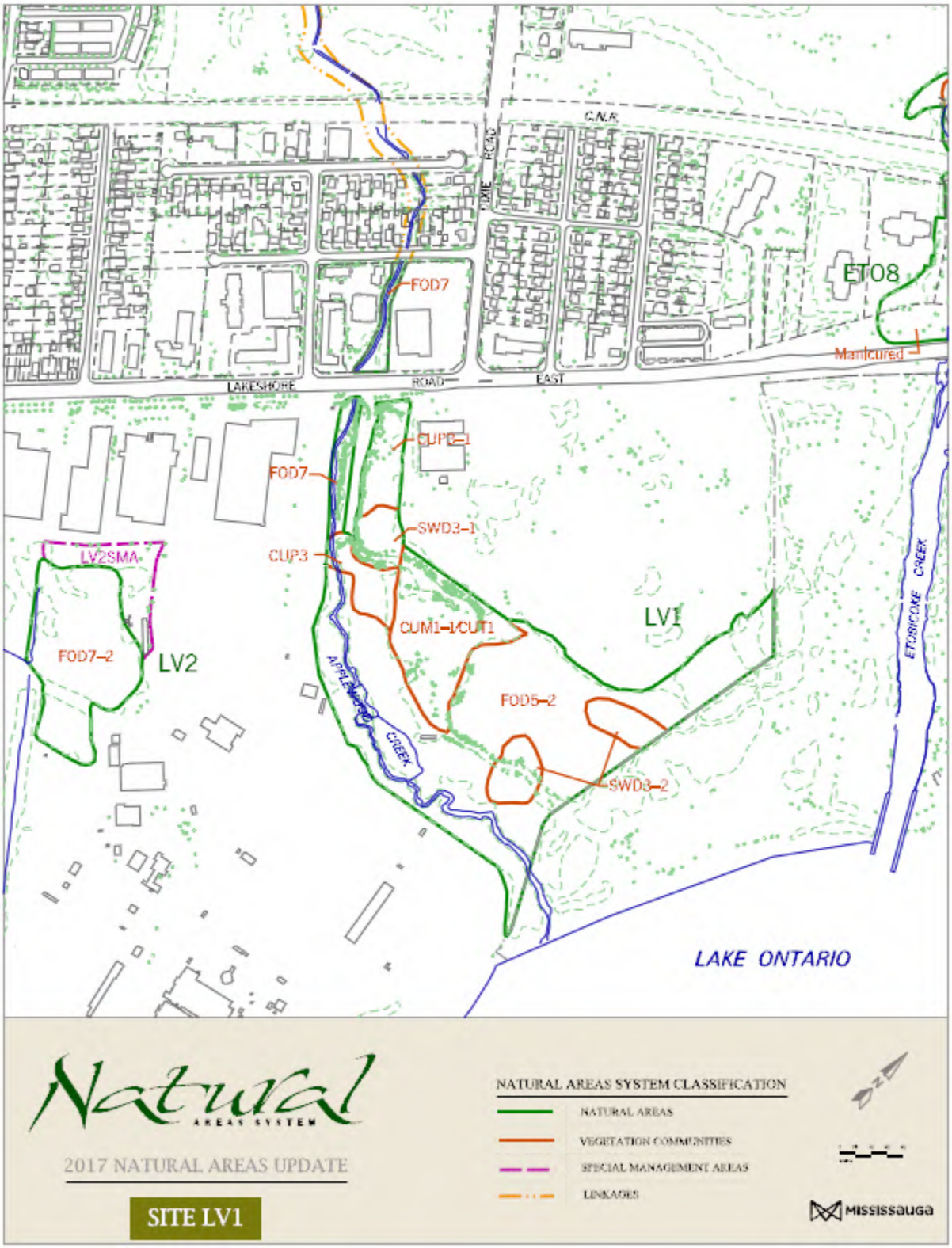
- NHIC online database query results
- Mississauga Natural Areas Survey – mapping and description of Natural Area LV1
- 1345 Lakeshore Road East DARC Project Status Report
- Cole Engineering. May 2018. Floodplain Mapping – Cut/fill analysis. Figure FP-3
- MNRF Information Request Response



NHIC Data -- Grid ID = 1017400

Common Name	Scientific Name	SRank	SARO Status	COSEWIC Status	Last Obs Date	EO ID	Details URL
Redside Dace	Clinostomus elongatus	S2	END	END	1927-08-14	7789	http://nhic.mnr.gov.
Henslow's Sparrow	Ammodramus henslowii	SHB	END	END	1932-07-11	13074	http://nhic.mnr.gov.

Figure G1: Screenshot of NHIC online database


C.N.R.
DIXIE ROAD
FOD7
ET08
Manicured
LAKESHORE ROAD EAST
CUP3-1
FOD7
SWD3-1
CUP3
LV2SMA
LV1
CUM1-1/CUT1
FOD7-2
LV2
FOD5-2
SWD3-2
APPLEBY CREEK
ETOBICOKE CREEK
LAKE ONTARIO
Natural
AREAS SYSTEM
2017 NATURAL AREAS UPDATE
SITE LV1
NATURAL AREAS SYSTEM CLASSIFICATION
NATURAL AREAS
VEGETATION COMMUNITIES
SPECIAL MANAGEMENT AREAS
LINKAGES
Mississauga

City of Mississauga Natural Areas Survey (2016)

Natural Areas Fact Sheet

Natural Area Name	Planning District	Area (ha)	UTM Grid Reference
LV1	Lakeview	12.94	6174 48263

1. **Location**

Southeast of the intersection of Lakeshore Road East and Dixie Road. This site is bounded on the south by Lake Ontario. The natural areas LV2 and ETO8 are located within approximately 500 m to the west and northeast respectively. Applewood Creek links this site with LV14 to the north.

2. **Classification**

Significant Natural Area

3. **Description**

A. **Physical Features**

This site is located in the Applewood Creek sub-watershed. The topography of this site is rolling and soil moisture is wet-mesic throughout. Soil is imperfectly drained Chinguacousy clay loams that developed within deposits of the Halton till plain. These deposits are underlain by bedrock geology consisting of the grey shales of the Georgian Bay Formation.

B. **Biota**

There are 240 floral species and 77 faunal species documented for this site. Seven vegetation communities comprise this site (see accompanying figure): dry-moist old field meadow type/ mineral cultural thicket ecosite (CUM1-1/CUT1), coniferous plantation (CUP3), red pine coniferous plantation type (CUP3-1), red maple mineral deciduous swamp type (SWD3-1), silver maple mineral deciduous swamp type (SWD3-2), dry-fresh sugar maple -beech deciduous forest type (FOD5-2), and fresh-moist lowland deciduous forest ecosite (FOD7).

Dry-moist Old Field Meadow Type/ Mineral Cultural Thicket Ecosite (CUM1-1/CUT1)

The canopy of this site consist of Red-osier Dogwood (*Cornus stolonifera*), Staghorn Sumac (*Rhus typhina*), Riverbank Grape (*Vitis riparia*), and Trembling Aspen (*Populus tremuloides*). These shrubs and trees are 1-2 m in height and cover 25-60% of the community. The ground layer is dominated by Canada Goldenrod (*Solidago canadensis*), Common Timothy (*Phleum pratense*), Orchard Grass (*Dactylis glomerata*), Kentucky Bluegrass (*Poa pratensis*), Common Burdock (*Arctium minus*), Purple Loosestrife (*Lythrum salicaria*), and Wild Carrot (*Daucus carota*). This vegetation is 0.5-1 m in height and covers greater than 60% of the community.

Coniferous Plantation (CUP3)

This second, more southern, plantation consists of Eastern White Cedar (*Thuja occidentalis*) in the canopy, some dieback is occuring. The canopy is 2-10 m and covers greater than 60%. There is no sub-canopy or understory vegetation. The ground layer in is dominated by old field species such as goldenrods (*Solidago spp.*), Virginia Strawberry (*Fragaria virginiana*), Inserted Virginia Creeper (*Parthenocissus inserta*), and Red Raspberry (*Rubus idaeus*). Ground layer vegetation is 0.2-0.5 m in height and covers 10-25% of the community.

Red Pine Coniferous Plantation Type (CUP3-1)

The first, more northern, plantation canopy consists of immature Red Pine (*Pimus resinosa*) with the occasional Scot's Pine (*Pimus sylvestris*), and Blue Spruce (*Picea pungens*). The canopy is 10-25 m and covers greater than 60% tree cover. There is no sub-canopy or understory vegetation. The ground layer is dominated by old field species such as goldenrods (*Solidago spp.*), Virginia Strawberry (*Fragaria*

B. **Biota** continued...
virginiana), Inserted Virginia Creeper (*Parthenocissus inserta*), and Red Raspberry (*Rubus idaeus*). Ground layer vegetation is 0.2-0.5 m in height and covers 10-25% of the community.

Red Maple Mineral Deciduous Swamp Type (SWD3-1)
The Red Maple (*Acer rubrum*) swamp separates the two plantations. This swamp is dominated by Red Maple and the occasional Freeman's Maple (*Acer xfreemanii*). These canopy trees range in height from 10-25 m and cover greater than 60% of the community. The sub-canopy is also dominated by Red Maple as well as the occasional Green Ash (*Fraxinus pennsylvanica*) and Silver Maple (*Acer saccharinum*). Sub-canopy trees are 2-10 m in height and cover 10-25% of the community. The understory is dense with Tartarian Honeysuckle (*Lonicera tatarica*), Red Raspberry, and Red-osier Dogwood (*Cornus stolonifera*). The ground layer contains an abundance of the invasive Garlic Mustard (*Alliaria petiolata*) as well as Canada Goldenrod and Common Self-heal (*Prunella vulgaris*). Ground layer vegetation is 0.5-1 m in height and covers 25-60% of the community. Some dieback of Silver Maple was noted.

Silver Maple Mineral Deciduous Swamp Type (SWD3-2)
Two small patches of silver maple swamp occur along drainage features in low-lying areas, within FOD5-2 near the south end of the site. The canopy is dominated by Silver Maple are 10-25m tall and cover greater than 60% of the community. The sub-canopy is also dominated by Silver Maple as well as the occasional Green Ash and Basswood (*Tilia americana*). Sub-canopy trees are 2-10 m in height and cover less than 10% of the community. The understory is dense with Tartarian Honeysuckle, Cranberry Viburnum (*Viburnum opulus*), and Red-osier Dogwood. The understory is 1-2m tall and covers greater than 60%. The ground layer contains an abundance of the invasive Garlic Mustard as well as Spotted Jewelweed (*Impatiens capensis*), Fringed Loosestrife (*Lysimachia ciliata*), and Purple Loosestrife. Ground layer vegetation is 0.5-1 m in height and covers 25-60% of the community.

Dry-Fresh Sugar Maple -Beech Deciduous Forest Type (FOD5-2)
The Sugar Maple (*A. saccharum*) and American Beech (*Fagus grandifolia*) forest occupies the largest portion of this site. The open canopy is dominated by mature Sugar Maple, American Beech, and Red Oak. Associate canopy species include White Ash (*Fraxinus americana*) and White Pine (*Pinus strobus*). Canopy trees are greater than 25 m in height and cover greater than 60% of the canopy. Sugar Maple, White Ash, Black Cherry (*Prunus serotina*), and Basswood are the predominant species in the sub-canopy. Sub-canopy trees are 2-10 m in height and cover 25-60% of the community. The understory is dominated by Sugar Maple and White Ash saplings as well as Choke Cherry (*Prunus virginiana*), Riverbank Grape, and Witch Hazel (*Hamamelis virginiana*). Understory vegetation is 1-2 m in height and covers 10-25% of the forest. The groundcover is dense with Garlic Mustard, Enchanter's Nightshade (*Circaea lutetiana*), Zig-zag Goldenrod (*Solidago flexicaulis*), and Yellow Avens (*Geum allepicum*).

Fresh-Moist Lowland Deciduous Forest Ecosite (FOD7)
Lowland deciduous forest is located at the north end of the site and this community crosses Lakeshore Road. The canopy is dominated by Manitoba Maple (*Acer negundo*) and Green Ash. Canopy trees are 10-25 m in height and cover greater than 60% of the community. The sub-canopy is dominated by Manitoba Maple and which are 2-10 m in height and cover less than 10% of the community. The understory is dominated by European Buckthorn (*Rhamnus cathartica*) and Tartarian Honeysuckle. Understory shrubs are 1-2 m in height and cover 25-60% of the forest. The ground layer consists of Garlic Mustard, Canada Goldenrod, Yellow Avens and Bittersweet Nightshade (*Solanum dulcamara*). Ground layer vegetation is 0.5-1 m in height and covers greater than 60% of the community.

There are 67 bird species, 6 mammals, 1 frog, 1 reptile, 1 dragonfly, and 1 butterfly documented from this site. A high diversity of faunal species of small forests, mid- to late successional areas and small patches of wetland are found here, including Northern Cardinal, Gray Catbird, Willow Flycatcher, American

B. **Biota** continued...
Redstart, Warbling Vireo, and Red-winged Blackbird. This site is known as an important migration stopover point for birds (Brownell, 1993). Applewood Creek is classified as a type 1 fishery within this site.

4. CONDITION

This site is currently in fair condition. Disturbances present include garbage, trampling, industrial odours and noise, trails, soil compaction, and invasive species. During field work in 2012 two large holes in the fence located in the central portion of the site were present and unplanned dirt trails have proliferated. Invasive plant species are prevalent and include Japanese Knotweed (*Polygonum cuspidatum*), Garlic Mustard, Purple Loosestrife, and Tartarian Honeysuckle. Ninety-nine introduced plant species are present at this site (representing 41.25% of the total number of species present), which is a very high proportion of exotics. The native FQI is 44.48, a high value and the native mean coefficient is 3.76[1], a medium value. Both the native FQI and native mean coefficient have increased from 2012 values of 42.61and 3.69, respectively. Surrounding land use is industrial. Remediation of the former munitions arsenal to the north is being undertaken. This site is currently the subject of park planning by the City.

5. SIGNIFICANCE

- 2 provincially significant flora species has been documented from this site.
- 8 plant species considered rare within the City (known from 3 or fewer locations).
- 3 plant species considered uncommon within the City (known from 4 to 10 locations): Finely-nerved Sedge (*Carex leptonervia*), Carolina Rose (*Rosa carolina*) and Roundleaf Goldenrod (*Solidago patula*).
- 37 Credit Valley Conservation flora Species of Conservation Concern (Tier 1-3).
- 1 provincially significant fauna species has been documented from this site.
- 43 Credit Valley Conservation fauna Species of Conservation Concern (Tier 1-3), including 38 bird and 3 mammal, 1 amphibian, and 1 reptile species.
- In FOD5-2 some canopy trees are between 60 and 100 years old. Some Red Oaks exceed 1 m in diameter.
- Contributes to the linkage function of Applewood Creek.
- The floodplain provides floodwater storage for Applewood Creek.
- Diversity of plant species (240 species).
- Close proximity to natural areas LV2 and ETO8.
- Diversity of vegetation communities (7 communities).
- Large size (12.94 ha).
- This site is linked to a number of natural areas by the Lake Ontario shoreline.

6. MANAGEMENT NEEDS

- The City parks public unnamed land and Marie Curtis Park is included within this natural area.
- Control of invasive species is recommended, especially of Japanese Knotweed.

7. PRINCIPLE REFERENCES

Brownell (1993)
City of Mississauga (1978b)

1. Floristic quality is explained in the introduction.

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

Ministère des
Richesses naturelles
et des Forets

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

June 5, 2018

Nicholas Schwetz
Aquafor Beech Ltd.
519-838-2005 x205
Schwetz.n@aquaforbeech.com

Re: Request for Information for 1345 Lakeshore Road East, Mississauga, City of Toronto

Dear Nicholas,

In your email dated April 26, 2018 you requested information on Species at Risk occurring on or adjacent to the above mentioned location. The species listed below have the potential to occur in your study area and may require further assessment or field studies to determine presence:

- EASTERN SMALL-FOOTED MYOTIS (Endangered)
- LITTLE BROWN MYOTIS (Endangered)
- NORTHERN MYOTIS (Endangered)
- TRI-COLOURED BAT (Endangered)

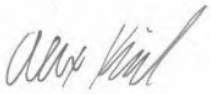
The species listed above may receive protection under the *Endangered Species Act, 2007* (ESA) and thus, an approval from MNRF may be required if the work you are proposing could cause harm to these species or their habitats. If the Species at Risk in Ontario List is amended, additional species may be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

Absence of information provided by MNRF for a given geographic area, or lack of current information for a given area or element, does not categorically mean the absence of sensitive species or features. Many areas in Ontario have never been surveyed and new plant and animal species records are still being discovered for many localities. For these reasons, the MNRF cannot provide a definitive statement on the presence, absence or condition of biological elements in any part of Ontario.

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

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

Sincerely,



Alex Kissel

Management Biologist
Ontario Ministry of Natural Resources and Forestry | Aurora District