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Attention: Mr. Michael Corrado, President

RE: Environmental Impact Study and Tree Inventory and Preservation Study

At this time, Premier Environmental Services (Premier) is pleased to submit the updated Environmental Impact Study and Tree Inventory and Preservation Study for the land located at 4063 Upper Middle Road in Burlington, Ontario to Springfield Construction Ltd. We appreciated the opportunity to work with your team, and Premier would be pleased to assist you on other projects.

Sincerely,

Premier Environmental Services



Dean Fitzgerald, M.Sc., Ph.D.
Senior Ecologist

613015.CE
September, 2016



ENVIRONMENTAL IMPACT STUDY

4063 Upper Middle Road,
Burlington, ON

Prepared for:

Springfield Construction
Ancaster, Ontario

PREMIER
ENVIRONMENTAL SERVICES INC

244 Montrose Street North, Unit 1 Upper Cambridge, Ontario, N3H 2H7

September 30, 2016

Project No. 613015.CE

Executive Summary

Premier Environmental Services Inc. (Premier) was retained by Springfield Construction (Springfield) to prepare an Environmental Impact Study (EIS) to assess a residential development application for land at 4063 Upper Middle Road, in Burlington, Ontario (hereinafter, the Site). The assessment of the development application for the Site with an EIS represents a required step under City of Burlington Official Plan (CBOP) and Halton Region Official Plan (HROP). This EIS is intended to assess the relationship between the existing natural environmental features on-Site and the current government regulations that define available development options, and follow methods presented in Conservation Halton (CH) (CH, 2005). Additional considerations for the EIS were also provided by staff from Region of Halton (ROH)

This Site is identified as parcel number 07228-0147 and is legally described as Part of Lot 10, Concession 1, South of Dundas Street, geographically in the Nelson/Burlington Township. During 2013 and again in 2014, staff from Premier inspected the Site, and documented it contained a single storey residence in 2013 that was surrounded by manicured lawn, shrubs, flower beds, fruit trees, and other planted deciduous and coniferous trees. In addition, it was observed the residential lawn ended at the top-of-bank of Shoreacres Creek (Shoreacres Creek Watershed; sub-watershed 308). This area at the top-of-bank of Shoreacres Creek was observed to contain varied plant species, including herbaceous and woody species that were not planted (i.e., naturally recruited plants). Hence, the ecotone between the residential lot and Shoreacres Creek flood plain is well defined on-Site. Then the house was demolished in 2014 and the debris removed from the Site without disturbing the vegetation along Shoreacres Creek. This information from the 2013 surveys was then used to complete initial communications with different government agencies that provided comments on an initial development plan, described in Chapter 2.0. This past communication also resulted in the identification of the study requirements for this EIS to assess the initial development plan. This study reports the findings from field studies completed primarily between April 2013 and July 2015, relative to the revised development plan.

Following guidance from CH, standard surveys were completed for the following species, to represent the biodiversity on-Site:

- Amphibians using Marsh Monitoring Protocol during April, May, and June;
- Vegetation inventories during May, June, July, and September
- Breeding birds using Ontario Breeding Bird Atlas protocol on two dates in June;
- Tree inventory and inspection during May, July, and September, and;
- Documentation of incidental wildlife observations on all visits to Site.

Dedicated surveys were completed to assess for potential presence of Species At Risk or possible habitat available for use by SAR on-Site, as requested by staff from Ontario Ministry of Natural Resources and Forestry (MNRF). These surveys included:

- Inspections for Barn Swallow (*Hirundo rustica*) and Chimney Swift (*Chaetura pelagica*) nests. No evidence of either bird was identified;
- Screening of trees for Butternut (*Juglans cinera*). There are no Butternut on-Site; and,
- Evaluation of potential bat (i.e., myotis) habitat in trees on-Site. All mature trees were inspected for cavities. No evidence of habitat use by bats was found within 150 m of the proposed development footprint on-Site.

A complete list of herbaceous species and woody stems was compiled for the Site, within 150 m of the proposed development footprint on-Site. This list included 39 species from 22 families with 25% identified as non-native to Burlington. The most common herbaceous plant within the proposed development footprint was non-native Garlic Mustard (*Alliaria petiolate*), a plant known to inhibit the growth of other herbaceous species. A total of 20 woody species from 12 families were also identified; of these 6 or 30% were non-native to Burlington. The most common tree in the proposed development footprint was native Ironwood (*Ostrya virginiana*). This high number of non-native herbaceous and woody species along with the predominantly urban location represent key reasons for low diversity of plants on-Site. The herbaceous species and woody stems contained no SAR or species of conservation importance.

Information on land, drainage, and plant community allowed for the completion of Ecological Land Classification (ELC) mapping. This resulted in an ELC map with three key polygons: the former residence designated as Low-density Residential (CVR-1); planted and volunteer trees around the residence, designated as Dry-Fresh Mixed Woodlands (WOMM-3), and the adjacent flood plain forest designated as Fresh-Moist Oak-Maple Hickory (FOD9-1). An interesting observation in FOD9-1 were a couple of regionally uncommon and large Swamp White Oak (*Quercus bicolor*). These specimens were located about 100 m from the edge of the proposed development footprint with no young Swamp White Oak evident; an absence of young Swamp White Oak is presumably due to herbivory from species like White-tailed Deer (*Odocoileus virginianus*) observed incidentally in FOD9-1.

Routine surveys for amphibians along with incidental observations identified no SAR or species of conservation importance. Species that were documented included Green Frog (*Lithobates clamitans*), Spring Peeper (*Pseudacris crucifer*), and American Toad (*Bufo americanus*). Amphibian activity was greatest within the forest area along Shoreacres Creek.

Routine surveys for birds along with incidental observations identified no SAR or species of conservation importance. The routine surveys were conducted by R.J. Burnside and identified 13 species, including the regionally uncommon Carolina Wren (*Thryothorus ludovicianus*). Other incidental observations by staff from Premier identified an additional six species, for a total of 19 species on-Site and within the forest edge of Shoreacres Creek.

A key observation was the documentation of numerous large trees along the top-of-bank of Shoreacres Creek. This area was identified as a no-touch zone by staff from CH and ROH, to create a buffer between the creek valley and proposed development. To ensure the protection of the mature trees, a buffer of 7.5 m along the drip line of the trees was recommended, to ensure protection of tree roots during future development of the Site.

With the field observations along with records review, communications with CH and OMNR, the following conclusions and additional recommendations were made in this EIS:

- Surveys revealed the Site contains distinct three habitats that reflect existing vegetation, wildlife, and surface waters;
- There are no significant natural features or wildlife habitat present in CVR-1 or WOMM-3 while FOD9-1 and Shoreacres Creek does provide habitat to wildlife;
- Collated information was interpreted using ELC and identified three distinct polygons, as: CVR-1, WOMM-3, FOD9-1 along Shoreacres Creek;
- It was noted FOD9-1 and Shoreacres Creek was mapped by CH as a Regulated Area, and provides habitat for a number of bird and wildlife species in the area, but all observed species are considered common with no SAR were observed;
- To apply a vegetation buffer of 7.5 m on the tree drip line at the top-of-bank of Shoreacres Creek, with no disturbance of this buffer area or top-of-bank;
- Since no disturbance of FOD9-1 or Shoreacres Creek is expected from the proposed development, these habitats are expected to retain ecological functionality in the future;
- This EIS recommends the use of BMP measures to mitigate the potential effects of the proposed development on the natural features of FOD9-1 and Shoreacres Creek;
- This EIS recommends a 1:1 compensation ratio to be applied for the 60 live trees proposed for removal within CVR-1 and WOMM-3; and
- Stormwater management will follow a plan that is currently in preparation. However, future drainage is expected to continue to the creek or to Upper Middle Road.

Overall, it is Premier's opinion that the proposed development on lands classified as CVR-1 and WOMM-3 along with the use of a vegetation buffer will result in no significant disturbance on the existing ecological features located in the adjacent FOD9-1 and Shoreacres Creek habitats.

This summary only represents an overview of the findings and recommendations of the EIS.

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1.0 INTRODUCTION

Premier Environmental Services Inc. (Premier) was retained by Springfield Construction (Springfield) to prepare an Environmental Impact Study (EIS) to assess a residential development application for land at 4063 Upper Middle Road, in Burlington, Ontario (hereinafter, the Site; Figure 1). This assessment of the development application with an EIS represents a required step under City of Burlington Official Plan (CBOP) and Halton Region Official Plan (HROP). The EIS is intended to assess the relationship between the existing natural environmental features on-Site and the current government regulations that define available development options, and follow methods presented in Conservation Halton (CH) (CH, 2005).

This Site is identified as parcel number 07228-0147 and is legally described as Part of Lot 10, Concession 1, South of Dundas Street, geographically in the Nelson/Burlington Township (reviewed in Premier, 2014). During 2013 and again in 2014, staff from Premier inspected the Site, and documented it contained a single storey residence in 2013 that was surrounded by manicured lawn, shrubs, flower beds, fruit trees, and other planted deciduous and coniferous trees. In addition, it was observed the residential lawn ended at the top-of-bank of Shoreacres Creek (Shoreacres Creek Watershed; sub-watershed 308; CBOP 2012). This area at the top-of-bank of Shoreacres Creek was observed to contain varied plant species, including herbaceous and woody species that were not planted (i.e., naturally recruited plants). Hence, the ecotone between the residential lot and Shoreacres Creek flood plain is well defined on-Site (Premier, 2014). Then the house was demolished in 2014 and the debris removed from the Site without disturbing the vegetation along Shoreacres Creek (Premier, 2014). This information from the 2013 surveys was then used to complete initial communications with different government agencies that provided comments on an initial development plan, described in Chapter 2.0. This past communication also resulted in the identification of the study requirements for this EIS to assess the initial development plan. At this time, a revised development plan is described in Chapter 2.0. This study reports the findings from field studies completed primarily between April 2013 and July 2015, relative to the revised development plan.

Relationship between the Proposed Development and City of Burlington Official Plan

In the CBOP, the Site is designated as 'High Density Residential and Watercourse' because it contains a portion of Shoreacres Creek (CBOP 2012). As noted above, this flood plain forest is separated from the manicured lawn by the top-of-bank, where the lawn is relatively flat and then the land slopes down to the flood plain on one side and toward the residence on the other side. This flood plain forest is designated as Greenlands A (CBOP, 2012, HROP 2009).

4063 Upper Middle Road Constraint Map

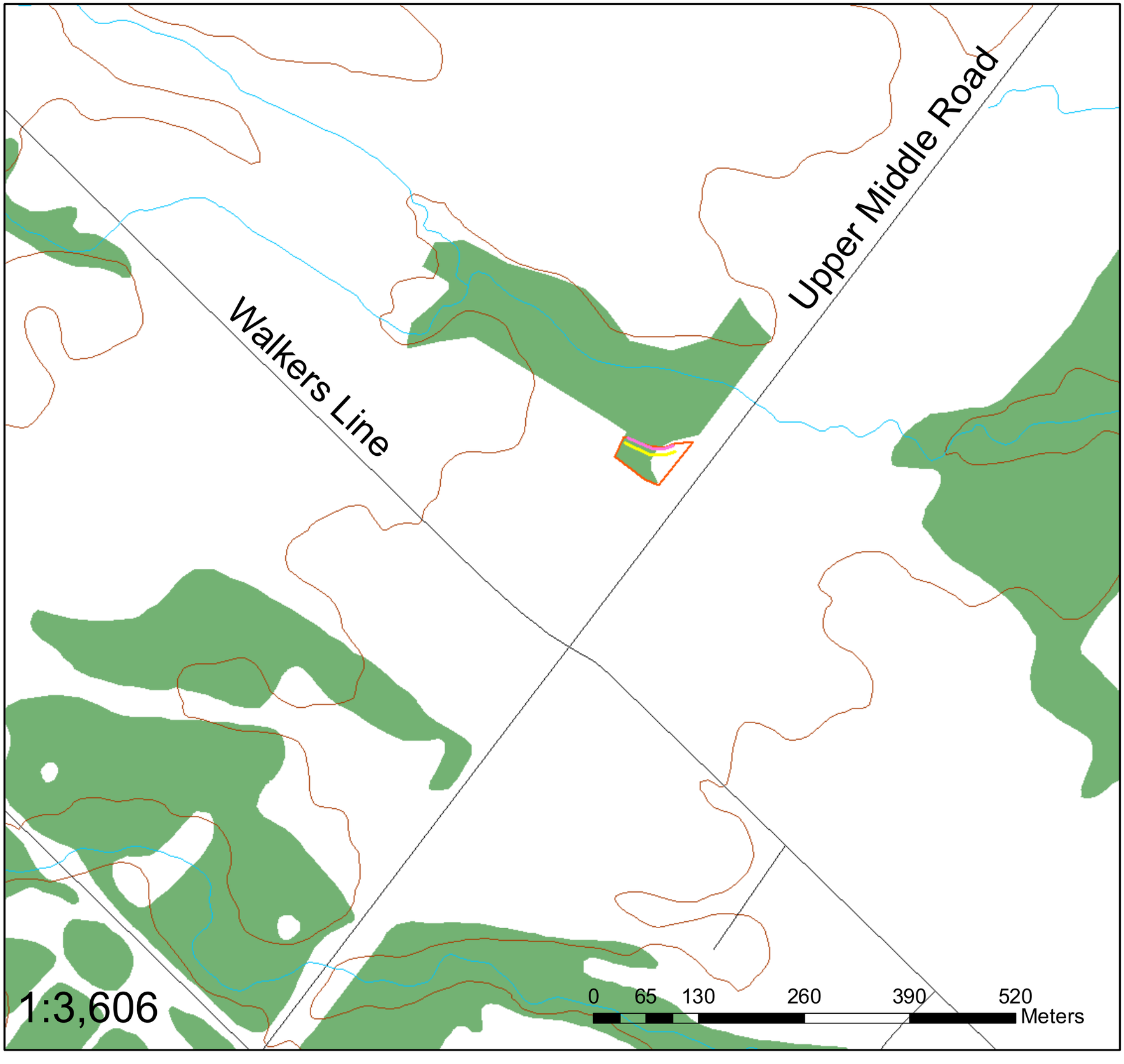


Figure 1

This drawing has been prepared for Premier and it's clients and may not be used, reproduced or transmitted in any way by third parties without permission from Premier Environmental.

PREMIER ENVIRONMENTAL SERVICES INC. Environmental Challenges BUSINESS SOLUTIONS

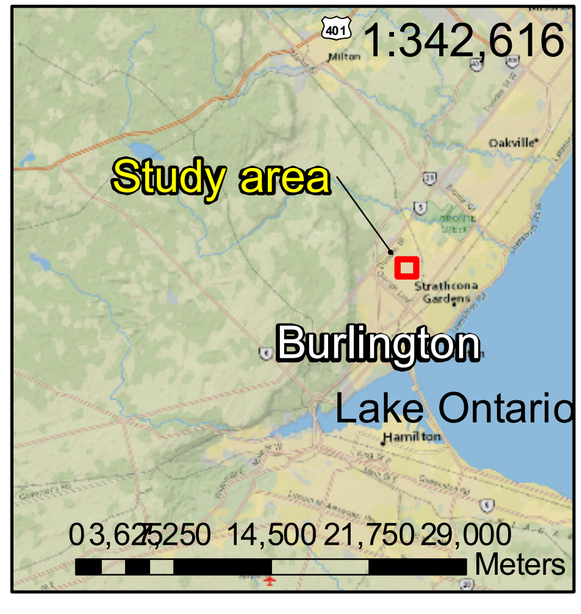
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UTM Zone Projection
North American Datum 1983
September 29, 2014

N W E S

Legend

- Drip line
- 7.5 m buffer
- Water course
- Road
- Contour line
- Woodland
- Study area



Information provided by Springfield (Michael Corrado, pers. comm., September 2014) identified to Premier that the residence on-Site was demolished during June, 2014. At this time, Premier understands that the appropriate demolition permits were obtained from the City of Burlington (COB) by the previous landowner and best practices were used during the demolition activity. On September 8, 2014, staff from Premier inspected the Site and a summary of this inspection is included in Appendix B (Premier, 2014). This recent inspection identified no evidence of environmental contamination near the foundation of the demolished residence. When the Site was inspected, it was also noted that the majority of debris from the residence had been removed. In addition, it was also noted that some of the planted ornamental trees adjacent to the residence were removed during demolition, as the roots were close to the foundation (Premier, 2014). This 2014 inspection also noted the trees found along the top-of-bank were not disturbed during the demolition, another indication that best practices were used.

1.1 Preparation of EIS Relative to Government Guidance

With available information for the Site, it is feasible to prepare an EIS that assesses Springfield's current residential development proposal. The preparation of this EIS will allow for the assessment the proposed development plan relative to the planning guidance included within the RHOP and CBOP. Other information that requires consideration within the EIS relative to the development plan is included within Ontario's *Endangered Species Act* (ESA), Ontario's *Water Resources Act* (WRA), *Conservation Authorities Act* (CAA), Ontario's Provincial Policy Statement (PPS) as defined by the *Planning Act*, federal *Species at Risk Act* (SARA), *Fisheries Act* (FA), *Migratory Birds Convention Act* (MBCA), and *Canadian Environmental Assessment Act* (CEAA). In addition, this EIS will evaluate the development proposal relative to guidance from CH staff due to the presence of Shoreacres Creek. In summary, this EIS integrates the development plan from Springfield with available guidance, as follows:

- Review of proposed development plan, **Chapter 2.0**;
- Natural heritage planning considerations, **Chapter 2.0**;
- Review of biological survey methods and other resources used, **Chapter 3.0**;
- Survey results for vegetation, including trees and herbaceous species, **Chapter 4.0**;
- Survey results for amphibians (frogs and toads), **Chapter 5.0**;
- Survey results for breeding birds, **Chapter 6.0**;
- Survey results for incidental wildlife, **Chapter 7.0**;
- Integration of proposed development with all biological survey results, **Chapter 8.0**; and,
- Recommendations for maintenance of ecological functioning of Site relative to the proposed development plan, **Chapter 9.0**.

2.0 PROPOSED DEVELOPMENT AND NATURAL HERITAGE PLANNING

This chapter reviews the proposed development plan for the Site. Then this chapter reviews the consultations completed with different government agencies regarding the required study components to be included within the EIS from 2013 - 2015. The initial field studies and analyses were completed by ecologist Ms. Lauren Cymbaly, Ecologist, from Premier with follow-up work by ecologists Dean Fitzgerald and David Jolly, Senior Ecologists, from Premier.

2.1 Proposed Development

Springfield Construction has prepared a development plan for the Site. This plan identifies a scenario to develop a multi-storey condominium building. The general layout of this plan for the Site is identified within **Figure 2**. The architect's vision for the building is presented as **Plate 1**. For this plan, the extent of the footprint of the development is set back from the top-of-bank that is located on-Site. This EIS will resolve the most appropriate setback from the top of bank. For the Site, the proposed disturbance for the future development will be set back from Shoreacres Creek, to ensure no disturbance to this sensitive natural features. This area of setback from the top-of-bank can be described as mostly flat (described in detail later in the report). This flat area is intended to separate the future development from the flood plain and protect the roots of the vegetation (primarily mature trees) that exist along the top-of-bank of the creek. For the proposed development, the setbacks are expected to maintain existing ecological features and functioning in the area of the top-of-bank with no disturbance of these trees.

For the proposed development, the future drainage is expected to drain toward Shoreacres Creek or be directed away from Shoreacres Creek, toward existing infrastructure located along Upper Middle Road. This expectation is due to the proposed setback from the top-of-bank that this flat area will allow for runoff from precipitation and snow melt to continue to drain naturally to the valley that contains Shoreacres Creek. This means the current natural drainage pattern will be maintained and result in no net loss of water to the creek valley. In other words, the existing natural slope of the land away from the top-of-bank will continue to allow drainage away from the proposed development footprint toward Upper Middle Road. Due to the grades within the proposed development, drainage will continue to flow as it does today. A draft drainage study is under preparation at this time, with the final drainage study expected during January, 2017. An addendum to this EIS will be issued when the final drainage study is prepared. At this time, it is inferred the total water draining from the Site to Shoreacres Creek will be retained, due to the proposed retention of natural vegetation is the setback area. This maintenance of the top-of-bank area is expected to benefit the ecological features and functions within the creek valley, and provide protection to the mature tree canopy.

1 STOREY
BRICK TOWN HOUSE
PEAK ELEVATION:
150.13

2 STOREY
BRICK TOWNHOUSE
PEAK ELEVATION:
149.59

2 STOREY
BRICK TOWNHOUSE
PEAK ELEVATION:
149.22

CONDO BLOCK 25671

7 STOREY
APARTMENT BUILDING

Main level Parking

Maintenance
Garbage

Elevator & Stairs

Patio

Porch

Access Ramp to
2nd Level Parking

Access to
Main Level Parking

Ramp to
Underground
Parking

Entrance

New Driveway Grade: 138.4

New Driveway Grade: 138.4

WOODEN
SHED

7.5m from Top of Bank

Top of Bank

DRIPLINE

TOP OF BANK AS MARKED BY
HALTON CONSERVATION AUTHORITY

7.5m Setback
From Dripline

Top of Bank

6m SETBACK FROM ROAD WIDENING

5m ROAD WIDENING

UPPER MIDDLE ROAD
ROAD ALLOWANVE BETWEEN CONCESSIONS 1 AND 2 S.D.S.

P.I.N. 07228-0137(LT)

P.I.N. 07228-0147(LT)

P.I.N. 07228-0149(LT)

P.I.N. 07228-0149(LT)

P.I.N. 07228-0149(LT)

P.I.N. 07228-0137(LT)

P.I.N. 07228-0149(LT)

EXIST 200mm SAN SEWER

825mm STORM @ 0.40 %

900mm STORM @ 0.40 %

EXIST 600mm WATERMAIN

Overhead Utility Wires

Concrete Sidewalk

Concrete Curb

Gutter

Asphalt

Curb Cut

Top of Bank

Bottom of Bank

Fence

Board Fence

Post & Wire Fence

SIB (1497)

SIB (BURL)

SIB (Y&Y)

SIB (P4)

SIB (OU)

MH

CB

CBMH

WV

HP

GW

Hydro Vault

Swale

Porch

N37°24'00"E

91.47

(P4 & Meas)

(P3 & Meas)

N49°28'40"W

N49°28'20"W

N37°18'10"E
(P1 & Meas)
(N38°20'10"E P2)

76.473
(P1, P2 & Meas)

(N19°46'05"E P2)
(P1 & Meas)
N18°41'55"E
16.115
(P1, P2 & Meas)

102.25 (P3 & Meas)
N 37° 24' 30" E
(REFERENCE BEARING)

23m-125mm SAN SERVICE
PVC SDR 28-INV @ ± 135.13m

21.71

3.40

5.79

4.51

19.80

6.82

12.43

11.72

7.50

4.13

20.13

14.47

17.59

15.03

6.11

1.24

6.90

6.19

11.70

7.71

4.50

1.51

7.50

6.00

9.04

8.20

19.57

5.00

4.72

9.86

25.36

13.98

63.42

58.12

91.47

35.62

3.98 (Meas)



Plate 1: Architect's vision for the design of the proposed development. The footprint of the development will be set back from the tree drip line, to ensure no disturbance to the mature tree canopy. This approach identifies that grading will occur outside of the setback and creek valley.

An evaluation of this proposed development plan relative to regulatory guidance from government agencies is included in Chapter 8.0. That is, the proposed development plan is evaluated relative to government regulatory guidance and the documented ecological features on-Site. The integration of this information will then allow for an assessment of the conformity of the proposed development to the regulatory guidance provided-to-date and assess the risk from significant environmental effects from this proposed development. This process of reviewing regulations and guidance is followed to ensure the proposed development is fully assessed using the EIS to show compliance with government regulations and regulatory guidance.

2.2 Natural Heritage Planning Considerations

In order to evaluate the proposed development, it is necessary to identify key natural heritage features located on-Site within this EIS. For the Site, the natural heritage features include the manicured lawn, the planted trees and shrubs near the former residence, wildlife that may exist on-Site, and the flood plain forest that exists in proximity to Shoreacres Creek.

Due to the location of Shoreacres Creek in Burlington, it has been studied extensively in the past by CH (e.g., CH, 2013a). For example, CH studies have previously described the terrestrial and aquatic features in detail, and identify that Shoreacres Creek originates as seepage from the Waterdown Moraine. Specifically, Shoreacres Creek originates as two (2) headwater (i.e., first order) creek channels that flow south from the Waterdown Moraine. These two first order creek channels show a confluence south of Millcroft Park Drive in Burlington,

where a larger single channel forms. The total length of the creek is about 14 km with a drainage area of 12.9 km^2. Due to the predominantly urban land use in this watershed, studies from CH have previously described the water quality, diversity and habitats as 'degraded'. This designation is due to water quality degradations that include stormwater runoff from urban lands (developments, roads, etc.), low summer flows, reduced benthic invertebrate diversity, and limited fish species richness, along with evidence of channel erosion (CH, 2013a). For example, benthic invertebrate and fish species in the creek are tolerant of degraded water quality typical of urban settings. Past studies by CH explain why the flood plain forest on-Site was designated as Greenlands A and thereby requires assessment within this EIS.

Shoreacres Creek has been assessed for vulnerability to contamination within source water protection studies (Hamilton-Halton Source, 2015). This assessment was completed to evaluate drainage from this creek that eventually enters Lake Ontario, near the drinking water intake for Burlington. Within the evaluation, the average flow rates along with the distance were used to estimate the vulnerability for transport of contaminants and risk to the Burlington water intake. Shoreacres Creek was identified to exist within Intake Protection Zone 2 with a vulnerability rating of 4.1 (where 1 is low and 10 is high). The 4.1 vulnerability is linked to the estimate of 76 minutes for water to travel through this creek and possibly enter the water intake used by Burlington. For additional information, refer to Table 6.1 and Figure 6.2 in Hamilton-Halton Source (2015). In summary, this creek is within the source protection planning area, and drainage to the creek should be managed, to reduce risk of transport of hazardous materials from future development activities. Such environmental management can be achieved through use of environmental setbacks along the creek, to maintain drainage quality and volumes.

2.3 Government Regulations and Regulatory Guidance

Assessments of land development proposals in Ontario require evaluation relative to a suite of government regulations and other regulatory guidance. This requirement for evaluation is intended to protect the existing functionality of natural heritage features and functions and adjacent area that could be affected by the proposed development. For this EIS, the development proposal provided by Springfield (Figure 2) requires consideration relative to the following government regulations and regulatory guidance:

- Ontario’s PPS;
- Ontario's ESA;
- Ontario's WRA;
- Ontario's CAA;
- Federal SARA;
- Federal FA;
- Federal MBCA; and,
- Guidance from Staff at CH and Region of Halton.

The PPS was issued under Section 3 of *The Planning Act*, and came into effect on March 01, 2005. Planning authorities "shall be consistent with" policy statements issued under *The Planning Act*. The PPS includes policies on development and land use patterns, resources, and public health and safety. This report deals with Policy 2.1 of the PPS, which is directed at protection and management of natural heritage resources. Within this context, seven types of natural heritage features are defined in the PPS: Significant wetlands; threatened and endangered species; fish habitat; significant woodlands; significant valley lands; significant Areas of Natural and Scientific Interest ("ANSIs"); and significant wildlife habitat. The current version was presented by Ontario's Municipal Affairs and Housing during 2014, and follows the similar recommendations for environmental management as the 2005 version (MMAH, 2014).

Following the PPS (2014), proposed development will not be permitted in significant wetlands east and south of the Canadian Shield. Also, no development will be allowed in significant portions of the habitat of threatened and/or endangered species, generally called Species-At-Risk (SAR), as defined by species listed in the ESA and SARA. Development and site alteration may be permitted on lands adjacent to significant wetlands and the significant portions of the habitat of SAR if it is demonstrated that there will be no negative impacts on the natural features or the ecological functions within the area. Development may be permitted in, and adjacent to, the other five types of natural heritage features provided that there will be no negative impacts on the features and functions for SAR associated with the area identified.
In summary, the Ontario WRA and federal FA precludes proposed developments that may have detrimental consequences on surface water quality and habitats used by fishes to complete their life history The MBCA precludes disturbance of habitat used by migratory birds across North America, particularly during nesting season and during foraging. Habitat protection includes concentration areas for migratory birds, during seasonal (spring, autumn) migrations.

The following descriptions overviews regulatory guidance received from ROH, COB, and CH. Some of this information was included in the respective official plans along with instructions provided by staff that attended inspections of the Site in 2012 and 2013. A record of communications with these staff members whom inspected the Site is included in Appendix C.

2.3.1 Region of Halton

Staff from ROH participated in the inspection of the Site during 2013. Specifically, on April 26, 2013, Mr. Ron Reinholt, Regional Forester, and Mr. Stephen Dinka inspected the Site with Ms. Cymbaly of Premier. These individuals from ROH provided interpretations of the relationship between the flood plain forest and existing residential lawns and planted flowers, trees, and other cultural features on-Site. This information was interpreted and then used to set the tree drip line, associated with the top-of-bank line set by CH during 2012 (see below for details).

A review of the 2009 HROP identifies that the Site is located in land that is designated for residential-type land development. In other words, this land is not mapped as Greenbelt or Escarpment Natural Area (refer to Map 1A in the current HROP, available at http://www.halton.ca/). In addition, the HROP identifies that a flood plain does exist on-Site.

2.3.2 City of Burlington

Staff from the CB were invited to participate in the inspection of the Site during 2013 but declined to attend, due to the presence of staff from ROH. Thus, staff from ROH discussed how the HROP and CBOP are complementary, and recommend similar environmental management. Such similarity is intended to ensure consistent strategies for development as well as management of land near water with natural areas.

Within the CBOP, the Site is identified as suitable for residential development with the recognition it is partially located on the flood plain of Shoreacres Creek. The Natural Heritage System included in CBOP, as identified on Schedule B Natural Heritage System, consists of the Greenbelt Natural Heritage System, the Greenbelt Protected Countryside, the Niagara Escarpment Plan area, and Core Areas and Linkages identified by the City, based on requirements of the Provincial Policy Statement. It is prudent to note that Schedule B identifies the wetland and surrounding area, located at the south of the Site, as Core Area.

The purpose of the Natural Heritage System, involves Core Areas, Linkages, and the matrix of lands between them. Such connecting natural areas allows wildlife and plants to move between habitat patches. These movements act to maintain biodiversity, and help sustain the long-term health and viability of natural systems. It is for these reasons that the natural heritage features on-Site require documentation in this EIS. When these natural heritage features are documented, then it is feasible to identify the possible environmental constraints that may exist in proximity to the proposed development. The identification of the natural heritage features allows for an analysis of possible consequences on-Site and for adjacent lands in the EIS.

Guidance was also received from Ms. Rosalind Minaji, Coordinator of Development Review, COB. Ms. Minaji informed Ms. Cymbaly of Premier over the telephone on April 30, 2013 that a study of the trees planted on the manicured lawn of the Site was required, and to be presented as a Tree Inventory and Preservation Study (TIPS). In addition to this requirement, Ms. Minaji stated that the TIPS could be integrated as a component of the EIS (as an appendix) with no separate report necessary. It was also identified that the TIPS should follow the guidance included in the COBP and that the findings should integrate with other ecological studies on-Site. For example, the COPB recommends a minimum of a 1:1 compensation ratio for trees that are removed and that replacement trees are native to ROH. This tree compensation is to follow -completion of the proposed development with follow-up to ensure tree survival.

On November 17, 2015, By-Law Enforcement Officer Tyler Morgan, COB, identified that some trees had toppled on-Site. Mr. Morgan advised Springfield that these hazard trees needed to be immediately addressed, due to safety concerns. On November 24, 2015, Mr. Morgan met with representatives from Springfield, and confirmed that the hazard trees were cut and the problem was considered resolved. It was confirmed during the meeting on November 24 that the trees requiring cutting were those that had been previously damaged by factors such as extreme weather and insect damage, as described in detail later in this document. It is also noteworthy to identify that Mr. Morgan advised Springfield to discuss this matter with ROH, and this involved a phone call with Mr. Ron Reinholt, Senior Forester for ROH. Mr. Reinholt stated to Springfield that no trees could be cut that were located in the flood plain of Shoreacres Creek, however.

2.3.3 Conservation Halton

Staff from CH participated in the inspections of the Site on different dates. The first inspection was completed by Mr. Charles Priddle, Coordinator, Regulations Program, on October 12, 2012. In 2012, Mr. Priddle marked the top-of-bank of the flood plain forest of Shoreacres Creek. This marking identified the extent of the regulated flood plain on-Site. This process of the identification of the flood plain is pursuant to the *Ontario Regulation 162/06* (Development, Interference with Wetlands and Alterations to Shorelines and Watercourses; CH, 2013b). Such guidance acts to regulate any proposed development in, near, or on areas near water (e.g., river or stream valleys, hazardous land, wetlands). Thus, any proposed development in proximity to regulated lands (i.e., near a flood plain) requires permission (approval following evaluation through an EIS) from CH. It is also for this reason that the proposed development on-Site (Figure 2) is setback from the top-of-bank and flood plain. This past guidance also included the scenario that if the proposed development was set back from the creek, the existing drainage pattern would be retained, and no storm water management plan would be required.

On April 26, 2013, Ms. Jane Devito Senior Planner CH participated in the inspection of the Site, to set the tree drip line along with staff from ROH and Ms. Cymbaly from Premier. Then on May 8, 2013, Ms. Devito shared a telephone conversation with Ms. Cymbaly. This conversation confirmed that a geotechnical slope stability study was not required by CH for the proposed development, as long as a 7.5 m setback is maintained from the top-of-bank. It was also discussed during this conversation that this 7.5 m setback would also match the majority of the noted tree drip line. That is, it was acknowledged a 7.5 m setback was very similar to the tree drip line, and would act to protect the roots of most trees found in proximity to the top-of-bank.

On June 18, 2015, the tree drip line was re-set, with staff from ROH. The ROH was represented by Senior Planner Richard Clark and Senior Forester Ronald Reinholt while Premier was represented by Senior Ecologist Dean Fitzgerald. It was necessary to re-set the tree drip line, as a number of large trees were toppled by the ice storm of December 2013 or died afterwards.

Since these large trees in the past had been used to set the original tree drip line, it was necessary to re-set the dripline. In summary, the natural loss of native trees following the ice storm resulted in the revision of the tree drip line. No changes were made to the top-of-bank previously set by CH on-Site.

2.3.4 Ontario Ministry of Natural Resources

Communications were completed between Ms. Cymbaly of Premier and staff from Ontario Ministry of Natural Resources (OMNR) Aurora District Office between April and July, 2013 regarding possible SAR on-Site. Initially, Ms. Cymbaly described the project to OMNR and then OMNR provided a screening letter, issued by Ms. Natosha Fortini, OMNR Assistant Species at Risk Biologist, Aurora OMNR office. In this letter, OMNR that identified the Site needed to be screened using proper methods by qualified ecologists for one tree and two bird SAR reported in the last 25 years as being in the in the area of the Site, as follows: Butternut (*Juglans cinerea*), Barn Swallow (*Hirundo rustica*), and Chimney Swift (*Chaetura pelagica*). In addition, the MNR stated that other SAR that may be encountered on-Site would need to be reported to Ms. Fortini as soon as feasible. A copy of this letter is included in Appendix C.

It is important to identify that during the re-setting of the tree drip line on-Site during June 2015, Mr. Clark from ROH asked if Premier had surveyed for bats, a group of mammals referred to generally as ‘myotis’, on-Site. Premier responded that the original residence had been surveyed for bats prior to demolition and none were found. Mr. Clark then reminded Premier that during November, 2013, OMNR elevated three myotis species to endangered status in Ontario and thereby these populations and habitats became protected under the Ontario’s *Endangered Species Act*. These species that received protection at that time include: Little Brown Myotis *Myotis lucifugus*, Northern Myotis *Myotis septentrionalis*, and Tri-colored Bat *Perimyotis subflavus* (COSEWIC, 2013). Due to the elevation of these three myotis species to endangered, it became necessary to inspect large trees on-Site for possible habitat use by these species. Specifically, Premier was instructed to visually evaluate all trees in proximity to the creek and proposed building area for possible use by myotis. This evaluation was to involve the use of binoculars to search for presence of nest cavities in the trees (live, dead) within the proposed building area and about 75 m from the top-of-bank. The results of this inspection of trees for possible habitat use by myotis is reported in Chapter 4.

Summary

The top-of-bank of the flood plain forest along Shoreacres Creek on-Site was marked with flags by CH staff Mr. Priddle during October 2012. Then the drip line of top-of-bank and associated flood plain forest was marked with flags during April 2013 by Ms. Cymbaly of Premier and ROH and CH staff members. This information on the top-of-bank and dripline was surveyed by licensed Ontario Land Surveyors from Ashenhurst Nouwens Limited, Hamilton Ontario. A TIPS was requested by staff from COB to be included as a component of this EIS. Staff from CH also stated that no slope stability study was required, if a 7.5 m setback was maintained from the top-of-bank. Guidance from OMNR stated that one tree and two bird SAR were known to previously occur in the area of the Site and should be assessed for presence. Follow-up guidance identified that the SAR habitat on-Site needed to be screened for possibly use by myotis. This guidance from the different government regulations and agencies was then used to revise the proposed development plan from the original version presented in 2013 to the current version that is considered in detail within this EIS (Figure 2, Plate 1). During this process, the tree drip line was also revised, due to a number of strong storms that damaged and toppled trees during December 2013 and October 2015. The varied storms damaged nearly all the trees in the area of the proposed development, and as a result, a number have died recently. In general, these trees on the building site are dominated by non-native species and are proposed for removal. After the development is completed, all trees that are removed will be replaced with a ratio of 1:1 using only species native to Halton, as defined by CH and ROH. An updated storm water drainage plan is expected for the proposed development in the future, as it is under preparation by S. Llewellyn & Associates Limited of Burlington. When this plan is prepared, an Addendum to this EIS will be presented.

3.0 DATA COLLECTION, ANALYSIS, AND ADDITIONAL RESOURCE

This chapter reviews the dates of visits to the Site, for varied purposes in 2013, 2014, and 2015.

3.1 Field Studies

Studies of the natural environment were completed on, and adjacent to, the Site between April and October, 2013; one additional visit was completed on September 8, 2014. Another follow-up visit was completed on June 17, 2015. The exact dates for these surveys, with descriptions of activities, as follows:

April 25th , 2013	A preliminary biological assessment of the site was conducted in order to generally describe the features and to detect obvious environmental constraints. Spring plants were also identified on-Site. Incidental bird and wildlife observations documented. Inspections of existing residence for evidence of habitat use by Barn Swallow and Chimney Swift.
April 26th, 2013	Meeting with staff from ROH and CH to identify the tree drip line along the top-of-bank previously demarcated by CH.
May 2nd, May 9th, May 27th, and June 14th, 2013	The site was surveyed for calling amphibians, as well as incidental nocturnal birds (owls) and other wildlife. Supplemental information on the vegetation community was also collected. Data on incidental wildlife observations also collected. Inspections of existing residence for evidence of habitat use by Barn Swallow and Chimney Swift.
May 18th and June 4th, 2013	Initial work for Ecological Land Classification (ELC) and botanical surveys on-Site.
June 15th and June 29th, 2013	Breeding bird surveys were conducted to assess the diversity of birds using the site. Inspections of existing residence for evidence of habitat use by Barn Swallow and Chimney Swift.
July 4th, 2013	Evaluation suspected Butternut trees with MNR Forester Bohdan Kowalyk R.P.F., OMNR Aurora District Forester.
August 14th to October 4th, 2013	Follow-up botanical surveys completed, to finalize ELC maps. Additional documentation of incidental wildlife.
September 8th and 15th, 2014	Follow-up inspection of the Site, to assess demolition of residence and tree cover on-Site. The purpose for this re-assessment of the tree cover was the ice storm experienced on-Site during December 2013. This storm caused a number of large trees that formed the tree drip line on-site to fall over. This ice storm was responsible for damage to trees across Burlington. These inspections also looked for evidence of myotis (i.e., bat) use in association with the large trees on-Site as well.
June 17, 2015	Inspection of Site with Staff from ROH, to re-set tree drip line. This re-set was required, due to tree damage from the December, 2013 ice storm. Hence, the tree drip line that was set on April 26th, 2013 was no longer valid. No changes made to top-of-bank set by CH.
July 29, 2015	Inspection of large trees on-Site for possible habitat use by myotis. This approach was approved by CH and ROH. Large trees within 120 m of the top-of-bank were evaluated for presence of cavities that could be used by myotis for maternal or overwinter roosting.
November, 2015	By-law enforcement from COB requested that Springfield remove hazard trees that had recently toppled due to a wind storm. The trees in question had been previously damaged by the December 2013 ice storm with subsequent attacks by insects and/or disease. The removal of these trees was verbally approved by ROH. No trees located in the flood plain were removed during this process, as they are not hazards.

3.2 Supporting Documents and Resources

Aerial Photographs

Premier obtained historical aerial photographs of the Site. These photographs were from 1954, 1978, and 1988 (Plates 2 - 4). Inspection of these photographs show a transition of increased urban development in the area around the Site, and an absence of development in the flood plain of Shoreacres Creek.



Plate 2: Aerial photograph of land that includes the Site from 1954. This photograph reveals that agriculture was the dominant land use in the area of the Site at that time. This photograph also reveals the creek is located in an intact floodplain forest.

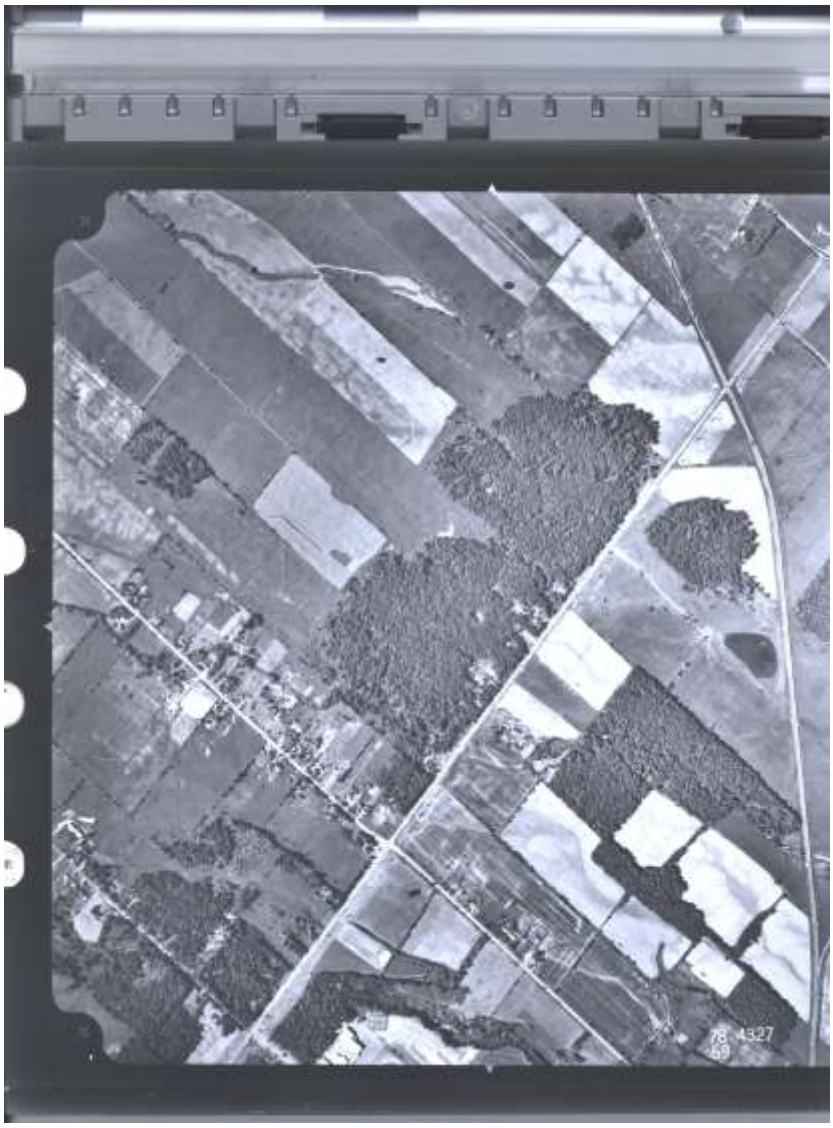


Plate 3: Aerial photograph of land that includes the Site from 1978. This photograph reveals that agriculture remained the dominant land use at that time with an intact flood plain forest.

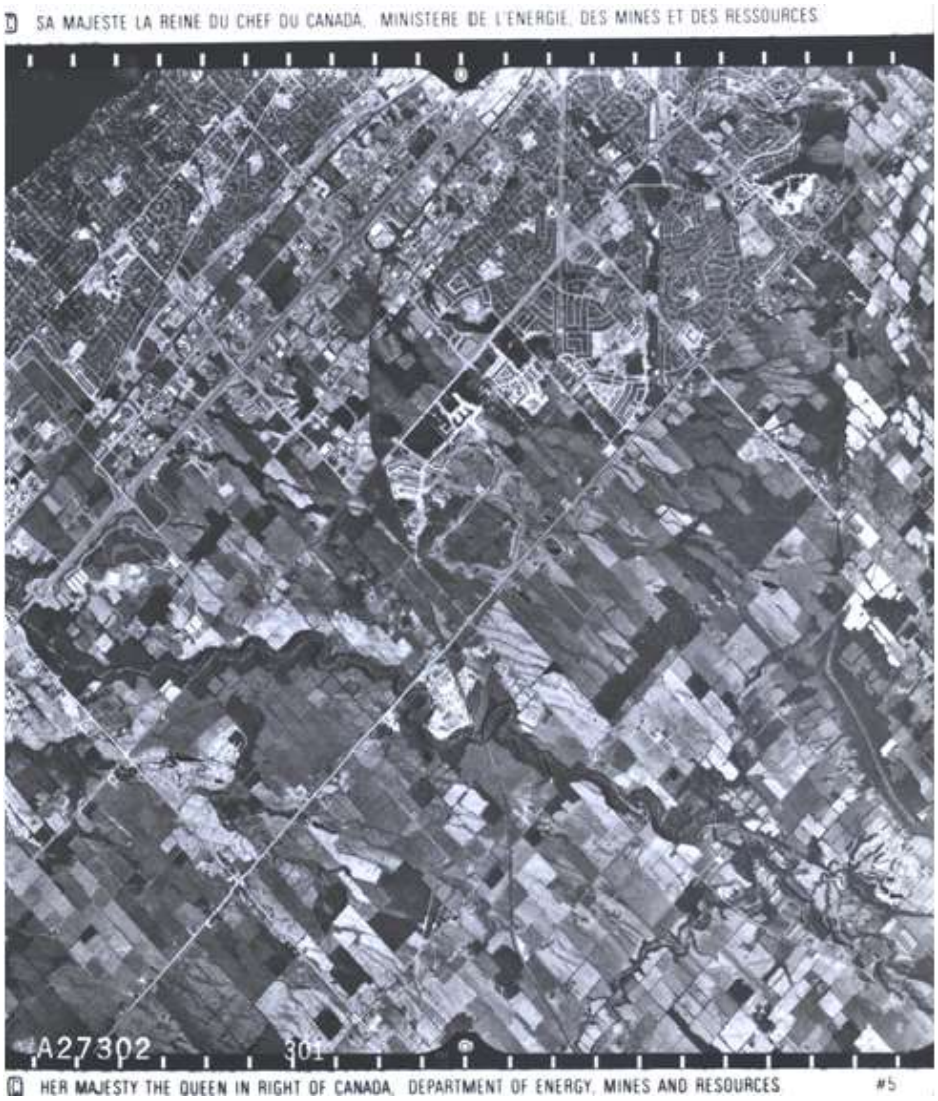


Plate 4: Aerial photograph of land that includes the Site, from 1988. This photograph reveals that agriculture remained the dominant land use at that time with an intact flood plain forest. However, urban encroachment is evident to the north and east of the Site.

The Natural Heritage Information Centre Database

Premier staff also reviewed the information for the Site available through the Natural Heritage Information Centre ("NHIC") database, maintained by the OMNR (OMNR, 2014). This database includes records of provincially significant vegetation and wildlife on, and in proximity of the Site. The search revealed records for the same three SAR species as noted in the OMNR letter. As such, Premier considers the records review for SAR for the Site as complete.

4.0 VEGETATION SURVEYS

This chapter describes the surveys completed for herbaceous and woody vegetation on-Site.

4.1 Methodology for Botanical Surveys

Plants were assessed during all visits to the Site, between April and October of 2013 along with a follow-up visit on September 8, 2014. This assessment of plants focused on the identification of specimens located on the manicured lawn in proximity to the residence. In addition, cursory inspections of plants located along the top-of-bank was also completed. Only general surveys of vegetation was completed in the flood plain forest, as this area is not to be disturbed.

This information on plant identity across the Site was then used to prepare an ELC map, following standard methods (Bakowsky et al. 1998; Lee et al. 1998). Fieldwork included assessment of vegetation communities and a floristic survey. English colloquial names and Latin binominals of plant species generally follow those for Ontario in Newmaster et al. (1998).

A TIPS was also prepared for the trees found across the manicured lawn and in proximity to the top-of-bank on-Site. The preparation of the TIPS followed guidance and methods included in Part II, Section 6.3, subsection b) of the CBOP and Part IV, Sections 146-147 of the RHOP. These methods included the measurement of the diameter at breast height (DBH) of all live trees that were greater than 10 cm. In addition, information on the status of the trunk, crown, height, and tree health was also recorded and reported.

Information collected on-Site during 2013 and 2014 was used to prepare the TIPS. The initial data collection was completed between April and October of 2013. As noted, an ice storm was experienced in Burlington during December of 2013. Due to this ice storm, numerous trees were damaged across Burlington, as reported in the mass media. As a result, Springfield requested a follow-up inspection of the trees found around the manicured lawn and in proximity to the top-of-bank on-Site. As such, this area was re-surveyed on September 8, 2014, to determine the presence or absence of recent tree damage attributable to the ice storm. Selected photographs of the herbaceous and woody stems on-Site is presented as Appendix D.

Surveys during 2015

Additional inspections of trees was completed on-Site on July 29, 2015 in response to guidance from CH and staff from ROH. On this date, a Premier Senior Ecologist visually inspected trees on-Site with a DBH > 25 cm in the proposed development area and the area within 120 m of the top-of-bank. All trees of size were inspected visually and with the aid of binoculars, to determine if cavities were present. The determination of the presence / absence of cavities was completed to evaluate the possible presence of habitat for myotis.

4.2 Results

4.2.1 Herbaceous Species

The inspections of herbaceous plants completed between April and October of 2013 allowed for the common species in proximity to the residence on-Site to be identified. This effort resulted in the identification of 39 species representing 22 families (Table 4-1). There is no real pattern with the herbaceous plant distribution other than colonization across the former manicured lawn. None of these plant species are listed as SAR or hold conservation status in Ontario or Canada (Table 4-1). In addition, approximately 25% are considered non-native to ROH and/or Ontario. This herbaceous plant community can be described as being typical of a disturbed urban habitat. All native species were ranked as S5 – and this identifies they are known to be very common in Ontario and secure in biogeographical distribution. A number of plant species are also known to be sold at commercial greenhouses, as annual or perennial (i.e., ornamentals) and are common in urban areas. Follow-up inspections of vegetation on-Site were completed during September 2014, and confirmed the species diversity on-Site.

It should also be noted that the herbaceous vegetation community found within the flood plain of Shoreacres Creek was only inventoried in a general sense, as no disturbance is proposed for this area. This area within the flood plain was represented by two general habitats attributable to local moisture and shade regimes. First, the sloped area that represented by the area from the top-of-bank to the foot of the slope. This slope is well drained and receives direct sunlight attributable to the incomplete tree canopy on the lawn. Second, the lower area of the flood plain that is directly adjacent to the creek. This latter area has been observed to contain standing water that can be attributed to runoff from snowmelt and flooding from the creek. For example, water was pooled in this area from April 2013 until June 2013. This area is also well shaded due to the closed canopy. These factors create two different herbaceous plant communities.

Those herbaceous plant community found along the sloped area prefer well-drained soils and require direct sunlight. This plant community on the slope include goldenrods and asters (family Asteraceae) such as Canada Goldenrod (*Solidago canadensis*), Panicled Aster (*Symphyotrichum lanceolatum*), Daisy Fleabane (*Erigeron annuus*), Lesser Burdock (*Arctium minus*), Mouse-ear Chickweed (*Cerastium vulgatum*), Common Red Raspberry (*Rubus idaeus*), Black Raspberry (*Rubus occidentalis*), Common Strawberry (*Fragaria virginiana*), Riverbank Grape (*Vitis riparia*), Garlic Mustard (*Alliaria petiolata*), Queen Anne's Lace (*Daucus carota*), Poison Ivy (*Toxicodendron radicans*), and Herb Robert (*Geranium robertianum*).

Table 4-1: Review of the herbaceous species identified on the manicured lawn and in proximity to the top-of-bank on-Site. For each species, the global rank (GRANK), species rank (SRANK), and conservation status (COSEWIC) is identified. No SAR or species of conservation importance were identified on-Site.

Family	***Species Scientifc Name***	**Species Common Name**	**GRANK**	**SRANK**	**COSEWIC**
ANACARDIACEAE	*Rhus radicans ssp. negundo*	Climbing Poison-ivy	G5	S5	-
APOCYNACEAE	*Vinca minor*	Common Periwinkle	G?	SE5	-
ARACEAE	*Arisaema triphyllum*	Jack-in-the-pulpit	G5	S5	-
BALSAMINACEAE	*Impatiens capensis*	Spotted Jewel-weed	G5	S5	-
BORAGINACEAE	*Myosotis scorpioides*	Common Forget-me-not	G5	SE5	-
CARYOPHYLACEAE	*Cerastium vulgatum*	Mouse-ear Chickweed	G5	SE5	-
COMPOSITAE	*Arctium minus*	Common Burdock	G5	SE5	-
COMPOSITAE	*Erigeron annuus*	Annual Daisy Fleabane	G5	S5	-
COMPOSITAE	*Symphyotrichum lanceolatum*	Panicled Aster	G5	S5	-
COMPOSITAE	*Symphyotrichum nova-angilae*	New England Aster	G5	S5	-
COMPOSITAE	*Lactuca scariola*	Prickly Lettuce	G5	SE5	-
COMPOSITAE	*Solidago canadensis*	Canada goldenrod	G5	S5	-
COMPOSITAE	*Rudbeckia hirta*	Brown-eyed Susan	G5	S5	-
COMPOSITAE	*Picris hieracoides*	Oxtongue Hawkweed	G5	SE5	-
CRUCIFERAE	*Alliaria petiolata*	Garlic Mustard	G?	SE5	-
EUPHORBIACEAE	*Acalypha rombiodea*	Three-seeded Mercury	G5	S5	-
GERANIACEAE	*Geranium maculatum*	Wild Geranium	G5	S5	-
GERANIACEAE	*Geranium robertianum*	Herb Robert	G5	SE5	-
LEGUMINOSAE	*Gleditsia tricanthos* var. *forma inermis*	Honey Locust (Sunburst variety)	G5	SE5	-
LEGUMINOSAE	*Medicago lupulina*	Black Medick	G5	SE5	-
LILIACEAE	*Allium tricoccum*	Wild Leek	G5	S5	-
LILIACEAE	*Convallaria majalis*	Lily-of-the-valley	G5	SE5	-
LILIACEAE	*Erythronium americanum*	Yellow Trout Lily	G5	S5	-
LILIACEAE	*Polygonatum pubescens*	Hairy Solomon's Seal	G5	S5	-
LILIACEAE	*Maianthemum racemosum*	False Solomon's Seal	G5	S5	-
OXALIDACEAE	*Oxalis stricta*	Yellow Wood Sorrel	G5	S5	-
PLANTAGINACEA	*Plantago major*	Common Plantain	G5	S5	-
POACEAE	*Poa pratensis*	Kentucky Blue Grass	G5	S5	-
PORTULACACEAE	*Claytonia virginica*	Virginia Spring Beauty	G5	S5	-
PRIMULACEAE	*Anagallis arvensis*	Scarlet Pimpernel	G5	SE4	-
RANUNCULACEAE	*Anemone quinquefolia*	Wood Anemone	G5	S5	-
RANUNCULACEAE	*Ranunculus acris*	Common or Tall Buttercup	G5	SNA	-
ROSACEAE	*Crataegus mollis*	Downy hawthorn	G5	S5	-
ROSACEAE	*Fragaria virginiana*	Common Strawberry	G5	S5	-
ROSACEAE	*Rubus occidentalis*	Black Raspberry	G5	S5	-
SOLANACEAE	*Solanum dulcamara*	Climbing Bittersweet	GNR	SNA	-
VIOLACEAE	*Viola sororia*	Common Blue Violet	G5	S5	-
VIOLACEAE	*Viola pensylvanica*	Smooth Yellow Violet	G5	S5	-
VITACEAE	*Vitis riparia*	Wild Riverbank Grape	G5	S5	-
VITACEAE	*Parthenocissus inserta*	Virginia Creeper	G5	S5	-
COSEWIC - Committee on the Status of E	*GRANK - MNR Global Rank*	SRANK - MNR Provincial Rank			
X - Extinct; a wildlife species that no longe	*G1- Extremely rare; <5 occurences*	S1- Extremely rare in ON; <5 occurences			
XT - Extirpated; a wildlife species that no lo	*G2 - Very rare; 5-20 occurences*	S2 - Very rare in ON; 5-20 occurences			
E - Endangered; a wildlife species facing in	*G3 - Rare to uncommon; 20-100 occurences*	S3 - Rare to uncommon in ON; 20-80 occurences			
T - Threatened; a wildlife species that may	*G4 - Common; >100 occurences*	S4 - Common in ON; 80 - 1000 occurences			
is done to reverse the factors leading to	*G5 - Very common*	S5 - Very common in ON; > 1000 occurences			
SC - Special Concern; a wildlife species th	*? - Follows a rank and denotes a rank is tentatively assigned (i.e. G4?)*	SE - Exotic			
because of a combination of biologica	*G? - Unranked*	? - Follows a rank and denotes a rank is tentatively assigned (i.e. S4?)			
	GNR - Denotes a species that is not ranked	S?/SNA - Unranked or not yet ranked			

4.2.2 Woody Species

The inspections of woody shrubs and trees completed between April and October of 2013 allowed for all species to be identified. This effort resulted in the identification of 20 species representing 12 families; six species or 30% are non-native (Table 4-2). None of these woody species are considered SAR or hold conservation status in Ontario or Canada. However, the Black Walnut (*Juglans nigra*) shows similarity to the closely related Butternut. As such, an OMNR tree identification expert, Mr. Kowalyk, visited the Site on July 4, 2013 confirmed that only Black Walnut was evident.

Table 4-2: Review of the tree species identified on the manicured lawn and in proximity to the top-of-bank on-Site. For each species, the global rank (GRANK), species rank (SRANK), and conservation status (COSEWIC) is identified. No SAR were identified on-Site.

Family	***Species Scientifc Name***	**Species Common Name**	**GRANK**	**SRANK**	**COSEWIC**
ACERACEAE	*Acer negundo*	Manitoba Maple	G5	S5	-
ACERACEAE	*Acer saccharum*	Sugar Maple	G5	S5	-
ACERACEAE	*Acer platanoides*	Norway Maple	G5	SE5	-
BETULACEAE	*Betula papyrifera*	White Birch	G5	S5	-
BETULACEAE	*Ostrya virginiana*	Ironwood	G5	S5	
CUPRESSACEAE	*Thuja occidentalis*	Eastern White Cedar	G5	S5	-
FAGACEAE	*Quercus rubra*	Red Oak	G5	S5	-
FAGACEAE	*Quercus rubra* x *Q. shumardii*	Hybrid Oak	G?	S?	-
FAGACEAE	*Quercus macrocarpa*	Bur Oak	G5	S5	-
JUGLANDACEAE	*Juglans nigra*	Black Walnut	G5	S5	-
JUGLANDACEAE	*Carya cordiformis*	Bitternut Hickory	G5	S5	-
JUGLANDACEAE	*Carya ovata*	Shagbark Hickory	G5	S5	
OLEACEAE	*Fraxinus americana*	White Ash	G5	S5	-
PINACEAE	*Pinus sylvestris*	Scots Pine	G?	SE5	-
PINACEAE	*Pinus strobus*	Eastern White Pine	G5	S5	-
PINACEAE	*Pinus nigra*	Black or Austrian Pine	G5	SE2	-
RHAMNACEAE	*Rhamnus cathartica*	Common Buckthorn	G?	SE5	-
ROSACEAE	*Prunus virginiana*	Choke Cherry	G5	S5	-
ROSACEAE	*Malus sylvestris*	Common Apple	G5	SE5	-
TILIACEAE	*Tilia americana*	Basswood	G5	S5	-
ULMACEAE	*Ulmus americana*	American Elm	G5?	S5	-
COSEWIC - Committee on the Status of E	*GRANK - MNR Global Rank*	SRANK - MNR Provincial Rank			
X - Extinct; a wildlife species that no longe	*G1- Extremely rare; <5 occurences*	S1- Extremely rare in ON; <5 occurences			
XT - Extirpated; a wildlife species that no lo	*G2 - Very rare; 5-20 occurences*	S2 - Very rare in ON; 5-20 occurences			
E - Endangered; a wildlife species facing in	*G3 - Rare to uncommon; 20-100 occurences*	S3 - Rare to uncommon in ON; 20-80 occurences			
T - Threatened; a wildlife species that may	*G4 - Common; >100 occurences*	S4 - Common in ON; 80 - 1000 occurences			
is done to reverse the factors leading to	*G5 - Very common*	S5 - Very common in ON; > 1000 occurences			
SC - Special Concern; a wildlife species th	*? - Follows a rank and denotes a rank is tentatively assigned (i.e. G4?)*	SE - Exotic			
because of a combination of biologica	*G? - Unranked*	? - Follows a rank and denotes a rank is tentatively assigned (i.e. S4?)			
	GNR - Denotes a species that is not ranked	S?/SNA - Unranked or not yet ranked			

Tree Inspections in 2015

Staff from Premier identified no trees on the manicured lawn or within 120 m of the top-of-bank that demonstrated the presence of cavities large enough that could be used by myotis. It is noteworthy to state that a very large Weeping Willow (*Salix babylonica*) and Swamp White Oak, > 150 m had cavities but were sufficiently far away from the proposed development. A summary is included in Appendix E.

4.2.3 Tree Inventory and Preservation Plan

Information collected on-Site has been used to prepare a TIPS based on surveys completed between April and October of 2013 along with a re-survey was completed on September 8, 2014, to determine the presence or absence of recent tree damage attributable to the December 2013 ice storm. The September survey revealed extensive presence of broken branches on trees that were free of such damage during the past surveys. That is, a number of trees that were live and had full canopies in the past were observed to have broken branches, were uprooted, or were dead when inspected in September. Thus, the TIPS included herein reflects only live trees with a DBH > 10 cm on the lawn and in proximity to the top-of-bank.

A total of 20 species of trees and 60 stems were included in the TIPS, as presented in Table 4-3 and Appendix G. The analysis of the 60 live stems found on-Site resulted in the determination these trees do not represent a significant woodland or an extension of the flood plain forest along Shoreacres Creek, due to the tree species distribution, the total number of stems, and the total volume of trees. A total of 60 of these live trees are identified to be removed and replanted. Further, these live trees are recommended for removal due to extensive damage from the past ice storm, presence of disease, or they are non-native to Halton. As noted earlier, some of the trees on-Site were identified for preservation but they were damaged during the December 2013 ice storm with subsequent stress from insects and/or disease. These trees were subsequently damaged during an October 2015 wind storm. Following this windstorm, COB staff requested these hazard trees to be removed. The removal of these trees was verbally approved by ROH.

A compensation strategy is described in Appendix G to replace all of these lost trees with a 1:1 compensation ratio along with preservation methods to be followed to protect the remaining trees found on-Site, especially those that exist along the top-of-bank area. This strategy identifies that a minimum of 60 trees native to ROH need to be planted on-Site. Premier recommends that these 60 trees to be planted along the shoreline of Shoreacres Creek. If the trees are planted in the area between the creek and the proposed development, it will provide additional enhancement of the natural features along the creek corridor.

Table 4-3: Summary of trees identified on the manicured lawn and in proximity to the top-of-bank included in the TIPS. The health of trees was classified as good (G), fair (F), or poor (P). Also, the proposed action for each tree is identified as remove (R) or preserve (P). These trees were also inspected for the presence of cavities that could be used by myotis (i.e., bats). None of the trees displayed features suggesting presence of cavities large enough for use by myotis. Note that as of November, 2015, all trees on the land adjacent to the flood plain on-Site are identified for removal due to past damage from various storms, insects, and/or disease.

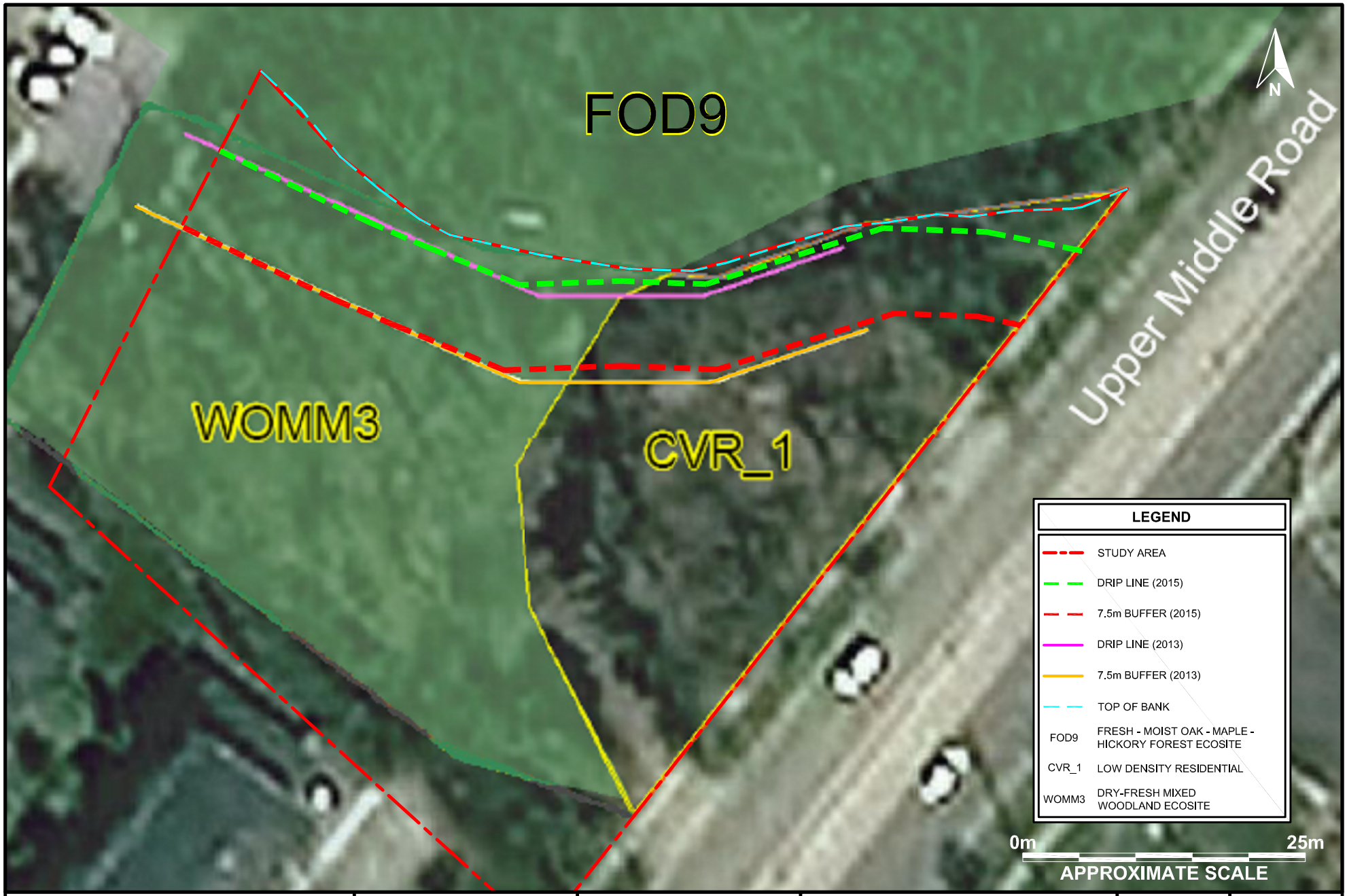
Common Name	Number	Origin (I/N)	Ice damage (Y/N)	Evidence of Disease (Y/N)	Evidence of Insect Pests (Y/N)	General Health (G, F, P)	Remove (R) or Preserve (P)	Evidence of cavities?
Black Walnut	4	Native	Y	N	N	G	R	N
	39		N	N	N	G	R	N
	47		N	N	N	G	R	N
	6		N	N	N	G	R	N
Eastern White Cedar	25	Native	N	N	N	G	R	N
Shagbark Hickory	22	Native	Y	N	Y	G	R	N
	37		N	Y	Y	G	R	N
	39		Y	N	Y	G	R	N
Bitternut Hickory	14	Native	Y	N	N	G	R	N
	29		Y	N	N	G	R	N
	34		Y	N	N	G	R	N
Thornless Honey Locust	7	Native	N	N	N	G	R	N
	52		N	N	N	G	R	N
Eastern White Pine	47	Native	N	N	N	G	R	N
	10		N	N	N	G	R	N
	36		Y	N	N	G	R	N
	45		Y	N	N	P	R	N
	48		Y	N	N	P	R	N
	49		Y	N	N	P	R	N
Black Pine	2	Invasive	N	N	N	G	R	N
	1		N	N	N	G	R	N
	3		N	N	N	G	R	N
Scotch Pine	11	Invasive	Y	N	Y	P	R	N
	12		Y	N	Y	P	R	N
	31		Y	Y	Y	P	R	N
	32		Y	Y	Y	P	R	N
Ironwood	17	Native	N	N	N	G	R	N
	15		N	N	N	G	R	N
	16		Y	N	N	G	R	N
	26		Y	N	N	G	R	N
	18		N	N	N	G	R	N
	27		Y	N	N	G	R	N
	28		Y	N	N	P	R	N
	19		Y	N	N	G	R	N
	30		N	N	N	G	R	N
	50		Y	N	N	G	R	N
Hawthorn spp.	20	Native	N	Y	N	F	R	N
	21		N	Y	N	F	R	N
White Ash	5	Native	Y	N	Y	P	R	N
	8		Y	N	Y	P	R	N
	23		Y	N	Y	P	R	N
Wild Apple	42	Native	N	N	Y	F	R	N
	43		N	N	Y	F	R	N
	24		Y	N	Y	F	R	N
Choke Cherry	41	Native	N	N	N	G	R	N
American Basswood	51	Native	Y	N	Y	G	R	N
Bur Oak	9	Native	N	N	N	G	R	N
Red Oak * Shumard Oak	40	Native	Y	Y	Y	P	R	N
Norway Maple	13	Invasive	N	N	N	G	R	N
	33		N	N	N	G	R	N
	35		Y	N	N	G	R	N
White Birch multi-stem	44	Native	N	N	Y	P	R	N
multi-stem			N	N	Y	P	R	N
multi-stem			Y	N	Y	P	R	N
multi-stem			N	N	N	P	R	N
multi-stem			Y	N	N	P	R	N
multi-stem			N	N	N	P	R	N
multi-stem			Y	N	N	P	R	N

4.3 Ecological Land Classification

Various information collected on-Site was used to designate these lands using the ELC framework. The ELC methods have been described in varied documented (Bakowsky et al. 1998; Jalava et al. 1997; Lee et al. 1998). For this Site, the ELC information was based on the general location in southern Ontario and observation of 39 herbaceous plant species along with 20 woody shrubs and tree species representing 32 families identified as present on the manicured lawn and lands in proximity to the top-of-bank between April and October, 2013. This information on plant diversity and plant distributions was combined with soil profiles, slope, and presence of Shoreacres Creek on-Site resulted in the initial identification of two ecosites. These are: Low-density Residential (CVR-1) surrounding the residence and Dry-Fresh Mixed Woodlands (WOMM-3) with a diversity of coniferous and deciduous species on the manicured lawn and in proximity to the top-of-bank. This information along with the original tree drip line set prior to the 2013 ice storm are presented as Figure 3.

When the flood plain forest in proximity to the top-of-bank was inspected, it was observed to contain a mixture of the following key species: Shagbark Hickory, Bitternut Hickory, Eastern White Pine, Black Walnut, and a few Swamp White Oak (*Quercus bicolor*); other trees in the subcanopy include American Elm, Basswood (*Tilia americana*), Ironwood, American Beech (*Fagus grandifolia*). With the observation that this area floods during the spring, this ecosite was designated as Fresh-Moist Oak-Maple Hickory (FOD9-1) depicted as Figure 3. A transition zone exists between the flood plain and the WOMM-3 that is due to the presence of well drained soils on the slope, with tree composition including American Elm, Black Walnut, Manitoba Maple, Sugar Maple, and White Ash. In close proximity to the top-of-bank, trees included Black Walnut, Common Buckthorn, Manitoba Maple, and White Ash.

When these trees of the flood plain are compared with the cultural woodland, in terms of species composition, DBH and density, differences are readily evident. For example, the dominant species are hickory, oak, and white pine in the flood plain compared with other species such as Paper Birch, Ironwood, Walnut, and Eastern White Pine in the cultural woodland. Although a full botanical inventory was not completed in the flood plain, the DBH is inferred to be much higher, as the dominant flood plain trees are taller than the trees found in the cultural woodland. Further, the density of trees in the flood plain forest was also interpreted to be higher compared with the cultural woodland. For these reasons, the trees found in the cultural woodland do not represent an extension of the flood plain forest along Shoreacres Creek. It is probable that individual trees, such as the large Eastern White Pine and one large Bitternut Hickory on the west side of the Site were retained in the cultural woodland during the past development. However, other tree species have been planted in this area and it now represents a different plant community, indicative of past disturbance.



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NOTE: LOCATIONS OF BUILDINGS, UNDERGROUND UTILITIES, ETC. ARE FOR REFERENCE ONLY AND SHOULD NOT BE RELIED UPON FOR DETAILED DESIGN, EXCAVATION, OR CONSTRUCTION PURPOSES

Client: SPRINGFIELD CONSTRUCTION Site: 4063 UPPER MIDDLE ROAD BURLINGTON, ONTARIO	Title: TREE DRIP LINE AND TOP OF BANK	Date: AUG 2015 Scale: AS SHOWN	Project: 613015.CE Figure: 3

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5.0 AMPHIBIAN SURVEYS

This chapter describes the surveys completed for amphibians (i.e., frogs and toads) on-Site.

5.1 Methodology

Four (4) amphibian calling surveys were completed to assess the presence or absence of amphibians on-Site. These surveys generally followed the Marsh Monitoring Program (MMP) (2008). The MMP requires surveys to occur when air temperatures exceed 5 ºC, 10 ºC, and 17 ºC across the spring season. A key requirement is that surveys for each temperature regime should occur at least 15 days apart. Conditions should be moist and calm, whereby measurable rain (i.e., usually accumulation > 1 mm) has been observed within the previous 24 hours, and winds are absent or light. Hence, heavy rain does provide the moisture preferred by amphibians but the noise of the rain makes survey efforts problematic. Thus, the ideal scenario is light rain with light winds. Also, each survey should commence at least one half hour after sunset and be completed before midnight.

The first survey was completed on May 2, 2013, when night-time air temperature was approximately 13°C, skies were observed to have a 10% cloud cover throughout the duration of the survey. The surveyor remained on-site from 21:45 to 22:50. Conditions were calm (beaufort wind scale of 0), through the entire survey.

The second survey was completed on May 9th, 2013. It was observed that rain had occurred earlier during the day, with an evening temperature of 9°C. Available climate records indicated approximately 10 mm of rain had fallen in the Burlington area during the previous 24-h period (Environment Canada). The surveyor remained on-site from 21:30 to 22:45. Calm winds were observed during the entire survey (beaufort scale of 1).

A third survey was conducted on May 27, 2013, with nighttime temperatures of approximately 15°C whereby sporadic rain showers had been observed during the previous 24-h period. The surveyor remained on-site between 21:45 and 23:00. Skies were predominantly clear (approximately 10% cloud cover) and conditions were calm; winds were essentially absent (beaufort scale of 0-1 through the duration of the visit).

A fourth survey was conducted on June 14, 2013, with temperatures of approximately 20°C whereby rain was observed consistently throughout the previous 24-h period. The surveyor remained on-site between 22:00 and 23:00. Winds were calm (beaufort scale of 0).

Given the limited breadth of the property, two (2) point count locations were used for all four surveys. These locations bordered Shoreacres Creek at the southern limit of the Site adjacent to Upper Middle Road, and at the northern extent of the property. These stations were also selected for ease of access, as it was unsafe to traverse within the flood plain forest at night. Furthermore, it was inferred that it was possible to hear the calls of amphibians in the flood plain forest from these stations. To be complete, the surveyor recorded any additional auditory or visual observations throughout the duration of each Site visit.

5.2 Results

5.2.1 Data Collection

For all four surveys a minimum of two (2) listening periods were conducted at each of the stations. Each listening period encompassed a duration of at least (3) minutes. An unlimited distance, 180º arc sampling area was at each point count station. Call for each species was categorized under one of the following five (5) levels:

- Level 1 – No calls heard, no species seen;
- Level 2 – Frog(s) or toad(s) seen or heard with unknown total numbers;
- Level 3 – Frog(s) or toad(s) can be counted, calls do not overlap;
- Level 4 – Frog(s) or toads can be counted, while others are overlapping; or,
- Level 5 – Full chorus, continuous and overlapping, difficult to identify frogs or toads.

5.2.2 Amphibian Survey Results

No amphibians were heard or seen during the first amphibian survey on May 2nd.

On-Site, only one (1) species of amphibian was identified during the MMP surveys: Green Frog (*Lithobates clamitans*). This species was observed (via auditory evidence of multiple calls) in the vegetation on-Site during different dates. Specifically, one individual was observed (Level 2) at point count Station No.1 (near the road crossing bridge) during both the second survey (May 9th, 2013) and the third survey (May 27, 2014). In addition, multiple specimens of Green Frog were heard calling (Level 2) during the June survey, again in habitat near station No.1. No other amphibian were observed on-Site during the MMP surveys.

Amphibians were observed off-Site. Specifically, an unknown number of Spring Peeper (*Pseudacris crucifer*) were heard calling (i.e., Level 3) in the flood plain forest during the first survey on May 2nd (i.e., Level 3) and second survey on May 9th (i.e., Level 3). An unknown number of American Toad (*Bufo americanus*) were also heard during the second and third surveys as well, likely about five specimens (i.e., Level 3). One American Toad was also seen on-Site during the visit. Only a limited number of American Toad were heard calling (i.e., Level 2) in the flood plain forest during the June survey. This survey information suggests the primary

habitat for amphibians exists in the flood plain forest, and this is likely due to the absence of standing water on the manicured lawns or among the planted trees. The highest numbers of Spring Peepers was heard in the flood plain forest during the first survey and the highest numbers of American Toad heard in the flood plain forest during the third survey.

5.2.3 Incidental Amphibian Survey Results

During the April 25, 2013 survey, a Green Frog was observed associated with planted shrubs (Eastern Red Cedar *Juniperus virginiana*) near the residence at approximately 2:00 PM in the afternoon. An American Toad was also observed on the manicured lawn, near the base of a mature tree (Basswood *Tilia americana*) on May 18, 2013 at approximately 1:15 PM. Then on August 14, an American Toad was observed on the manicured lawn, west of the residence, at about 3:00 PM. These observations also suggest the amphibians are foraging on portions of the cultural landscape during the day, and likely using the flood plain forest for the remainder of their life history. An additional American Toad was observed among the vegetation near the same Basswood Tree on-Site on September 8th, 2014. These incidental observations of amphibians are consistent with the amphibian calls herd during the MMP surveys.

6.0 BREEDING BIRD SURVEYS

This chapter describes the surveys completed for breeding birds on-Site, during June, 2013.

6.1 Methodology

A qualified ecologist from RJ Burnside (i.e., Hannah Maciver) completed two surveys for breeding birds on-Site. These breeding bird surveys followed the methods identified in the Ontario Breeding Bird Atlas (OBBA) for southern Ontario. The surveys were conducted during the morning hours of June 15, 2013 and June 29, 2013. The report that describes these OBBA surveys includes the time of the surveys, the weather conditions, and other species observed during these survey times, and is provided as Appendix H.

6.2 Results

6.2.1 Bird Surveys

The two OBBA surveys identified a total of thirteen (13) bird species (Table 5-1). No SAR bird species were observed on-Site. All species are considered common and expected for the area with the exception of Carolina Wren (*Thryothorus ludovicianus*) regarded as an uncommon breeder in Ontario with a core distribution located in the central U.S.A. In other words, this is a species common to the central and southern portions of North America. The conservation status of Carolina Wren in Ontario is S4 and secure.

It is also noteworthy to identify Hairy Woodpecker (*Picoides villosus*) was observed on-Site during both surveys. The presence of this species is likely attributable to the large numbers of dead trees within the flood plain forest, as this represents ideal habitat for this bird. This species was readily identified as distinct from Downey Woodpecker (*Picoides pubescens*) due to differences in bill length (longer in Hairy Woodpecker) and plumage colours on the head (straight lines around eye in Hairy Woodpecker).

In summary, no area-sensitive species were observed on-Site. Similarly, no birds of Provincial or Federal concern were observed, with no Barn Swallow or Chimney Swift. Despite the presence of the creek near the Site, no waterfowl (e.g., ducks, geese) were observed. The majority of the birds identified on-Site can be described as common to the urban areas of Ontario with associations to the flood plain forest of Shoreacres Creek.

Table 6-1: Species of Birds identified on-Site. Evidence of habitats or breeding noted (also refer to detailed information in Appendix F).

Bird Species (Common Name, *Genus species*)		**Time of Sampling**			
		June 15, 2013		**June 29, 2013**	
		Habitats	**Breeding Evidence**	**Habitats**	**Breeding Evidence**
American Goldfinch	*Spinus tristis*	√	√	√	√
American Robin	*Turdus migratorius*	√	√	√	√
Black-capped Chickadee	*Poecile atricapillus*	√	√	√	√
Blue Jay	*Cyanocitta cristata*	√	√	√	√
Brown-headed Cowbird	*Molothrus ater*	√	√		
Carolina Wren	*Thryothorus ludovicianus*	√	√	√	√
Hairy Woodpecker	*Picoides villosus*	√	√		
House Wren	*Troglodytes aedon*	√	√	√	√
Mourning Dove	*Zenaida macroura*			√	√
Northern Cardinal	*Cardinalis*	√	√	√	√
Red-eyed Vireo	*Vireo olivaceus*			√	√
Song Sparrow	*Melospiza melodia*			√	√
Yellow Warbler	*Dendroica petechial*	√	√		

7.0 INCIDENTAL WILDLIFE OBSERVATIONS

This chapter describes the incidental wildlife observations during the various surveys on-Site.

7.1 Methodology

During each visit to the Site, evidence of wildlife (e.g., scat, tracks, auditory, odour, visual) was recorded. The species observed on-Site are noted by common name and latin equivalents and where appropriate, evidence of habitat use on-Site follows Dobbyn (1994). Additional information on possible incidental wildlife on-Site was sourced from Ontario Nature (http://www.ontarionature.org/discover/resources/publications.php#atlases).

7.2 Results

During the varied inspections of the Site, a number of wildlife were documented as present. The wildlife documented as present, in addition to the species noted in the previous surveys, includes 11 additional species. None of these species are regarded as SAR. It is noteworthy to identify that no evidence of reptiles was observed on-Site.

Table 7-1: List of wildlife documented on-Site. This list does not include any species listed in earlier chapters of this EIS. All species noted are considered common and secure in Ontario.

Type of Wildlife	Common Name *Genus species*	Evidence
Bird	American Crow *Corvus brachyrhynchos*	Visual, Auditory
	Chipping Sparrow *Spizella passerina*	Visual
	Common Grackle *Quiscalus quiscula*	Visual, Auditory
	Downy Woodpecker *Picoides pubescens*	Visual, Auditory
	European Starling *Sturnus vulgaris*	Visual, Auditory
	Red-winged Blackbird *Agelaius phoeniceu*	Visual, Auditory
Mammal	Domestic cat *Felis catus*	Visual
	Eastern Gray Squirrel *Sciurus carolinensis*	Visual
	Meadow Vole *Microtus pennsylvanicus*	Visual
	North American Raccoon *Procyon lotor*	Tracks
	Red Fox *Vulpes*	Tracks
	Striped Skunk *Mephitis*	Odour
	Virginia Opossum *Didelphis virginiana*	Tracks
	White-footed Mouse *Peromyscus leucopus*	Visual
	White-tailed Deer *Odocoileus virginianus*	Tracks

8.0 INTEGRATION OF INFORMATION FROM ECOLOGICAL SURVEYS

This chapter describes the integration of wildlife species with natural heritage features on-Site. When this information is integrated with the proposed development, it allows for a determination of possible disturbance on wildlife and natural heritage features on-Site.

When information on species presence is integrated with available natural features, it provides a basis to assess the potential for effects on these species from the proposed development. Key natural heritage features and like areas are defined as those that contain wetlands, fish habitat, woodlands, valleylands, habitat for SAR, wildlife habitat, and areas of natural and scientific interest (ANSIs). All of these features are important for their environmental and social values as a legacy of the natural landscapes of an area, as defined within Ontario's *Planning Act* and explained within the current PPS (MMAH, 2014).

8.1 Surface Water Features, Wetlands, and Fish Habitat

Surface water features are represented by creeks, ponds, rivers, and lakes. They can be temporary (ephemeral) and represent snow melt or permanent (Lee *et al.*, 1998). Surface water features provide habitat to wildlife when they are temporary and permanent whereas fish will use water when it is present. For example, it is common for fish to move in to a temporary habitat and when this area dries up, they then migrate to permanent water. Hence, surface waters provide habitat a range of species, in temporary and permanent settings.

Wetlands are defined as areas that are seasonally or permanently covered by shallow water, as well as lands where the water table is close to or at the surface (Lee *et al.*, 1998). A significant wetland is an area identified as provincially significant by the OMNR using evaluation procedures established by the province, as amended from time to time (Lee *et al.,* 1998). No wetlands exist on the manicured lawn or in proximity to the top-of-bank area. However, Land Information Ontario (LIO) geospatial data indicates that there are no wetlands present on or near the Site. Hence, wetlands do not represent a concern for the proposed development.

Fish habitats are identified as spawning grounds and nursery, rearing, food supply, and migration areas on which fish depend directly and or indirectly in order to carry out their life processes (Lee *et al.,* 1998). Fish can be identified as fish, shellfish, crustaceans, and marine animals, at all stages of their life cycle (MMAH, 2005). Lakes, rivers, streams, ponds and wetlands are known fish habitats (Lee *et al.*, 1998). Fish habitats commonly occur in many other natural heritage areas such as wetlands, valleylands, and woodlands. Fish also exist in Shoreacres Creek.

The topography of the Site in combination with the proposed development plan identifies that the current drainage of precipitation and snow melt to Shoreacres Creek and FOD9-1 will continue in a manner similar to pre-development conditions. That is, the proposed grading for the Site will not change the drainage to the creek to due to the maintenance of a vegetation buffer along the tree drip line and top-of-bank. In addition, the natural slope on-Site currently identifies that drainage either flows toward the creek or toward Upper Middle Road. In the future, the development will maintain flows to the creek via the retention of the vegetation buffer while allowing drainage to continue to flow toward Upper Middle Road. Hence, the total drainage to the creek is expected to remain similar between pre- and post-development, and thereby retain the ecological functionality of the creek and woodland habitats. Also, as noted, fish have been previously documented in Shoreacres Creek valley. Due to these considerations, the proposed development is not expected to modify existing fish habitat in the future.

8.2 Woodlands

Woodlands are treed areas that provide environmental or economic benefits such as erosion prevention, water retention, recreation and the sustainable harvest of woodland products. Woodlands include treed areas, woodlots or forested areas, and vary in their level of significance (MMAH, 2014). Woodland significance is typically determined by evaluating key criteria which relate to woodland size, ecological function, uncommon woodland species, and economic and social value. Also, larger woodlands are more likely to contain a greater diversity of plant and animal species and communities than smaller woodlands, and are better buffered against edge effects or agricultural and urban activities.

The LIO geospatial data indicates that woodland is present around Shoreacres Creek (as mapped in the CBOP and RHOP and Figure 3). In this EIS, this woodland is generally referred to as a flood plain forest. The proposed development will not extend into this forest, and will be setback from the tree-drip line along with a buffer on the tree drip line of 7.5 m. As such, this distance identifies that the setback of the development from the top-of-bank is equal to the tree drip line plus a vegetation buffer of 7.5 m on the tree drip line. This approach for the setback is intended to ensure protection for the mature trees found in proximity to the top-of-bank and also ensure the slope stability of this area is maintained by the root systems of the trees.

8.3 Valleylands

The PPS (MMAH, 2014) identifies significant valleylands as a “natural area that occurs in a valley or landform depression that has water” for some period of the year. As noted earlier, the CBOP and RHOP indicates that the area in proximity to the Site is designated as a valleyland/watercourse corridor. Development within valleyland/watercourse corridors is prohibited in order to preserve natural features, linkages and functions within the watershed. The designation of protection of land due to the identification of the tree drip line in addition to the use of a 7.5 m vegetation buffer is expected to protect the ecological functionality of the habitats within the flood plain forest (FOD9-1) of Shoreacres Creek.

It should be also re-stated that the valleyland is also regulated by *Ontario Regulation 162/06* under the *Conservation Authorities Act* for the "Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses". Development and/or alteration of areas adjacent to shorelines, river or stream valleys, hazardous lands or wetlands are prohibited under this regulation, unless permission to do so has been granted by the CH. The regulated floodplain limit generally coincides with the valleyland top-of-bank located to the east of the Site. This is why the top-of-bank has been previously staked by CH staff.

The findings included in this EIS for current surveys for the Site confirmed the continued presence of this valleyland, as mapped in the past and reported in CBOP and RHOP.

8.4 Areas of Natural and Scientific Interest

Provincially significant ANSI are defined as areas of land and water containing natural landscapes or features that have been identified as having life science or earth science values related to protection, scientific study or education. The ANSIs are divided into two (2) types: life science ANSI and earth science ANSI. Specifically, a life science ANSI can contain specific types of forests, valleys, prairies and wetlands of ecological importance. That is, they represent examples that are relatively undisturbed in terms of community and/or landforms associated with that vegetation. Those listed vegetation as provincially significant life science ANSI are the best examples of the particular natural heritage features in the province. In contrast, earth science ANSI includes representative examples by bedrock, fossil, and landforms in Ontario, and on-going geological processes.

The NHIC Biodiversity Explorer indicated that no ANSI exists within 1.0 km of the Site.

8.5 Wildlife Habitat

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

A wildlife habitat is referred to as significant if it is deemed ecologically important in terms of feature, function, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or Natural Heritage System (MMAH, 2014).

A significant wildlife habitat is described under four (4) categories:

- Seasonal concentrations of animals;
- Rare vegetation communities or specialized habitats for wildlife;
- Wildlife movement corridors; and,
- Habitats of species of conservation concern.

8.5.1 Seasonal Concentration Areas

Areas of seasonal concentrations of animals are defined as "areas where animals occur in relatively high densities at specific periods in their life cycle and/or particular seasons" (Lee *et al.*, 1998; MMAH, 2014). Areas of seasonal concentrations are typically small in comparison to larger habitat areas that the species uses at other times of the year.

An assessment of the potential for the Site to contain wildlife seasonal concentration areas was achieved through multi-season inspections. The NHIC Biodiversity Explorer records revealed that there are no wildlife concentration areas in the one (1) to two (2) kilometer area in and surrounding the Site. However, it is prudent to review the key habitats that are often evident on the landscape with direct comparison to the habitats documented for this Site. We compared these key habitats with the Site in Table 8-1, following the OMNR Significant Wildlife Habitat (SWH) Technical Guide (2000).

Table 8-1: Evaluation of the habitats on-Site relative to OMNR significant habitat features.

Habitat	ELC Communities	Observation
Waterfowl Stopover & Staging Areas (Terrestrial)	Mineral Cultural Meadow & Thicket (CUM1, CUT1) with annual spring flooding	Habitat not present on manicured lawn but likely present in flood plain forest. No waterfowl were observed during any Site investigations.
Waterfowl Stopover & Staging Areas (Aquatic)	Meadow Marsh (MAM1-6), Shallow Marsh (MAS1-3), Shallow Water (SAS1, SAM1, SAF1), & Deciduous Swamp (SWD1-7)	Habitat not present on manicured lawn but may be present in FOD9-1 flood plain forest.
Shorebird Migratory Stopover Area	Beach/Bar (BBO1-2, BBS1-2, BBT1-2), Sand Dune (SDO1, SDS1, SDT1), & Meadow Marsh (MAM1-5)	Habitat not present at the Site.
Raptor Wintering Area	Combination of Forest (FOD, FOM, FOC) & Upland Cultural (CUM, CUT, CUS, CUW) sites	Habitat likely present in the flood plain forest on-Site. However, this area is disturbed due to urban development including roads etc. No raptors were observed during any Site investigations.
Bat Hibernacula	Crevice (CCR1-2) & Cave (CCA1-2)	Habitat not present at the Site.
Bat Maternity Colonies	Mature Deciduous or Mixed Forests (FOD, FOM) with >10 large diameter (>25 cm dbh) trees per hectare	Habitat likely present in FOD9-1 flood plain forest adjacent to Site.
Bat (Myotis) Migratory Stopover Area	No specific ELC communities. Location & characteristics of habitat unknown & being determined.	No bats observed during any Site investigations. Follow up surveys identified no evidence of suitable habitat for bats on the manicured lawn or within adjacent FOD9-1 forest.
Turtle Wintering Areas	Swamp (SW), Marsh (MA), Open & Shallow Water (OA, SA), Open Bog (BOO), & Open Fen (FEO)	Habitat may be present in flood plain forest on-Site.But location in an urban area that is bounded by roadways identify this is not ideal turtle habitat.
Snake Hibernaculum	Talus (TA), Rock Barren (RB), Crevice & Cave (CC), Alvar (AL), & other dry ecosites	Habitat not present on-Site.

Habitat	ELC Communities	Observation
Colonially-Nesting Bird Breeding Habitat (Bank & Cliff)	Mineral Cultural (CUM1, CUT1, CUS1), Bluff (BLO1, BLS1, BLT1), Carbonate Cliff (CLO1, CLS1, CLT1), & other areas with eroding banks, sandy hills, borrow pits, steep slopes, sand piles, cliff faces, bridge abutments, silos or barns	Habitat not present at the Site. No colonially-nesting birds were observed during any Site investigations.
Colonially-Nesting Bird Breeding Habitat (Tree/Shrubs)	Deciduous & Mixed Swamp (SWD1-7, SWM2-3, SWM5-6), & Treed Fen (FET1)	Habitat not present at the Site.
Colonially-Nesting Bird Breeding Habitat (Ground)	Meadow & Shallow Marsh (MAM1-6, MAS1-3), & Cultural (CUM, CUS, CUT) with rocky islands or peninsulas or in close proximity to watercourse	Habitat not present at the Site.
Migratory Butterfly Stopover Areas	Combination of Cultural field (CUM, CUS, CUT) & Forest/Plantation (FOD, FOM, FOC, CUP) that are >10 ha & within 5 km of Lake Ontario	Habitat likely present in flood plain forest. However, this area is small and surrounded by urban features.
Landbird Migratory Stopover Areas	Forest (FOD, FOM, FOC), & Swamp (SWD, SWM, SWC) that are >10 ha & within 5 km of Lake Ontario	Habitat likely not present on-Site.
Deer Winter Congregation Areas	Forest (FOD, FOM, FOC), & Swamp (SWD, SWM, SWC) that are >100 ha	Habitat likely not present on-Site.

8.6 Rare Vegetation Communities and / or Specialized Habitats

Rare or specialized habitats include rare vegetation communities. These specialized areas may also provide habitat to rare animal species. According to the SWH Technical Guide (2000), the following definition of each was provided:

Rare vegetation communities include:

- Areas that contain a provincially rare vegetation communities or one that is rare within a planning area.

Specialized Habitats include:

- Areas that support wildlife species that have highly specific habitat requirements;
- Areas with high species and community diversity; and,
- Areas that provide habitat that greatly enhance species survival.

Habitats that meet these definitions of rare vegetation communities or specialized habitats were considered during the Site visits. The NHIC Biodiversity Explorer records revealed that there are no rare plant communities in the one (1) to two (2) kilometer area in and surrounding the Site classified as rare or specialized. Guidelines contained within the SWH Technical Guide (OMNR, 2000) were used to evaluate possible presence of these habitats on-Site. The typical ELC communities that occur in rare vegetation communities or specialized habitats are noted and compared to existing habitats on-Site, as presented in **Table 8-2** and **Table 8-3** below.

Table 8-2: Comparison of existing habitats on-Site with typical vegetation communities.

Habitat	ELC Communities	Observation
Cliffs & Talus Slopes	Open, Shrub & Treed Talus (TAO, TAS, TAT) Open, Shrub & Treed Cliff (CLO, CLS, CLT)	Habitat not present on-Site.
Sand Barren	Open, Shrub & Treed Sand Barren (SBO1, SBS1, SBT1)	Habitat not present on-Site.
Alvar	Open, Shrub & Treed Alvar (ALO1, ALS1, ALT1) Dry-Fresh Pine or Cedar Coniferous Forest (FOC1, FOC2) Bedrock Cultural Meadow, Thicket, Savannah & Woodland (CUM2, CUT1, CUS2, CUW2)	Habitat not present on-Site.
Old Growth Forest	Deciduous, Coniferous & Mixed Forest (FOD, FOC, FOM)	Habitat may exist in FOD9-1 forest located > 120 m from Site but not on CVR-1 or WOMM-3.
Savannah	Tallgrass Savannah (TPS1, TPS2) Tallgrass Woodland (TPW1, TPW2) Bedrock Cultural Savannah (CUS2)	Habitat not present on-Site.
Tallgrass Prairie	Open Tallgrass Prairie (TPO1, TPO2)	Habitat not present on-Site.
Other Rare Vegetation Communities	Provincially rare S1-S3 vegetation communities.	Habitat not present on-Site.

Table 8-3: Comparison of existing habitats on-Site with specialized wildlife habitat.

Habitat	ELC Communities	Observation
Waterfowl Nesting Area	Include all upland areas that are adjacent to: Meadow & Shallow Marsh (MAM, MAS), Shallow Water (SA), Bedrock & Mineral Thicket Swamp (SWT1, SWT2), & Mineral Deciduous Swamp (SWD1, SWD2, SWD3, SWD4).	Habitat may exist in FOD9-1 flood plain forest but not in CVR-1 or WOMM-3. No waterfowl were observed during any Site investigations.
Bald Eagle & Osprey Nesting, Foraging & Perching Habitat	Deciduous, Mixed & Coniferous Forest (FOD, FOM, FOC), & Deciduous, Mixed & Coniferous Swamp (SWD, SWM, SWC) communities adjacent near water.	Habitat may exist in FOD9-1 flood plain forest > 120 m from top-of-bank but not in CVR-1 or WOMM-3.
Woodland Raptor Nesting Habitat	Deciduous, Mixed & Coniferous Forest (FOD, FOM, FOC), Deciduous, Mixed & Coniferous Swamp (SWD, SWM, SWC), & Coniferous Plantation (CUP3).	Habitat may exist in FOD9-1 flood plain forest > 120 m from top-of-bank but not in CVR-1 or WOMM-3.
Turtle Nesting Areas	Exposed mineral soil areas (sand/gravel) adjacent to: Meadow Marsh (MAM), Shallow Marsh (MAS), Shallow Water (SA), Open Bog (BOO1) & Open Fen (FEO1).	Habitat may exist in FOD9-1 flood plain forest but not in CVR-1 or WOMM-3.
Seeps & Springs	Any forested ecosite (FOD, FOM, FOC) located in headwater areas.	Habitat not present at the Site.
Amphibian Breeding Habitat (Woodland)	Deciduous, Mixed & Coniferous Forest (FOD, FOM, FOC), & Deciduous, Mixed & Coniferous Swamp (SWD, SWM, SWC).	Habitat exists in FOD9-1 flood plain forest but not in CVR-1 or WOMM-3.
Amphibian Breeding Habitat (Wetlands)	Swamp (SW), Marsh (MA), Fen (FE), Bog (BO), Open water (OA) & Shallow Water (SA).	Habitat exists in FOD9-1 flood plain forest but not in CVR-1 or WOMM-3. Amphibians only seemed to forage on manicured lawn, due to absence of standing water required for breeding.

8.7 Wildlife Movement Corridors

Wildlife often use habitat corridors for movement between and among habitat patches. In this context, a corridor is defined as habitat that links two (2) or more other wildlife habitats that are critical to the maintenance of a population of a particular species or group of species. The key ecological function of wildlife movement corridors is to enable wildlife to move to and between areas of significant habitat or core natural areas with minimum mortality. They can provide critical links between shelter, feeding, watering, growing and nesting locations (Lee *et al.,* 1998).

According to the OMNR Significant Wildlife Habitat (SWH) Technical Guide (2015), the flood plain forest on-Site is likely an animal movement corridor for amphibians, birds, and mammals. Amphibian movement corridors may be present in all eco-sites that are associated with water. These corridors link breeding and summer habitats, and may be extremely important for local populations. Since the flood plain forest will remain free of disturbance, it is expected the functionality of this likely movement corridor will be maintained in to the future.

8.8 Habitat for Species-At-Risk

Habitats for SAR include:

- Features such as vegetation communities or creeks that are rare or substantially declining, or have high percentage of their global population in Ontario and are rare or uncommon in the planning area;
- Species that are rare in a planning area, even though they may not be provincially rare;
- SAR identified under the ESA or the SARA;
- Species that are listed as rare or historical in Ontario based on records kept by the NHIC (S1 is extremely rare, S2 is very rare, S3 is rare to uncommon, SH is historical); and,
- Species identified as nationally endangered or threatened by the COSEWIC, which are not protected in regulation under ESA or SARA

A summary of the ELC communities that occur in each of the species of conservation concern habitats, and observations of these features are compared with the habitats on-Site (Table 8-4).

Table 8-4: Comparison of habitats of species of conservation for habitats on-Site.

Habitat	ELC Communities	Observation
Marsh Bird Breeding Habitat	Meadow Marsh (MAM), Shallow Water (SA), Open Fen (FEO1) & Open Bog (BOO1)	Habitat may exist in FOD9-1 forest but not manicured lawn or WOMM-3 on-Site.
Woodland Area-Sensitive Bird Breeding Habitat	Deciduous, Mixed & Coniferous Forest (FOD, FOM and FOC), & Deciduous, Mixed & Coniferous Swamp (SWD, SWM, SWC)	Habitat may exist in FOD-9 forest but not manicured lawn or WOMM-3 on-Site.
Woodland roosting or hibernacula habitat for Myotis	Deciduous, Mixed & Coniferous Forest (FOD, FOM and FOC), & Deciduous, Mixed & Coniferous Swamp (SWD, SWM, SWC)	Habitat may exist in FOD-9 forest but not in proximity to manicured CVR-1 or WOMM-3m
Open Country Bird Breeding Habitat	Mineral & Bedrock Cultural Meadow (CUM1, CUM2)	Habitat not present on-Site.
Shrub/Early Successional Bird Breeding Habitat	Cultural Thicket (CUT1, CUT2), Cultural Savannah (CUS1, CUS2), & Cultural Woodland (CUW1, CUW2)	Habitat may exist in FOD9-1 forest but not manicured lawn or WOMM-3 on-Site.
Terrestrial Crayfish	Meadow Marsh (MAM) & Shallow Marsh (MAS)	Habitat may exist in FOD9-1 forest but not in CVR-1 or WOMM-3. However, this creek is located in a dense urban area, and is bounded by major roadways.
Special Concern (SC) & Rare (S1-S3, SH) Wildlife Species	Ecosites associated with any SC, S1-S3 or SH plant or animal element occurrences within 1 or 10 km from project location.	Habitat not present on-Site.

Communications with OMNR identified a suite of SAR were previously reported to occur in proximity to the Site. A geographical search for significant, threatened or endangered species and associated habitat was conducted using the OMNR NHIC Biodiversity Explorer for SAR. A search of OMNR's NHIC database was conducted on the one (1) km^2 and two (2) km^2 area surrounding the Site (OMNR, 2014). It is understood that the NHIC information is based on public regional reports, and habitat boundaries, and may be variable and incomplete. However, the list of species from these two sources identified the same list of SAR for species observations during the last 25 years. The search revealed results for three SAR: Butternut, Barn Swallow, and Chimney Swift.

The habitat characteristics of the three SAR are reviewed, as follows:

Butternut

It was reported in Chapter 4 that habitats on-Site support Black Walnut, a tree that is ecologically similar to Butternut. For this reason, it was interpreted the Site could possibly also support Butternut. Investigations of all trees on the manicured lawn and within 120 m of the top-of-bank in FOD9-1 by Premier confirmed an absence of Butternut. An OMNR District Forester, Mr. Kowalyk, also confirmed the absence of Butternut on-Site on July 4, 2013. Hence, Butternut is determined to be absent from the Site and within 120 m of the top-of-bank of the flood plain forest found along Shoreacres Creek.

Barn Swallow

Barn Swallow is a bird that has developed an ability to nest on many man-made structures. It also nests on natural features such as cliffs and in cavities of large trees. For these reasons, the Site was screened on multiple dates for Barn Swallow. All of the screening inspections identified no evidence of Barn Swallow. For example, the inspection of the residence during April of 2013, prior to demolition, showed no nests or birds. Also, no Barn Swallow were observed on-Site during vegetation surveys in May, 2013. Also, the bird breeding season survey of 2013 identified no specimens. Thus, Barn Swallow was confirmed as absent from the Site.

Chimney Swift

Chimney Swift is similar to Barn Swallow, in that it has developed an ability to nest on many man-made structures. This bird species also nests on natural features such as cavities in large trees. During multiple visits to the Site during 2013 and 2014, no Chimney Swift were observed. This screening period included site visits in April and May before the residence on-Site was demolished. Thus, no Chimney Swift nests or specimens were observed during multiple visits to the Site. Thus, this SAR was confirmed as absent.

Summary for SAR other than Myotis

No evidence of SAR or specimens was observed on Site from 2013 – 2015. For this reason, it is inferred the Site has been cleared for possible interaction with SAR identified as possibly evident in communications with OMNR and via literature reviews.

Myotis Screening

Regarding the screening for possible myotis habitat, it was reported in Chapter 4 that no cavities were observed in the trees located on-Site. This screening was conducted across CVR-1, WOMM-3, and FOD9-1 within the flood plain forest. There were no caves or other features in the vicinity of the Site where myotis could possibly roost or overwinter located. Hence, habitat that could be possibly used by myotis for roosting or as winter hibernacula is inferred as absent.

8.9 Summary

Studies on-Site documented the existing ecological and environmental features. This documentation used field surveys along with ELC classification and documented four key ecosites that vary in their environmental sensitivities. These were: CVR-1 and WOMM-3 in the area of the former residence and Shoreacres Creek and FOD9-1 found in the creek valley. These past studies confirmed that CVR-1 and WOMM-3 represented disturbed habitats and were not extensively used by wildlife whereas more sensitive habitats exist near Shoreacres Creek and within FOD9-1. This evaluation of habitats on-Site also identified that no candidate SWH or SWH exists on-Site or within 120 m of the top-of-bank of Shoreacres Creek. That is, there is no evidence for SWH used by wildlife, no wildlife concentration areas, and no rare habitats or other features of high conservation concern. With this information, we expect that no significant disturbance will result to Shoreacres Creek or FOD9-1 due to the establishment of a 7.5 m vegetation buffer on the tree drip line along the top-of-bank. This buffer is expected to separate the creek and FOD9-1 from the proposed development.

With this information, it is feasible to expect that no significant negative disturbance are anticipated on the existing natural features of Shoreacres Creek or the FOD9-1 flood plain forest from the proposed development. As noted, this proposed development will result in the removal of existing trees on the manicured lawn however this activity also includes re-planting trees on-Site as compensation, with a ratio of 1:1. When these trees are re-planted, it is anticipated they will be located within 120 m of the top-of-bank, with an expected overall net benefit to the FOD9-1 flood plain forest of Shoreacres Creek.

Species at Risk and Associated Habitats

No evidence of SAR specimens or habitats used by SAR was observed on Site from 2013 – 2015. For this reason, it is inferred the Site and proposed development has been cleared for possible interaction with SAR such as Barn Swallow, Butternut, Chimney Swift, and myotis.

9.0 RECOMMENDATIONS FOR ENVIRONMENTAL MANAGEMENT

This Chapter describes how the findings from the ecological surveys are used as the basis for recommendations regarding environmental management. When these environmental management measures are recommended, they provide the opportunity to reduce and / or eliminate environmental disturbance from the proposed development.

9.1 Existing Habitats on-Site

Surveys on-Site resulted in the identification of a range of habitats, based on vegetation communities and the presence of wildlife. The most sensitive habitats identified were Shoreacres Creek and FOD9-1 flood plain forest. With the proposed development plan, it is highly likely that no disturbance will extend to either the creek or FOD9-1. These two habitats can be expected to be not disturbed, due to the establishment of a vegetation buffer along the tree drip line and top-of-bank. This vegetation buffer will ensure that the roots of trees and other features of FOD9-1 and adjacent creek will be retained. However, it is likely that future tree plantings will be completed in FOD9-1, as compensation for the loss of trees due to the development. This development will focus on land classified as CVR-1 and WOMM-3. Hence, it is important to include recommendations for environmental management during the future construction phase. A summary of these features and the expected effect(s) of the proposed development along with mitigation are presented as Table 9-1.

Table 9-1: Summary of the expected effects of the proposed development on the documented environmental features on-Site. Each of these features are classified as non-sensitive (i.e., Low), somewhat sensitive (i.e., Moderate), or sensitive (i.e., High).

Feature	Sensitivity	Land Use	Area of Possible Disturbance	Proposed Mitigation
FOD9-1 Flood Plain Forest	High	Natural Area/ Wildlife habitat	Low	No negative effects expected with the retention of a 7.5 metre buffer from tree drip line.
Shoreacres Creek	High	Wildlife Habitat	Low	No negative effects, as drainage from the top-of-bank area will continue to flow downslope to creek.
CVR-1 cultural lawn	Low	Cultural	Low	Loss of grass and herbaceous plants not expected to disturb wildlife, creek, or FOD9-1.
WOMM-3 trees adjacent to CVR-1	Low	Cultural	High	Loss of trees and ornamental plantings with proposed development. These trees are not significant wildlife habitat.

9.2 Impact Avoidance Measures

This EIS has identified key natural features at and around the Site, and resolved the effects of the proposed development on these features. This resolution allows for the identification of Best Management Practices (BMPs) to avoid the negative effects that may occur as a result of the proposed development. This process of effect avoidance is preferable to the implementation of mitigation measures after effects have already been created. Where possible, avoidance measures should be implemented before resorting to mitigation, and lastly, rehabilitation to minimize negative effects on natural features on-Site and adjacent areas. The following BMPs are identified as available for implementation for this proposed development. If the BMPs are implemented, they will likely reduce the possible effects from the proposed development.

Standard BMPs for construction activities should be used to mitigate other types of disturbance on the environment, including the generation of dust, noise, vehicle exhaust and water runoff from the Site. The use of these mitigation measures is expected to reduce the extent and duration of the negative effects of the proposed development. In addition, prescribed mitigation measures with respect to natural heritage features observed at or adjacent to the Site are presented. After these BMPs are noted, the timing of development on-Site is considered.

Sediment and Erosion Control

It is important to recognize the difference between erosion control and sediment control measures when preparing an effective erosion and sediment control plan. The difference between erosion and sediment control methods is reviewed for the purposes of this document:

- Erosion control is the process by which the potential for erosion is minimized; and,
- Sedimentation control is the process by which the potential for eroded soil to be transported and/or deposited beyond the limits of the construction site is minimized.

Measures to address both erosion control and sedimentation control are required. Therefore, the design of erosion and sedimentation control measures is expected to be flexible and evolve throughout the construction process. This approach will limit effects on surrounding area. Various BMPs can be applied to limit the effects of erosion and sedimentation during the construction phase of the proposed development, as reviewed by Hamilton Conservation (Hamilton Conservation, 2006). A summary of this review is presented in Table 9-2.

All BMPs should be regularly inspected to ensure functionality as construction proceeds. For example, inspections should occur after rain events to ensure they are functioning as designed. It is also important that construction staff pay attention to weather forecasts. To prepare for upcoming rain events, operators should walk around the construction site to ensure that BMPs functional and all facets of the Site are secure. Identification of these BMPs represents an opportunity to avoid the negative effects of the proposed development on the environment.

Table 9-2: Examples of BMPs for sediment and erosion control available for use on-Site (after Hamilton Conservation, 2006).

BMP	Advantage	Limitation
Silt Fence	• Effective way to prevent off-site transport • Relatively inexpensive • Reduces runoff and sediment transport • Mitigates erosion on slopes	• Must be installed properly to prove effective • Not suitable for all areas with high runoff volumes, particularly steep slopes • Not well suited for rock or hard surfaces • Not suitable for areas with high winds • Regular inspection required
Vegetative Buffer	• Retains existing vegetation • Reduces erosion • Reduces runoff • Filters air and limits dust	• Ensure protective measures are taken • Space not available for development • Can be costly if buffer area is large
Straw Bales	• Mitigates erosion • Relatively inexpensive • Reduces runoff	• Must be installed properly to prove effective • Not suitable for high runoff areas • Requires maintenance
Dust Mitigation	• Reduces the amount of airborne dust particles that may be generated on-Site and migrate to adjacent habitats • Reduces the amount of sedimentation and by association water pollution to nearby water • Reduces the impact on respiratory systems of wildlife and workers in area	• Can be costly • May increase muddy conditions on-Site
Spill Prevention	• Should always use secondary containment • Reduces the amount of pollution that may be accidentally released to environment from routine activities such as adding fuel to on-Site machines	• Requires Site preparation and equipment for secondary containment etc.

Operators should also visually inspect all BMPs when the site will be inactive for several days, such as weekends or holidays. This will help to prepare for rain events that may occur when workers are off-Site. These planned preparation procedures with help minimize the risk of on or off-Site property damage.

The exact use of the BMPs will occur in conjunction with different phases of the proposed development. It is expected that the use of these BMPs will result in the avoidance or reduction of disturbance at the Site. However, it is essential for proper timing of the use of BMPs, to ensure they reflect typical seasonal constraints, such as high runoff during autumn rains etc.

9.2.1 Lighting and Terraces for Proposed Development

Light can be a concern where it is directed towards a variety of natural features and functions. (Toronto, 2007). Primary sources for “new light” on-Site will be from the proposed development. It is also prudent to review that a mounted light can illuminate in three directions; directly upward, directly to the ground, or at an angle away from the ground. For this Site, it is recommend that the placement of lights on the future building and in the parking area avoid illumination of the adjacent FOD9-1 and Shoreacres Creek valley. Different strategies can be used to achieve this goal (Toronto, 2007). For example, to minimize light being directed into the adjacent forest, outdoor common area lighting for walkways and parking spots should be directed toward the ground and/or angled toward the building. For this Site, it is recommended that to minimize impacts of light on birds, use of upward light should be avoided and the lighting should illuminate only non-reflective surfaces.

10.0 SUMMARY AND CONCLUSIONS

The proposed development required the completion of an EIS to assess and mitigate the potential effects on natural features present at and in the immediate vicinity of the Site. Therefore, a combination of a review of existing records and a series of Site visits conducted primarily from 2013 - 2015 were completed in order to document and evaluate natural features that are present on-Site. This extended period of study on-Site allowed for the documentation and identification of dominant plant and wildlife species as well as ELC classification for the Site. This collection of extensive information allowed for the evaluation of possible consequences of the proposed development on the existing natural heritage features on-Site.

As a result of findings produced from a review of existing records, consultations with CH and OMNR and Site visits, the following conclusions and recommendations were made in this EIS:

- Site within a highly urbanized area, and subjected to disturbances over last 100+ years;
- Surveys revealed the Site contains three distinct habitats that reflect existing vegetation, wildlife, and surface waters;
- There are no significant natural features or wildlife habitat present in CVR-1 or WOMM-3 while FOD9-1 surrounding Shoreacres Creek does provide habitat to wildlife;
- Collated information was interpreted using ELC and identified three distinct polygons, as: CVR-1, WOMM-3, FOD9-1 containing Shoreacres Creek;
- It was noted FOD9-1 and Shoreacres Creek was mapped by CH as a Regulated Area, and provides habitat for a number of bird and wildlife species in the area, but all observed species are considered common with no SAR were observed;
- To apply a vegetation buffer of 7.5 m on the tree drip line at the top-of-bank of Shoreacres Creek, as recommended by staff from CH and ROH;
- no future disturbance of the vegetation buffer area of 7.5m or top-of-bank;
- Since no disturbance of FOD9-1 or Shoreacres Creek is expected from the proposed development, these habitats are expected to retain ecological functionality in the future;
- When disturbance in FOD9-1 and Shoreacres Creek is avoided, it will enhance protection of the groundwater recharge zone known to exist in the general area;
- This EIS recommends the use of BMP measures to mitigate the potential effects of the proposed development on the natural features of FOD9-1 and Shoreacres Creek;
- This EIS recommends a 1:1 compensation ratio to be applied for the 60 live trees proposed for removal within CVR-1 and WOMM-3;
- This EIS recommends planting the 60 trees along Shoreacres Creek; and
- Stormwater management will follow a plan that is currently in preparation. However, future drainage is expected to continue to the creek valley or to Upper Middle Road.

Overall, it is Premier's opinion that the proposed development on lands classified as CVR-1 and WOMM-3 along with the use of a vegetation buffer will result in no significant disturbance on the existing ecological features located in the adjacent FOD9-1 and Shoreacres Creek habitats. The removal of large numbers of planted non-native trees on-Site with future planting of native trees will also represent a net benefit to the Site, including FOD9-1 containing Shoreacres Creek.

11.0 CLOSURE AND LIMITATIONS OF THIS STUDY

Thank you for providing Premier the opportunity to complete this EIS for the Site.

The findings reported in this EIS were based on observations on plants, wildlife, and other environmental features collected from 2013 to 2015. As such, the use of this report is subject to the Statement of Limitations presented in Appendix I of this report. The reader's attention is specifically drawn to the Statement of Limitations as it is considered essential that they be followed for the proper use and interpretation of this report.

If you have any questions concerning the above, please contact the undersigned at your earliest convenience.

Sincerely,

Premier Environmental Services



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