1055 Klondike Road

Environmental Impact Statement / Tree Conservation Report

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List of Acronyms and Definitions

ABBO - Atlas of Breeding Birds of Ontario
ANSI – Area of Natural and Scientific Interest
BHA - Butternut Health Assessment/Butternut Health Assessor
BLTU – Blanding's Turtle
CC - Co-Efficient of Conservation
CRZ - Critical Root Zone
DBH - Diameter at breast height
DFO – Fisheries and Oceans Canada
EIS – Environmental Impact Statement
ELC - Ecological Land Classification
CUM – Cultural Meadow
ESA - *Endangered Species Act* (Provincial)
GPS – Global Positioning System
NAD 83: North American Datum 1983
UTM: Universal Transverse Mercator
LIO - Land Information Ontario
MECP – Ministry of Environment, Conservation and Parks
MTO – Ministry of Transportation Ontario
MVCA – Mississippi Valley Conservation Authority
NHIC – Natural Heritage Information Centre
NHRM - Natural Heritage Reference Manual
OMNR/MNRF - Ontario Ministry of Natural Resources (old name)
-Ministry of Natural Resources and Forestry (new name)
OP – Official Plan
OWES - Ontario Wetland Evaluation System
PPS - Provincial Policy Statement
PSW - Provincially Significant Wetlands
SAR - Species at Risk (in this report they refer to species that are provincially or federally listed as endangered or threatened and receive protection under ESA or SARA)
SARA - *Species at Risk Act* (Federal)
SARO - Species at Risk in Ontario
SWH - Significant Wildlife Habitat
SWHCS – Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E
SWHTG - Significant Wildlife Habitat Technical Guide

SRANK DEFINITIONS

S1 Critically Imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.

S2 Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.

S3 Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

S4 Apparently Secure; uncommon but not rare; some cause for long-term concern due to declines or other factors.

S5 Secure; Common, widespread, and abundant in the nation or state/province.

? Inexact Numeric Rank—Denotes inexact numeric rank

SNR Unranked, Nation or state/province conservation status not yet assessed.

SU Unrankable, Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.

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

S#S# Range Rank, A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).

S#B Breeding

S#N Non-Breeding

SARA STATUS DEFINITIONS

END Endangered: a wildlife species facing imminent extirpation or extinction.

THR Threatened: a wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.

SC Special Concern, a wildlife species that may become threatened or endangered because of a combination of biological characteristics and identified threats.

SARO STATUS DEFINITIONS

END Endangered: A species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario's ESA.

THR Threatened: A species that is at risk of becoming endangered in Ontario if limiting factors are not reversed.

SC Special concern: A species with characteristics that make it sensitive to human activities or natural events.

Coefficient of Conservatism Ranking Criteria

0 Obligate to ruderal areas.
1 Occurs more frequently in ruderal areas than natural areas.
2 Facultative to ruderal and natural areas.
3 Occurs less frequent in ruderal areas than natural areas.
4 Occurs much more frequently in natural areas than ruderal areas.
5 Obligate to natural areas (quality of area is low).
6 Weak affinity to high-quality natural areas.
7 Moderate affinity to high-quality natural areas.
8 High affinity to high-quality natural areas.
9 Very high affinity to high-quality natural areas.
10 Obligate to high-quality natural areas.

Table of Contents

1.0 INTRODUCTION 8
2.0 METHODS 12
2.1 Study Area 12
2.2 Background Review 12
2.3 Field Studies 12
2.3.1 Description of Vegetation Communities and Flora Observations 14
2.3.2 Butternut Inventory 15
2.3.3 Daytime Breeding Bird Surveys 15
2.3.4 Bat Cavity 16
2.3.5 Basking Turtle Surveys 17
2.3.6 Fish Habitat Description 19
2.3.7 Fish Community Sampling 19
2.3.8 Incidental Fauna Observations 19
2.3.9 Tree Inventory 19
3.0 RESULTS 20
3.1 Background Information 20
3.1.1 Natural Heritage Features 20
3.1.2 Historical Fish Communities 23
3.2 Vegetation Communities 26
3.3 Raptor Nest and Daytime Breeding Bird Survey Results 34
3.4 Bat Cavity Results 35
3.5 Basking Turtle Surveys 37
3.6 Incidental Wildlife Observations 38
3.7. Plant Observations 38
3.7.1 General 38
3.7.2 SAR Plants 39
3.8. Watercourse Descriptions and Fish Community Results 39
3.8.1 Habitat and Fish Community Descriptions 42
4.0 EVALUATION OF SIGNIFICANCE OF NATURAL HERITAGE FEATURES 46
4.1 Fish Habitat 46

4.2 Endangered and Threatened Species Discussion 46
4.2.1 SAR Conclusions 54
4.3 Significant Woodlands 58
4.4 Significant Valleyland 58
4.5 Significant Wildlife Habitat 58
4.4 Natural Heritage Features Summary 63
5.0 IMPACT ASSESSMENT 64
5.1 Project Summary 64
5.2 Assessment Methods 64
5.3 Evaluation of Potential to Impact Natural Heritage Features 65
5.3.1 Species at Risk 65
5.3.2 Fish Habitat 69
5.3.3 Significant Woodland and Valleyland 71
5.3.4 Other 71
6.0 TREE CONSERVATION AND PLANTING PLAN 72
7.0 CONCLUSIONS AND RECOMMENDATION 100
8.0 REFERENCES 100

Appendix A: Background Information 107
Appendix B: Observed Species Lists 123
Appendix C: Species at Risk Hand-Out 128

List of Figures

Figure 1: General Location of the Study Area 10
Figure 2: Location of the Study Area 11
Figure 3: Blanding's Turtle Survey Locations 18
Figure 4: Significant Woodland (based on mature trees in 1976) 22
Figure 5: Vegetation Community Descriptions (with edge of Blanding's Turtle Category 2 Habitat) 33
Figure 6: Cavity Tree Search Area 36
Figure 7: Location of Fish Habitat Sampling Stations 41
Figure 8: Blanding's Turtle Habitat Categories 50
Figure 9: Map 1 Location of Individual and Groupings of Trees in the Subject Lands 83
Figure 10: Map 2 Trees to be Removed in Subject Lands 84

List of Tables

Table 1: Summary of Dates and Times of Site Investigations 13
Table 2: Summary of Available Background Information on the Identified Natural Features (PSW, Woodlands, Valleylands, ANSIs, ESA, SWH, and Fish Habitat) 21
Table 3: Historical Fish Species in Shirley's Brook 24
Table 4: Features and Sampling Parameters 40
Table 5: Summary of Potential SAR 55
Table 6: Potential Significant Wildlife Habitats 59
Table 7: Summary of Species of Conservation Value 60
Table 8: Summary of Potential for Natural Heritage Features after Field Investigations 63
Table 9: Summary of Trees and Groupings 75
Table 10 Summary of Impacts, Mitigation Measures and Residual Effects 85

List of Photographs

Photo 1: CUM at the top of hill, south side of project (July 17, 2018) 26
Photo 2: CUM at the base of the hill (north side of project) (July 17, 2018) 27
Photo 3: CUM near Shirley's Brook (July 17, 2018) 28
Photo 4: Copse of trees in the CUM community (July 17, 2018) 29
Photo 5: CUM in adjacent lands to the northeast (July 17, 2018) 29
Photo 6: FOD along Shirley's Brook (August 29, 2018) 30
Photo 7: Floodplain within Shirley's Brook (August 29, 2018) 31
Photo 8: Floodplain within Shirley's Brook (August 29, 2018) 31
Photo 9: Windrow on east side of the subject lands (June 9, 2018) 32
Photo 10: Trimmed cedar hedgerow around the house in the southwest corner (June 20, 2018) 32
Photo 11: Stormwater management pond looking northwest (May 14, 2018) 37
Photo 12: Shirley's Creek looking downstream (May 14, 2018) 38
Photo 13: Station 1 looking upstream from the downstream end (July 19, 2018) 43
Photo 14: Log jam immediately downstream of Station 1 (July 19, 2018) 43
Photo 15: Garbage and debris jam between stations 1 and 2 (May 14, 2018) 44
Photo 16: Station 2 looking upstream from the downstream end (July 19, 2018) 45
Photo 17: Station 2 looking downstream form the upstream end (July 19, 2018) 45

1.0 INTRODUCTION

Mapleleaf Custom Homes, hereafter referred to as the proponent, is proposing to build a residential subdivision at 1055 Klondike Road, Kanata, Ontario (Figure 1). It is in part of Lot 11, Concession 4 in the City of Ottawa (formerly March Township). The proposed subdivision includes approximately 4.5 ha. Bowfin Environmental Consulting Inc. (Bowfin) was retained to complete an Environmental Impact Statement (EIS) and a Tree Conservation Report (TCR).

As per the Official Plan (OP) of the City of Ottawa (2003), an EIS is required to determine if significant natural features have been designated in or adjacent to the subject lands followed by an assessment of the potential impacts to any identified natural environment from the proposed development. The OP follows the guidelines set out in the Provincial Policy Statement (PPS) in which there are several natural features and areas identified as needing protection. These are:

- Significant habitat of Endangered and Threatened Species;
- Significant wetlands;
- Significant woodlands;
- Significant valleylands;
- Significant wildlife habitat;
- Significant Areas of Natural and Scientific Interest; and
- Fish habitat.

The locations of known significant features along with other locally significant features (identified as part of the City's Natural Heritage System) are identified on OP schedules A, B, K and L. Note that the presence/absence of habitat for endangered (END) or threatened (THR) Species as well as some significant wildlife habitats (SWH) are not depicted on the OP schedules. Their presence/absence must be determined based on the criteria in the OP or the appropriate MNRF methodology [i.e. species-specific surveys, presence of preferred habitats and the MNR's *Natural Heritage Reference Manual* (OMNR, 2010)]. Where identified, the boundaries of any significant features are noted and the potential for the proposed land development to cause negative impacts is assessed. For those features which may be negatively impacted, mitigation measures and where appropriate compensation measures are recommended.

The following report is a combined EIS/TCR report. It includes an assessment of the natural environment habitats within the subject lands and discusses the potential for negative impacts. The PPS states that a negative impact signifies:

> *"a) in regard to policy 2.2, degradation to the quality and quantity of water, sensitive surface water features and sensitive ground water features, and their*

> *related hydrologic functions, due to single, multiple or successive development or site alteration activities;*
> *c) in regard to other natural heritage features and areas, degradation that threatens the health and integrity of the natural features or ecological functions for which an area is identified due to single, multiple or successive development or site alteration activities."*

The intention of the TCR is to determine what woody vegetation needs to be retained and protected on site.

This EIS portion follows the *City of Ottawa Environmental Impact Statement Guidelines* (City of Ottawa, 2012) and the TCR sections follow the *City of Ottawa Tree Conservation Report Guidelines* (City of Ottawa, 2019).

The field work for both the EIS and TCR was led by Michelle Lavictoire who has a Master of Science in Natural Resource Sciences and over 20 years of experience in completing natural environment assessments.

The paragraphs below outline the methods, followed by a review of the available background information and a description of the site's existing conditions. This information is used to evaluate the potential impacts to the features and to make recommendations in terms of the EIS and TCR.

Figure 1: General Location of the Study Area

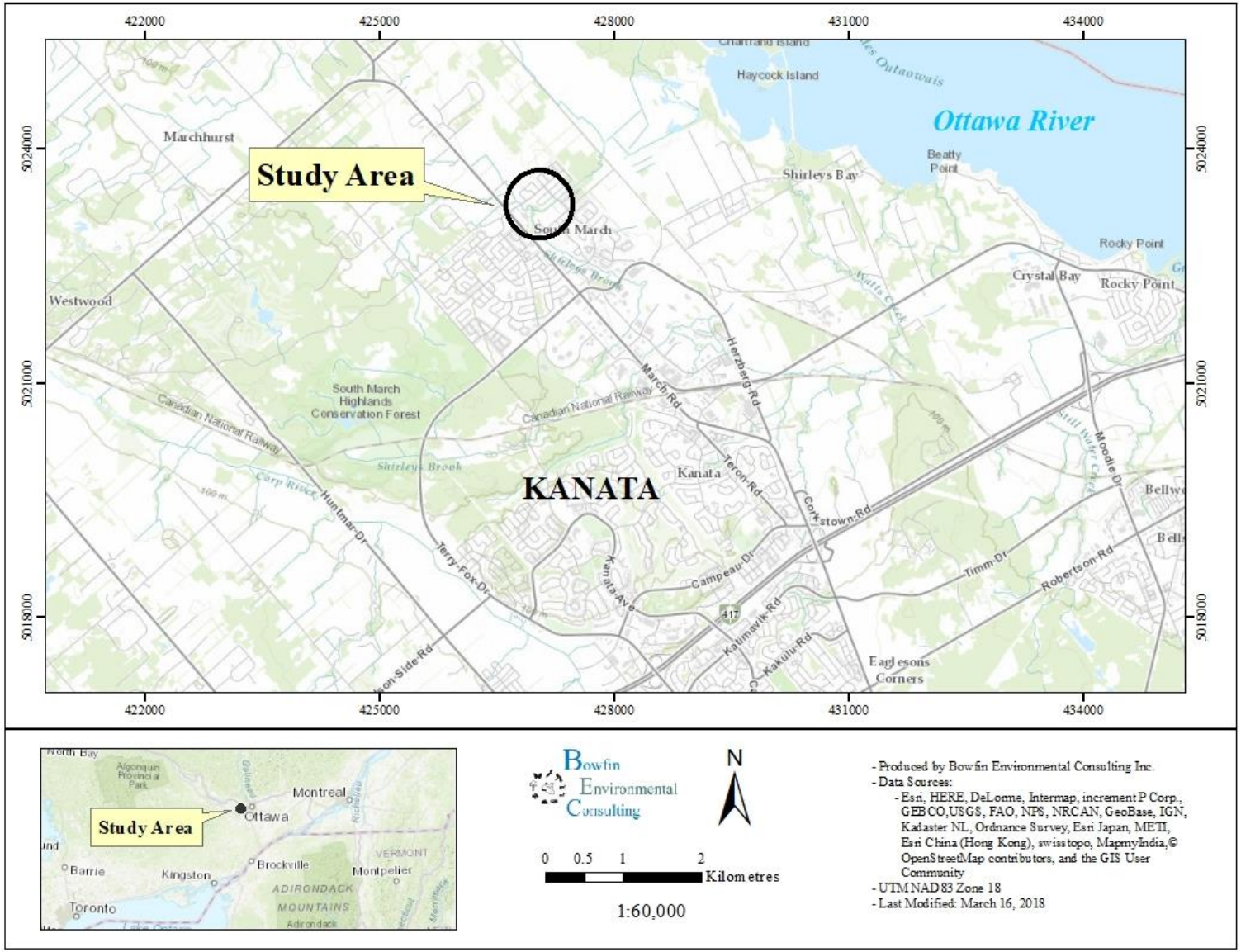
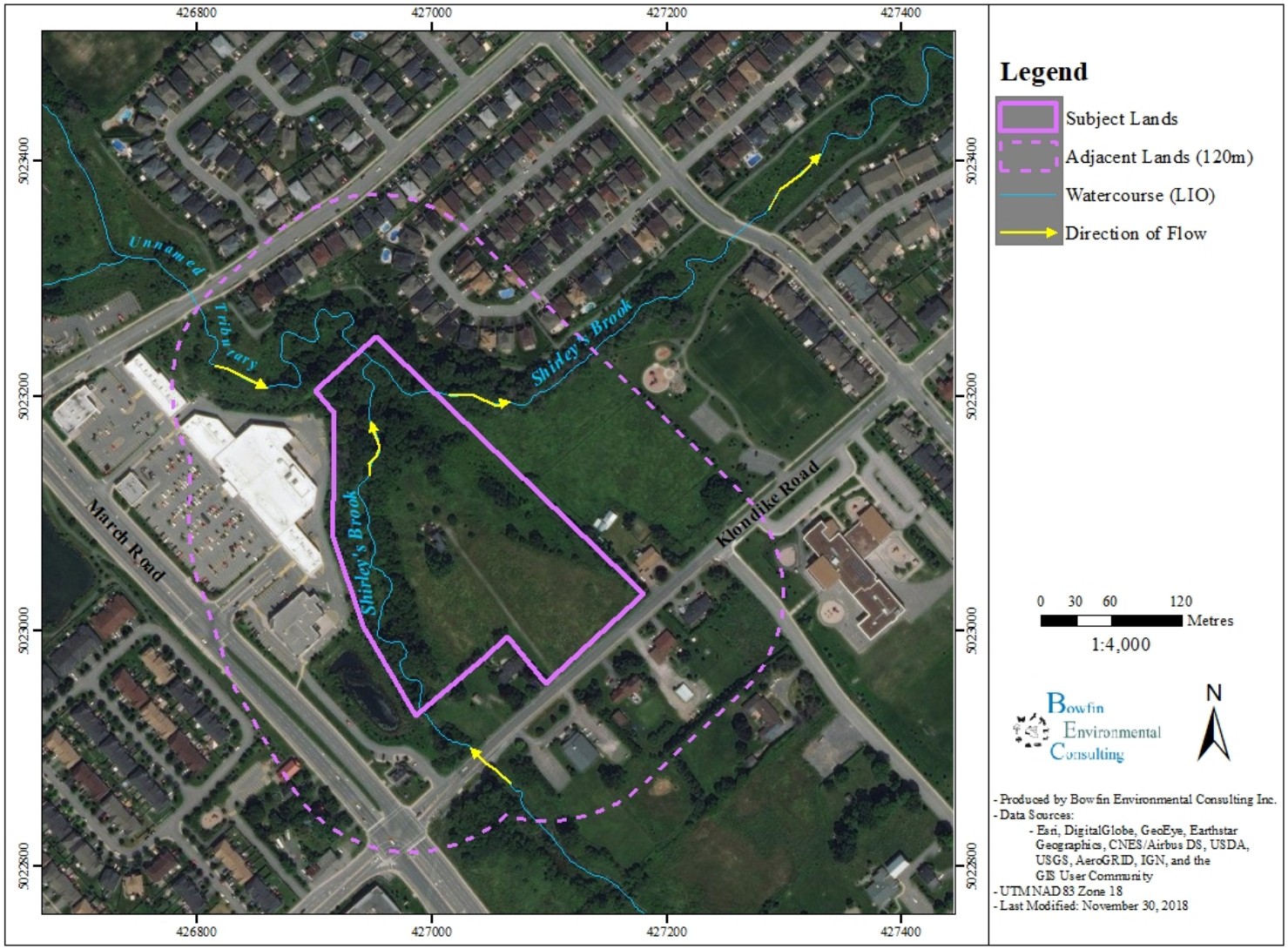


Figure 2: Location of the Study Area



2.0 METHODS

Work undertaken for the completion of this project included a background review of existing information and field investigations.

2.1 Study Area

The study area (Figure 2) varied with the item being surveyed. For the most part, the OP calls for an evaluation of the subject lands and the adjacent 120 m. The detailed field investigations, and assessments were completed within the subject lands (area proposed to be developed). These investigations also included general observations and sampling within the adjacent lands. The background review and consideration for the potential for species at risk (SAR) included a larger study area. The study area for each item is described in the methods below.

2.2 Background Review

The background review began with preliminary mapping of the vegetation communities, in the subject lands and the adjacent 120 m, as a desktop exercise. The search of databases and available background data also included the adjacent ±5 km.

The background search of available records and consulting reports was made to gather information on the known and potential occurrences of SAR within the project area. The following web sources were reviewed during the background review: Natural Heritage Information Centre (NHIC), species at risk in Ontario website, and Land Information Ontario (LIO). In the City of Ottawa, natural heritage features are designated on Schedules A, B, K, and L of the OP. As such these were reviewed and copy of the mapping for the study area is found in **Appendix A**. An information request was sent directly to the Ministry of Natural Resources and Forestry (MNRF) Kemptville for any additional information not available on the websites. A copy has been included in Appendix A.

2.3 Field Studies

Information on the features was collected during numerous visits scheduled throughout 2018. A summary of the dates, times, ambient conditions and purpose for the visits are provided in Table 1.

Table 1: Summary of Dates and Times of Site Investigations

Date	Time (h)	Staff	Air Temperature (Min-Max) °C	Weather	Purpose
April 13, 2018	1315-1400	M. Lavictoire C. Fontaine E. Theberge M. Brochu	7.0 (1.2-9.1)	80% cloud cover, light breeze (2) changing to overcast, light breeze (2)	-Initial Site Visit
April 19, 2018	1045-1215	C. Fontaine	-2.0 (-0.7-3.3)	Overcast, light snow, gentle breeze (3)	-Tree Cavity Inventory (Bat Maternity Sites)
April 27, 2018	0845-0930	E. Theberge	9.0 (1.9-16.6)	30% haze, light air (1) changing to 50% haze, light air (1)	-Turtle Overwintering
April 30, 2018	1145-1245	E. Theberge A. Yates	17.0 (2.7-18.7)	Clear skies, light (2) to gentle breeze (3)	-Turtle Survey
May 7, 2018	1200-1445	M. Lavictoire	13.0-17.0 (4.6-15.3)	Clear skies, light air (1) to light breeze (2)	-Turtle Survey - Flag Fish Habitat
May 14, 2018	1215-1315	C. Fontaine M. Brochu	22.0 (9.5-25.4)	Clear skies, light air (1) to light breeze (2)	-Turtle Survey
May 18, 2018	1145-1230	C. Fontaine	15.0-17.0 (3.0-17.9)	Clear skies, light breeze (2)	-Turtle Survey
May 24, 2018	1500-1600	M. Brochu A. Yates	22.0 (8.3-25.7)	Clear skies, light ai (1)r changing to light breeze (2)	-Turtle Survey
June 1, 2018	0730-0930	M. Lavictoire	23.0 (14.8-27.7)	Clear skies, light air (1) to light breeze (2) changing to 25% cloud cover, hazy, light breeze (2)	-Grassland Breeding Bird Survey #1 -General Breeding Bird Survey #1 -Turtle Survey
June 7, 2018	2015-0930	E. Theberge A. Yates	18.0 (10.5-21.5)	Overcast, light air (1) changing to 80% cloud cover, light air (1)	- Chimney Swift
June 9, 2018	0745-0815	M. Lavictoire	14.0 (8.0-24.0)	Light haze, light air (1) changing to 80% haze, light air (1)	-Grassland Breeding Bird Survey #2
June 11, 2018	1015-1300	C. Fontaine A. Yates	20.0 (8.0-23.3)	Clear skies, gentle breeze (2)	-Butternut Flagging
June 20, 2018	0730-0830	M. Lavictoire	15.0 (9.7-28.8)	10% cloud cover, light air (1)	-Grassland Breeding Bird Survey #3 -General Breeding Bird Survey #2
July 17, 2018	1045-1400	M. Lavictoire C. Fontaine E. Theberge	26.0-27.0 (17.3-29.1)	Clear skies, light to gentle breeze (3), changing to gentle breeze (3)	-Description of Vegetation Community -Fish Habitat Assessment
July 19, 2018	0900-1200	C. Fontaine E. Theberge	21.0-26.0 (9.6-29.4)	Clear skies, calm air (0) changing to 30% cloud cover, light air (1)	-Fish Habitat Assessment
August 7, 2018	1015-1300	C. Fontaine A. Yates	25.0-30.0 (19.4-28.4)	Overcast, light breeze (2) changing to 50% cloud cover, light breeze (2)	-Tree Inventory
August 29, 2018	0930-1015	M. Lavictoire	25 (19.4-29.6)	Clear skies, light breeze (2)	- Description of Vegetation Communities

Date	Time (h)	Staff	Air Temperature (Min-Max) °C	Weather	Purpose
February 15, 2019	1100-1215	C. Fontaine	-2.0 (-6.5-4.5)	Overcast, light air (2)	- Tree Inventory

M. Lavictoire – Michelle (Nunas) Lavictoire – B. Sc. Wildlife Resources and M.Sc. Natural Resources
C. Fontaine - Cody Fontaine - Fisheries and Wildlife Technologist
M. Brochu – Melissa Brochu – M. Sc. Environmental and Life Sciences and Fisheries and Wildlife Technician
E. Theberge – Elysabeth Theberge —M.Sc. Biology
A. Yates – Abby Yates – B.Sc. Env. Ecology

*Min-Max Temp Taken From: Environment Canada. National Climate Data and Information Archive. Ottawa International Airport. Available http://climate.weatheroffice.gc.ca/ [February 19, 2019]

2.3.1 Description of Vegetation Communities and Flora Observations

To assess the potential for SAR or their habitat, the vegetation communities within the subject lands and the adjacent 120 m were described. Sufficient level of detail was collected to provide general habitat descriptions and identify preferred habitats for various SAR.

The field studies were completed by systematically travelling through the study area and by ground truthing the results from the preliminary mapping exercise. Habitat descriptions were based on the appropriate methodologies such as: *Ontario Wetland Evaluation System, Southern Manual* (OWES) (OMNR, 2013a) for wetland habitats and the *Ecological Land Classification for Southern Ontario* 1st approximation for terrestrial habitats (ELC) (Lee *et al*., 1998). Note that OWES took precedent over the ELC where an OWES wetland community was present. The OWES definition of wetland habitat is:

> *"Lands that are seasonally or permanently flooded by shallow water as well as lands where the water table is close to the surface; in either case the presence of abundant water has caused the formation of hydric soils and has favoured the dominance of either hydrophytic or water tolerant plants".*

OWES defines the wetland boundary as the location where over 50% of the plant community consists of upland species with the woody vegetation layer (trees and shrubs) taking precedence over the herbaceous layer (OMNR, 2013a). Furthermore, the presence of large numbers of obligate upland species requires an upland classification. Unless they contain a special feature or function wetlands smaller than 0.5 ha were not delineated.

Apart from delineating the edge of fish and turtle habitat, no delineation of community's boundaries was completed for this work. All boundaries were created using satellite imaging. Delineation of forests includes habitats classified as forest using ELC (regardless of the age of the tree species). It also includes treed swamps, low shrub and tall swamps using OWES when

the cover provided by trees met the definitions of a forest under ELC. Forest is defined in the ELC as communities where the tree species provide >60% cover (regardless of the age of the individuals).

Plants that could not be identified in the field were collected for a more detailed examination in the laboratory. Nomenclature used in this report follows the Southern Ontario Plant List (Bradley, 2009) for both common and scientific names which are based on Newmaster *et al.* (1998). Authorities for scientific names are given in Newmaster *et al.* (1998). Specific attention was paid to locating SAR or species of conservation value (any S1-S3 species) listed as potentially occurring within the study area. Any specimen observed was photographed and its coordinates were recorded on a GPS using NAD83.

2.3.2 Butternut Inventory

The MNRF has a mandatory protocol for the assessment of butternuts. The assessment is referred to as a Butternut Health Assessment (BHA) and must be completed by a Butternut Health Assessor certified by MNRF. The first step is to search in and within 50 m of the subject lands. Any individuals noted would be marked with white spray paint and flagging tape and numbered sequentially. Their UTMs, using a GPS unit set at NAD83, would be recorded and the individual would be assessed according the BHA protocol by a qualified Butternut Health Assessor. As will be noted further on, no butternuts were found.

2.3.3 Daytime Breeding Bird Surveys

Information on bird use of the area was collected through a raptor nest survey and breeding bird surveys. The raptor nest survey consisted of looking for evidence of nesting (such as stick nests, food caches, whitewashing of branches and foliage, accumulation of feathers/fur or prey remains on the ground or in shrubs as per the *Significant Wildlife Habitat Technical Guide* (SWHTG; OMNR, 2000, Appendix O) as well as the raptors themselves.

Due to the presence of the fields and the treed areas, the daytime breeding bird surveys meet the requirements of both the grassland and forest breeding bird surveys. The methods were as follows:

- Two visits were completed for the forest habitats and these two visits were a minimum of 15 days apart (June 1st, and 20th, 2018).
- Three visits were completed for the grassland habitats and the three visits were a minimum of 1 week apart (June 1st, June 9th, and 20th, 2018).
- Surveys began no earlier than 30 minutes after dawn and completed by midday for the forest habitats and by 0900 hours for the grassland;
- Visits were conducted on days with no rain, little to no wind and good visibility;
- The survey type was point counts.

- The forest survey consisted of 5-min point count stations spaced 300 m apart (or as near as 100 m if needed to obtain information from all habitat types)
- The grassland habitat survey consisted of 10-min point count stations placed along linear transects spaced 250 m apart with point counts every 250 m;
- Point counts consisted of listening and observing over the specified time period and recording the number of birds heard/seen, their sex, location, behaviour and interactions with others; and
- While walking between points, any additional observations were recorded.

Birds were identified by sound and/or sight.

Note that one survey for chimney swift use of the house was completed prior to the burning down.

2.3.4 Bat Cavity

There are now four bat species list as endangered or threatened under the provincial *Endangered Species Act* (ESA). The potential to impact these species depends on the presence/absence of critical habitat: hibernation or maternity sites. Significant hibernacula habitats are typically situated in caves. There were no caves present as such, no hibernacula surveys were completed. The maternity sites for little brown myotis, northern myotis and tri-colored bat tend to be located in trees. The Significant *Wildlife Habitat Criteria Schedules Draft 6E* (SWHCS; OMNFR, 2015) indicates that consideration for maternity sites should be made when the vegetation community consists of a mature deciduous or mixed forest with >10 large trees/ha [large trees are defined as having a diameter-at-breast-height (dbh) >25 cm]. Little brown myotis and tri-colored bat may also use buildings (COSEWIC, 2013a). The potential maternity sites for the eastern small-footed myotis consists of open areas with rocky habitat and much more rarely old buildings (Humphrey 2017).

The subject lands contained no rocky habitat. The subject lands included a small treed area along the banks of Shirley's Brook which could provide maternity sites. MNR's (2011) bat maternity protocol states that a minimum of 10 plots of 0.05 ha must be created in areas of suitable forest habitat that are less than 10 ha in size. In this case, the area of suitable forest habitat within the subject lands was small (approximately 1.5 ha) and too narrow to establish the plots. Therefore, the whole area of suitable bat maternity habitat along the Shirley's Brook was walked to search for cavity trees, and information was collected on each one that was found. Information collected consisted of: tree species, diameter at breast height (dbh), presence/absence of cavity, description of cavity and snag class. The survey was completed on April 19, 2018 during leaf-off period to facilitate the detection of bat cavities.

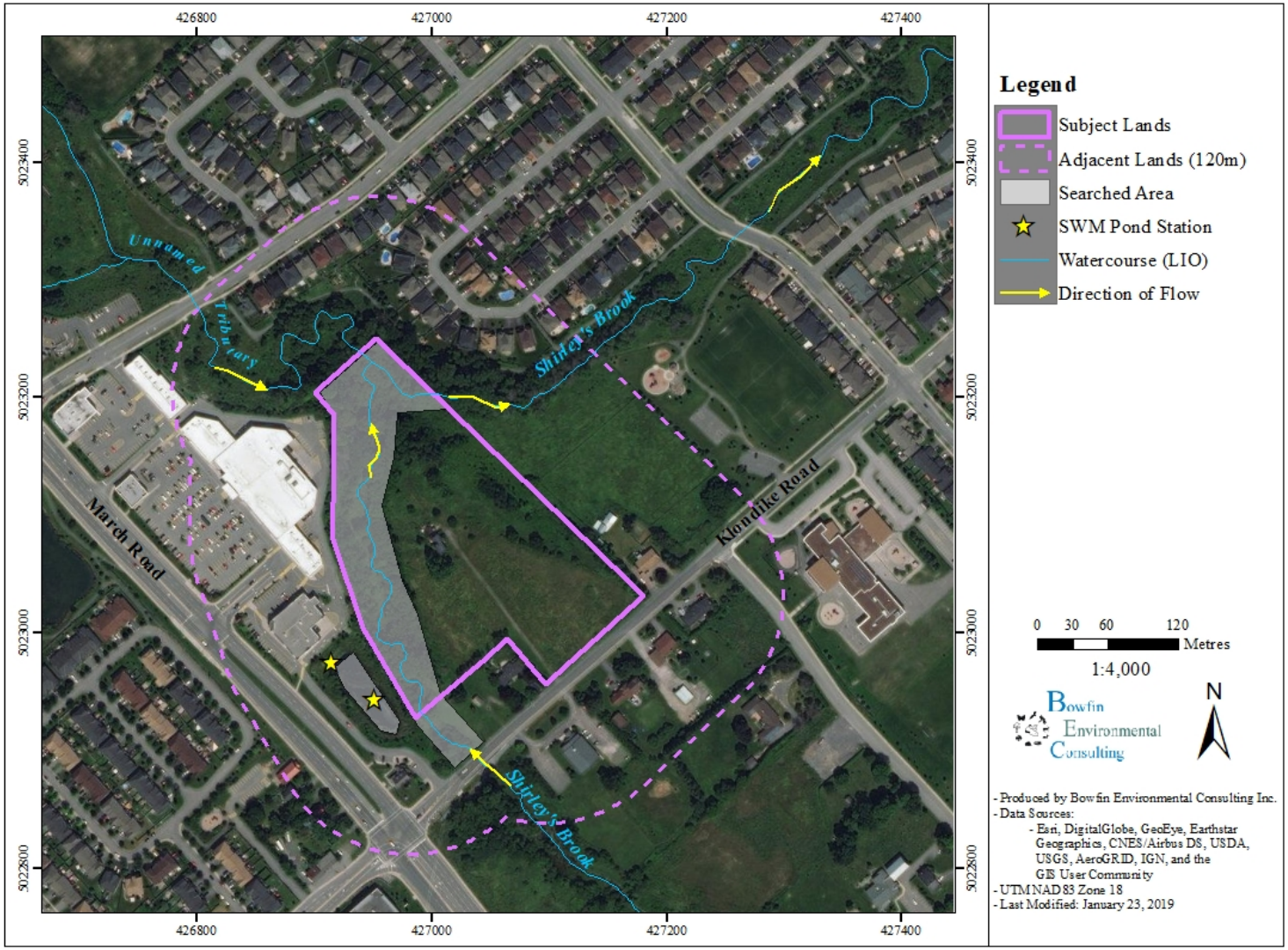
2.3.5 Basking Turtle Surveys

The MNRF *Occurrence Survey Protocol for Blanding's Turtle (Emydoidea blandingii) in Ontario* (OMNR, 2013b) was followed. This protocol requires a minimum of five basking surveys in suitable habitat using Blanding's turtle general habitat description by MNRF. For this site, the surveys were undertaken in the stormwater management pond and tributaries of the adjacent lands and wetland habitats present in and within 120 m of the subject lands. The survey period begins following ice-melt and ends on June 15th. The spacing of surveys should be such that a minimum period of 3 weeks is covered.

The MNRF requires that basking surveys be completed between 8 am and 5 pm during sunny periods and when air temperature is at least 10°C (partially cloudy is accepted if air temperature is above 15°C and is warmer than the water temperature) (OMNR, 2013b). When possible, surveys should target days immediately following inclement weather, when turtles would be more prone to basking.

Information to be collected included: names of observers, date of survey, start and stop time, weather conditions, number and species of turtles observed, and their location would be noted using a hand-held GPS.

Figure 3: Blanding's Turtle Survey Locations



2.3.6 Fish Habitat Description

To assess the potential impacts to fish habitat, fish communities or fish species at risk (SAR) the aquatic habitats within the study area were assessed based on the point observation technique used by *Ontario Stream Assessment Protocol* (Stanfield, 2013) and the Ministry of Transportation of Ontario (MTO)'s *Environmental Guide for Fish and Fish Habitat October 2006* (MTO, 2006). The channel morphology was described using evenly spaced transects upon which data was recorded from evenly spaced observation points. The data collected included: channel width, wetted width, bankfull depth, water depth, substrate size, morphological units and in-stream cover. The habitat assessment was completed on July 19, 2018.

2.3.7 Fish Community Sampling

Given that this project will have no direct, temporary or permanent footprints in the fish habitat and because there is sufficient historical information available on the fish community in Shirley's Brook, it was agreed with Mississippi Valley Conservation Authority (MVCA) that no sampling was needed.

2.3.8 Incidental Fauna Observations

During all visits, any wildlife observations were recorded. Incidental observations included observations of an individual, its tracks, burrows, feces and/or kill sights.

2.3.9 Tree Inventory

As part of the TCR, the individual trees were assessed and a description of the environmental value of the trees within the site and their ecological function recorded. Information collected on the individual trees included:

- Their location (UTM, NAD83);
- Identified to species for native specimens;
- Diameter at breast height (DBH);
- Presence/absence of Butternuts; and
- Health.

This information is appended at the end of this letter and the locations of the individual trees are shown on (Figure 9). The trees that are proposed for removal are shown on Figure 10. Where the density of trees with a DBH > 10 cm was high, they were grouped and described as a whole.

3.0 RESULTS

The proposed development would be fully serviced. The rear yard drainage is captured and routed to Shirley's Brook via a storm pipe that will outlet into erosion protection (rip rap) and then into Shirley's Brook. The pipe will be buried. Apart from the pathway, all development will be situated outside of the Category 2 Blanding's Turtle Habitat and outside of the 30 m setback from the fish habitat in Shirley's Brook. The significant woodland will not be impacted, and geotechnical studies have determined the appropriate setback to protect the significant valley.

A summary of the field investigations results from the background review and site visits are provided in the paragraphs below followed by a discussion on potential for endangered and threatened species and/or significant wildlife habitat.

3.1 Background Information

The study area is in part of Lot 11, Concession 4 in the City of Ottawa. The proposed subdivision includes approximately 4.5 ha.

3.1.1 Natural Heritage Features

Schedule B of the OP indicates that the study area is designated as General Urban Area. The only natural features depicted on Schedules A, B, K, and L of the OP in the subject or adjacent lands is the presence of fish habitat (Shirley's Brook). Floodplain is also designated on Schedules K and L. The Kanata North Community Design Plan Recommended Environmental Management Plan also shows the fish habitat as well as floodplain. It does not identify any other constraints. During the pre-consultation with the City of Ottawa, the City requested that the vegetation along the banks be retained and noted that Category 2 and 3 habitats for Blanding's turtle had been identified along the watercourse.

The closest Areas of Natural and Scientific Interest are South March Highlands Wetland Complex (1.3 km) and Shirley's Bay (2 km) (Appendix A). A summary of the known natural features from the background review is provided in Table 2 and a summary of the known local natural heritage features shown on the OP are summarized in Appendix A.

The City of Ottawa OP also lists other features that form part of their natural heritage system, no new feature other than those already identified (i.e. Shirley's Brook) were present. However, based on the draft guidelines for woodlands, a portion of the woodland present on-site would be considered significant because it is likely more than 60 years old and over 0.8 ha in size. This portion of the forest is roughly 1.7 ha in size (Figure 4). Some of the area has been removed

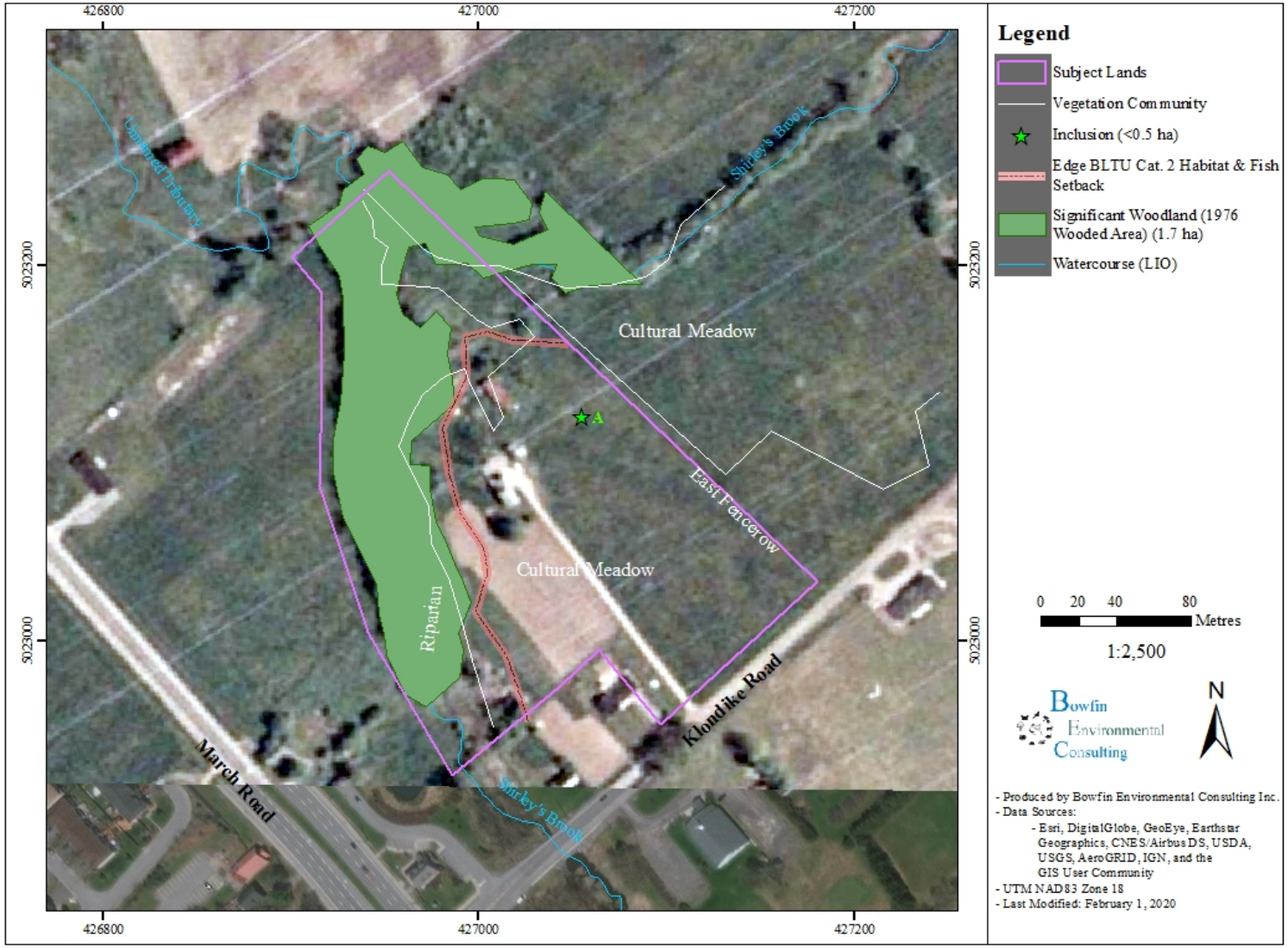
since 1976 but more then 0.8 ha remains. The ELC lines and descriptors have been added to this figure. Additional information on the ELC is presented in the results section.

Table 2: Summary of Available Background Information on the Identified Natural Features (PSW, Woodlands, Valleylands, ANSIs, ESA, SWH, and Fish Habitat)

Natural Heritage Feature	Present within Subject Lands Impact	Present within 120 m of Subject Lands	Present nearby (±5 km)
Provincially Significant Wetlands (PSW)	None	None	Yes [South March Highland Wetland Complex (1.3 km) and Shirley's Bay (2 km)]
Areas of Natural and Scientific Interest (ANSIs)	None	None	Yes [South March Highland Wetland Complex (1.3 km) and Shirley's Bay (2 km)]
Habitats or species designated by ESA (Provincial)	Category 2 and 3 Blanding's turtle habitats were identified during the pre-consultation with the City. MNRF was contacted, they indicated that there were occurrences within 2 km of the site and suitable habitat should be mapped as described in the general habitat description for this species. Further correspondence with MRNF indicated that there were no known sightings in the study area or between the site and March Road, downstream. MNRF had no available mapping for this area (email communications February 6, 2019). Potential for this species and others is discussed in Section 4		
Significant Woodlands	Yes – the forest along Shirley's Brook is present in the 1976 airphotos on the geoOttawa website and this area is >0.8 ha		
Significant Valleylands	To be confirmed during field investigations		None shown on OP schedules.
Significant Wildlife Habitat (SWH)	Potential is discussed in Section 4		Yes [Deer Yard (Stratum 1) 1.1 km southwest of subject lands; South March Highlands Wetland Complex 1.3 km]
Fish Habitat	Yes (Shirley's Brook)		Shirley's Brook, Shirley's Bay; South March Highlands Wetland Complex 1.3 km

Sources of background information: OP (City of Ottawa), Google Satellite Imaging

Figure 4: Significant Woodland (based on mature trees in 1976)



3.1.2 Historical Fish Communities

A search through available records and available consulting reports was made in order to gather existing information on the fish habitat and community within the project area. The following web sources were used during the background review:

- Natural Heritage Information Centre (NHIC)
- Land Information Ontario – Aquatic Resource Area (LIO-ARA layer)
- DFO (Department of Fisheries and Oceans) on-line Aquatic Species at Risk website
- Consulting reports
- Mississippi Valley Conservation Authority (Shirley's Brook 2016 Summary Report)
- Ottawa Official Plans (OP)

Schedules A, B, K and L of the OP mapping and LIO mapping indicate that Shirley's Brook flows through the subject lands (Appendix A). Shirley's Brook provides permanent fish habitat and is described as a cool-warm water system, with the downstream end being slightly warmer than the upstream portion (MVCA, 2016). A total of 23 fish species are listed as occurring in Shirley's Brook. These, along with information sources are summarized in Table 3.

The DFO Aquatic Species at Risk Map (2018) did not indicate the presence of any SAR in Shirley's Brook. The MNRF InfoRequest received in June 2018 (Appendix A) as well as LIO mapping listed American eel as potentially occurring in Shirley's Brook. MNRF was contacted and they indicated that the American eel occurrence was a result of this being a direct tributary to the Ottawa River, and that American eels are known to occur in that portion of the Ottawa River (email communications January 31, 2019). The only other fish species of interest was from the sampling of Shirley's Brook by Dillon Consulting Limited (1999) which yielded bridle shiner, a special concern species. The presence of this species in Shirley's Brook was not confirmed by any other sources (MNRF or DFO). Its presence is considered unconfirmed and may be a case of mistaken identification.

Table 3: Historical Fish Species in Shirley's Brook

Species Name	Scientific Name	Trophic Class	Thermal Regime	SRank	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	Reference
American Eel	*Anguilla rostrata*	invertivore/ carnivore	cool	S1?	END	No Status	LIO, 2014
Northern Pike	*Esox lucius*	carnivore	cool	S5	No Status	No Status	LIO, 2014
Central Mudminnow	*Umbra limi*	invertivore	cool	S5	No Status	No Status	Dillon, 1999; LIO, 2014; MVCA, 2016
White Sucker	*Catostomus commersoni*	insectivore/ omnivore	cool	S5	No Status	No Status	Dillon, 1999; LIO, 2014; MVCA, 2016
Northern Redbelly Dace	*Chrosomus eos*	invertivore/ planktivore	cool	S5	No Status	No Status	Dillon, 1999; MVCA, 2016
Finescale Dace	*Chrosomus neogaeus*	invertivore/ planktivore	cool	S5	No Status	No Status	Dillon, 1999; MVCA, 2016
Common Shiner	*Luxilus cornutus*	invertivore	cool	S5	No Status	No Status	Dillon, 1999
Bridle Shiner	*Notropis bifrenatus*	planktivore	cool	S2	SC	SC	Dillon, 1999
Blacknose Shiner	*Notropis heterolepis*	invertivore/ herbivore	cool	S5	No Status	No Status	LIO, 2014; MVCA, 2016
Spottail Shiner	*Notropis hudsonius*	invertivore/ planktivore	cool	S5	No Status	No Status	LIO; 2014; MVCA, 2016
Bluntnose Minnow	*Pimephales notatus*	detritivore	warm	S5	No Status	No Status	Dillon, 1999; LIO, 2014; MVCA, 2016
Fathead Minnow	*Pimephales promelas*	detritivore/ invertivore	warm	S5	No Status	No Status	Dillon, 1999; LIO, 2014; MVCA, 2016
Eastern Blacknose Dace	*Rhinichthys atratulus*	invertivore	cool	S5	No Status	No Status	LIO, 2014
Creek Chub	*Semotilus atromaculatus*	invertivore/ carnivore	cool	S5	No Status	No Status	LIO, 2014; MVCA, 2016
Brook Stickleback	*Culaea inconstans*	planktivore/ invertivore	cool	S5	No Status	No Status	Dillon, 1999; LIO, 2014; MVCA, 2016

Species Name	Scientific Name	Trophic Class	Thermal Regime	SRank	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	Reference
Mottled Sculpin	*Cottus bairdii*	invertivore	cool	S5	No Status	No Status	LIO, 2014
Slimy Sculpin	*Cottus cognatus*	invertivore	cold	S5	No Status	No Status	LIO, 2014
Rock Bass	*Ambloplites rupestris*	insectivore/ piscivore	cool	S5	No Status	No Status	LIO, 2014
Pumpkinseed	*Lepomis gibbosus*	invertivore/ carnivore	warm	S5	No Status	No Status	LIO, 2014
Smallmouth Bass	*Micropterus dolomieu*	invertivore/ carnivore	cool	S5	No Status	No Status	LIO, 2014
Largemouth Bass	*Micropterus salmoides*	invertivore/ carnivore	warm	S5	No Status	No Status	LIO, 2014
Logperch	*Percina caprodes*	invertivore	warm	S5	No Status	No Status	LIO, 2014
Iowa Darter	*Etheostoma exile*	invertivore	cool	S5	No Status	No Status	MVCA, 2016

(Coker et al., 2001; Dillon, 1999; LIO, 2014; MTO, 2006; MVCA, 2016; Page et al., 2013; Scott & Crossman, 1973)

Status Updated: October 2, 2018

SRANK DEFINITIONS

S1 Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.
S2 Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.
S4 Apparently Secure, Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5 Secure, Common, widespread, and abundant in the nation or state/province.
SNR Unranked, Nation or state/province conservation status not yet assessed.
? Inexact Numeric Rank—Denotes inexact numeric rank

SARO STATUS DEFINITIONS

END Endangered: A species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario's ESA.
SC Special Concern: A species with characteristics that make it sensitive to human activities or natural events.

SARA STATUS DEFINITIONS

SC Special Concern, a wildlife species that may become threatened or endangered because of a combination of biological characteristics and identified threats.

3.2 Vegetation Communities

The study area consisted primarily of cultural meadows (fallow fields) with inclusions of tree groupings. An abandoned residence was present during the early part of the inventory period, but it burnt down early summer 2018 with only some of the old sheds remaining. The habitat along the banks of Shirley's Brook was well-treed. These communities are depicted on Figure 5.

Cultural Meadows

The lands on the south and east sides of the subject lands consisted of a dry-moist old field cultural meadow.

The areas nearest to Klondike Road was dominated by grasses (common timothy, smooth brome, orchard grass, and others) followed by smooth bedstraw, and cow vetch along with common tansy, common milkweed and wild carrot. The ground layer provided 100% cover. Outside of the inclusions identified on Figure 5, the woody vegetation (shrubs and trees) was sparse providing less than 5% cover and was less than 1 m tall. The most common species encountered in this layer were: common blackberry, regenerating Manitoba maple, and American elm. Other species observed were: meadow goat's beard, reed canary grass, Canada thistle, regenerating pine, common strawberry and field hawkweed.

Deer were noted in this field.

Photo 1: CUM at the top of hill, south side of project (July 17, 2018)

At the base of the hill, the vegetation in the fields changed. Here the ground layer continued to provide 100% cover, but it was dominated by Canada goldenrod followed by timothy, wild parsnip, early goldenrod, orchard grass, common strawberry and cow vetch.

Photo 2: CUM at the base of the hill (north side of project) (July 17, 2018)

Further north, next to Shirley's Brook, there was a small part of the meadow that consisted primarily of annual ragweed, Canada goldenrod, and common burdock with some wild parsnip, daisy fleabane, Canada thistle, wild carrot and European stinging nettle. There was 5% shrub cover provided by wild red raspberry and common blackberry.

Photo 3: CUM near Shirley's Brook (July 17, 2018)

Within the field was an inclusion that consisted of a copse of deciduous trees. The trees species provided 90% cover and had an average diameter-at-breast height (dbh) of 2-10 cm. The canopy (40% cover; 6 m tall) was dominated by trembling aspen (dbh, 9-12 cm) with a few eastern cottonwoods (dbh 9 cm). The subcanopy (80% cover; 2-4 m tall) was dominated by the same species and had a few Tartarian honeysuckles. The understory was sparse (5% cover; 1 m tall) and consisted of Manitoba maple with wild red raspberry. The ground cover (90% cover) included: rough goldenrod, orchard grass and Canada goldenrod.

Photo 4: Copse of trees in the CUM community (July 17, 2018)

The field in the adjacent lands to the east contained mostly grasses (smooth brome) with very few broadleaf plants (common milkweed, Canada thistle and smooth bedstraw).

Photo 5: CUM in adjacent lands to the northeast (July 17, 2018)

The riparian habitat of Shirley's Brook was well-vegetated (Photo 6). This community was situated along the banks and the tree composition varied but was most often dominated by Manitoba maple. This community did not match up well with any of the ELC communities because of the high density of Manitoba maples. The canopy (80% cover; 6-15 m tall) consisted of Manitoba maples (average dbh 20-30 cm) with a few basswood and sugar maples (dbh 8-40 cm). The subcanopy (10% cover; 2-3 m) consisted of common buckthorn. The understory (10% cover; 1-2 m tall) included young white ash, Tartarian honeysuckle, American elm, Manitoba maple and prickly gooseberry. The ground cover was highly variable (none-80% cover) and contained: grasses, rough goldenrod, wood sorrel, meadow horsetail, burdock, Virginia creeper, Canada anemone, and sow thistle.

Photo 6: FOD along Shirley's Brook (August 29, 2018)

Other small communities (<0.5 ha) were located within the floodplain (Photo 7 and Photo 8). These typically consisted of reed canary grass, purple loosestrife, bindweed, lady's thumb, Devil's beggar-ticks, joe-pye weed with crack willow, American elm, green ash, and Manitoba maples. Note that while these were not delineated for the purposes of the vegetation descriptions, the edge along the subject lands was in order to mark the edge of potential Blanding's Turtle habitat (see section 4.2 and 5.3.1).

Photo 7: Floodplain within Shirley's Brook (August 29, 2018)

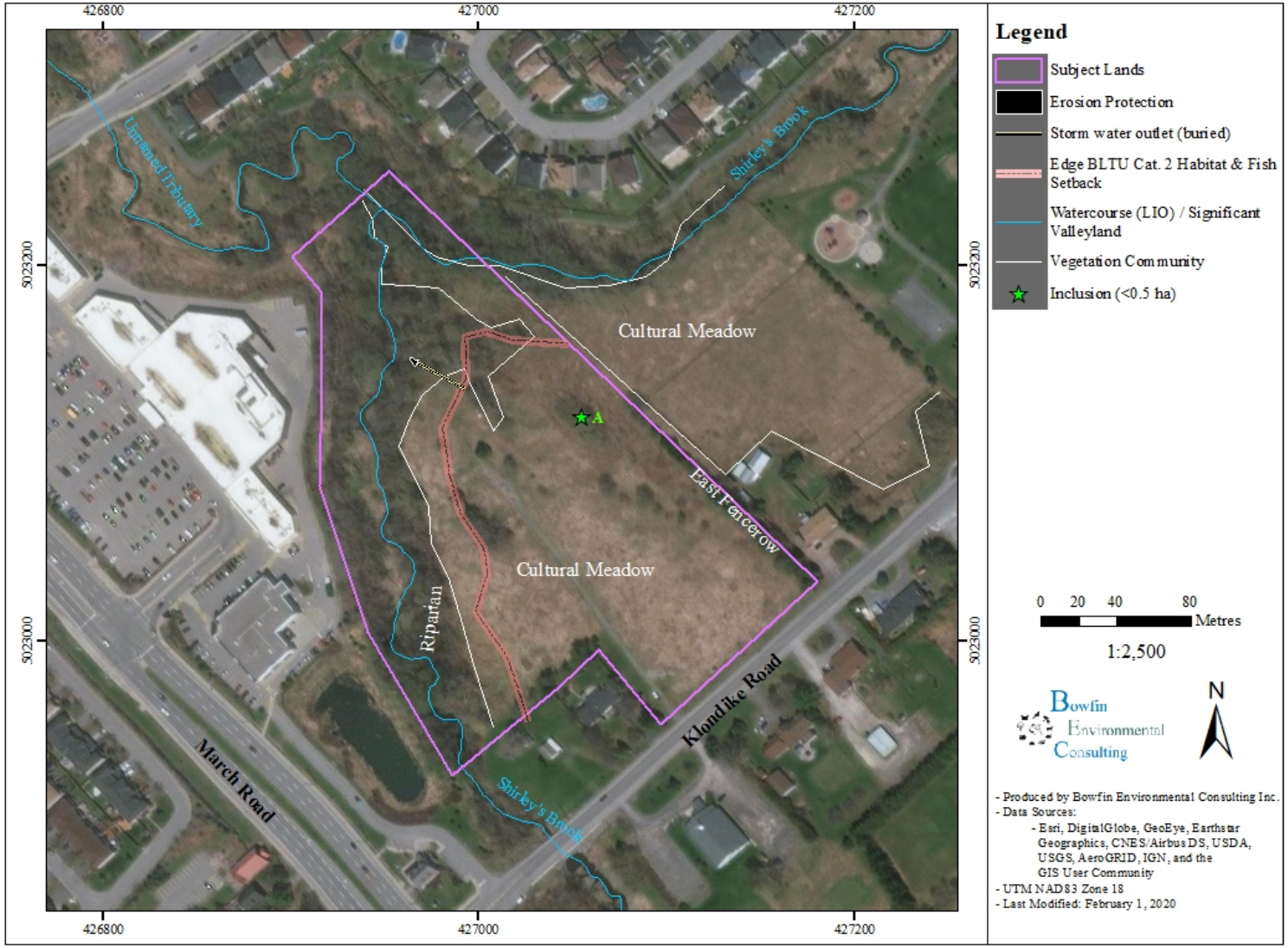
Photo 8: Floodplain within Shirley's Brook (August 29, 2018)

The windrow on the eastern side of the subject lands included both deciduous and coniferous trees (white spruce, red maple, white pine, red pine, and scot's pine) (Photo 9). Around the house in the adjacent lands was a trimmed eastern white cedar hedgerow (Photo 10).

Photo 9: Windrow on east side of the subject lands (June 9, 2018)

Photo 10: Trimmed cedar hedgerow around the house in the southwest corner (June 20, 2018)

Figure 5: Vegetation Community Descriptions (with edge of Blanding's Turtle Category 2 Habitat)



3.3 Raptor Nest and Daytime Breeding Bird Survey Results

A search was made for raptor nests during the leaf-off period and none were found.

The daytime breeding bird survey consisted of a combined grassland and general habitat survey. The section of the subject lands described as cultural meadows, were surveyed three times, as per the MNRF grassland breeding bird protocol. The remainder of the site was surveyed during the first and third visit (June 1st, 9th, and 20th, 2018). All surveys were completed in the early morning on days with appropriate weather conditions.

Most observations consisted of calling males along with some perched and/or foraging individuals. Confirmed nests included: Canada goose (in the floodplain), song sparrows (in the meadow habitat), and starlings (in the abandoned house). Probable nests were indicated by birds giving alarm calls, or pairs of singing males seen/heard in the same general location in suitable habitat on multiple occasions during the breeding bird surveys (mallard, eastern phoebe, warbling vireo, black-capped chickadee, cedar waxwing, American redstart, common yellowthroat, song sparrow, red-winged blackbirds, and American goldfinch). The probable nests were situated in the meadow and riparian areas.

The other species that were observed using the habitat in the subject lands only once during the breeding bird visits were: northern flicker, pileated woodpecker, eastern kingbird, red-eyed vireo, black-capped chickadee, house wren, American robin, gray catbird, yellow warbler, field sparrow, vesper sparrow, northern cardinal, indigo bunting, common grackle, Baltimore oriole, house finch, and American goldfinch. Other species heard in the distance, off-site, included: pileated woodpecker and eastern wood-pewee.

Potential SAR bird habitat on-site included habitat for chimney swifts, grassland (bobolink and eastern meadowlark) and barn swallows. The abandoned house on the property had the potential to provide nesting and roosting habitat for the SAR chimney swifts and barn swallows. No chimney swifts were ever observed and the house was destroyed by fire shortly during the monitoring period. One evening visit on June 7th, 2018 found that there were no chimney swifts exiting or entering the chimney on the house. The buildings were searched for evidence of barn swallow nesting during the first breeding bird visit and none were found. The only observation of barn swallows was one individual seen briefly flying/foraging overheard. No bobolink or eastern meadowlarks were detected during any of the visits.

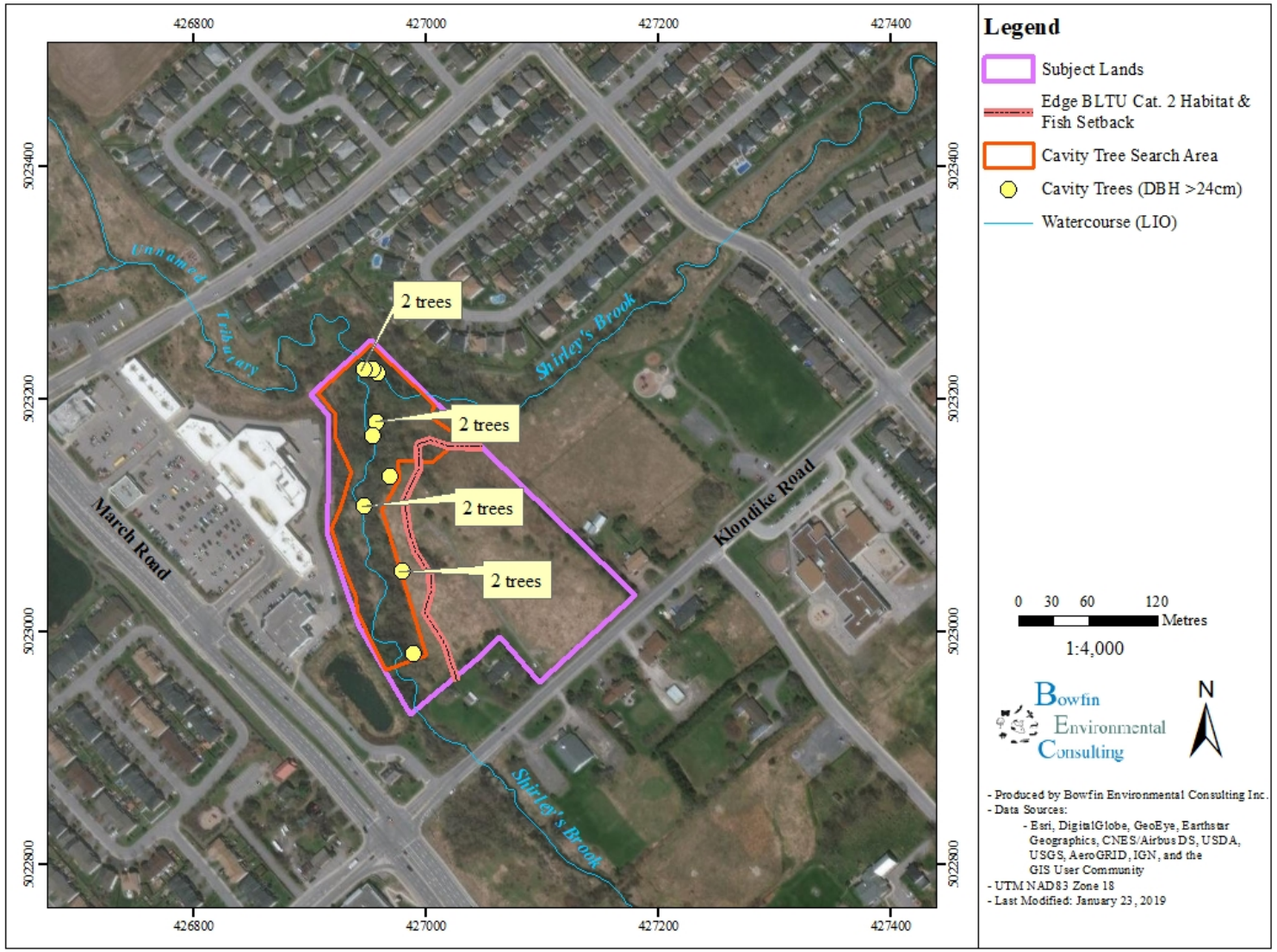
One special concern species heard but only once (June 20, 2018). This was the eastern wood-pewee and it was not on-site; it was calling from the other side of Shirley's Brook. All other birds observed are common species in Ontario.

3.4 Bat Cavity Results

The *Significant Wildlife Habitat Criteria Schedules Draft 6E* (OMNRF, 2015) indicates that consideration for maternity sites should be made when the vegetation community consists of a mature deciduous or mixed forest with ≥10/ha of large trees (>25 cm DBH). MRNF guidelines for bat maternity sites require a minimum of ≥10 cavity trees (with a minimum DBH of 25 cm) / ha.

The treed area with the subject lands was not large enough to establish bat cavity survey plots, therefore, all trees within the woodland along Shirley's Brook within the subject lands with a DBH ≥25 cm were measured and searched for cavities, resulting in a search area of 1.5 ha. A total of 13 trees with a DBH ≥25 cm with cavities were noted (Figure 6). The species included: red maple, Manitoba maple, crack willow, and American elm. This results in 9 cavity trees with a DBH ≥25 cm per hectare. As such, the study area does not meet the MNRF minimum requirements for bat maternity sites. The potential for bats to utilize the site for maternity colonies is discussed further under the SAR and Significant Wildlife Habitat sections of this report. Note that all 9 cavity trees are within the area to be protected (Figure 6).

Figure 6: Cavity Tree Search Area



3.5 Basking Turtle Surveys

Basking turtle surveys were completed, in the SWM pond and along Shirley's Brook, on seven occasions (April 27th, April 30th, May 7th, May 14th, May 18th, May 24th, and June 1st, 2018). The surveys were completed on days with suitable weather conditions (Table 1). Only one dead red-eared slider, an exotic species, was found along Shirley's Brook on June 1st, 2018. No other turtles were observed during these seven visits or as incidental observations during any other visit. Examples of the habitats searched are provided in the photographs below.

Photo 11: Stormwater management pond looking northwest (May 14, 2018)

Photo 12: Shirley's Creek looking downstream (May 14, 2018)

3.6 Incidental Wildlife Observations

Incidental wildlife observations are those species observed in the study area outside of the species-specific surveys. American toads and green frogs were heard calling from the SWM pond during the turtle visits. Five bird species were observed during the turtle visits, and not during the breeding bird period: black-throated green warbler, solitary sandpiper, common raven, and yellow-rumped warbler.

A gray squirrel, racoon tracks, and a white-tailed deer along with some tracks were observed during the turtle and breeding bird surveys.

All incidental observations consisted of common species in Ontario.

3.7. Plant Observations

3.7.1 General

A list of plant species that were recorded in the subject lands is provided in Appendix B. A total of 75 taxa were identified of which 68 were identified to species. Of these, 56 % are native species and ranked S4 or S5.

The number of native species within the subject lands is considered below average in terms of disturbances (sites with more than 70% native species are generally considered to be less disturbed).

The Co-efficient of Conservatism (CC) of the species recorded provides information on the species' tolerance to disturbance; those species with a high CC (maximum of 10) are highly sensitive. The CC values ranged from 0 to 8 and the average CC for this site was 3 which places it in the low side of the sensitivity scale. Most of the species had a CC value of 5 or lower (96%). The only species with a CC value of 8 was the red pine which were planted. There were no species with a CC value of 9 or higher.

All species found are common. No remnants of rare vegetation communities were encountered.

3.7.2 SAR Plants

SAR plant surveys were completed in June, July, and August for various species. None were found.

3.8. Watercourse Descriptions and Fish Community Results

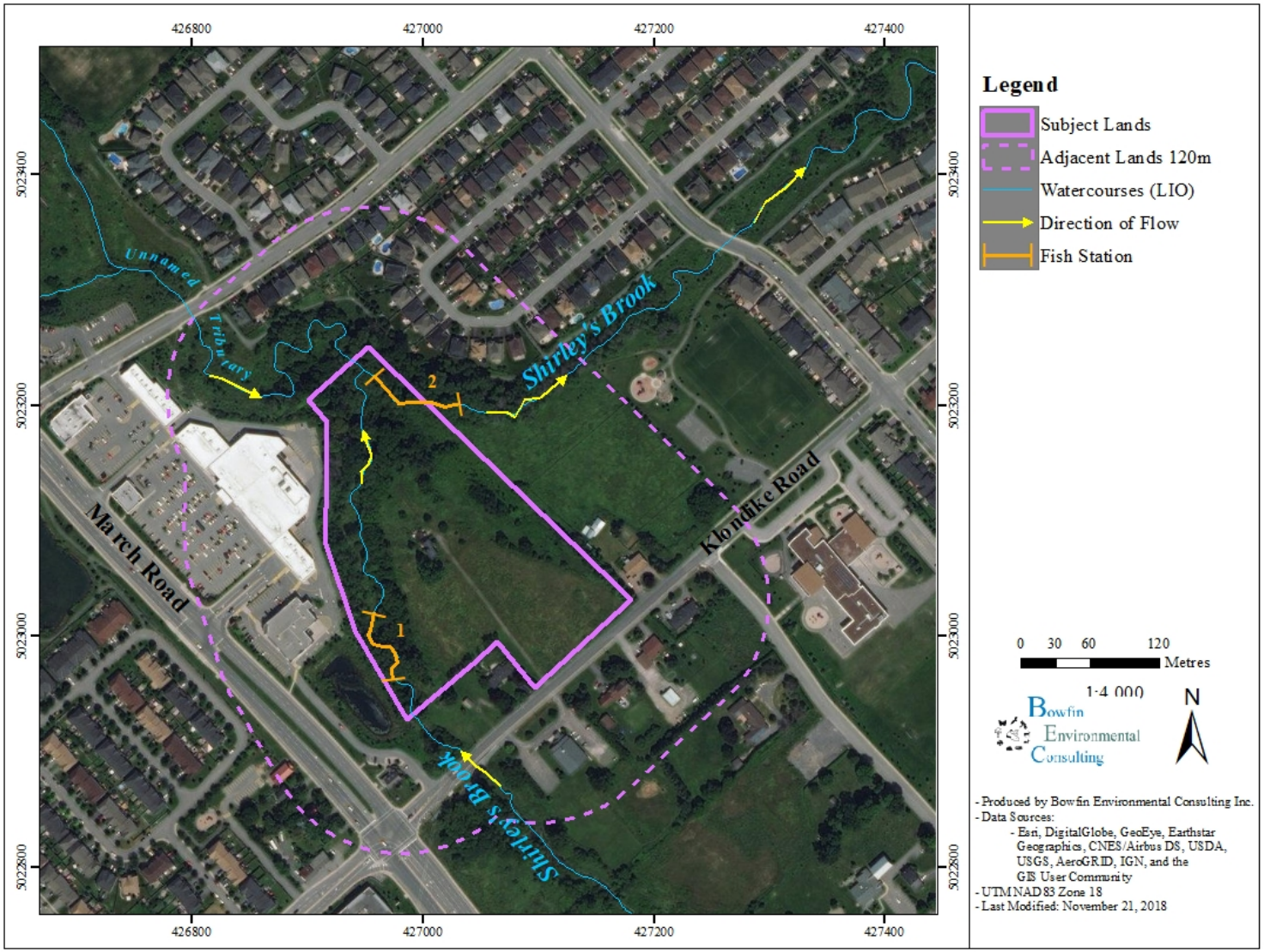
Shirley's Brook was situated within the study area. Shirley's Brook flowed northwest before taking a sharp turn and continuing to flow northeast through the western and northern edges of the subject lands. An unnamed tributary to Shirley's Brook flowed from north to south, connecting with the Shirley's Brook in the study area in the northernmost corner of the subject lands (Figure 7). Shirley's Brook has a drainage area of 26.2 km^2 and is 13 km in length. It originates in the South March Highlands, approximately 1 km west of Terry Fox Drive (MVCA, 2016). Shirley's Brook is a tributary of the Ottawa River, entering the river at Shirley's Bay (Figure 7). From the study area to its confluence with the Ottawa River, Shirley's Brook travels approximately 5.3 km. The section of Shirley's Brook that is within the study area is natural and is bordered by treed banks on either side.

The snowpack and flow in the general area has been summarized to put the conditions observed during the field work into context. The snowpack of winter 2017-2018 began melting in late February. Snow in the forests and ice on the waterbodies remained through March. Wetlands continued to be ice covered until early April. Air temperatures were below normal during April and heavy rains followed by a snow and ice storm resulted in a second freshet mid-April throughout Ontario. Between May and August 2018, the region received approximately half of the precipitation it usually receives. To further put the information collected into context, 10.8 mm of rain fell in the seven days prior to the July 19th visit (Environment Canada, 2018).

Table 4: Features and Sampling Parameters

Station No.	Date	Time (h)	Air Temp (°C)	Water Temp (°C)	pH	TDS (ppm)	Conductivity (µs)	Ave. Depth (cm)	Ave. Wetted Width (m)	Ave. Channel Width (m)
Shirley's Brook										
1	July 19, 2018	1025	21.0	16.8	7.40	1075	1542	7	2.9	7.1
2	July 19, 2018	0915	21.0	16.4	7.12	1127	1628	4	2.4	7.0

Figure 7: Location of Fish Habitat Sampling Stations



3.8.1 Habitat and Fish Community Descriptions

The following sections provide information on the aquatic habitat collected in 2018. The banks of Shirley's Brook within the subject lands and the unnamed tributary were both well-treed, with some large individuals. The channel exhibited a meandering pattern, characteristic of natural, undisturbed streams. Two stations were established; Station 1 was furthest upstream, while Station 2 was furthest downstream (Figure 7). Situated between these two stations was an accumulation of garbage and debris that partially blocked the channel (Photo 15)

As mentioned previously, no fish community sampling occurred in Shirley's Creek due to sufficient data having been recently collected from MVCA (2016) (Table 3).

Station 1

Station 1 began approximately 5.4 km upstream from the confluence with the Ottawa River and was 78 m in length. During the July 19, 2018 visit, the average channel width and bankfull depths were 7.1 m and 34 cm, respectively. The average wetted width and depths were 2.9 m and 7 cm (range 0-39 cm).

The substrate consisted of mostly fines, with occasional gravel and cobble. The habitat type consisted of glide morphological units and some pools up to 40 cm deep. In-water cover consisted of dense root mats by the banks, occasional cobble, small and large woody material throughout, and some aquatic vegetation (pondweed, Canada waterweed). Canopy cover ranged from 10-100%. Areas with exposed banks and some signs of erosion were noted on both banks. The site also contained many areas with small and large woody material and occasional log jams.

The tops of the banks were well vegetated with herbaceous and woody species. The most common species were: grasses, goldenrod species, stinging nettle, glossy and common buckthorn, prickly gooseberry, crack willow, Manitoba maple, and white ash.

Photo 13: Station 1 looking upstream from the downstream end (July 19, 2018)

Photo 14: Log jam immediately downstream of Station 1 (July 19, 2018)

Photo 15: Garbage and debris jam between stations 1 and 2 (May 14, 2018)

Station 2

Station 2 began approximately 250 m downstream of Station 1 and was 86 m in length. During the July 19, 2018 visit, the average channel width and bankfull depths were 7.0 m and 28 cm, respectively. The average wetted width and depths were 2.4 m and 3 cm (range 0-27 cm).

The substrate consisted of fines with occasional gravel and pebbles. The habitat type consisted of glide morphological unit, with occasional runs where the channel narrowed. In-water cover consisted of dense root mats by the banks, as well as small and large woody material throughout. A large portion of the site had no cover. There was 90% canopy cover throughout the entire length of the site. Both banks had exposed soil throughout the site. The left bank was steep, while the right bank had a smoother gradient with large crack willows along the edge. There were exposed tree roots on either side of the stream. The station also contained many areas with small and large woody material and a log jam about mid-way through the site.

The tops of the banks were well vegetated, with 100% ground cover throughout. The vegetation consisted of herbaceous and woody species. The most common species were: grass and goldenrod species, Virginia creeper, glossy buckthorn, wild red raspberry, crack willow, Manitoba maple, and American elm.

Photo 16: Station 2 looking upstream from the downstream end (July 19, 2018)

Photo 17: Station 2 looking downstream form the upstream end (July 19, 2018)

4.0 EVALUATION OF SIGNIFICANCE OF NATURAL HERITAGE FEATURES

The following section looks at the identified or potential natural features and the results from the field work to assess whether the feature is present and if present, whether it is significant based on the OP, the *Natural Heritage Reference Manual* (OMNR, 2010), SWHTG (OMNR, 2000) and/or the SWHCS; (OMNRF, 2015). As mentioned in Section 3.0, the only natural features identified as significant on the OP schedules or on the Kanata North Community Design Plan Recommended Environmental Management Plan was fish habitat. However following the draft guidelines for woodland significance for the City of Ottawa indicates that the portion of the woods along Shirley's Brook that were mature in 1976 should be considered significant. Further, the steep and tall banks of the valley with the permanent watercourse of Shirley's Brook makes this a significant valleyland. The area is also known to be within 2 km of Blanding's turtle sightings. The potential for habitat of other endangered and threatened species and significant wildlife habitat needed to be assessed in the field. The following summarises these items.

4.1 Fish Habitat

Shirley's Brook, within the study area, provided year-round fish habitat. Here, the watercourses travelled through a well-treed valley and exhibited a meandering pattern. Large trees were present on the banks, providing a source of large woody material, water temperature regulation from the canopy cover, and bank stability. Both habitat description stations were similar in substrate which consisted mostly of fines. The dominant form of in-water cover, at both stations, was small and large woody materials. Station 1 had aquatic vegetation present with some deeper pool areas, while Station 2 had some shallow riffle areas and no aquatic vegetation. There was a larger area with exposed soil and erosion along the banks of Station 2 while Station 1 had much less canopy cover.

The spring and summer water levels in 2018 were low due to the region only receiving approximately half of its usual precipitation between May and August. Regardless, the channel was entrenched as such the floodplain habitat would not provide spawning habitat to even the early spring spawners such as the northern pike listed for this area. The habitat present was most suitable for common warm to cool water forage fish such as those listed in the historical fish table (Table 3). The potential for fish habitat to be impacted by this project will be further discussed in Section 5 of this report.

4.2 Endangered and Threatened Species Discussion

Terrestrial and wetland Endangered and Threatened Species at Risk, on private land, are protected under provincial *Endangered Species Act*. It is noted that bird species protected under

the *Species at Risk Act* (SARA) are protected by the *Migratory Bird Convention Act* (MBCA) on private lands. Mitigation measures to protect bird nests are included in Section 5.

Within this report, the acronym SAR refers to only Endangered or Threatened species. Special Concern species do not receive protection from ESA or SARA and have been included in the discussion on Significant Wildlife Habitat.

A list of potential SAR was compiled using various sources. The NHIC database provides information available to the public on those SAR documented as occurring within the general area. It should be noted that not all information for all species is available to the public. Furthermore, the absence of a recording does not necessarily indicate that the species is absent from the area. The purpose of the NHIC database is to serve as a guide to help determine the potential species which may occur within the project area. The background review included looking at the list of birds observed as part of the Atlas of Breeding Birds of Ontario (ABBO) and any SAR species listed on these lists were considered as potentially occurring within the subject lands. Added to this list were species listed by MNRF in the response to the information request and those, that based on personal experience, often occur within the general area. The resulting list includes 14 SAR: one insect (rusty-patched bumble bee), 1 fish (American eel), 1 reptile (Blanding's turtle), 6 birds (eastern whip-poor-will, chimney swift, bank swallow, barn swallow, bobolink, and eastern meadowlark), four mammals (little brown myotis, northern myotis, eastern small-footed myotis, and the tri-colored bat), and one plant (butternut) (Table 5).

NOTE: The ESA has now been transferred to the Ministry of Environment, Conservation and Parks (MECP) (as of April 1, 2019). To date MECP has not changed the protocols or process for assessing the potential to impact SAR. References to dealing with MNRF have been left in this report as they were the responsible Ministry at the time of the field work.

Insects

Rusty-patched Bumble Bee (Bombus affinis)

The Rusty-patched Bumble Bee is listed as endangered federally and provincially. They feed on pollen and nectar from a wide variety of plants and as such are found in a variety of habitats including marshes, farmlands, urban areas, and wooded areas. They nest in abandoned underground rodent burrows. Southern Ontario is considered the northern limit of their range (COSEWIC, 2010a). The draft recovery strategy for this species is currently listing critical habitat as any suitable habitat that is within 1000 m of a confirmed sighting since 2005 (Environment and Climate Change Canada, 2016). The MNRF information response letter (June 28, 2018; Appendix A) lists this species as potentially occurring within the study area. The proposed recovery strategy for the rusty-patched bumble bee (ECCC, 2016) states that the most recent occurrence of this species is in Pinery Provincial Park near Sarnia (one individual in 2005 and two individuals in 2009) and that only historical records (pre-1997) exist for this species in

Ottawa. At this time, it is considered absent in Ottawa. This species and its critical habitat are considered absent.

Fish

American Eel (*Anguilla rostrata*)

The American eel is listed as endangered provincially, but the species is not listed federally. The American eel breeds in the Sargasso Sea and matures in freshwater rivers in North America (including the Ottawa River) (Becker, 1983; MacGregor *et al*., 2013; Scott and Crossman, 1998). The freshwater eel population within Ontario has been declining since the 1980s (McGregor *et al.*, 2013). The eels migrate to the Ottawa River during the spring and migrate downstream during the fall, spending 5 to 20 years in freshwater (Becker, 1983; MacGregor *et al*., 2013; Scott and Crossman, 1998). Eels inhabiting the Ottawa River are generalist requiring structure (i.e. rocks, logs, undercut banks, vegetation) for cover. In the winter they are known to hibernate in mud. During electrofishing surveys, Bowfin has observed eels along both rocky and areas with soft substrate during nighttime sampling. American eels are present in the Ottawa River near the confluence with Shirley's Brook. As per communications with MNRF (email January 31, 2019), the listing of American eel in Shirley's Brook is directly related to its present in the Ottawa River in this area and there are no known occurrences on Shirley's Brook itself. Bowfin has sampled Shirley's Brook for a variety of unrelated projects as has the MVCA, to date no American eels have been found. Typically, eels would be found in larger systems than that encountered along the subject lands. While it is unlikely to be present, this species will be discussed in Section 5.

Reptiles

Blanding's Turtle

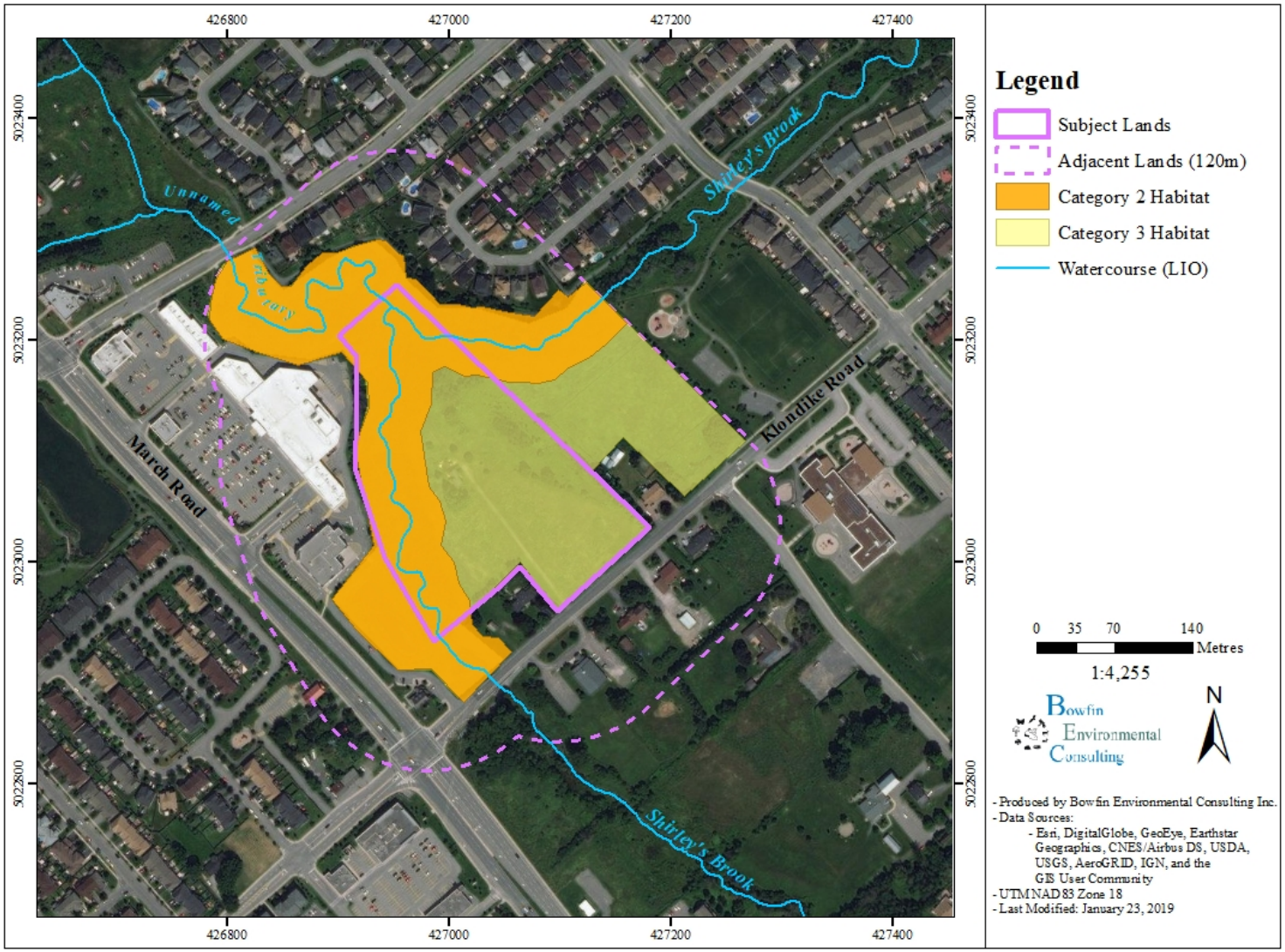
Blanding's turtle is associated with a variety of shallow slow aquatic habitats with submergent and emergent plants. These turtles require basking sites located near the water such as exposed rocks or partially submerged logs. The nesting sites are located within areas of loose substrates varying from sand to cobblestone and may occur along roadways as far as 400 m away. Marsh habitat is important for the juveniles for protection from predators. The species overwinters within permanent water bodies (COSEWIC, 2005). This species can migrate far distances of up to 6 km (OMNR, 2013c). Migration routes can include overland movement.

The habitat guidelines for Blanding's turtle provide protection to the areas surrounding a nest, or perceived nest area. The level of protection varies with the distance from the nest and has been categorized by MNRF into three categories. These along with their protection level are:

Category 1	Nest and the area within 30 m or Overwintering sites and the area within 30 m
Category 2	The wetland complex (i.e., all suitable wetlands or waterbodies within 500 m of each other) that extends up to 2 km from an occurrence, and the area within 30 m around those suitable wetlands or waterbodies
Category 3	Area between 30 m and 250 m around suitable wetlands/waterbodies identified in Category 2, within 2 km of an occurrence

No candidate nesting areas were noted during the field investigations but the SWM pond in the southwest adjacent lands had potential to provide overwintering habitat. Shirley's Brook itself could provide a migratory corridor. The surveys followed the MNRF protocol for determining the presence/absence of the species. They began on April 27, 2018, immediately after ice-off, and continued until June 1, 2018. No Blanding's turtles or signs of nesting were observed. Based on the field work, no Category 1 habitat was present. However, there was a sighting of a Blanding's turtle within 2 km of this site. Because of that occurrence, Shirley's Brook and the adjacent 30 m is automatically designated as Category 2 habitat. The edge of the wetland habitat (floodplain habitat noted in the vegetation descriptions) was staked in the field by an OWES certified staff member and its location recorded by surveyors. This edge has been used to establish the edge of the Category 2 and 3 habitats (30 m from the line for Category 2 and the area between 30-250 m of the line for Category 3 habitat (Figure 8). This species will be discussed in Section 5 and MECP has been contacted.

Figure 8: Blanding's Turtle Habitat Categories



Birds

Through the background review, seven species of birds were listed as potentially occurring: least bittern, eastern whip-poor-will, chimney swift, bank swallow, barn swallow, bobolink and eastern meadowlark. The site investigation identified the presence of only one (barn swallow). These species are discussed below.

Least Bittern

The least bittern is a secretive species that requires marsh habitats with dense vegetation (Sandilands, 2005; COSEWIC, 2009a). This species tends to prefer to nest within cattail marshes usually along the edge or near openings (Woodliffe, 2007). However, they have also been found to nest in bulrushes, grasses, horsetails and willow (Woodliffe, 2007). The COSEWIC report for this species indicates that they must have emergent marsh communities with open water areas and stable water levels (COSEWIC, 2009a).

There is no marsh wetland habitat in the surveyed area and no open water habitat nearby. This species is considered absent.

Eastern Whip-poor-will

The whip-poor-will is a well camouflaged species can be found in a multitude of forest types. Its requirements consist of areas that are semi-open forests or sites with a closed forest intermixed with other open habitats. It also needs some areas with little ground cover. Its minimum habitat size requirement is 9 ha (COSEWIC, 2009b). The G*eneral Habitat Description for Eastern Whip-poor-will* (MNRF on-line document) indicates that the protected habitat for this species includes three categories:

Category 1	known nests and 20 m of the nest
Category 2	the area between 20 m and 170 m from the nest or the approximate centre of the defended territory
Category 3	the area of suitable habitat between 170 m and 500 m of the nest or approximate centre of the defended territory

The riparian habitat along Shirley's Brook does not meet the minimum size of 9 ha. Therefore, this species is considered absent.

Chimney Swift (*Chaetura pelagica)*

The chimney swift can often be found in developed areas and prefers to utilize structures such as large (>50 cm diameter) trees or man-made structures such as chimneys for its nesting habitat (COSEWIC, 2007a). As it has been recorded in the ABBO squares (breeding evidence:

possible) in the general area, it could occur within the study area. Large diameter trees (dbh > 50 cm) were identified during the tree inventory and an old farm house with a chimney was present during the early part of the season. The chimney swift survey protocol was initiated for the building that was on-site; however, the building was destroyed prior to the completion of the work. Regardless, no chimney swifts were observed during this visit or any others. This species is easily identified when present, it is very vocal and forages often. This species is considered absent.

Bank Swallow (*Riparia riparia)*

Bank swallows are known to nest in vertical banks including those along riverbanks, and sand pits. Portions of the riverbanks along Shirley's Brook were steep and exposed and could be considered candidate significant wildlife habitat according to the SWHCS (OMNRF, 2015). However, the banks did not consist of sand and as such are not the preferred substrate type. Further, the banks were searched and no nests were present. Finally, no bank swallows were observed during any of the breeding bird visits or any other visit. This species is considered absent.

Barn Swallow (*Hirundo rustica)*

The barn swallow can often be found nesting on man-made structures. An abandoned house was present within the subject lands until June 10, 2018, when it was destroyed in a fire. Prior to the fire, the building and the other structures (lean-tos) were searched for active and inactive nests. None were found. During the breeding bird visits, the only sighting was of a single individual observed briefly flying/foraging over the area (June 20, 2018 breeding bird visit). This species is present in the general area and may use the habitat for foraging, but no nesting structures were present. Given that some of the building structures remain and could be colonized at a later date, mitigations will be discussed in Section 5.

Bobolink (*Dolichonyx oryzivorus)*

This species is grassland-breeding-bird requiring a minimum of 4 ha of uncut meadow or field. The *Bobolink General Habitat Description* (OMNRF, 2018) indicates that the protected habitat for this species includes three categories:

Category 1	known nests and 10 m of the nest
Category 2	the area between 10 m and 60 m from the nest or the approximate centre of the defended territory
Category 3	the area of continuous suitable habitat between 60 m and 300 m of the nest or approximate centre of the defended territory

The MNRF grassland breeding bird survey protocol for bobolinks was completed. No bobolinks or nests were observed during the grassland breeding bird surveys or during any other visit. This species is considered absent.

Eastern Meadowlark

Like the bobolink, this is a grassland breeding birds requiring a minimum of 4 ha of uncut meadow or field. The G*eneral Habitat Description for Eastern Meadowlark* (OMNRF, 2018) indicates that the protected habitat for this species includes three categories:

Category 1	known nests and 10 m of the nest
Category 2	the area between 10 m and 100 m from the nest or the approximate centre of the defended territory
Category 3	the area of continuous suitable habitat between 100 m and 300 m of the nest or approximate centre of the defended territory

The MNRF grassland breeding bird protocol for eastern meadowlark was completed. No eastern meadowlarks or nests were observed during the grassland breeding bird surveys or during any other visit. This species is considered absent.

Bats

The potential SAR bats within the general area are: little brown myotis, northern myotis, eastern small-footed myotis and tri-colored bat. There are three types of habitats required by bats: hibernation, maternity sites and day-roost sites. The latter is not considered critical habitat.

These four bats species prefer to hibernate in caves or mines. They can hibernate in buildings but that is rare for these species (COSEWIC, 2013a). No caves or mines were present. The only building present within the subject lands was an abandoned house which was destroyed in a fire on June 10, 2018.

The northern myotis tends to prefer larger expanses of older forests (late successional or primary forests) and chose maternity sites in snags that are in the mid-stage of decay. They prefer habitat with intact interior habitat and is shown to be negatively correlated with edge habitat (Menzel et al., 2002; Broders et al., 2006; Yates et al., 2006; OMNRF, 2015). The only potential habitat present is the riparian habitat along the banks of Shirley's Brook. This well-treed but very narrow forest was less than 1 ha. As such, the preferred habitat was not present and as such, this species is considered unlikely to have maternity sites here.

The recovery strategy for the eastern small-footed myotis indicates that the preferred maternity habitat of this species consists of open rock habitats and that it rarely uses old buildings as roosting/maternity sites (Humphrey, 2017). There was no rocky habitat present. Based on this information, this species' maternity sites are considered absent.

The Atlas of Mammals of Ontario (Dobbyn, 1994) suggests that the tri-colored bat is not present within this part of Ontario however, the NatureServe mapping in the COSSARO (2015) includes all of southeastern Ontario. The City of Ottawa summary of Species at Risk in Ottawa (August 2018) indicates that only historical records of this species are available, there are no recent sightings. Based on this information, this species is considered to have a very low potential of occurring.

This leaves only the little brown myotis as potentially using the study area for maternity sites. The SWHCS (OMNRF, 2015) indicates that consideration for maternity sites, for species that utilise tree cavities, should be made when the vegetation community consists of a mature deciduous or mixed forest with >10/ha of large trees (>25 cm DBH). MRNF guidelines for bat maternity sites require a minimum of >10 snags (with a minimum DBH of 25 cm) / ha. As documented in Section 3.4 above, the trees along the banks did not meet the minimum requirement for bat maternity sites. It is noted that this stand is 1.5 ha in size and is limited to the banks, providing more of a windrow habitat than forest. There remains the potential for various species to utilise the trees on-site for day-roosts. Mitigation measures will be included discussed further below.

Plants

Butternuts

As discussed above, no butternuts were identified in or within 50 m of this site. This species is considered absent. Note that butternut inventories are good for 2-years (in this case until June 11, 2020).

4.2.1 SAR Conclusions

Based on the habitat descriptions in the sections above and following numerous field investigations from 2018, the only confirmed SAR present was the single sighting of the flying/foraging barn swallow. No barn swallow nests were found. It is also possible that barn swallows may colonize the remaining structures at a later date. While no other species was confirmed, the subject lands includes Category 2 and 3 Blanding's turtle habitat based on recent sighting of an individual within 2 km from the site. Survey's undertaken by Bowfin confirmed the lack of Category 1 habitat. There remains the potential for a variety of bat species to use trees for day-roosts. Finally, MNRF has indicated the potential for American eels to be present in Shirley's Brook. These species will be discussed in Section 5.

Table 5: Summary of Potential SAR

Common Name	Scientific Name	Preferred Habitat	SRank	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	References
INSECTS						
Rusty-patched Bumble Bee	*Bombus affinis*	Generalist species. Nests have been found underground, usually in old rodent burrows. This species has been found foraging in a wide variety of habitats such as mixed farmland, sand dunes, marshes, urban and wooded areas.	S1	END	END	COSEWIC 2010a
FISH						
American Eel	*Anguilla rostrata*	Near cover over muddy, silty bottoms of lakes, rivers and creeks.	S1?	END		COSEWIC 2006
REPTILES						
Blanding's Turtle	*Emydoidea blandingii*	Shallow water, large marshes, shallow lakes or similar such water bodies.	S3, SNR (Great Lakes/St-Lawrence pop.)	THR	THR	COSEWIC 2005
BIRDS						
Least Bittern	*Ixobrychus exilis*	Freshwater marshes, ditches, creeks, rivers and lakes with tall emergent vegetation	S4B	THR	THR	COSEWIC, 2009a
Eastern Whip-poor-will	*Antrostomus vociferus*	Rock or sand barrens with scattered trees, savannahs, old burns or other disturbed sites in a state of early to mid-forest succession, or open conifer plantations	S4B	THR	THR	COSEWIC 2009b
Chimney Swift	*Chaetura pelagica*	Cities, towns, villages, rural, and wooded areas.	S4B, S4N	THR	THR	COSEWIC 2007a
Bank Swallow	*Riparia riparia*	Variety of forest types, most common in wet, mixed deciduous-coniferous forest with a well-	S4B	THR	THR	COSEWIC 2013b

Common Name	Scientific Name	Preferred Habitat	SRank	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	References
		developed shrub layer. It is often found in shrub marshes, red maple stands, cedar stands, conifer swamps dominated by black spruce and larch and riparian woodlands along rivers and lakes. It is also associated with ravines and steep brushy slopes near these habitats				
Barn Swallow	*Hirundo rustica*	Open or semi-open lands: farms, field, marshes.	S4B	THR	THR	COSEWIC 2011a, Peterson 1980
Bobolink	*Dolichonyx oryzivorus*	Primarily in forage crops, and grassland habitat.	S4B	THR	THR	COSEWIC 2010b
Eastern Meadowlark	*Sturnella magna*	Fields, meadows and prairies.	S4B	THR	THR	COSEWIC 2011b, Peterson 1980
MAMMALS						
Little Brown Myotis	*Myotis lucifugus*	Buildings, attics, roof crevices and loose bark on trees or under bridges. Always roost near waterbodies.	S4	END	END	COSEWIC 2013a
Northern Myotis	*Myotis septentrionalis*	Older (late successional or primary forests) with large interior habitat.	S3	END	END	COSEWIC 2013a, Broders et al, 2006, Menzel et al. 2002
Eastern Small-footed Myotis	*Myotis leibii*	Found within deciduous or coniferous forests in hilly areas.	S2, S3	END		Eder 2002
Tri-colored Bat	*Perimyotis subflavus*	Prefers shrub habitat or open woodland near water.	S3?	END	END	COSEWIC 2013a

Common Name	Scientific Name	Preferred Habitat	SRank	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	References
PLANTS						
Butternut	*Juglans cinerea*	Variety of sites, grows best on well-drained fertile soils in shallow valleys and on gradual slopes	S2?	END	END	COSEWIC 2003
	Indicates potential to occur					

Status Updated August 1, 2018

SRANK DEFINITIONS

S1 Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.
S2 Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.
S3 Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4 Apparently Secure, Uncommon but not rare; some cause for long-term concern due to declines or other factors.
SAB Breeding accidental.
? Inexact Numeric Rank—Denotes inexact numeric rank
S#B Breeding
S#N Non-Breeding

SARO STATUS DEFINITIONS

END Endangered: A species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario's ESA.
THR Threatened: A species that is at risk of becoming endangered in Ontario if limiting factors are not reversed.
SC Special Concern: A species with characteristics that make it sensitive to human activities or natural events.

SARA STATUS DEFINITIONS

END Endangered, a wildlife species facing imminent extirpation or extinction.
THR Threatened, a wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.

4.3 Significant Woodlands

The *Draft Significant Woodland: Guidelines for Identification, Evaluation and Impact Assessment* (not dated) indicates that all forests that are a minimum of 0.8 ha and at least 60 years old in the urban area are to be considered significant. The geoOttawa mapping shows a mature forest along much of Shirley's Brook in 1976 which would put this forest at or older than the minimum age (mature 44 years ago). As such, this portion of the treed riparian habitat is considered significant. The areas listed as wooded within the remainder of the site, does not meet the minimum age or size.

4.4 Significant Valleyland

The City of Ottawa policies indicates that significant valleylands are all areas that have a minimum length of 50 m, contain water for at least a portion of the year and have banks that are steep (>15%). Significant valleylands are not to include man-made features.

Shirley's Brook travels within a steep banked valley that meets this definition. As such, the valley in the study area is considered a significant valleyland.

4.5 Significant Wildlife Habitat

The PPS indicates that no development or site alteration is permitted within significant wildlife habitat unless it has been demonstrated that there will be no negative impacts on the natural feature or its ecological functions. It defines wildlife habitat as:

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

The OP schedules did not include any significant wildlife habitat present within the study area. The ELC communities were compared to the MNRF's SWHTG (2000) and its appendices and the SWHCS (OMNRF, 2015). The findings are summarized in Table 6.

Table 6: Potential Significant Wildlife Habitats

Candidate Significant Wildlife Habitat	Potential in Subject Lands	Potential in Adjacent Lands	Comments
Special Concern Species	No	Yes	The only Special Concern species heard or observed during any of the visits was the eastern wood-pewee. This species was heard calling only once during the third breeding bird visit and it was outside of the study area (>120 m from the subject lands).

Table 7: Summary of Species of Conservation Value

Common Name	Scientific Name	Preferred Habitat	SRank	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	Reference
INSECTS						
Monarch	*Danaus plexippus*	Old fields, meadows, roadsides confined to places were milkweed sp. grow.	S2N, S4B	SC	SC	COSEWIC 2010c
REPTILES						
Snapping Turtle	*Chelydra serpentina*	Preferred habitat is slow-moving water with a soft mud bottom and dense aquatic vegetation.	S3	SC	SC	COSEWIC 2008a
BIRDS						
Peregrine Falcon	*Falco peregrinus*	Requires steep cliffs or high rises for nesting and open habitat for foraging.	S3B	SC	SC	COSEWIC 2007b
Black Tern	*Chlidonias niger*	Breed in freshwater marshes	S3B	SC	Not at Risk	Peterson 1980
Short-eared Owl	*Asio flammeus*	Open areas.	S2N, S4B	SC	SC	COSEWIC 2008b
Common Nighthawk	*Chordeiles minor*	Open habitats, such as sand dunes, beaches, logged areas, burned-over areas, forest clearings, short-grass prairies, pastures, open forests, peatbogs, marshes, lakeshores, gravel roads, river banks, rocky outcrops, rock barrens, railways, mine tailings, quarries, urban parks, military bases, airports, mines and commercial blueberry fields, also present in mixed coniferous forest, and pine stands	S4B	SC	THR	COSEWIC 2007c
Eastern Wood-Pewee	*Contopus virens*	Breed mostly in mature and intermediate-age deciduous and mixed forests having an open understory	S4B	SC	SC	COSEWIC 2012a
Wood Thrush	*Hylocichla mustelina*	Found in moist, deciduous hardwood or mixed stands, often previously disturbed, with a dense deciduous undergrowth and with tall trees for singing perches	S4B	SC	THR	COSEWIC 2012b

Common Name	Scientific Name	Preferred Habitat	SRank	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	Reference
Canada Warbler	*Cardellina canadensis*	Variety of forest types, most common in wet, mixed deciduous-coniferous forest with a well-developed shrub layer. It is often found in shrub marshes, red maple stands, cedar stands, conifer swamps dominated by black spruce and larch and riparian woodlands along rivers and lakes. It is also associated with ravines and steep brushy slopes near these habitats	S4B	SC	THR	COSEWIC 2008c
Grasshopper Sparrow	*Ammodramus savannarum*	Grasslands.	S4B	SC	SC	COSEWIC 2013c
PLANTS						
Rugulose Grapefern	*Botrychium rugulosum*	Secondary forest and open fields.	S2	Not at Risk	Not at Risk	Voss 1985
Pitch Pine	*Pinus rigida*	Upland or lowland sites, dry to boggy soils.	S2?	Not at Risk	Not at Risk	Farrar 1995
Ram's-head Lady's Slipper	*Cypripedium arietinum*	Dunes, along shores, or inland under Jake pine and oak and also in coniferous swamps.	S3	Not at Risk	Not at Risk	Voss 1985

Status Updated August 1, 2018

SRANK DEFINITIONS

S2 Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.
S3 Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4 Apparently Secure, Uncommon but not rare; some cause for long-term concern due to declines or other factors.
SNR Unranked, Nation or state/province conservation status not yet assessed
SAB Breeding accidental.
? Inexact Numeric Rank—Denotes inexact numeric rank
S#B Breeding
S#N Non-Breeding

SARO STATUS DEFINITIONS

SC Special Concern: A species with characteristics that make it sensitive to human activities or natural events.

SARA STATUS DEFINITIONS

THR Threatened, a wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.
SC Special Concern, a wildlife species that may become threatened or endangered because of a combination of biological characteristics and identified threats.

4.4 Natural Heritage Features Summary

Following the completion of the background review and site investigations, the following natural heritage features were either identified or listed as potentially occurring in or within 120 m of the subject lands (Table 8): endangered or threatened species habitat, and fish habitat.

Table 8: Summary of Potential for Natural Heritage Features after Field Investigations

Natural Heritage Feature	Present within Subject Lands Impact	Present within 120 m of Subject Lands
Provincially Significant Wetlands (PSW)	No	No
Areas of Natural and Scientific Interest (ANSIs)	No	No
Habitats or species designated by ESA (Provincial)	Yes [Blanding's turtle Category 2 and 3 habitat. Potential habitat for bat SAR roosting sites (several bat species). Note that the potential for tri-colored bat is considered low based on its distribution range and the potential for northern myotis is considered low due to the lack of large tracks of forests]	
Significant Woodlands	Yes – situated within the protected natural area for the site.	
Significant Valleylands	Yes – situated within the protected natural area for the site.	
Significant Wildlife Habitat (SWH)	No confirmed or potential SWH	Yes [The only Special Concern species heard or observed during any of the visits was the eastern wood-pewee. This species was heard calling only once during the third breeding bird visit and it was outside of the study area, >120 m from the subject lands]
Fish Habitat	Yes (Shirley's Brook)	Shirley's Brook, Shirley's Bay; South March Highlands Wetland Complex 1.3 km

Sources of background information: LIO mapping, MNRF (email), Atlas of Breeding Birds of Ontario Website, OP (City of Ottawa), Google Satellite Imaging

5.0 IMPACT ASSESSMENT

5.1 Project Summary

The proponent is proposing to build a residential subdivision at 1055 Klondike Road, Kanata, Ontario (Figure 1). The proposed subdivision includes approximately 4.5 ha. The development would be fully serviced. The rear yard drainage is captured and routed to Shirley's Brook via a storm pipe that will outlet into erosion protection (rip rap) and then into Shirley's Brook. The pipe will be buried.

The land use is designated as General Urban Area and the only natural heritage features depicted on the schedules of the OP or the Kanata North Community Design Plan Recommended Environmental Management Plan is fish habitat. During the pre-consultation with the City of Ottawa, the City requested that the vegetation along the banks be retained and noted that Category 2 and 3 habitats for Blanding's turtle had been identified along the watercourse. This same area is also considered a significant valleyland and woodland under the guidelines provided by the City. No other natural heritage constraints were identified through the background review of the site investigations.

Apart from the pipe and pathway, all development will be situated outside of the Category 2 Blanding's Turtle Habitat and outside of the 30 m setback from the fish habitat in Shirley's Brook. The portion of the treed riparian that meets the significant woodland criteria for the City of Ottawa will not be impacted, and geotechnical studies have determined the appropriate setback to protect the significant valley.

Note that while not significant habitat, almost all birds in Ontario are protected by the *Migratory Bird Convention Act* (MBCA) and/or *Fish and Wildlife Conservation Act* (FWCA). Mitigation measures for these items are also included below for completeness.

5.2 Assessment Methods

The significance of the potential impacts to these natural heritage features can be measured using four different criteria:

1. Area affected may be:
    a. local in extent signifying that the impacts will be localized within the project area
    b. regional signifying that the impacts may extend beyond the immediate project area.

2. Nature of Impact:
    a. negative or positive

b. direct or indirect

3. Duration of the impact may be rated as:
    a. short term (construction phase, 1-2 years)
    b. medium term (2-3 years)
    c. long term (>3 years).
    d. permanent

4. Magnitude of the impact may be:
    a. negligible signifying that the impact is not noticeable
    b. minor signifying that the project's impacts are perceivable and require mitigation
    c. moderate signifying that the project's impacts are perceivable and require mitigation as well as monitoring and/or compensation
    d. major signifying that the project's impacts would destroy the environmental component within the project area.

5.3 Evaluation of Potential to Impact Natural Heritage Features

Note that as per the City's request, the trees along the riparian habitat of Shirley's Brook will be retained.

5.3.1 Species at Risk

SAR that are listed as endangered or threatened under the provincial *Endangered Species Act* (all species) or the federal *Species at Risk Act* (SARA) (only "fish" as defined under the *Fisheries Act* in this case fish and mussel species) are protected in this study area. Together, provincially and federally protected species are referred to as SAR. The following endangered or threatened species or their habitat were described as potentially occurring in Section 4.2 of this report:

- American eel (low potential – nearest sighting is Ottawa River)
- Blanding's turtle (Category 2 and 3 because of sighting within 2 km; no sightings on or near subject lands and no Category 1 habitat)
- Barn swallow (No nests found but a few structures remain)
- Roosting habitat potential for little brown myotis, eastern small-footed myotis, northern myotis and to a lower potential tri-colored bat)

Fish (American Eel)

As mentioned above, the American eel is known to occur in the Ottawa River. The confluence of Shirley's Brook with the Ottawa River is approximately 5.3 km downstream from the study area. The fish habitat within the study area will not be directly impacted and, as mentioned

above, a minimum 30 m buffer has been established. The edge of the active channel was flagged by a biologist and subsequently surveyed. The following measures are recommended to protect this species should it occur on-site.

Mitigation Measures:

- Refer to all measures listed for the fish habitat in Section 5.3.2 below.
- Educate construction workers of the potential for American eel to be present and that this is protected species from harm and injury under the provincial *Endangered Species Act*.
- While eel can travel on land, it is unlikely that they would travel outside of the 30 m buffer established for this project. The sediment fence used during construction, and the permanent turtle fence will also serve as a barrier for their movement into the work area.
- If an eel is observed, then all work that may harm the individual should stop and the worker should notify their supervisor. It is also important that they take a photograph and keep a watch on the individual to ensure that it does not enter an area where it may come to harm.
- The supervisor should contact MECP (and if applicable the project biologist) immediately.
- The workers should not chase or otherwise harass the individual, even to get photographs.

Area	Nature	Duration	Magnitude
Local	Negative Direct	Short	Unlikely to occur (very low potential for species to be present and sediment fence will act as a barrier)

Turtle (Blanding's Turtle)

Surveys were completed in and near the site and no Blanding's turtles were observed. However, this species is known to occur within 2 km of the site. This turtle can also often be found far from waterbodies during its seasonal migrations. As such habitat that is within 2 km of a known occurrence can be designated as Category 2 (appropriate wetland and waterbodies plus a 30 m area surrounding these habitats) or Category 3 (habitat found between 30 and 250 m from Category 2 habitat). The purpose of Category 3 habitat is to serve as a migration corridor. The question to be asked is whether or not there are any areas in or beyond the study area to which the turtle would have a desire/need to migrate to. Given the highly developed nature of the area and potential for road mortality as well as the lack of suitable nearby habitat outside of Shirley's Brook, turtles should not be encouraged to move outside of the Category 2 habitat. For this site, the edge of the Blanding's turtle habitat was delineated on-site by a biologist and surveyed. The edge of the habitat included all suitable aquatic habitat (including floodplain). The banks of Shirley's Brook were steep, and the edge of the habitat was easily located. The adjacent meadow

habitats contained <50% cover (in any layer) by wetland plants. The dominant species in adjacent to the treed area in the subject lands were: smooth brome, ragweed, Canada goldenrod, burdock and wild parsnip. No overwintering or nesting habitat was documented on-site. This minimizes the potential for the turtles to occur.

There are two proposed works inside the Category 2 habitat. The first is the storm outlet and erosion protection (pipe itself will be buried and will not create a permanent disturbance to habitat), the rock protection is minimal and will not affect turtle use of the area. The second is the pathway which is situated on the edge of the Category 2 habitat. These activities are being reviewed by MECP.

Mitigation Measures:

- Also note the mitigation measures listed under Fish Habitat (Section 5.3.2).
- MECP has been contacted and an Information Gathering Form has been submitted. The mitigation measures may need to be altered once this process is finalized.
- A turtle exclusion fence will be installed as per MNRF guidelines *Reptile and Amphibian Exclusion Fencing* (OMNR, 2013d). Temporary fencing can be installed during construction. Note that this fencing also needs to address fence height requirements of MVCA for protection of natural areas (typically 1 m tall).
- Permanent fencing should be included in the subdivision design.
- Clearly delineate the edge of the Category 2 habitat (30 m from the edge of the Blanding's turtle habitat that was surveyed in 2018) on the construction drawings and in the field.
- The only clearing of vegetation within the Category 2 habitat will be for the pathway and the storm outlet (temporary impact). It is recommended that this clearing of vegetation take place outside of the turtle active season (i.e. after ice has melted in the spring until about mid-October; usually April 16-October 15). Otherwise, monitoring of the area for turtles could be completed daily during clearing of vegetation and the suse of machinery minimized (use hand tools/ chain saws where possible to minimize potential of running over turtles). No other clearing of vegetation within the Category 2 habitat.
- Educate construction workers of the potential for Blanding's Turtle to be present and that this is a protected species from harm and injury under the provincial *Endangered Species Act*.
- Educate workers, that this species is known to travel far from aquatic habitats and as such, the proper installation and maintenance of the sediment fence is important as it will help keep any turtles out of the work area.
- Workers should perform a daily sweep of the work area when they first arrive on-site during the turtle active season (April 16-October 15).
- Fencing of stockpiles that might provide suitable nesting substrate (i.e. gravel, soil) with sediment fencing will help prevent turtles from nesting in the work area.

- If a turtle is observed, then all work that may harm the individual must stop and the worker should notify their supervisor. Try to take a photograph but do not chase the turtle in order to do so.
- Turtles encountered on-site cannot be harmed or harassed.
- Turtles should be allowed to leave the area on their own.
- It is also important that the individual be watched, from afar, to ensure that it does not enter an area where it may come to harm.
- The supervisor should contact MNRF (and if applicable the project biologist) immediately.

Area	Nature	Duration	Magnitude
Local	Negative Direct	Short	Unlikely to occur (very low potential for species to be present and sediment fence will act as a barrier)

Birds (Barn Swallow)

The breeding bird visits undertaken in 2018 confirmed that there were no SAR on-site. The only observation was a brief flight over the area by a single barn swallow (THR, provincially and federally). A search of the structures (including the exterior of the buildings that were later burnt down) found no barn swallow nests. Since there were a few remaining structures, there remains the potential for nests to be built in the future.

Mitigation Measures:

- Unless the remaining structures are removed prior to May 1, 2019, then these should be surveyed prior to any work on or near them.
- No impacts to federal SAR bird nests, or their eggs is permitted under the federal *Species at Risk Act*. If a federally-listed bird species at risk nest is encountered, then work must stop and the Environment Canada must be notified immediately for guidance.
- No impacts to provincial SAR bird nests or their eggs is permitted under the provincial *Endangered Species Act*. If a provincially-listed bird species at risk is encountered, then work must stop and MECP contacted (sarontario@ontario.ca).
- Educate staff and contractors on the potential for SAR to be in the area and their significance.
- Educate workers to inform them that Barn Swallow nests are protected and cannot be removed.

- Should a nest be discovered, stop all work that may disturb the birds (i.e. that cause the adults to fly off the nest) and contact a biologist or MECP or Environment Canada, as appropriate for the species.

Area	Nature	Duration	Magnitude
Local	Negative Direct	Short Term	Low potential (since none present in 2018 and remaining structures are in a poor state) but if present – Moderate (will need to be registered on-line and compensation required)

Bats

The potential SAR bats within the general area are: little brown myotis, northern myotis, eastern small-footed myotis and tri-coloured. No hibernacula were found. Based on the habitats encountered and the location of the study area, the habitat did not meet the definition for bat maternity sites. However, bats could use the trees for day-roots.

Mitigation Measures:

- Educate contractors by informing them that most bats in Ontario are protected.
- When possible, remove trees after September 30th or before May 1st. If this is not possible, conduct exit survey or shake the trees prior to cutting them down. If a bat is observed leaving the tree, then stop clearing vegetation and wait until after September 30th for any additional tree clearing (there are sufficient trees being retained in the riparian habitat for bats to quickly find alternative day-roost).

Area	Nature	Duration	Magnitude
Local	Negative Direct	Permanent Term (removal of tree)	Low potential (since most trees along the riparian are being retained and this is the location of the larger individuals more suitable to bat use)

5.3.2 Fish Habitat

The only fish habitat near the site is Shirley's Brook. The year-round habitat of this watercourse will be protected by a 30 m buffer. The only work within this area consists of the construction of the storm sewer pipe (to be buried and the slope stabilized) with erosion control measures at its mouth. As such, there are no direct impacts anticipated because of this development. Potential indirect impacts to the aquatic habitat would be the indirect impacts caused by erosion or sediment laden runoff, unstable slopes or accident or malfunctions.

Potential Impacts and Mitigation Measures:

- No direct impacts to the fish habitat will occur. The edge of the fish habitat (edge of the active channel) was delineated in the field and surveyed. A minimum buffer of approximately 30 m between the activities and the edge of fish habitat is being established. Note that where the edge of fish habitat and Blanding's turtle habitat differed, the one that was further from the watercourse was used. The only work within this area will be the construction of the pathway and the storm water outlet. Note measures listed under Blanding's Turtle.
- The 30 m buffer listed above, includes the vegetated slopes of the valley.
- Potential for the development to affect slope stability is being addressed by others. All recommendations should be followed to ensure that no changes to the slope stability occurs.
- Indirect impacts could occur as a result of change in water supply or quality, erosion/sediment to the forested slope between the fish habitat and the site. This has been mitigated by:
    - Site will be fully serviced.
    - The surface drainage from the site will be treated in a SWM facility that will discharge into Shirley's Brook approximately 1km downstream. There was no evidence of any surface water entering the brook from the site during the survey periods and the flow from upstream is anticipated to maintain the existing water levels. As such, water quantity will not be impacted.
    - During construction an appropriate erosion and sediment control strategy will be developed, installed, monitored and maintained. This will include, at a minimum, the installation of sediment fence (countersunk) along the edge of the limit of development (along the edge of the 30 m buffer). Note that this fencing is also needed to keep SAR out (see sections above).
- Any outlet or drains required for the development will be constructed to ensure that no erosion of the soil occurs (to prevent slope failure and the transportation of sediments into the wetland).
- Any stockpiles of soil or fill material would be stored at least 30 m from the fish habitat and protected by a sediment fence.
- Additional materials (*i.e.* rip rap, filter cloth and silt fencing) should be readily available in case they are needed promptly for erosion and/or sediment control.
- Erosion and sediment and erosion control measures need to be maintained and will require daily inspection to ensure that they are working as intended. Additional inspections will be required after rainfall or storm events.
- The sediment fencing would not be removed until the site is stable.
- All equipment should be well maintained, clean and free of leaks.
- Maintenance of construction equipment should occur at a minimum of 30 m from the top of the bank. It is to be in an area where all precautions have been made to prevent oil,

grease, antifreeze or other materials from inadvertently entering the ground or surface water.
- Any machine coming from offsite should be cleaned and free of mud (to prevent the transfer of non-native vegetation).
- Emergency spill kits should be located on site and the crew trained on their use.
- Any spills will be reported immediately to MECP Spills Action Centre (1.800.268.6060)

Area	Nature	Duration	Magnitude
Local	Negative Indirect	Short to Medium Term depending on extent	Unlikely to occur (would occur as a result of an accident or malfunction)

5.3.3 Significant Woodland and Valleyland

The significant woodland and valleyland habitats are situated within the natural area that will be protected along Shirley's Creek. During the field investigations the edge of the fish habitat and floodplain/wetland habitat were delineated and surveyed, and these were used to establish the edge of the Category 2 Blanding's Turtle Habitat and the 30 m setback from fish habitat. Situated within this protected buffer is all of the significant woodland (forest outside of this line was not mature in 1976 or is too small to be considered significant) and the valleyland. Geotechnical experts have established the appropriate setback from the edge of the valley to maintain its integrity.

The edge of the Category 2 Blanding's habitat also serves or exceeds the necessary setback for fish habitat, valleyland and woodland. Where there is a potential for indirect harm to the trees, the measures listed below in the Tree Conservation Plan will be followed to minimize harm.

5.3.4 Other

As mentioned above, almost all birds in Ontario are protected by either MBCA or FWCA.

Potential Impacts and Mitigation Measures:

- Almost all breeding birds are protected under the MBCA and/or FWCA. The only species not protected are: American crow, brown-headed cowbird, common grackle, house sparrow, red-winged blackbird and starling. It is prohibited to destroy or disturb an active nest of other birds, or to take or handle nests, eggs, or nestlings. In this part of Ontario, the current standard nesting period is between April 12th to August 28th. Outside of this timing window, it is considered unlikely that birds would be nesting. Note, there are some birds (birds of prey, herons etc.) that do begin nesting earlier in

the year. It should also be noted, that if an active nest is present before or after the above dates that it is still protected. These dates only serve as a guideline.

- There is the potential for ground nesters to occur within the subject lands once grading activities occur should bare soil be left (i.e. killdeer). Perform regular walks of the cleared areas looking for ground nesters. If any are present, the contact a biologist for guidance.
- Work during the daytime hours to prevent light disturbances.
- Ensure that all equipment have the appropriate mufflers to reduce noise disturbances.

6.0 TREE CONSERVATION AND PLANTING PLAN

The proposed development at 1055 Klondike Road (approximately 4.5 ha) is located to the east of March Road and north of Klondike Road; in Kanata, Ontario. It is in part of Lot 11, Concession 4 in the City of Ottawa (formerly March Township).

There were few individual trees on this property. Most of the trees identified consisted of those found along the banks of Shirley's Brook (along the west and north edge of the property), in the copse of trees noted in the meadow and along the fencerows to the east and south of the property.

None of the tree groupings were wide enough to provide forest interior habitat (all were less than 200 m wide).

There were no occurrences of SAR trees or their protected habitats.

The only trees recommended for retention are those along the banks of Shirley's Brook. Those trees that form a significant woodland also provide a variety of functions: protection of fish habitat, located in the Category 2 Blanding's turtle habitat, potential for bat roosting sites, and slope stability.

A summary of individual trees and groupings is provided in Table 9. Map 1 and Map 2 as per the City's TCR requirements are provided below (Figure 9, Figure 10). All trees situated on the Site but that are outside of the Category 2 habitat will be removed. In addition, those trees within the Category 2 habitat, but that need to be removed for the storm outlet or pathway.

In addition to the mitigation measures outlined in Section 5.0, the measures listed below are recommended to protect trees to be retained.

Mitigation Measures for Trees to be Retained

- A permit from the City is required prior to removing any trees with a dbh of 10 cm or larger.
- If roots of trees to be retained become exposed during site alterations, they will be buried immediately with soil or covered with filter cloth or woodchips and kept moist until the roots can be buried permanently.
- Any roots that must be cut will be cut cleanly to allow for healing.
- No signs, notices or posters should be attached to any trees.
- Trim branches that overhang the expansion area and that may be damaged accidentally from machinery. Timing of the removal of vegetation or trimming of branches should occur outside of the breeding bird window and the active bat season (see below).
- Machinery entering the site will be clean and free of mud and plant material. This is to minimize the spreading of invasive plant species.
- The Critical Root Zone (CRZ) is 10x the dbh of the adjacent trees. Based on the average dbh the CRZ will likely be around 3.5 m but the exact location of the edge of the CRZ should be determined once the site layouts are completed.
    - Clearing of vegetation within the CRZ of trees to be retained will be completed by hand.
    - Sturdy fencing will be installed outside of the CRZ. This sturdy fence will remain in place until final grading and seeding takes place.
    - No grading or activities that may cause soil compaction (such as heavy machinery and stockpiling of materials) will be allowed within the fenced area.
    - Furthermore, no machinery maintenance or refueling or stockpiling is permitted within 5 m of the outer edge of this fencing.
    - Exhaust fumes from all equipment will be directed away from the canopy of the trees to be retained.
- Indirect impacts could occur if the trees along the top of the slope are harmed and this results in less stability of the slope. Geotechnical investigations have been completed by other.
- Grading will tie into the CRZ.
- The removal of woody vegetation will be minimized.
- Any landscape plans should include native species as much as possible. Various species could be used including: red maple, white spruce, American basswood, red pine, sugar maple, hickory, red oak, bur oak, green ash, white ash, nannyberry, gray dogwood, or red osier dogwood. Where possible the woody vegetation should be planted in groupings to maximize wildlife benefit.
- When clearing the forest on the slope mitigation measures to minimize harm to the root systems of trees adjacent to the proposed works will be implemented to protect them from indirect harm:

- All vegetation clearing should occur outside of breeding bird season and the day-roost period for bats (no clearing between April 15th and September 30th). If this is not possible, then have a biologist complete a bird nest surveys a maximum of 5 days prior to clearing between April 15th and August 15th. Take precautions for bats between May 1st and September 30th.

Table 9: Summary of Trees and Groupings

Individual Tree Number	Species	DBH (cm)	Height (m)	Health	Ownership	To be Removed (Y or N)	Comments
1	White Spruce	49	14	Some dead branches - fire	Mapleleaf	Y	Affected by the house fire
2	White Spruce	66	13	Some dead branches - fire	Mapleleaf	Y	Affected by the house fire
3	White Spruce	63	14	Some dead branches - fire	Mapleleaf	Y	Affected by the house fire
4	American Elm	16	6	Dead	Mapleleaf	Y	
5	Red Maple	200	18	Good	Mapleleaf	Y	
6	Scots Pine	60	10	Good	On property line (east)	Y	
7	White Spruce	24	10	Good	On property line (east)	Y	
8	Red Maple	48	14	Good	On property line (east)	Y	
9	Eastern White Cedar	16	8	Good	On property line (east)	Y	
10	Eastern White Cedar	19	9	Good	On property line (east)	Y	
11	Red Pine	13	8	Good	On property line (east)	Y	
12	Eastern White Cedar	11, 13	8	Good	On property line (east)	Y	
13	Eastern White Cedar	13, 12	8	Good	On property line (east)	Y	
14	Red Pine	16	14	Good	On property line (east)	Y	
15	Red Maple	34	15	Good	On property line (east)	Y	
16	White Spruce	28	13	Good	On property line (east)	Y	
17	Eastern White Cedar	15	7	Good	On property line (east)	Y	
18	Red Pine	30	5	Poor	On property line (east)	Y	Top broken off
19	Eastern White Cedar	11	6	Good	On property line (east)	Y	
20	Red Maple	30	16	Good	On property line (east)	Y	
21	Eastern White Cedar	10	6	Good	On property line (east)	Y	
22	White Birch	23	13	Good	On property line (east)	Y	

Individual Tree Number	Species	DBH (cm)	Height (m)	Health	Ownership	To be Removed (Y or N)	Comments
23	Red Pine	52	15	Good	On property line (east)	Y	
24	Eastern White Cedar	11	5	Good	On property line (east)	Y	
25	Eastern White Cedar	16	6	Good	On property line (east)	Y	
26	Red Maple	39, 42	15	Good	On property line (east)	Y	
27	Eastern White Cedar	16	6	Good	On property line (east)	Y	
28	Eastern White Cedar	18	6	Good	On property line (east)	Y	
29	Eastern White Cedar	17	6	Good	On property line (east)	Y	
30	Eastern White Cedar	17	6	Good	On property line (east)	Y	
31	Red Maple	46	14	Good	On property line (east)	Y	
32	Eastern White Cedar	20	7	Good	On property line (east)	Y	
33	Eastern White Cedar	24	8	Good	On property line (east)	Y	
34	White Spruce	40	14	Good	On property line (east)	Y	
35	Red Maple	15	10	Good	On property line (east)	Y	
36	Red Maple	28	13	Good	On property line (east)	Y	
37	Red Maple	47	15	Good	On property line (east)	Y	
38	White Spruce	26	9	Good	On property line (east)	Y	
39	Red Maple	13	8	Good	On property line (east)	Y	
40	Red Maple	26, 17	13	Good	On property line (east)	Y	
41	Red Pine	12	10	Dead	On property line (east)	Y	
42	Red Maple	48	15	Good	On property line (east)	Y	
43	Red Pine	21	9	Poor	On property line (east)	Y	
44	Red Maple	42	15	Good	On property line (east)	Y	
45	White Spruce	11	4	Good	On property line (east)	Y	
46	White Pine	40	13	Good	On property line (east)	Y	
47	Red Maple	14	8	Good	On property line (east)	Y	
48	White Spruce	25	10	Good	On property line (east)	Y	
49	White Spruce	24	10	Good	On property line (east)	Y	
50	White Spruce	39	11	Good	On property line (east)	Y	

Individual Tree Number	Species	DBH (cm)	Height (m)	Health	Ownership	To be Removed (Y or N)	Comments
51	White Spruce	41	11	Good	On property line (east)	Y	
52	White Spruce	40	12	Good	On property line (east)	Y	
53	White Pine	56	14	Good	On property line (east)	Y	
54	White Spruce	44	12	Good	On property line (east)	Y	
55	White Spruce	51	13	Good	On property line (east)	Y	
56	White Spruce	50	13	Good	On property line (east)	Y	
57	Red Maple	46	14	Good	On property line (east)	Y	
58	White Spruce	30	9	Good	On property line (east)	Y	
59	Red Maple	45	14	Good	On property line (east)	Y	
60	White Spruce	12	8	Good	On property line (east)	Y	
61	Red Maple	42	14	Good	On property line (east)	Y	
62	White Spruce	15	9	Good	On property line (east)	Y	
63	Red Maple	57	14	Good	On property line (east)	Y	
64	Red Pine	30	13	Good	On property line (east)	Y	
65	White Spruce	44	11	Good	On property line (east)	Y	
66	White Pine	45	11	Good	On property line (east)	Y	
67	Scots Pine	33	11	Good	On property line (east)	Y	
68	Scots Pine	50	10	Good	On property line (east)	Y	
69	White Pine	45	12	Good	On property line (east)	Y	
70	Scots Pine	38	9	Good	On property line (east)	Y	
71	Manitoba Maple	24	7	Good	On property line (east)	Y	
72	Manitoba Maple	13	6	Good	On property line (east)	Y	
73	Scots Pine	36	10	Good	On property line (east)	Y	
74	Manitoba Maple	25	7	Good	On property line (east)	Y	
75	Manitoba Maple	16	7	Good	On property line (east)	Y	
76	Manitoba Maple	36, 38	12	Good	Mapleleaf	Y	
77	Manitoba Maple	12	8	Good	Mapleleaf	Y	
78	Manitoba Maple	11	6	Good	Mapleleaf	Y	

Individual Tree Number	Species	DBH (cm)	Height (m)	Health	Ownership	To be Removed (Y or N)	Comments
79	Manitoba Maple	15	5	Good	Mapleleaf	Y	
80	Manitoba Maple	67, 59, 61	15	Good	Mapleleaf	Y	
81	Manitoba Maple	34	7	Good	Mapleleaf	Y	
82	Manitoba Maple	25, 13	5	Good	Mapleleaf	Y	
83	Manitoba Maple	35	10	Good	Mapleleaf	Y	
84	Manitoba Maple	80	14	Good	Mapleleaf	Y	
85	American Elm	23	5	Good	Mapleleaf	N	
86	Manitoba Maple	11	5	Good	Mapleleaf	N	
87	Bur Oak	15	9	Good	Mapleleaf	N	
88	Manitoba Maple	14	7	Good	Mapleleaf	N	
89	Manitoba Maple	53	15	Poor	Mapleleaf	N	Fallen over still alive
90	Manitoba Maple	60, 41	16	Good	Mapleleaf	N	
91	Manitoba Maple	87	15	Good	Mapleleaf	N	
92	Manitoba Maple	33, 56	15	Good	Mapleleaf	N	
93	Manitoba Maple	62, 32	10, 14	Good	Mapleleaf	Y	
94	Manitoba Maple	39	12	Good	Mapleleaf	Y	
95	Trembling Aspen	40	16	Good	Mapleleaf	Y	
96	Manitoba Maple	12	9	Good	Mapleleaf	Y	
97	Trembling Aspen	28	16	Good	Mapleleaf	Y	
98	Trembling Aspen	37	13	Good	Mapleleaf	Y	
99	Trembling Aspen	16	6	Good	Mapleleaf	Y	
100	Trembling Aspen	27	15	Good	Mapleleaf	Y	
101	Manitoba Maple	27	9	Good	Mapleleaf	Y	
102	Manitoba Maple	53	15	Good	Mapleleaf	N	
103	Manitoba Maple	15	7	Good	Mapleleaf	N	
104	Manitoba Maple	48, 41, 37	16	Good	Mapleleaf	N	
105	Manitoba Maple	15	8	Good	Mapleleaf	N	

Individual Tree Number	Species	DBH (cm)	Height (m)	Health	Ownership	To be Removed (Y or N)	Comments
106	Manitoba Maple	64	14	Good	Mapleleaf	N	
107	White Spruce	11	4	Good	Mapleleaf	N	
108	Manitoba Maple	14	7	Good	Mapleleaf	N	
109	Manitoba Maple	26	7	Good	Mapleleaf	N	
110	Manitoba Maple	27	7	Good	Mapleleaf	N	
111	Manitoba Maple	13	6	Good	Mapleleaf	N	
112	American Elm	51	16	Dead	Mapleleaf	N	
113	White Spruce	31	9	Good	Mapleleaf	N	
114	Manitoba Maple	20, 19, 17	10	Good	Mapleleaf	N	
115	Manitoba Maple	17, 12, 14	7	Good	Mapleleaf	N	
116	Manitoba Maple	33, 37	14	Good	Mapleleaf	N	
117	Manitoba Maple	20, 15	11	Good	Mapleleaf	N	
118	White Spruce	37	16	Good	Mapleleaf	N	
119	Manitoba Maple	43, 29	14	Good	Mapleleaf	N	
120	Manitoba Maple	29	10	Good	Mapleleaf	N	
121	Manitoba Maple	36	8	Good	Mapleleaf	N	
122	White Spruce	31	14	Good	Mapleleaf	N	
123	Manitoba Maple	19	7	Good	Mapleleaf	N	
124	Manitoba Maple	14	5	Good	Mapleleaf	N	
125	American Elm	21	12	Good	Mapleleaf	N	
126	Manitoba Maple	13	7	Good	Mapleleaf	N	
127	American Elm	14	7	Good	Mapleleaf	N	
128	Manitoba Maple	87	16	Good	Mapleleaf	N	
129	Manitoba Maple	84	15	Good	Mapleleaf	N	
130	Manitoba Maple	23	6	Good	Mapleleaf	N	
131	American Elm	13	7	Good	Mapleleaf	N	
132	Manitoba Maple	70	15	Good	Mapleleaf	N	
133	Manitoba Maple	12	6	Good	Mapleleaf	N	

Individual Tree Number	Species	DBH (cm)	Height (m)	Health	Ownership	To be Removed (Y or N)	Comments
134	Manitoba Maple	14	6	Good	Mapleleaf	N	
135	Manitoba Maple	26, 17	9	Good	Mapleleaf	N	
136	Manitoba Maple	27, 12	10	Good	Mapleleaf	N	
137	American Elm	20	14	Dead	Mapleleaf	N	
138	Manitoba Maple	30, 29, 33	12	Good	Mapleleaf	N	
139	Green Ash	14	7	Good	Mapleleaf	N	
140	Black Cherry	41	16	Good	Mapleleaf	N	
141	Manitoba Maple	24	10	Good	Mapleleaf	N	
142	American Elm	14	10	Good	Mapleleaf	N	
143	Manitoba Maple	108	17	Good	Mapleleaf	N	
144	Manitoba Maple	48, 30, 14	13	Good	Mapleleaf	N	
145	Manitoba Maple	33	6	Poor	Mapleleaf	N	Top broken off
146	Manitoba Maple	40	13	Poor	Mapleleaf	N	Fallen over still alive
147	White Spruce	38	14	Good	Adjacent landowner property	N	
148	White Spruce	32	14	Good	Adjacent landowner property	N	
149	Sugar Maple	33, 29	11	Good	Adjacent landowner property	N	
150	Scots Pine	30	10	Poor	Adjacent landowner property	N	Only few live branches
151	Scots Pine	27	10	Good	Adjacent landowner property	N	Some dead branches
152	Scots Pine	31	6	Good	Mapleleaf	Y	
153	Scots Pine	33	9	Good	Mapleleaf	Y	
154	Scots Pine	37	10	Good	Mapleleaf	Y	
155	Scots Pine	28	10	Good	Mapleleaf	Y	
156	Scots Pine	30	8	Dead	Mapleleaf	Y	
157	Scots Pine	26	7	Dead	Mapleleaf	Y	
158	Scots Pine	28	9	Good	Mapleleaf	Y	

Individual Tree Number	Species	DBH (cm)	Height (m)	Health	Ownership	To be Removed (Y or N)	Comments
159	Scots Pine	31	10	Good	Mapleleaf	Y	
160	Scots Pine	34	5	Dead	Mapleleaf	Y	Top broken off
161	Scots Pine	38	13	Dead	Mapleleaf	Y	
162	Scots Pine	29	11	Good	Mapleleaf	Y	Some dead branches
163	Scots Pine	34	11	Dead	Mapleleaf	Y	
164	Bur Oak	Approx. 38, 34, 45	15	Good	Adjacent landowner property	N	
165	Red Pine	Approx. 43	11	Good	Adjacent landowner property	N	Some dead branches
166	Red Pine	Approx. 43	11	Good	Adjacent landowner property	N	Some dead branches
167	Sugar Maple	Approx. 30, 20, 23	9	Good	Adjacent landowner property	N	
168	White Spruce	Approx. 25	13	Good	Adjacent landowner property	N	
169	Sugar Maple	Approx. 50	14	Good	Adjacent landowner property	N	
170	Sugar Maple	Approx. 40	14	Good	Adjacent landowner property	N	
171	Sugar Maple	Approx. 50	14	Good	Adjacent landowner property	N	
			Groupings				
Grouping A	Manitoba Maple	15	6	Good	Mapleleaf	Y	Tree grouping; largest dbh taken
Grouping B	Manitoba Maple	13	9	Good	Mapleleaf	Y	Tree grouping; largest dbh taken
Grouping C	Manitoba Maple	10	8	Good	Mapleleaf	Y	Tree grouping; largest dbh taken
Grouping D	Eastern White Cedar	10-25 (average 17)	8	Good	On property line (east)	Y	Thick cedar plantation

Individual Tree Number	Species	DBH (cm)	Height (m)	Health	Ownership	To be Removed (Y or N)	Comments
							running along wind row.
Grouping E	Trembling Aspen	10-28 (average 20)	N/A	Good	Mapleleaf	Y	Tree clump of over 50 individuals
Grouping F	Manitoba Maple	23	11	Good	Mapleleaf	Y	Tree grouping; largest dbh taken

Figure 9: Map 1 Location of Individual and Groupings of Trees in the Subject Lands

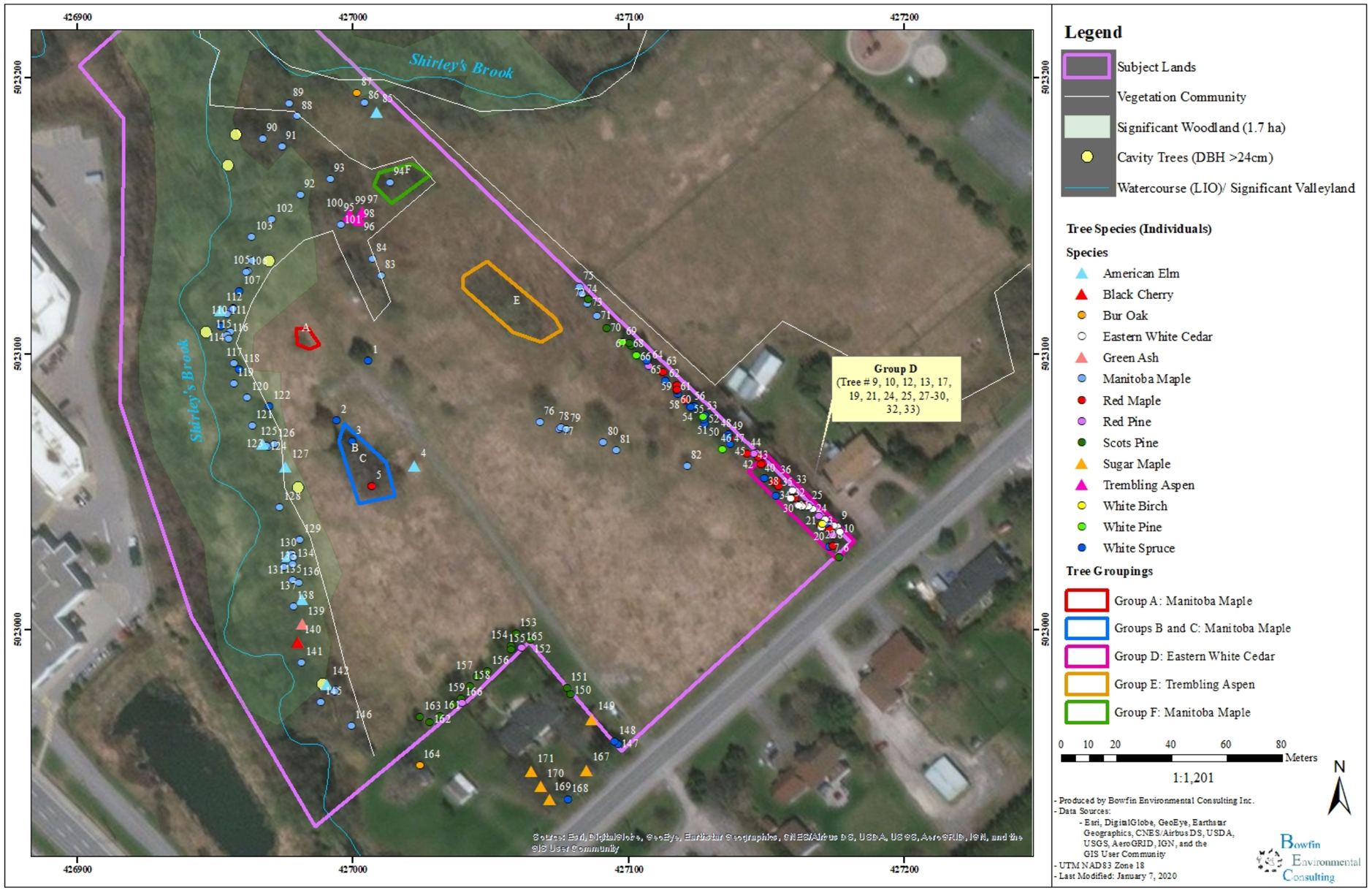


Figure 10: Map 2 Trees to be Removed in Subject Lands

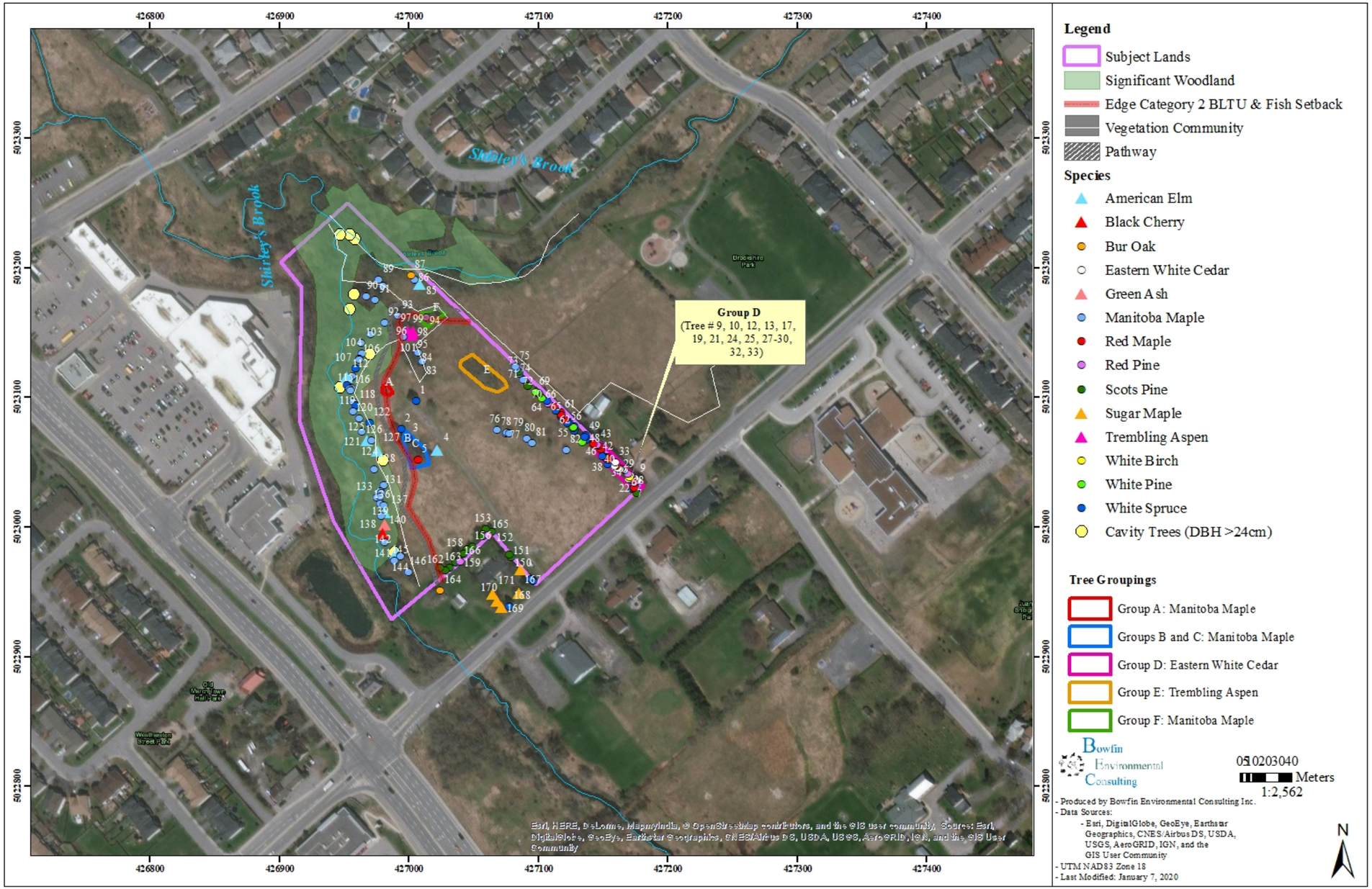


Table 10 Summary of Impacts, Mitigation Measures and Residual Effects

Activity	Natural Heritage Feature/Function	Potential Effect	Proposed Mitigation	Residual Effect
Construction				
Vegetation Clearing in preparation development	Category 3 Habitat for Blanding's Turtle Bird nests protected by MBCA or FWCA Significant Woodland Significant Valleyland	The habitat to be impacted is considered Category 3 habitat for Blanding's Turtle. Discussions with MNRF are required. Removal of herbaceous vegetation would destroy (temporarily or permanently) breeding habitat. It may also impact, indirectly, adjacent grassland habitats.	The significant woodland and valleyland are within the protected natural area. A permit from the City is required prior to removing any trees with a dbh of 10 cm or larger. If roots of trees to be retained become exposed during site alterations, they will be buried immediately with soil or covered with filter cloth or woodchips and kept moist until the roots can be buried permanently. Any roots that must be cut will be cut cleanly to allow for healing. No signs, notices or posters should be attached to any trees. Trim branches that overhang the expansion area and that may be	None

Activity	Natural Heritage Feature/Function	Potential Effect	Proposed Mitigation	Residual Effect
			damaged accidentally from machinery. Timing of the removal of vegetation or trimming of branches should occur outside of the breeding bird window and the active bat season (see below). Machinery entering the site will be clean and free of mud and plant material. This is to minimize the spreading of invasive plant species. The Critical Root Zone (CRZ) is 10x the dbh of the adjacent trees. Based on the average dbh the CRZ will likely be around 3.5 m but the exact location of the edge of the CRZ should be determined once the site layouts are completed. Clearing of vegetation within the CRZ of trees to be retained will be completed by hand.	

Activity	Natural Heritage Feature/Function	Potential Effect	Proposed Mitigation	Residual Effect
			Sturdy fencing will be installed outside of the CRZ. This sturdy fence will remain in place until final grading and seeding takes place. No grading or activities that may cause soil compaction (such as heavy machinery and stockpiling of materials) will be allowed within the fenced area. Furthermore, no machinery maintenance or refueling or stockpiling is permitted within 5 m of the outer edge of this fencing. Exhaust fumes from all equipment will be directed away from the canopy of the trees to be retained. Indirect impacts could occur if the trees along the top of the slope are harmed and this results in less stability of the slope.	

Activity	Natural Heritage Feature/Function	Potential Effect	Proposed Mitigation	Residual Effect
			Grading will tie into the CRZ. The removal of woody vegetation will be minimized. Any landscape plans should include native species as much as possible. Various species could be used including: red maple, white spruce, American basswood, red pine, sugar maple, hickory, red oak, bur oak, green ash, white ash, nannyberry, gray dogwood, or red osier dogwood. Where possible the woody vegetation should be planted in groupings to maximize wildlife benefit. When clearing the forest on the slope mitigation measures to minimize harm to the root systems of trees adjacent to the proposed works will be implemented to protect them from indirect harm.	

Activity	Natural Heritage Feature/Function	Potential Effect	Proposed Mitigation	Residual Effect
			All vegetation clearing should occur outside of breeding bird season and the day-roost period for bats (no clearing between April 15th and September 30th). If this is not possible, then have a biologist complete a bird nest surveys a maximum of 5 days prior to clearing between April 15th and August 15th and take precautions for bats between May 1st and September 30th (i.e. exit surveys). No impacts to federal SAR bird nests, or their eggs is permitted under the federal *Species at Risk Act*. If a federally-listed bird species at risk nest is encountered, then work must stop and the Environment Canada must be notified immediately for guidance. No impacts to provincial SAR bird nests or their eggs is permitted under the provincial *Endangered Species Act*. If a	

Activity	Natural Heritage Feature/Function	Potential Effect	Proposed Mitigation	Residual Effect
			provincially-listed bird species at risk is encountered, then work must stop and MECP contacted (sarontario@ontario.ca). Educate staff and contractors on the potential for SAR (American eel, Blanding's turtle, barn swallow) to be in the area and their significance. Should a nest be discovered, stop all work that may disturb the birds (i.e. that cause the adults to fly off the nest) and contact a biologist or MECP or Environment Canada, as appropriate for the species. Because of the Blanding's turtle habitat, MECP has been contacted and this process needs to be completed prior to any work occurring. The outcome of that consultation process will determine if offsetting is required.	

Activity	Natural Heritage Feature/Function	Potential Effect	Proposed Mitigation	Residual Effect
			A turtle exclusion fence will be installed as per MNRF guidelines *Reptile and Amphibian Exclusion Fencing* (OMNR, 2013d). Temporary fencing can be installed during construction. The fence height will also meet the MVCA requirements for protecting natural areas. Permanent fencing should be included in the subdivision design. Permanent fencing to protected the natural areas will have a minimum height of 1 m. Clearly delineate the edge of the Category 2 habitat (30 m from the edge of the wetland habitat that was surveyed in 2018) on the construction drawings and in the field. The only clearing of vegetation within the Category 2 habitat will be for the pathway and the storm outlet pipe. It is recommended	

Activity	Natural Heritage Feature/Function	Potential Effect	Proposed Mitigation	Residual Effect
			that this clearing of vegetation take place outside of the turtle active season (i.e. after ice has melted in the spring until about mid-October; usually April 16-October 15). Otherwise, monitoring of the area for turtles could be completed daily during clearing of vegetation and the sue of machinery minimized (use hand tools/ chain saws where possible to minimize potential of running over turtles). No other clearing of vegetation within the Category 2 habitat. Educate workers, that Blanding's turtle is known to travel far from aquatic habitats and as such, the proper installation and maintenance of the sediment fence is important as it will help keep any turtles out of the work area. Workers should perform a daily sweep of the work area when they first arrive on-site during the turtle	

Activity	Natural Heritage Feature/Function	Potential Effect	Proposed Mitigation	Residual Effect
			active season (April 16-October 15). Fencing of stockpiles that might provide suitable nesting substrate (i.e. gravel, soil) with sediment fencing will help prevent turtles from nesting in the work area. If a turtle is observed, then all work that may harm the individual must stop and the worker should notify their supervisor. Try to take a photograph but do not chase the turtle in order to do so. Turtles encountered on-site cannot be harmed or harassed. Turtles should be allowed to leave the area on their own. It is also important that the individual be watched, from afar, to ensure that it does not enter an area where it may come to harm.	

Activity	Natural Heritage Feature/Function	Potential Effect	Proposed Mitigation	Residual Effect
			The supervisor should contact MECP (and if applicable the project biologist)	
Construction of infrastructure, buildings and Grading	Indirect impacts to aquatic habitat should erosion or sediment control measures fail. Bird nesting habitat.	Negative impacts to quality of fish habitat or its functions (fish habitat, potential Category 2 Blanding's turtle habitat), could cause slope failure of the banks or impact the habitat as a result of erosion or sedimentation of aquatic habitats. Permanent structure could cause slope instability. No barn swallow nests were present during field work. If the structures were not removed, then they should be quickly surveyed to ensure that	No direct impacts to the fish habitat will occur. Selected natural features have been protected. The edge of the fish habitat (edge of the active channel) was delineated in the field and surveyed. A minimum buffer of approximately 30 m between the activities (temporary and permanent) and the edge of fish habitat is being established. Note that this line was used to delineate both the edge of Category 2 Blanding's Turtle habitat and the 30 m setback from the edge of fish habitat. Where these lines differed, the one that was further from the watercourse was used. The only work within this area will be the construction of the pathway and the stormwater pipe. The storm water pipe will be buried, will include appropriate erosion control measures at its	None provided that mitigation measures are properly implemented and maintained.

Activity	Natural Heritage Feature/Function	Potential Effect	Proposed Mitigation	Residual Effect
		no barn swallows have constructed nests. Once the area has been cleared and graded, then the bare soil or gravel areas could create new habitat for ground nesters such as killdeer. Their nests would be protected until young are fully fledged.	mouth and the area will be stabilized. Note measures listed under Blanding's Turtle. The protected natural area established for this project discussed above, includes the vegetated slopes of the valley and the woodland (both significant) Potential for the development to affect slope stability is being addressed by others. All recommendations should be followed to ensure that no changes to the slope stability occurs. Indirect impacts could occur as a result of change in water supply or quality, erosion/sediment to the forested slope between the fish habitat and the site. This has been mitigated by: Site will be fully serviced, the surface drainage from the site will be treated in a SWM facility that will discharge into Shirley's Brook	

Activity	Natural Heritage Feature/Function	Potential Effect	Proposed Mitigation	Residual Effect
			approximately 1km downstream. There was no evidence of any surface water entering the brook from the site during the survey periods and the flow from upstream is anticipated to maintain the existing water levels. As such, water quantity will not be impacted. During construction an appropriate erosion and sediment control strategy will be developed, installed, monitored and maintained. This will include, at a minimum, the installation of sediment fence (countersunk) along the edge of the limit of development (along the edge of the Category 2 Blanding's Turtle Habitat/ fish setback). Note that this fencing is also needed to keep SAR out (see sections above). Any outlet or drains required for the development will be constructed to ensure that no	

Activity	Natural Heritage Feature/Function	Potential Effect	Proposed Mitigation	Residual Effect
			erosion of the soil occurs (to prevent slope failure and the transportation of sediments into the wetland). Any stockpiles of soil or fill material would be stored at least 30 m from the fish habitat and protected by a sediment fence. Additional materials (*i.e.* rip rap, filter cloth and silt fencing) should be readily available in case they are needed promptly for erosion and/or sediment control. Erosion and sediment and erosion control measures need to be maintained and will require daily inspection to ensure that they are working as intended. Additional inspections will be required after rainfall or storm events. The sediment fencing would not be removed until the site is stable.	

Activity	Natural Heritage Feature/Function	Potential Effect	Proposed Mitigation	Residual Effect
			There is the potential for ground nesters to occur within the subject lands once grading activities occur should bare soil be left (i.e. killdeer). Perform regular walks of the cleared areas looking for ground nesters. If any are present, the contact a biologist for guidance. Unless the remaining structures are removed prior to May 1, 2019, then these should be surveyed prior to any work on or near them.	
Accidents or Malfunctions	Indirect impacts to fish habitat should erosion or sediment control measures fail.	Spills or accidents during construction could impact the quality of fish habitat or its functions (fish and Blanding's Turtle habitat), could cause slope failure of the banks.	All equipment should be well maintained, clean and free of leaks. Maintenance of construction equipment should occur at a minimum of 30m from the top of the bank. It is to be in an area where all precautions have been made to prevent oil, grease, antifreeze or other materials from	Unlikely

Activity	Natural Heritage Feature/Function	Potential Effect	Proposed Mitigation	Residual Effect
			inadvertently entering the ground or surface water. Any machine coming from offsite should be cleaned and free of mud (to prevent the transfer of non-native vegetation). Emergency spill kits should be located on site and the crew trained on their use. Any spills will be reported immediately to MECP Spills Action Centre (1.800.268.6060).	

7.0 CONCLUSIONS AND RECOMMENDATION

The proponent is proposing to build a residential subdivision at 1055 Klondike Road, Kanata, Ontario (Figure 1). The proposed subdivision includes approximately 4.5 ha. The development would be fully serviced. They consisted of cultural meadows and treed riparian area. The majority of the riparian habitat will be protected by a 30 m buffer that will also serve to protect the Category 2 Blanding's turtle habitat, fish habitat, significant woodland and significant valleyland. No SAR were documented in the study area, other than a single flyover by one barn swallow. No raptor nests were found within this area.

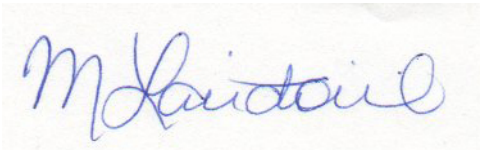
No trees requiring retention were identified within the area to be cleared.

All of the impacts can be mitigated through the use of common mitigation measures and no residual negative impacts to the natural environment are anticipated as a result of the development. This proposed development can be accepted as planned.

I trust that this report will meet your requirements. Should you have any questions or comments, please contact the undersigned.

Sincerely,

Bowfin Environmental Consulting Inc.



Michelle Lavictoire,
Biologist / Principal

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Appendix A: Background Information

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Attention: Elysabeth Theberge

Subject: Information Request - Developments
Project Name: EIS_TCR_1055 Klondike Road
Site Address: 1055 Klondike Road, Ottawa, Ontario
Our File No. 2018_MAR-4473

Natural Heritage Values

The Ministry of Natural Resources and Forestry (MNRF) Kemptville District has carried out a preliminary review of the area in order to identify any potential natural resource and natural heritage values.

The following Natural Heritage values were identified for the general subject area:

- Unevaluated Wetland (not evaluated per OWES)
- Stream, Shirley's Brook
- Significant Woodlands

Municipal Official Plans contain information related to natural heritage features. Please see the local municipal Official Plan for more information, such as specific policies and direction pertaining to activities which may impact natural heritage features. For planning advice or Official Plan interpretation, please contact the local municipality. Many municipalities require environmental impact studies and other supporting studies be carried out as part of the development application process to allow the municipality to make planning decisions which are consistent with the Provincial Policy Statement (PPS, 2014).

The MNRF strongly encourages all proponents to contact partner agencies and appropriate municipalities early on in the planning process. This provides the proponent with early knowledge regarding agency requirements, authorizations and approval timelines; Ministry of the Environment and Climate Change (MOECC) and the local Conservation Authority may require approvals and permitting where natural values and natural hazards (e.g., floodplains) exist.

As per the Natural Heritage Reference Manual (NHRM, 2010) the MNRF strongly recommends that an ecological site assessment be carried out to determine the presence of natural heritage features and species at risk and their habitat on site. The MNRF can provide survey methodology for particular species at risk and their habitats.

The NHRM also recommends that cumulative effects of development projects on the integrity of natural heritage features and areas be given due consideration. This includes the evaluation of the past, present and possible future impacts of development in the surrounding area that may occur as a result of demand created by the presently proposed project.

In Addition, the following fish species were identified: American eel, Etheostoma sp., Notropis sp., Rhinichthys sp., Sticklebacks, bluntnose minnow, brook stickleback, central mudminnow, creek chub, fathead minnow, finescale dace, largemouth bass, logperch, mottled sculpin, northern pike, northern redbelly dace, pumpkinseed, rock bass, smallmouth bass, white sucker.

Wildland Fire

MNRF woodland data shows that the site contains woodlands. The lands should be assessed for the risk of wildland fire as per PPS 2014, Section 3.1.8 "*Development shall generally be directed to areas outside of lands that are unsafe for development due to the presence of hazardous forest types for wildland fire. Development may however be permitted in lands with hazardous forest types for wildland fire where the risk is mitigated in accordance with wildland fire assessment and mitigation standards*". Further discussion with the local municipality should be carried out to address how the risks associated with wildland fire will be covered for such a development proposal. Please see the Wildland Fire Risk Assessment and Mitigation Guidebook (2016) for more information.

Significant Woodlands

Section 2.1.5 b) of the PPS states: *Development and site alteration shall not be permitted in significant woodlands unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.* The 2014 PPS directs that significant woodlands must be identified following criteria established by the Ontario Ministry of Natural Resources and Forestry, i.e. the Natural Heritage Reference Manual (NHRM), 2010. Where the local or County Official Plan has not yet updated significant woodland mapping to reflect the 2014 PPS, all wooded areas should be reviewed on a site specific basis for significance. The MNRF Kemptville District modelled locations of significant woodlands in 2011 based on NHRM criteria. The presence of significant woodland on site or within 120 metres should trigger an assessment of the impacts to the feature and its function from the proposed development.

Significant Wildlife Habitat

Section 2.1.5 d) of the PPS states: *Development and site alteration shall not be permitted in significant wildlife habitat unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.* It is the responsibility of the approval authority to identify significant wildlife habitat or require its identification. The MNRF has several guiding documents which may be useful in identification of significant wildlife habitat and characterization of impacts and mitigation options:

- Significant Wildlife Habitat Technical Guide, 2000

- The Natural Heritage Reference Manual, 2010
- Significant Wildlife Habitat Mitigation Support Tool, 2014
- Significant Wildlife Habitat Criteria Schedule for Ecoregion 5E and 6E, 2015

The habitat of special concern species (as identified by the Species at Risk in Ontario list) and Natural Heritage Information Centre tracked species with a conservation status rank of S1, S2 and S3 may be significant wildlife habitat and should be assessed accordingly.

Water

The Ministry of Natural Resources and Forestry (MNRF) has established timing window guidelines to restrict in-water work related to an activity during certain periods. These restricted periods are identified in order to protect fish from impacts of works or undertakings in and around water during spawning and other critical life stages. A suite of appropriate measures should be taken for projects involving in-water works to minimize and mitigate impacts to fish, water quality and fish habitat, and include:

- avoiding in-water works during the timing guidelines;
- installation of sediment/erosion control measures;
- avoiding the removal, alteration, or covering of substrates used for fish spawning, feeding, over-wintering or nursery areas; and
- debris control measures to manage falling debris (e.g. spalling).

Timing guidelines are based on species' presence and are therefore subject to change if new information becomes available. Timing guidelines in Kemptville District are:

Waterbody (and applicable geography or Fisheries Management Zone)	Timing Guidelines (no in-water works)
○ St. Lawrence River (FMZ 20)	March 15 – July 15 (Spring spawning species)
○ Ottawa River – Lac Des Chats (FMZ 12)	October 1 to July 15 (Spring and fall spawning species, including Lake Trout and Lake Whitefish)
○ Ottawa River – Lac Deschenes (FMZ 12)	October 15 to July 15 (Spring and fall spawning species, including Cisco)
○ Ottawa River – Lac Dollard des Ormeaux (FMZ 12)	January 1 to July 15 (Winter and spring spawning species, including Burbot)
○ Big Rideau Lake (South Burgess, North Burgess, Bastard and South Elmsley Twps) ○ Charleston Lake (Lansdowne and Escott Twps) ○ Crow Lake (South Crosby Twp)	October 1 to June 30 (Spring and fall spawning species, including Lake Trout)
○ Bass Lake (South Elmsley Twp) ○ Lower Rideau Lake (South Elmsley Twp) ○ Bob's Lake (South Sherbrooke Twp) ○ Christie Lake (South Sherbrooke Twp) ○ Dalhousie Lake (Dalhousie Twp) ○ Davern Lake (South Sherbrooke Twp) ○ Farren Lake (South Sherbrooke Twp)	October 15 to June 30 (Spring and Fall spawning species, including Lake Whitefish and Cisco)

3

○ Grippen Lake (Leeds Twp) ○ Indian Lake (South Crosby Twp) ○ Little Long Lake (Lansdowne Twp) ○ Millpond Lake (South Burgess) ○ Otter Lake (South Elmsley, South Burgess and Bastard Twps) ○ Otty Lake (North Burgess and North Elmsley Twps) ○ Pike Lake (North Burgess Twp) ○ Silver Lake (South Sherbrooke Twp) ○ Redhorse Lake (Lansdowne Twp) ○ Tay River (South Sherbrooke, Bathurst, Drummond and North Elmsley Twps) ○ Wolfe Lake (North Crosby Twp)	
○ Bennett Lake (Bathurst Twp) ○ Crosby Lake (North Crosby Twp) ○ Gananoque River (Leeds Twp) ○ Lac Georges (Plantagenet and Alfred Twps) ○ Gillies Lake (Lanark Twp) ○ Little Crosby Lake (North Crosby Twp) ○ McLaren Lake (North Burgess Twp) ○ Mississippi Lake (Drummond, Beckwith and Ramsay Twps) ○ Mississippi River (Beckwith, Ramsay, Pakenham and Fitzroy Twps) ○ Raisin River below Martintown dam (Charlottenburgh Twp) ○ Rideau River (Wolford, Oxford, Montague, Marlborough, South Gower, North Gower, Osgood, Nepean and Gloucester Twps) ○ South Lake (Leeds Twp) ○ South Nation River below Plantagenet weir (Plantagenet Twp) ○ Upper Rideau Lake (North Crosby Twp) ○ Westport Sand Lake (North Crosby Twp)	January 1 – June 30 (Winter and spring spawning species, including Burbot)
○ Small rivers and streams (denoted on 1:50,000 National Topographic System maps as being one lined) ○ All other waterbodies in FMZ 18	March 15 to June 30 (Spring spawning species)

**Please note: Additional timing restrictions may apply as they relate to endangered and threatened species for works in both water and wetland areas. Timing restrictions are subject to change, depending on species found in a given waterbody.*

In addition to adhering to the above timing guidelines, a work permit from the MNRF may be required depending on the nature and scope of work. No encroachment on the bed or banks of a waterbody/watercourse (e.g. abutments, embankments, etc.) is permitted without MNRF approval. Additional information regarding work permits may be found online at https://www.ontario.ca/page/crown-land-work-permits#section-2.

The MNRF does not have any water quality or quantity data available. We recommend that the Ministry of the Environment and Climate Change be contacted for such data along with the local Conservation Authority. For further information regarding fish habitat and protocols, please refer to the following interagency, document, *Fish Habitat Referral Protocol for* Ontario at: http://www.web2.mnr.gov.on.ca/mnr/ebr/fish_hab_referral/protocol_en.pdf.

Additional approvals and permits may be required under the Fisheries Act and the Species at Risk Act; please contact Fisheries and Oceans Canada to determine requirements and next steps. There may also be approvals required by the local Conservation Authority or Transport Canada,

and these agencies should be contacted directly to determine requirements. As the MNRF is responsible for the management of provincial fish populations, we request ongoing involvement in such discussions in order to ensure population conservation.

Species at Risk
A review of the Natural Heritage Information Centre (NHIC) and internal records indicate that there is a potential for the following threatened (THR) and/or endangered (END) species on the site or in proximity to it:

- American Eel (END)
- Bank Swallow (THR)
- Barn Swallow (THR)
- Blanding's Turtle (THR)
- Bobolink (THR)
- Butternut (END)
- Eastern Meadowlark (THR)
- Rusty-patched Bumble Bee (END)

All endangered and threatened species receive individual protection under section 9 of the ESA and receive general habitat protection under Section 10 of the ESA, 2007. Thus any potential works should consider disturbance to the individuals as well as their habitat (e.g. nesting sites). General habitat protection applies to all threatened and endangered species. Note some species in Kemptville District receive regulated habitat protection. The habitat of these listed species is protected from damage and destruction and certain activities may require authorization(s) under the ESA. For more on how species at risk and their habitat is protected, please see: https://www.ontario.ca/page/how-species-risk-are-protected.

If the proposed activity is known to have an impact on any endangered or threatened species at risk (SAR), or their habitat, an authorization under the ESA may be required. It is recommended that MNRF Kemptville be contacted prior to any activities being carried out to discuss potential survey protocols to follow during the early planning stages of a project, as well as mitigation measures to avoid contravention of the ESA. Where there is potential for species at risk or their habitat on the property, an Information Gathering Form should be submitted to Kemptville MNRF at sar.kemptville@ontario.ca.

The Information Gathering Form may be found here:
http://www.forms.ssb.gov.on.ca/mbs/ssb/forms/ssbforms.nsf/FormDetail?OpenForm&ACT=RDR&TAB=PROFILE&ENV=WWE&NO=018-0180E

For more information on the ESA authorization process, please see:
https://www.ontario.ca/page/how-get-endangered-species-act-permit-or-authorization

One or more special concern species has been documented to occur either on the site or nearby. Species listed as special concern are not protected under the ESA, 2007. However, please note that some of these species may be protected under the Fish and Wildlife Conservation Act and/or

Migratory Birds Convention Act. Again, the habitat of special concern species may be significant wildlife habitat and should be assessed accordingly. Species of special concern for consideration:

- Canada Warbler (SC)
- Monarch (SC)
- Peregrine Falcon (SC)
- Short-eared Owl (SC)
- Snapping Turtle (SC)
- Wood Thrush (SC)

If any of these or any other species at risk are discovered throughout the course of the work, and/or should any species at risk or their habitat be potentially impacted by on site activities, MNRF should be contacted and operations be modified to avoid any negative impacts to species at risk or their habitat until further direction is provided by MNRF.

Breeding birds may be present on site. The Migratory Birds Convention Act and the ESA may be triggered if these birds are affected. Negative impacts may be avoided by clearing vegetation outside of the breeding bird season (April 15th – August 15th) or by surveys conducted by a qualified professional to ensure no breeding birds are present before clearing of vegetation.

No work should occur in turtle overwintering habitat from October 16th – March 15th in order to protect hibernating turtles. Turtles can be found travelling on land during the active season (April 1st – October 30th). If the proposed works are to occur during these times, the MNRF recommends fencing off the site prior to work being undertaken in order to prevent turtles from accessing the site.

Please note that information regarding species at risk is based largely on documented occurrences and does not necessarily include an interpretation of potential habitat within or in proximity to the site in question. Although this data represents the MNRF's best current available information, it is important to note that a lack of information for a site does not mean that additional features and values are not present. It is the responsibility of the proponent to ensure that species at risk are not killed, harmed, or harassed, and that their habitat is not damaged or destroyed through the activities carried out on the site.

The MNRF continues to strongly encourage ecological site assessments to determine the potential for SAR habitat and occurrences. When a SAR or potential habitat for a SAR does occur on a site, it is recommended that the proponent contact the MNRF for technical advice and to discuss what activities can occur without contravention of the Act. For specific questions regarding the Endangered Species Act (2007) or SAR, please contact MNRF Kemptville District at sar.kemptville@ontario.ca.

The approvals processes for a number of activities that have the potential to impact SAR or their habitat have recently changed. For information regarding regulatory exemptions and associated online registration of certain activities, please refer to the following website: https://www.ontario.ca/page/how-get-endangered-species-act-permit-or-authorization.

Please note: The advice in this letter may become invalid if:

- The Committee on the Status of Species at Risk in Ontario (COSSARO) re-assesses the status of the above-named species OR adds a species to the SARO List such that the section 9 and/or 10 protection provisions apply to those species; or
- Additional occurrences of species are discovered on or in proximity to the site.

This letter is valid until: Wed. Jun 26, 2019

For any questions or concerns, please do not hesitate to contact me.

Sincerely,

Jane Devlin
Management Biologist
jane.devlin@ontario.ca

Encl.\
-ESA Infosheet
-NHIC/LIO Infosheet

7

Figure A-1: OP Schedule A

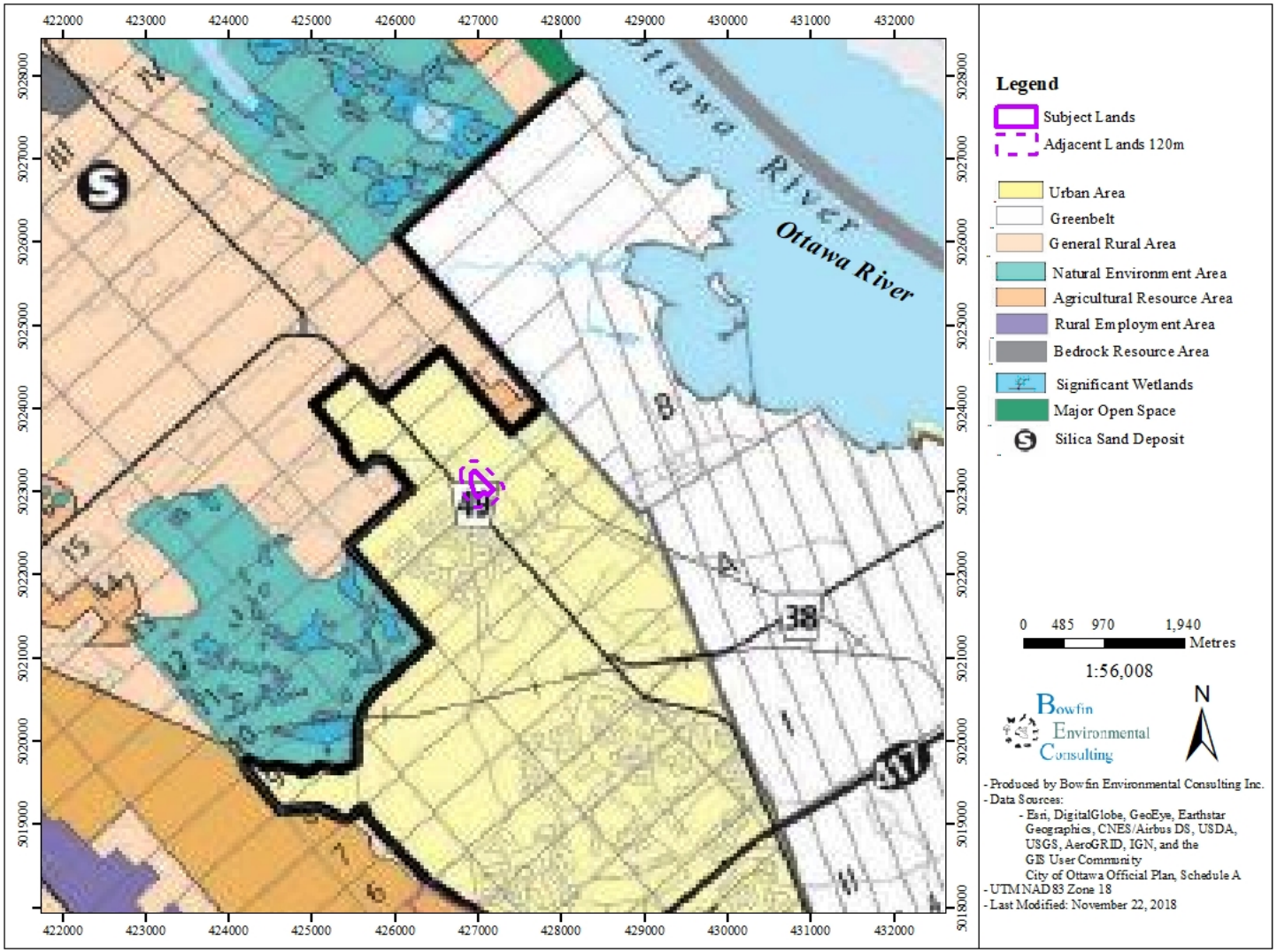

Figure A-2: OP Schedule B

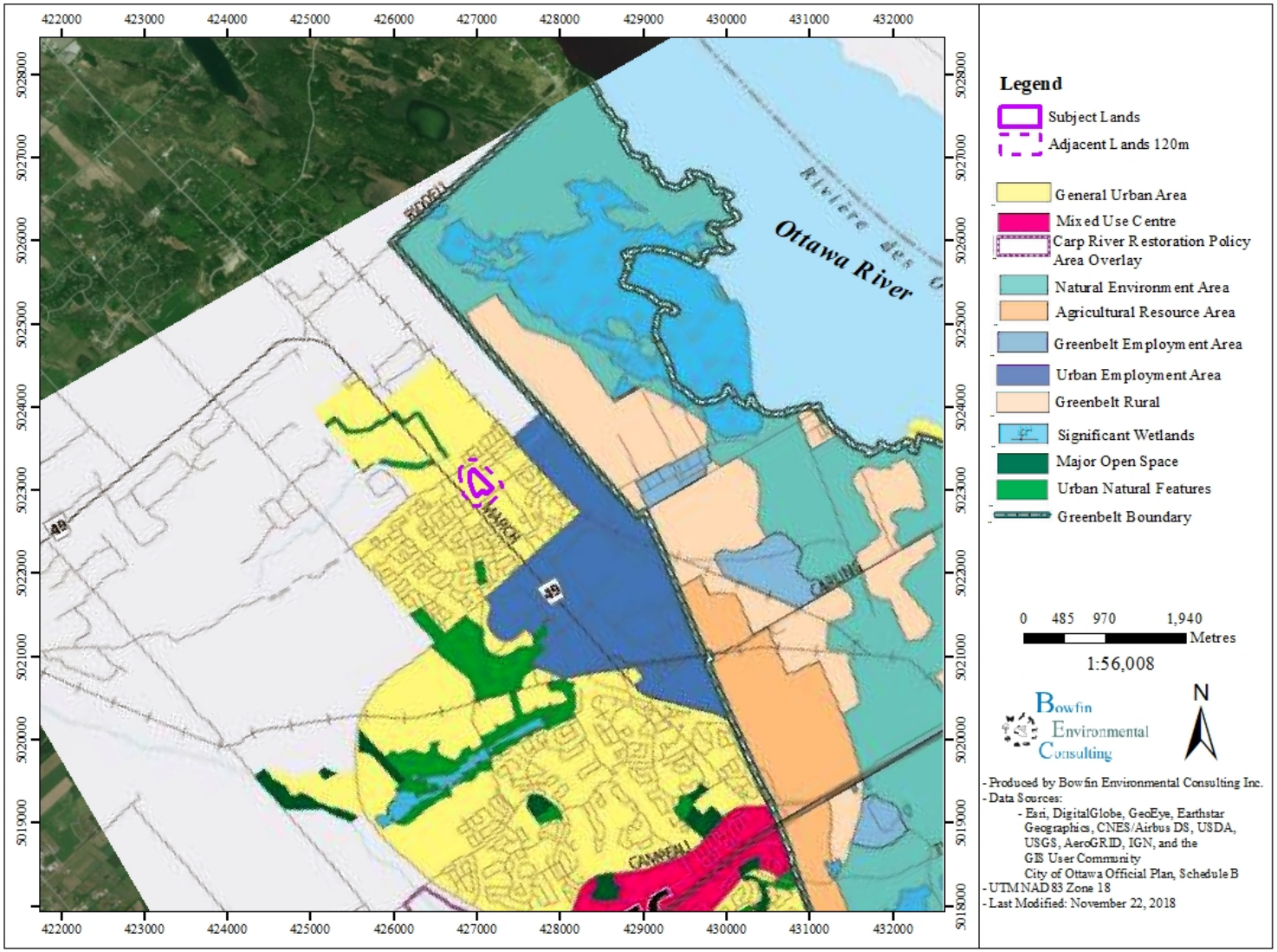

Figure A-3: OP Schedule K

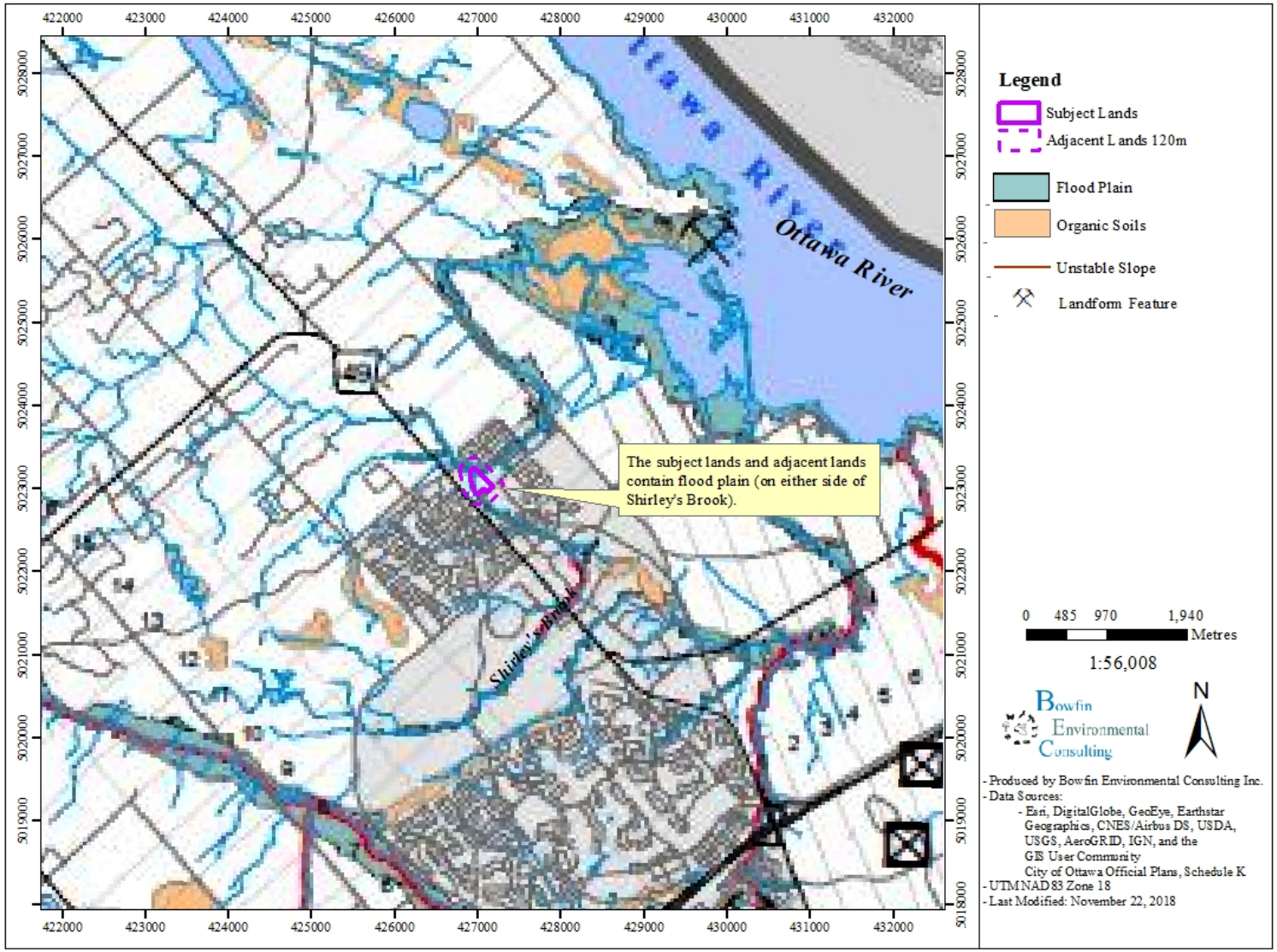

Figure A-4: Schedule L3 (West)

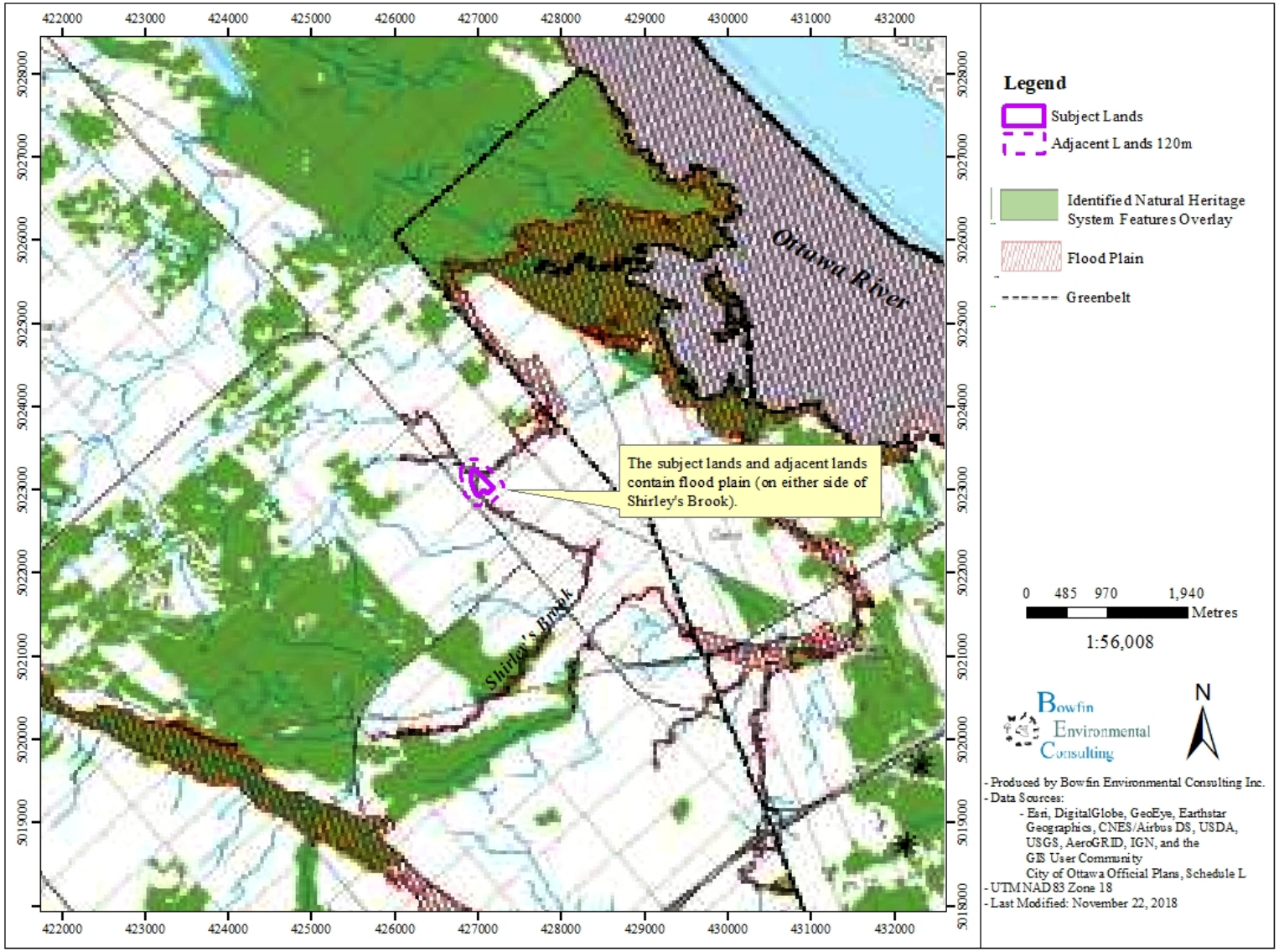

Table A-1: Potential Bird Species based on Atlas of Breeding Birds of Ontario

Region 24 10 km squares: 18VR21, 18VR23, 18VR31, 18VR32.

Common Name	Scientific Name	ABBO Category	SRank	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status
Canada Goose	*Branta canadensis*	Confirmed	S5		
Wood Duck	*Aix sponsa*	Confirmed	S5		
American Wigeon	*Anas americana*	Possible	S4		
American Black Duck	*Anas rubripes*	Confirmed	S4		
Mallard	*Anas platyrhynchos*	Confirmed	S5		
Green-winged Teal	*Anas crecca*	Possible	S4		
Ring-necked Duck	*Aythya collaris*	Probable	S5		
Hooded Merganser	*Lophodytes cucullatus*	Confirmed	S5B, S5N		
Ruffed Grouse	*Bonasa umbellus*	Probable	S4		
Wild Turkey	*Meleagris gallopava*	Confirmed	S5		
Common Loon	*Gavia immer*	Probable	S5B, S5N		
Pied-billed Grebe	*Podilymbus podiceps*	Confirmed	S4B, S4N		
American Bittern	*Botaurus lentiginosus*	Confirmed	S4B		
Least Bittern	*Ixobrychus exilis*	Probable	S4B	THR	THR
Great Blue Heron	*Ardea herodias*	Possible	S4		
Green Heron	*Butorides virescens*	Confirmed	S4B		
Turkey Vulture	*Cathartes aura*	Confirmed	S5B		
Osprey	*Pandion haliaetus*	Confirmed	S5B		
Northern Harrier	*Circus cyaneus*	Confirmed	S4B		
Sharp-shinned Hawk	*Accipiter striatus*	Probable	S5		
Cooper's Hawk	*Accipiter cooperii*	Confirmed	S4		
Northern Goshawk	*Accipiter gentilis*	Confirmed	S4		
Red-shouldered Hawk	*Buteo lineatus*	Probable	S4B		SC
Red-tailed Hawk	*Buteo jamaicensis*	Confirmed	S5		
American Kestrel	*Falco sparverius*	Possible	S4		
Merlin	*Falco columbarius*	Confirmed	S5B		
Virginia Rail	*Rallus limicola*	Confirmed	S5B		
Sora	*Porzana carolina*	Confirmed	S4B		
Common Gallinule	*Gallinula galeata*	Probable	S4B		
American Coot	*Fulica americana*	Confirmed	S4B		
Killdeer	*Charadrius vociferus*	Confirmed	S5B, S5N		
Spotted Sandpiper	*Actitis macularia*	Confirmed	S5		
Upland Sandpiper	*Bartramia longicauda*	Probable	S4B		
Common Snipe	*Gallinago delicata*	Probable	S5B		

Common Name	Scientific Name	ABBO Category	SRank	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status
American Woodcock	*Scolopax minor*	Confirmed	S4B		
Black Tern	*Chlidonias niger*	Confirmed	S3B	SC	
Common Tern	*Sterna hirundo*	Confirmed	S4B		
Rock Pigeon	*Columba livia*	Confirmed	SNA		
Mourning Dove	*Zenaida macroura*	Confirmed	S5		
Yellow-billed Cuckoo	*Coccyzus americanus*	Possible	S4B		
Black-billed Cuckoo	*Coccyzus erythropthalmus*	Probable	S5B		
Eastern Screech-Owl	*Megascops asio*	Confirmed	S4		
Great Horned Owl	*Bubo virginianus*	Confirmed	S4		
Barred Owl	*Strix varia*	Confirmed	S5		
Common Nighthawk	*Chordeiles minor*	Possible	S4B	SC	THR
Eastern Whip-poor-will	*Antrostomus vociferus*	Possible	S4B		
Chimney Swift	*Chaetura pelagica*	Confirmed	S4B, S4N	THR	THR
Ruby-throated Hummingbird	*Archilochus colubris*	Probable	S5B		
Belted Kingfisher	*Ceryle alcyon*	Confirmed	S4B		
Yellow-bellied Sapsucker	*Sphyrapicus varius*	Confirmed	S5B		
Downy Woodpecker	*Picoides pubescens*	Confirmed	S5		
Hairy Woodpecker	*Picoides villosus*	Confirmed	S5		
Northern Flicker	*Colaptes auratus*	Confirmed	S4B		
Pileated Woodpecker	*Dryocopus pileatus*	Confirmed	S5		
Eastern Wood-Pewee	*Contopus virens*	Confirmed	S4B	SC	SC
Alder Flycatcher	*Empidonax alnorum*	Probable	S5B		
Willow Flycatcher	*Empidonax traillii*	Possible	S5B		
Least Flycatcher	*Empidonax minimus*	Probable	S4B		
Eastern Phoebe	*Sayornis phoebe*	Confirmed	S5B		
Great Crested Flycatcher	*Myiarchus crinitus*	Confirmed	S4B		
Eastern Kingbird	*Tyrannus tyrannus*	Confirmed	S4B		
Warbling Vireo	*Vireo gilvus*	Confirmed	S5B		
Red-eyed Vireo	*Vireo olivaceus*	Confirmed	S5B		
Blue Jay	*Cyanocitta cristata*	Confirmed	S5		
American Crow	*Corvus brachyrhynchos*	Confirmed	S5B		
Common Raven	*Corvus corax*	Confirmed	S5		
Horned Lark	*Eremophila alpestris*	Possible	S5B		
Purple Martin	*Progne subis*	Confirmed	S4B		
Tree Swallow	*Tachycineta bicolor*	Confirmed	S4B		

Common Name	Scientific Name	ABBO Category	SRank	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	Confirmed	S4B		
Bank Swallow	*Riparia riparia*	Confirmed	S4B	THR	THR
Cliff Swallow	*Petrochelidon pyrrhonota*	Confirmed	S4B		
Barn Swallow	*Hirundo rustica*	Confirmed	S4B	THR	THR
Black-capped Chickadee	*Poecile atricapilla*	Confirmed	S5		
Red-breasted Nuthatch	*Sitta canadensis*	Confirmed	S5		
White-breasted Nuthatch	*Sitta carolinensis*	Confirmed	S5		
Brown Creeper	*Certhia familiaris*	Confirmed	S5B		
House Wren	*Troglodytes aedon*	Probable	S5B		
Winter Wren	*Troglodytes troglodytes*	Probable	S5B		
Sedge Wren	*Cistothorus platensis*	Probable	S4B		
Marsh Wren	*Cistothorus palustris*	Probable	S4B		
Golden-crowned Kinglet	*Regulus satrapa*	Possible	S5B		
Eastern Bluebird	*Sialia sialis*	Confirmed	S5B		
Veery	*Catharus fuscescens*	Probable	S4B		
Hermit Thrush	*Catharus guttatus*	Probable	S5B		
Wood Thrush	*Hylocichla mustelina*	Confirmed	S4B	SC	THR
American Robin	*Turdus migratorius*	Confirmed	S5B		
Gray Catbird	*Dumetella carolinensis*	Confirmed	S4B		
Northern Mockingbird	*Mimus polyglottos*	Possible	S4		
Brown Thrasher	*Toxostoma rufum*	Confirmed	S4B		
European Starling	*Sturnus vulgaris*	Confirmed	SNA		
Cedar Waxwing	*Bombycilla cedrorum*	Confirmed	S5B		
Blue-winged Teal	*Anas discors*	Confirmed	S4		
Nashville Warbler	*Vermivora ruficapilla*	Confirmed	S5B		
Yellow Warbler	*Dendroica petechia*	Confirmed	S5B		
Chestnut-sided Warbler	*Dendroica pensylvanica*	Confirmed	S5B		
Magnolia Warbler	*Dendroica magnolia*	Probable	S5B		
Black-throated Blue Warbler	*Dendroica caerulescens*	Possible	S5B		
Yellow-rumped Warbler	*Dendroica coronata*	Probable	S5B		
Blackburnian Warbler	*Dendroica fusca*	Possible	S5B		
Pine Warbler	*Dendroica pinus*	Probable	S5B		
Black-and-white Warbler	*Mniotilta varia*	Confirmed	S5B		
American Redstart	*Setophaga ruticilla*	Confirmed	S5B		
Ovenbird	*Seiurus aurocapillus*	Confirmed	S4B		

Common Name	Scientific Name	ABBO Category	SRank	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status
Northern Waterthrush	*Seiurus noveboracensis*	Probable	S5B		
Mourning Warbler	*Oporornis philadelphia*	Possible	S4B		
Common Yellowthroat	*Geothlypis trichas*	Confirmed	S5B		
Eastern Towhee	*Pipilo erythrophthalmus*	Confirmed	S4B		
Chipping Sparrow	*Spizella passerina*	Confirmed	S5B		
Field Sparrow	*Spizella pusilla*	Confirmed	S4B		
Vesper Sparrow	*Pooecetes gramineus*	Possible	S4B		
Savannah Sparrow	*Passerculus sandwichensis*	Confirmed	S4B		
Grasshopper Sparrow	*Ammodramus savannarum*	Possible	S4B	SC	SC
Song Sparrow	*Melospiza melodia*	Confirmed	S5B		
Swamp Sparrow	*Melospiza georgiana*	Confirmed	S5B		
White-throated Sparrow	*Zonotrichia albicollis*	Confirmed	S5B		
Dark-eyed Junco	*Junco hyemalis*	Possible	S5B		
Scarlet Tanager	*Piranga olivacea*	Confirmed	S4B		
Northern Cardinal	*Cardinalis*	Confirmed	S5		
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	Confirmed	S4B		
Indigo Bunting	*Passerina cyanea*	Probable	S4B		
Bobolink	*Dolichonyx oryzivorus*	Confirmed	S4B	THR	THR
Red-winged Blackbird	*Agelaius phoeniceus*	Confirmed	S4		
Eastern Meadowlark	*Sturnella magna*	Confirmed	S4B	THR	THR
Common Grackle	*Quiscalus quiscula*	Confirmed	S5B		
Brown-headed Cowbird	*Molothrus ater*	Confirmed	S4B		
Baltimore Oriole	*Icterus galbula*	Confirmed	S4B		
Purple Finch	*Carpodacus purpureus*	Confirmed	S4B		
House Finch	*Carpodacus mexicanus*	Confirmed	SNA		
Red Crossbill	*Loxia curvirostra*	Possible	S4B		
Pine Siskin	*Carduelis pinus*	Possible	S4B		
American Goldfinch	*Carduelis tristis*	Confirmed	S5B		
Evening Grosbeak	*Coccothraustes vespertinus*	Confirmed	S4B		
House Sparrow	*Passer domesticus*	Confirmed	SNA		

Status updated March 22, 2018

SRANK DEFINITIONS

S2 Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.

S3 Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

S4 Apparently Secure, Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5 Secure, Common, widespread, and abundant in the nation or state/province.
SNA Not Applicable, A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
S#S# Range Rank, A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
S#B Breeding
S#N Non-Breeding

SARO STATUS DEFINITIONS
THR Threatened: A species that is at risk of becoming endangered in Ontario if limiting factors are not reversed.
SC Special Concern: A species with characteristics that make it sensitive to human activities or natural events.

SARA STATUS DEFINITIONS
THR Threatened, a wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.
SC Special Concern, a wildlife species that may become threatened or endangered because of a combination of biological characteristics and identified threats.

Appendix B: Observed Species Lists

Table B-1: Observed Plant List

Common Name	Scientific Name	SRank	Provincial Status (SARO)	Federal Status (SARA)	Coefficient of Conservatism
Horsetail	*Equisetum sp.*				
Eastern White Cedar	*Thuja occidentalis*	S5			4
White Spruce	*Picea glauca*	S5			6
Red Pine	*Pinus resinosa*	S5			8
Eastern White Pine	*Pinus strobus*	S5			4
Scots Pine	*Pinus sylvestris*	SNA			
Manitoba Maple	*Acer negundo*	S5			0
Red Maple	*Acer rubrum*	S5			4
Sugar Maple	*Acer saccharum*	S5			4
Wild Carrot	*Daucus carota*	SNA			
Wild Parsnip	*Pastinaca sativa*	SNA			
Common Milkweed	*Asclepias syriaca*	S5			0
Annual Ragweed	*Ambrosia artemisiifolia var. elatior*	S5			0
Common Burdock	*Arctium minus ssp. minus*	SNA			
Aster sp.	*Aster sp.*				
Devil's Beggar-ticks	*Bidens frondosa*	S5			3
Ox-eye Daisy	*Chrysanthemum leucanthemum*	SNA			
Canada Thistle	*Cirsium arvense*	SNA			
Daisy Fleabane	*Erigeron annuus*	S5			0
Spotted Joe-pye Weed	*Eutrochium maculatum var. foliosum*	S5			3
Field Hawkweed	*Hieracium caespitosum ssp. caespitosum*	SNA			
Canada Goldenrod	*Solidago canadensis*	S5			1
Early Goldenrod	*Solidago juncea*	S5			3
Rough Goldenrod	*Solidago rugosa ssp. rugosa*	S5			4
Common Sow-thistle	*Sonchus oleraceus*	SNA			
Common Tansy	*Tanacetum vulgare*	SNA			
Meadow Goat's-beard	*Tragopogon pratensis ssp. pratensis*	SNA			
Spotted Jewelweed	*Impatiens capensis*	S5			4
White Birch	*Betula papyrifera*	S5			
Mustard sp.	*Brassica sp.*				
Tartarian Honeysuckle	*Lonicera tatarica*	SNA			
Bladder Campion	*Silene latifolia*	SNA			
Field Bindweed	*Convolvulus arvensis*	SNA			
Red Clover	*Trifolium pratense*	SNA			

Common Name	Scientific Name	SRank	Provincial Status (SARO)	Federal Status (SARA)	Coefficient of Conservatism
Cow Vetch	*Vicia cracca*	SNA			
Bur Oak	*Quercus macrocarpa*	S5			5
Prickly Gooseberry	*Ribes cynosbati*	S5			4
Common St. John's-wort	*Hypericum perforatum*	SNA			
Purple Loosestrife	*Lythrum salicaria*	SNA			
White Ash	*Fraxinus americana*	S4			4
Green Ash	*Fraxinus pennsylvanica*	S4			3
Upright Yellow Wood-sorrel	*Oxalis stricta*	S5			0
Common Plantain	*Plantago major*	SNA			
Lady’s-thumb	*Polygonum persicaria*	SNA			
Canada Anemone	*Anemone canadensis*	S5			3
Tall Meadow-rue	*Thalictrum pubescens*	S5			5
Common Buckthorn	*Rhamnus cathartica*	SNA			
Glossy Buckthorn	*Rhamnus frangula*	SNA			
Common Strawberry	*Fragaria virginiana ssp. virginiana*	S5			2
Black Cherry	*Prunus serotina*	S5			3
Common Blackberry	*Rubus allegheniensis*	S5			2
Wild Red Raspberry	*Rubus idaeus ssp. strigosus*	S5			0
Smooth Bedstraw	*Galium mollugo*	SNA			
Eastern Cottonwood	*Populus deltoides ssp. deltoides*	SU			4
Largetooth Aspen	*Populus grandidentata*	S5			5
Trembling Aspen	*Populus tremuloides*	S5			
Willow sp.	*Salix sp.*				
Bebb's Willow	*Salix bebbiana*	S5			4
Crack Willow	*Salix fragilis*	SNA			
American Basswood	*Tilia americana*	S5			4
American Elm	*Ulmus americana*	S5			3
European Stinging Nettle	*Urtica dioica ssp. dioica*	SNA			
Virginia Creeper	*Parthenocissus inserta*	S5			3
Riverbank Grape	*Vitis riparia*	S5			0
Canada Waterweed	*Elodea canadensis*	S5			4
Tiger Lily	*Lilium lancifolium*	SNA			
Grass Family	*Poaceae*				
Smooth Brome	*Bromus inermis ssp. inermis*	SNA			
Orchard Grass	*Dactylis glomerata*	SNA			
Reed Canary Grass	*Phalaris arundinacea*	S5			0
Timothy	*Phleum pratense*	SNA			
Pondweed spp.	*Potamogeton sp.*				

Common Name	Scientific Name	SRank	Provincial Status (SARO)	Federal Status (SARA)	Coefficient of Conservatism
Curly Pondweed	*Potamogeton crispus*	SNA			

Updated September 17, 2018

SRANK DEFINITIONS

S4 Apparently Secure, Uncommon but not rare; some cause for long-term concern due to declines or other factors.

S5 Secure, Common, widespread, and abundant in the nation or state/province.

SU Unrankable, Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.

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

Coefficient of conservatism ranking criteria

0 Obligate to ruderal areas.
1 Occurs more frequently in ruderal areas than natural areas.
2 Facultative to ruderal and natural areas.
3 Occurs less frequent in ruderal areas than natural areas.
4 Occurs much more frequently in natural areas than ruderal areas.
5 Obligate to natural areas (quality of area is low).
6 Weak affinity to high-quality natural areas.
7 Moderate affinity to high-quality natural areas.
8 High affinity to high-quality natural areas.

Table B-2: Wildlife Observations List

Common Name	Scientific Name	SRank	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status
AMPHIBIANS				
American Toad	*Bufo americanus*	S5		
Green Frog	*Rana clamitans*	S5		
REPTILES				
Red-Eared Slider	*Trachemys scripta*	SNA		
BIRDS				
Canada Goose	*Branta canadensis*	S5		
Mallard	*Anas platyrhynchos*	S5		
Solitary Sandpiper	*Tringa solitaria*	S4		
Mourning Dove	*Zenaida macroura*	S5		
Black-billed Cuckoo	*Coccyzus erythropthalmus*	S5B		
Northern Flicker	*Colaptes auratus*	S4B		
Pileated Woodpecker	*Dryocopus pileatus*	S5		
Eastern Wood-Pewee	*Contopus virens*	S4B	SC	SC
Eastern Phoebe	*Sayornis phoebe*	S5B		
Great Crested Flycatcher	*Myiarchus crinitus*	S4B		
Eastern Kingbird	*Tyrannus*	S4B		
Warbling Vireo	*Vireo gilvus*	S5B		
Red-eyed Vireo	*Vireo olivaceus*	S5B		
Blue Jay	*Cyanocitta cristata*	S5		
Common Raven	*Corvus corax*	S5		
Barn Swallow	*Hirundo rustica*	S4B	THR	THR
Black-capped Chickadee	*Poecile atricapilla*	S5		
American Robin	*Turdus migratorius*	S5B		
House Wren	*Troglodytes aedon*	S5B		
Gray Catbird	*Dumetella carolinensis*	S4B		
European Starling	*Sturnus vulgaris*	SNA		
Cedar Waxwing	*Bombycilla cedrorum*	S5B		
Yellow Warbler	*Dendroica petechia*	S5B		
Yellow-rumped Warbler	*Dendroica coronata*	S5B		
Black-throated Green Warbler	*Dendroica virens*	S5B		
American Redstart	*Setophaga ruticilla*	S5B		
Common Yellowthroat	*Geothlypis trichas*	S5B		
Field Sparrow	*Spizella pusilla*	S4B		

Common Name	Scientific Name	SRank	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status
Vesper Sparrow	*Pooecetes gramineus*	S4B		
Song Sparrow	*Melospiza melodia*	S5B		
Northern Cardinal	*Cardinalis*	S5		
Indigo Bunting	*Passerina cyanea*	S4B		
Red-winged Blackbird	*Agelaius phoeniceus*	S4		
Common Grackle	*Quiscalus quiscula*	S5B		
Baltimore Oriole	*Icterus galbula*	S4B		
American Goldfinch	*Carduelis tristis*	S5B		
House Finch	*Carpodacus mexicanus*	SNA		
MAMMALS				
Grey Squirrel	*Sciurus carolinensis*	S5		
Raccoon	*Procyon lotor*	S5		
White-tailed Deer	*Odocoileus virginianus*	S5		

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Appendix C: Species at Risk Hand-Out

The following table provides photographs and general descriptions of potential species at risk that may occur within the project area and information on what actions to take should any of these species be observed.

Endangered and Threatened species are protected and cannot be harmed, harassed or killed and in some cases their habitats are also protected. These individuals will only be handled by qualified person and only if the individual is in imminent threat of harm. An authorization under the ESA 2007 would be required to handle individuals that are not in imminent threat of harm.

For all Endangered or Threatened species found on-site any activity which may cause harm to the individual will be stopped and the site supervisor will be contact immediately for further instructions.

Photograph	Description and Status:	Action to be taken:
 http://www.rom.on.ca/ontario/risk.php?doc_type=fact&lang=&id=311	**American Eel** • Dark coloured elongated fish, • Larger individuals can be anywhere from 20 cm to around 100 cm long **ENDANGERED**	• Stop any activity that may cause harm to these species and contact supervisor. • Individuals should only be encouraged to move if it is in immediate harm's way. These animals can only be handled by a qualified biologist when it is in imminent threat of harm, otherwise an ESA 2007 authorization will be required.

Photograph	Description	Action to be Taken
 http://birdweb.org/Birdweb	**Barn Swallow** • Swallow with a long tail which is deeply forked in adult males • An orange front (no white on the forehead) • Narrow pointed wings • Juveniles have a white band across the top of the tail. THREATENED	• Stop any activity that may cause harm to this specie and contact project Supervisor. • Individuals should only be encouraged to move if it is in immediate harm's way. These animals can only be handled by a qualified biologist when it is in imminent threat of harm, otherwise an ESA 2007 authorization will be required.

Photograph	Description	Action to be Taken
 Photo: Royal Ontario Museum website http://www.rom.on.ca/ontario/risk.php	**Blanding's Turtle** • Medium sized turtle (12.5-28 cm) • Bright yellow on chin and throat • Shall is dark light-coloured sports or lines THREATENED	• Take a photograph and record the date observed, name of person who observed it • If turtle is located within the construction site, then construction activities that may impact it must STOP until the turtle is clear of the site. • Contact supervisor