

**Charter Development LP's West Ridge Trailside Neighbourhood Plan
Summary of Environmental Impact Assessment and Peer Review Sequence of Activities**

Date	Undertaking	EIS Study Conclusions	Peer Review Comments	Appended Documentation
March 29, 2018	Meeting with Geri Poisson (Beacon) and Paul Neals (Orion) representing Charter, and Al Shaw (Riverstone) City of Orillia peer reviewer to discuss scope of work.	Not applicable	Standard EIS field studies minus four season vegetation survey and amphibian survey because wetlands being protected and ELC classifications sufficient to assess SAR and wildlife habitat	Appendix "A" Riverstone letter to Jill Lewis with approved terms of reference dated April 20, 2018.
April 2019	EIS submission by Beacon	<ul style="list-style-type: none"> - Wetland features protected, proposed 10m buffer - Drainage swales on west side contribute to fish habitat, DFO review required - Potential bat habitat in isolated south woodlot, snag survey/habitat assessment required prior to lands being developed - Significant wildlife habitat in wetland and woodlands retained on-site - Butternut along edge of south woodlot, will require evaluation prior to development of adjacent lands - Significant woodlands retained - Compliance with PPS and City OP natural heritage policies 		Appendix "B" Environmental Impact Study West Orillia Neighbourhood Plan Area, City of Orillia, prepared by Beacon Environmental, April 2019.
August 8, 2019	Riverstone peer review comments on Beacon's April 2019 EIS	Not applicable	<ul style="list-style-type: none"> - Agreed Butternut trees will be assessed when adjacent lands are to be developed - Wetland proposed 10m buffer requires justification to demonstrate no negative impact on feature or its functions. Industry standard is 30m, City OP has no guideline on wetland buffer, buffer width to be determined through EIS - Swale B assessment by Department of Fisheries and Oceans that its removal will not result in a serious harm to fish and works are approved under Letter of Advice accepted - Site to be assessed for Significant Wildlife Habitat potential 	Appendix "C" Riverstone email to Paul Neals August 8, 2019. Response in July 22, 2019 email, bullet is Riverstone original comment, Response is Charter comment, RS Response in red is Riverstone response DFO Letter of Advice, June 18, 2019

October 1, 2019	Riverstone peer review comments on issues identified in April 2018 EIS	Not applicable	<ul style="list-style-type: none"> - Riverstone confident if evaluated the wetland would be designated a provincially significant wetland, therefore would suggest a 30m buffer. - Suggest a raised walkway through the wetland should be considered to permit pedestrian movement through the wetland 	<p style="text-align: center;">Appendix "D"</p> <p>Riverstone response in October 1, 2019 email from Al Shaw to Paul Neals</p>
December 20, 2019	Revised Beason EIS to address Riverstone's August 8 th and October 1 st , 2019 peer review comments	<ul style="list-style-type: none"> - Butternuts along edge of south woodlot will be reassessed to determine their health and retainability under the provincial guideline prior to site plan application for the adjacent lands - Wetland vegetation communities along edge of wetlands dominated by cattails and reed canary grass not sensitive community that require greater than 10m buffer. More sensitive wetland area in interior have greater than 30m buffer. - DFO letter of advice confirms acceptance of Swale A and B removal - Significant Wildlife Habitat protected within northern wetland block, tree removal in southern woodlot minor wildlife habitat function will be retained 		<p style="text-align: center;">Appendix "E"</p> <p>Environmental Impact Study West Orillia Neighbourhood Plan Area, City of Orillia, prepared by Beacon Environmental, April 2019. Revised December 2019.</p>
April 28, 2020	Orion Environmental response to Jill Lewis on Riverstone's March 13, 2020 peer review comments	<ul style="list-style-type: none"> - Agree with holding provision on potential future lots adjacent to southern woodlot within 50m of the Butternut trees until they are evaluated for retainability. Trees will be assessed prior to formal draft plan submission - Disagree with suggested 30m buffer because all significant wildlife habitat functions are interior to the wetland 150m from the proposed development limit and buffer to forested wetland in excess of 30m for 80% of the wetland boundary and 10m from remaining 20%. Protection of the significant wetland features and functions are protected. - Amphibian breeding habitat interior to wetland not along wetland edge, Riverstone did not require amphibian surveys along edge after site visit to determine scope of work - West edge dominated by invasive Reed Canary Grass and Cattails which provide low quality habitat 	<ul style="list-style-type: none"> - No peer review response to letter 	<p style="text-align: center;">Appendix "F"</p> <p>Orion response letter to Jill Lewis dated April 28, 2020</p>

		- No relationship between buffer width and wetland hydrology. Hydrogeological assessment confirmed wetland sustained predominately by groundwater flow originating from surficial sands on the topographic highs surrounding the feature		
July 17, 2020	City of Orillia email confirming acceptance of Orion response to peer review comments	- Acceptance of the 10m buffer on the wetland		Appendix "G" City of Orillia July 17, 2020 email

Appendix A



RIVERSTONE

ENVIRONMENTAL SOLUTIONS INC.

April 20, 2018
RS# 2018-040

Jill Lewis

Jill Lewis, B.Com., M.A. (Pl), MCIP, RPP
Senior Planner, City of Orillia
Development Services and Engineering Department – Planning Division

via email: JLewis@orillia.ca

SUBJECT: Meeting Summary, Terms of Reference – Charter Construction Environmental Impact Study

Dear Jill:

RiverStone Environmental Solutions Inc. (hereafter RiverStone) is pleased to provide the City of Orillia with a summary of our meeting with the consulting group representing Charter Construction. The purpose of the meeting was to discuss the development proposal and come to an agreement on the required components, Terms of Reference, for the Environmental Impact Study (EIS) that is required to further the *Planning Act* application to develop the subject lands.

The meeting was held at the RiverStone office in Bracebridge on March 29, 2018. The consulting team representing Charter Construction included Mr. Paul Neals (Orion Environmental Solutions), Geri Poisson (Beacon Environmental), and Ryan Morin (Beacon Environmental).

It is our understanding that Charter Construction is proposing to continue developing adjacent to an existing subdivision that they have been building for some time. The property is location to the south of Bass Lake Sideroad and immediately to the east of Line 15 North. The property consists of agricultural fields, woodlots and wetlands. Some infrastructure is already in place, such as a stormwater pond, and some roads; however, several roads, some with crossings of watercourses, will be required to service the lots that are being proposed.

It regard to the completion of an EIS, Section 7.1.9 (pages 199-205) of the City of Orillia Official Plan sets out the policies and expectations for an EIS. The guiding principal is that “An Environmental Impact Study shall demonstrate that there will be no *negative impact* resulting form the proposed use on the nature and significance of the natural features that have been identified and includes a statement about the presence or absence of species identified for protection by the relevant legislation”. It was noted at the meeting that the EIS should follow the details of this section of the Official Plan in terms of the features and functions that would be addressed. As discussed with the City prior to the meeting and relayed to the Charter Construction consultants, the EIS was not expected to include any details regarding groundwater recharge/discharge or aquifer conditions. These details are expected to be considered by others.

In addition to the policies above, Official Plan policy 4.2.6 a) refers to Environmental Features, Functions and Linkages on the West Orillia Lands. This policy should be reviewed and included in the assessment of the lands and impacts related to the proposed development.

In order to address the significance and need to protect certain features and functions, field studies will need to be completed. The type of field studies and breadth of site assessment are not necessarily outlined in the Official Plan, which were the primary details discussed at the meeting. Based on our meeting notes, the following items were agreed to be included in the field assessment:

- Wetland boundary – assessment of the boundary of the central wetland adjacent to the proposed development (using Provincial standards).
- Watercourse assessment (particularly creek under Line 15 N draining the agricultural field to the west, with proposed road crossing). Includes the determination of whether the watercourse is coldwater or warmwater, may include sampling the fish community, if there are fish.
- Ecological Land Classification of vegetation communities. Does not require four season vegetation studies, but does require enough detail to accurately assign ELC for the purposes of assessing the potential for species at risk and significant wildlife habitat.
- Species at Risk (SAR), assessment for species potential on the property – either by a habitat-based approach or through species specific studies. We discussed Bobolink in particular as much of the subject property is presently under active agriculture. It was also noted that it is our responsibility to review the EIS for SAR.
- Breeding Bird Survey – assessment using standard protocols, in the agriculture, wetland edge and woodlot habitats.
- Amphibian surveys – not necessary given the wetland is to be protected and there are no other wetlands.
- Significant Wildlife Habitat – should be assessed against the Provincial tools (SWH Technical Guide, Ecoregion Criteria Schedules and Mitigation Tool).
- Significant Woodlands – Woodlands along the south portion of the property should be considered for classification as Significant Woodlands.
- Based on the assessment of each of the natural features above, the appropriate protection should be assigned to significant features along with development setbacks/buffers to protect those features and functions. This is consistent with Official Plan Policy 7.1.9 d) viii), that refers to a management plan, and is synonymous with a map of environmental constraints.
- The site assessments were to be completed during the appropriate time of year according to industry/Provincial standards, unless otherwise agreed.

It was our expectation that we would attend the site during the field season, first giving notice to the consultant team. We would likely wait until some of the field work has been completed.

These are the pertinent details of our meeting related to the TOR for the EIS.

Should you have any questions please call me at 705.645.9887 (office).

RiverStone Environmental Solutions Inc.

Per:

A handwritten signature in black ink, appearing to read 'Al Shaw', with a long horizontal flourish extending to the right.

Al Shaw, M.Sc.,
Senior Ecologist/Principal

Appendix B



GUIDING SOLUTIONS IN THE
NATURAL ENVIRONMENT

Environmental Impact Study West Orillia Neighbourhood Plan Area, City of Orillia

Prepared For:

Charter Development LP

Prepared By:

Beacon Environmental Limited

Date: Project:

April 2019 218059

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1. Introduction

Beacon Environmental Limited (Beacon) has been retained by Charter Development LP, to prepare an Environmental Impact Study (EIS) as part of the proposed West Orillia Neighbourhood Plan Area at properties identified as 825 and 925 Line 15 North (Lot 6 Concession 2 southern division), in the City of Orillia (subject property). The subject property is located at the western extent of the City of Orillia planning area and is one concession south of Bass Lake Provincial Park, north of Bass Lake Sideroad (**Figure 1**).

The purpose of the EIS is to identify existing natural heritage features on and adjacent to the site and to address the interaction between the proposed development and existing conditions as related to natural heritage features. In this EIS, we identify and evaluate the natural heritage features on the subject property, analyze the potential impacts on these features from the proposed development and provide recommendations to avoid or mitigate potential impacts, consistent with the relevant policies of the City of Orillia Official Plan (2013, Consolidated 2018), the Provincial Policy Statement (PPS 2014) and the *Endangered Species Act* (ESA 2007).

2. Policy Context

Relevant municipal, provincial and federal environmental policies that apply to the subject property are addressed in this section. These include:

- Provincial Policy Statement (2014);
- Endangered Species Act (2007); and
- The City of Orillia Official Plan (2010, Consolidated 2018).

2.1 Provincial Policy (2014)

Policy 2.1 of the *Provincial Policy Statement* (PPS) (2014) provides direction to municipalities regarding planning policies for the protection and management of natural heritage features and resources. The PPS defines six natural heritage features, providing planning policies for each. The *Natural Heritage Reference Manual* (OMNR 2010) is a technical document used to help assess the six PPS natural heritage features listed below:

- a) Significant wetlands;
- b) Significant woodlands;
- c) Significant valleylands;
- d) Significant wildlife habitat;
- e) Significant Areas of Natural and Scientific Interest (ANSIs); and
- f) Coastal wetlands.

Each of these features is afforded varying levels of protection subject to the PPS, guidelines contained in the Natural Heritage Reference Manual, and in some cases, regulations.

It is also important to recognize the lands surrounding a study area as the Provincial Policy Statement states in Policy 2.1.8:

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

Determining what constitutes *Adjacent Lands* requires consideration of a number of factors including the type of feature (e.g., Provincially Significant Wetland), the sensitivity of a feature to disturbance (e.g., based on habitat function or ecological community), the ecological attributes that are species-specific, and the scale and type of development being considered.

2.2 Endangered Species Act (2007)

The Ontario *Endangered Species Act (ESA)* came into force in June 2008 and the *Act* is having a significant role in land use activities and planning due to protection of both the species as well as their habitat on all lands (i.e., private and public). Under the new *ESA* there are over 200 species in Ontario that are identified as Extirpated, Endangered, Threatened, or of Special Concern.

The *Act* prohibits the killing or harming of Threatened and Endangered species, as well as the destruction of particular species habitat. There are, however, several transitional provisions that provide extended timelines before the protection of the habitats for certain species comes into force. For Special Concern species the *Act* does not afford protection to the individual or their habitat.

Under the *ESA*, Habitat is defined as follows

- “Habitat” means,
 - (a) With respect to a species of animal, plant or other organism for which a regulation made under clause 55 (1) (a) is in force, the area prescribed by that regulation as the habitat of the species, or
 - (b) With respect to any other species of animal, plant or other organism, an area on which the species depends, directly or indirectly, to carry on its life processes, including life processes such as reproduction, rearing, hibernation, migration or feeding, and includes places in the area described in clause (a) or (b), whichever is applicable, that are used by members of the species as dens, nets, hibernacula or other residence; (habitat).
- Definition of “habitat”, cl. (B)
 - (2) For greater certainty, clause (b) of the definition of “habitat” in subsection (1) does not include an area where the species formerly occurred or has the potential to be reintroduced unless existing members of the species depend on that area to carry on their life processes. 2007, c. 6, s. 2 (2).



Site Location		Figure 1	
Charter Developments LP			
UTM Zone 17 N, NAD 83			
Project 218059 April 2019			
0 137.5 275 550 Metres		1:15,000	

There are two key protection provisions in the ESA:

- Section 9 describes prohibited activities (e.g., kill, harm, harass, possess, collect, buy and sell) for species listed as Extirpated, Endangered or Threatened on the Species at Risk in Ontario (SARO) List; and
- Section 10 prohibits the damage or destruction of protected habitat of species listed as Extirpated, Endangered or Threatened on the SARO List.

It is important to note that the owner of the land, as well as the individual or organization carrying out any activities on those lands, are both subject to the enforcement and penalty provisions of the *ESA* should Sections 9 or 10 of the *ESA* be contravened.

Under the *ESA*, native species that are in danger of becoming extinct or extirpated from the province are identified as being Extirpated, Endangered, Threatened or Special Concern. These designations are defined as follows:

- Extirpated - a species that no longer exists in the wild in Ontario but still occurs elsewhere;
- Endangered – a species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario's *Endangered Species Act*;
- Threatened - a species that is at risk of becoming endangered in Ontario if limiting factors are not reversed; and
- Special Concern (formerly Vulnerable) - a species with characteristics that make it sensitive to human activities or natural events.

Under the *Act*, protection is provided to Endangered or Threatened species and their habitat, as well as providing stewardship and recovery strategies for species.

Species of Special Concern require management plans from the MNR but are not directly protected under the *ESA* nor is their Habitat protected under the *ESA*.

2.3 City of Orillia Official Plan (2010, Consolidated 2018)

Under Section 4.2.6 of the City's Official Plan (OP), the subject lands are part of the West Orillia Lands Special Policy Area (SPA) and include lands that are designated as "Living Area-Neighborhood Greenfield" and "Environmental Protection Area" on Schedule A – Land Use of the City of Orillia Official Plan. Section 3.5.3.2 of the OP defines "Environmental Protection Areas" as:

- Provincially Significant Wetlands;
- Other wetlands that are 0.5 hectares or greater in size;
- Significant woodlands;
- Significant valleylands;
- Significant wildlife habitat;
- Significant habitat of threatened and/or endangered species;
- Significant Areas of Natural and Scientific Interest; and
- Fish habitat.

The 'Environmental Protection Area' designation may also include lands that, due to steep slopes or other physical hazards, such as floodplains, are not appropriate for development.

Under the SPA and Section 3.5.3.3 c) and d) of the OP, no development is permitted within or adjacent to an Environmental Protection Area designation unless it has been demonstrated, through an Environmental Impact Study that there will be no negative impacts on the natural heritage features and areas or on their ecological functions. Where there are lands adjacent to an Environmental Protection Area designation, the nature, extent and size of the environmental buffer or other mitigation measures, will be determined and refined if necessary, through an Environmental Impact Study.

Section 7.1.9 of the outlines the terms of reference for an Environmental Impact Study which are to be determined in consultation with any agency having jurisdiction and approved by the City. The terms of reference for this EIS have been agreed upon with the City's peer reviewer and are outlined in our study methodology below.

3. Study Methodology

3.1 Background Review and Agency Contact

Background review was undertaken to gain a richer understanding of the subject property and surrounding lands, including an Environmental Impact Study completed for the lands to the east (Azimuth Environmental Consulting Inc. 2004). The following resources were available and consulted in conjunction with our field program expanded upon below:

- Ministry of Natural Resources and Forestry (MNR) Ontario Base Mapping (OBM);
- MNR's Make-a-map Natural Heritage Information Centre website;
- Land Information Ontario (LIO 2018), and
- Google Earth Historical Imagery.

Prior to undertaking field investigations, Beacon met with the City's peer reviewer Riverstone Environmental Solutions Inc. (Riverstone) on March 29, 2018 to scope the terms of reference and study requirements (**Appendix A**). This EIS follows these established terms of reference and all study requirements. In addition, Beacon contacted the MNR Midhurst and received Species at Risk screening correspondence via email from Brent Shirley, Management Biologist (**Appendix A**). As outlined in the email from MNR, the following species at risk are known to occur in the vicinity of the subject property:

- Blanding's Turtle (*Emydoidea blandingii*);
- Barn Swallow (*Hirundo rustica*);
- Bobolink (*Dolichonyx oryzivorus*);
- Eastern Meadowlark (*Sturnella magna*);
- Eastern Wood-pewee (*Contopus virens*);
- Snapping Turtle (*Chelydra serpentina*);
- Wood Thrush (*Hylocichla mustelina*); and

- Species at Risk (SAR) bat species (Little Brown Myotis, Northern Myotis and Tri-coloured Bat).

Based on previous studies by others (Azimuth 2004) there are known occurrences of Butternut on the subject property.

3.2 Field Investigations

Field investigations of the subject property were undertaken by Beacon staff throughout 2018 and are detailed below.

The following **Table 1** provides a summary of the completed field studies.

Table 1. Field Study Timetable

Survey Type	Dates Undertaken (2018)
Breeding Birds	June 6, 29, and July 6
Vegetation, ELC and Soils (concurrent Butternut search)	May 23, June 29, July 3, September 6
Bat Snag Survey	April 11
Aquatic Habitat Assessment	May 31
Wetland Boundary Delineation	August 16 and September 6
Blanding’s Turtle Surveys	May 17, 23, 24 and June 6, 15, 29

3.2.1 Vegetation Mapping and Botany

General vegetation communities were mapped throughout the subject property and described according to the Ecological Land Classification (ELC) system for southern Ontario (Lee *et al.* 1998). A plant species list was simultaneously generated and is provided in **Appendix B**.

3.2.2 Aquatic Habitat Assessment

An assessment of aquatic habitat was completed on May 31, 2018. Weather on this date included a maximum daily high of 25 degrees Celsius (°C). Light south and southeast winds. No precipitation on this date or in the 24 hours prior to the survey. The following characteristics were noted: channel morphology, water depth, flow velocity, cover, substrate and bank condition. Water quality measurements were taken using a YSI Multiparameter water quality probe.

3.2.3 Breeding Bird Surveys

Breeding bird surveys were undertaken on three early mornings, between dawn and 10:00 a.m. (11:00 a.m. on June 29), on the dates noted in **Table 1**. Surveys were undertaken during times of no precipitation, light winds, and typical temperatures. All birds that were either heard or seen were recorded by walking surveys that would record all singing birds in the surveyed area. Birds were

recorded on an orthophotograph in the approximate location that they were observed. All birds observed or heard singing in suitable habitat were assumed to be breeding on-site. Non-breeding birds using the site were also recorded.

Three surveys were undertaken in order to comply with MNRF protocols concerning Bobolink and Eastern Meadowlark potential habitat.

3.2.4 Bat Habitat Surveys

An ecologist from Beacon Environmental visited the site on Wednesday, April 11, 2018 to investigate the presence or absence of potential species at risk bat habitat within the proposed development area.

Snag surveys were conducted in accordance with the Midhurst District MNRF “Maternity Roost Surveys of Treed Habitats, April 2017” (MNRF 2017). Data was collected on a handheld tablet with GPS points taken to 3m of accuracy. Given the smaller size of vegetated units within the proposed development area, the approach was to survey these areas in their entirety, forgoing the development of randomized plots.

3.2.5 Blanding’s Turtle Surveys

Blanding’s Turtle surveys were conducted for the property in accordance with the MNRF’s Survey Protocol for the Blanding’s Turtle in Ontario (OMNR 2013). This involves the identification of survey sites, and choosing three to five days to conduct intensive surveys of potential habitat during the window in which Blanding’s most actively bask (May-June). Two ecologists from Beacon conducted a total of five basking surveys for this species using the MNRF protocol.

3.2.6 Other Wildlife

During field investigations, all wildlife species encountered or presence noted from tracks, scat, calls, or nests were recorded and listed in Section 4.7 of this report.

3.2.7 Feature Staking with City of Orillia

A feature staking was undertaken on August 16, 2018 by Beacon with a review in the field by staff from Riverstone, the City of Orillia’s environmental peer reviewer. Members of the consulting team (Ryan Morin and Geri Poisson – Beacon, Paul Neals – Orion Environmental Solutions) were also present.

4. Existing Conditions

4.1 General Conditions and Landscape Context

The subject property is approximately 103 ha in area, the majority of which is agricultural and Environmental Protection. The property is bounded by Bass Lake Sideroad East to the north, residential subdivision under construction to the east, agricultural field and institutional (Lakehead University) to the south, and Line 15 North to the west. Four existing single detached residences are currently present on the property. There is an existing natural gas pipeline right of way with two large diameter transmission pipes traversing the subject property. The vegetation communities are woodlands, wetlands, meadows, hedgerow and active agricultural fields.

4.2 Physiography

According to the physiographic regions of Ontario identified by Chapman and Putnam (1984), the property is located in an area of glacial Till Plains. The soils range from mostly sandy, gravelly in the higher elevations in the southern portion of the subject property to silty, sandy in the northern, lower elevation areas near the Bass Lake drain wetlands.

4.3 Watershed Context

The subject property straddles two major watersheds. The northern portion of the subject property is located within the Bass Lake watershed which eventually drains to the Lake Huron. The southern portion, generally south of the woodlot, drains to the south into the Mill Creek watershed and eventually to Lake Simcoe. The City of Orillia is not within the jurisdiction of any conservation authority.

4.4 Aquatic Habitat

The subject property is within the Bass Lake drainage area which is located one (1) km northeast of the subject property (**Figure 1**). Bass Lake is drained by the North River which flows northeast to Matchedash Bay (Lake Huron). The subject property is not within the jurisdiction of a conservation authority.

An assessment of aquatic habitat was completed on May 31, 2018. Weather on this date included a maximum daily high of 25 degrees Celsius (°C), light south and southeast winds, and no precipitation nor in the 24 hours prior to the survey. Two drainage swales were identified on the property and are discussed below as Swale 'A' and 'B'.

4.4.1 Swale A

An intermittent drainage swale traverses the subject property generally from south to north (**Figure 2**). This swale originates in a swamp immediately west of Line 15 North. It enters the subject property through a rusty and partially collapsed 0.5 m diameter corrugated steel pipe (CSP) culvert. No flow was observed through this culvert on May 31, 2018. The culvert connects to the roadside ditch on the east side of Line 15 North. Standing water, 0.3 m deep was observed in the ditch and cyprinids were observed in these pools (species unknown). East of Line 15 North standing water less than 3 cm deep was observed in a grassy area with no defined channel. Drainage pipes observed in this area could alter flow in this swale. Water quality in this area is shown in **Table 2** below.

Table 2. Swale ‘A’ Water Quality East of Line 15 North.

Water Temperature	22°C
Conductivity	572 µs/cm
Conductivity	0.544 mS/cm
Total Dissolved Solids	0.372 g/l
Dissolved Oxygen	54.7 %
Dissolved Oxygen	4.73 mg/l

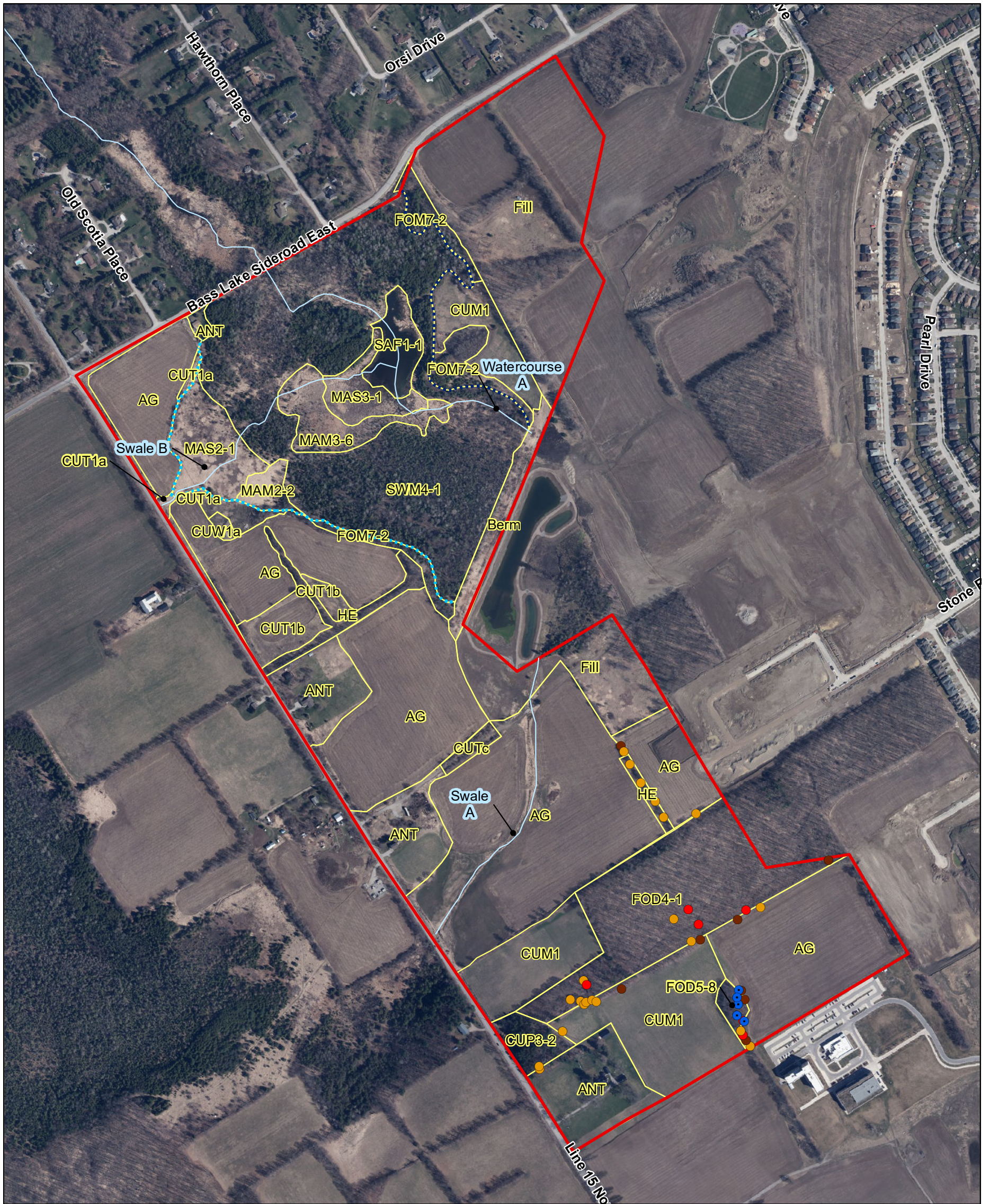
The drainage swale continues northeast as a grassy swale approximately 12 m wide without a defined channel. There are two areas with pooled water approximately 5 m by 5 m that contained tadpoles (species unknown). Another tile drain connects to the swale in this area. One section of the swale has a constructed channel approximately 0.3 m wide. Some sections of the channel are dry. The swale passes through a constructed channel on the southeast side of the existing stormwater management (SWM) pond and into an existing swamp beyond the property boundary. The constructed channel southeast of the SWM pond was dry on May 31, 2018.

The route of Swale ‘A’, after flowing into the off property swamp, enters the main SWM pond which then outlets to the wetland to the north. The wetland drains towards the north and exits the property through a 1.5 m diameter CSP. Flow was observed through this culvert. This culvert is installed at grade and embedded into the substrate. It would not constitute a barrier to upstream fish migration during the flow conditions observed on May 31, 2018.

This watercourse (Bass Lake Drain) continues northwest and eventually crosses under Line 15 North and into Bass Lake approximately one (1) km northwest. It was not confirmed if there are any barriers to fish migration between the subject property and Bass Lake as the watercourse passes through private properties.

Table 3. Watercourse ‘A’ Water Quality at Bass Lake Sideroad East.

Water Temperature	22 °C
Conductivity	516 µs/cm
Conductivity	0.489 mS/cm
Total Dissolved Solids	0.335 g/l
Dissolved Oxygen	62.1 %
Dissolved Oxygen	5.38 mg/l



Legend

- Subject Property (Approximate)
- ELC Communities
- Drainage Feature
- Wetland (MNR 2018)
- Wetland Limit (Beacon 2018)
- Category 1 (Non-retainable)
- Category 2 (Retainable)
- Category 3 (Potentially Archivable)
- Potential Bat Habitat

ELC Code	Description
ANT	Anthropogenic
AG	Agricultural
HE	Hedgerow
CUM1	Mineral Cultural Meadow
CUT1	Mineral Cultural Thicket
CUW1	Mineral Cultural Woodland
CUP3-2	White Pine Cultural Plantation
FOD4-1	Dry-Fresh Beech Deciduous Forest
FOD5-8	Dry-Fresh Sugar Maple - White Ash Deciduous Forest
FOM7-2	Fresh-Moist White Cedar - Hardwood Mixed Forest
MAM2-2	Reed Canary Grass Mineral Meadow Marsh
MAM3-6	Broad-leaved Sedge Meadow Marsh
MAS2-1	Cattail Mineral Shallow Marsh
MAS3-1	Cattail Organic Shallow Marsh
SWM4-1	White Cedar - Hardwood Organic Mixed Swamp
SAF1-1	Bullhead Lily Floating-leaved

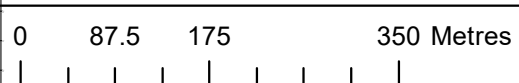
Existing Conditions

Figure 2

Charter Developments LP

UTM Zone 17 N, NAD 83

First Base Solutions
Web Mapping Service 2016



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The northern half of this drainage feature, within the wetland, is likely a permanent watercourse and it provides permanent, direct habitat for fish. The southern half of this drainage feature, between Line 15 North and the SWM Pond is likely intermittent or ephemeral and provides seasonal contributing habitat for fish by contributing to the base flow downstream. The pools in the ditch along the east side of Line 15 North in the southern portion of the subject property provide direct habitat for fish. It is not certain that fish can complete their life cycle in these pools but rather that they are transported into these pools from the nearby swamp to the west of Line 15 North during high flow events.

4.4.2 Swale B

In the northwest corner of the subject property another drainage feature enters the property through a 0.5 m diameter CSP culvert under Line 15 North which was dry on May 31, 2018. West of Line 15 North no defined channel was observed in an actively cropped field. Within the subject property no defined channel was observed and no flow or standing water was associated with this swale. This swale likely only conveys water during the spring freshet or possibly during extreme rain events and provides only seasonal contributing habitat for fish in the form of baseflow.

4.4.3 Fish Community

A fish survey was not completed by Beacon. Fish species that may be present in this aquatic resource area based on the review of the Land Information Ontario database are listed in the table below.

Table 4. Watercourse ‘A’ Fish Species (MNRF)

Common Name	Scientific Name
Bluntnose Minnow	<i>Pimephalus notatus</i>
Brook Stickleback	<i>Culaea inconstans</i>
Brook Trout	<i>Salvelinus fontinalis</i>
Central Mudminnow	<i>Umbra limi</i>
Common Shiner	<i>Luxilus cornutus</i>
Creek Chub	<i>Semotilus atromaculatus</i>
Northern Redbelly Dace	<i>Chrosomus eos</i>
White Sucker	<i>Catostomus comersonii</i>

The swale on-site, upstream of the site and downstream of the site all the way to Bass Lake is identified as Aquatic Resource Area MH-0139-BAS. The species listed above were captured somewhere in this watercourse, most likely closer to the lake. The data is effective from 19 January 2010.

All the fish species identified by MNRF in the aquatic resource area are common and widespread throughout Southern Ontario.

4.5 Terrestrial Resources

4.5.1 Vegetation Communities

General vegetation communities mapped according to the Ecological Land Classification (ELC) system for southern Ontario (Lee *et al.* 1998) are described in greater detail below and are illustrated on **Figure 2**. A plant list was generated to characterize vegetation communities during the course of ELC investigation and is included in **Appendix B**.

Much of the terrain on the subject property is former agricultural lands, with a large natural feature in the north containing a complex of wetland habitats and a mature woodland near the south end. Outside of these natural areas the property is dominated by former agricultural lands, and contains hedgerows, meadows, several residential properties along Line 15 North.

Agricultural Land (AG)

Agricultural Lands on the subject property are either occupied by corn, soy, or were plowed through to soil during field investigations and an areas of fill from the neighbouring approved residential development (**Photograph 1** and **2**).

Hedgerow (HE)

Hedgerows on the property occur as agricultural windbreaks. They contain a mix of tree species such as Manitoba Maple (*Acer negundo*), Basswood (*Tilia americana*), Black Cherry (*Prunus serotina*), White Ash (*Fraxinus americana*), and American Elm (*Ulmus americana*). Introduced, invasive Common Buckthorn (*Rhamnus cathartica*) also dominates.

Mineral Cultural Meadow (CUM1)

Cultural Meadow communities occur in the southern portion of the subject property south and west of the FOD4-1 forest community. During site investigations these areas were uncultivated (fallow) agricultural land, and dominated by grasses and herbaceous species such as Smooth Brome (*Bromus inermis*), Timothy (*Phleum pretense*) and Orchard Grass (*Dactylis glomerata*), Wild Carrot (*Daucus carota*), Red Clover (*Trifolium pratense*) and Tall Sweet Clover (*Melilotus albus*).

Mineral Cultural Thicket (CUT1a)

This Cultural Thicket type occurs in a low-lying ditch adjacent to Line 16 North, and has a culvert within it that appears to drain overland flow from the agricultural land to the west of the property. The other occurs adjacent the central wetland complex. These thickets contain Manitoba Maple, Tartarian Honeysuckle (*Lonicera tartarica*), Garlic Mustard (*Alliaria petiolata*), as well as some grassy areas dominated by Smooth Brome.

Mineral Cultural Thicket (CUT1b)

This Cultural Thicket type occurs in two sections on the west side of the subject property and contains the sapling tree species: White Ash, Red Cedar (*Juniperus virginiana*), Trembling Aspen (*Populus tremuloides*), and Balsam Poplar (*Populus balsamifera*), with Staghorn Sumac (*Rhus typhina*), Wood Avens (*Geum urbanum*), Garlic Mustard, Rough Goldenrod (*Solidago rugosa*) and Smooth Brome also present.

Mineral Cultural Thicket (CUT1c)

This thicket type occurs between two agricultural areas, and contains American Elm, with Alternate-leaved Dogwood (*Cornus alternifolia*), Wild Red Raspberry (*Rubus idaeus*), Thicket Creeper (*Parthenocissus vitacea*), Smooth Brome and Crown-vetch (*Coronilla varia*).

Mineral Cultural Woodland (CUW1a)

This small fragmented Cultural Woodland is occupied entirely by densely growing, sapling-sized Trembling Aspen.

White Pine Cultural Plantation (CUP3-2)

A Cultural Plantation occurs in the southwest end of the subject property and is dominated by intermediate-aged (< 50 years old, average ~25 to 30 cm dbh – diameter at breast height), planted rows of White Pine with some immature saplings of White and Green Ash (*Fraxinus americana*, *F. pennsylvanica*), Trembling Aspen and Sugar Maple (*Acer saccharum*) (**Photograph 3**). The shrub layer is moderate to dense with Chokecherry (*Prunus virginiana*), European Buckthorn (*Rhamnus cathartica*), Alternate-leaved Dogwood (*Cornus alternifolia*), European Mountain Ash (*Sorbus aucuparia*), and Wild Red Raspberry. The herbaceous ground cover consists of scattered False Solomon's Seal (*Maianthemum racemosum*), Enchanter's Nightshade (*Circaea lutetiana*), Coltsfoot (*Tussilago farfara*), and localized patches of Japanese Knotweed (*Fallopia japonica*), a non-native invasive species.

Dry-Fresh Beech Deciduous Forest (FOD4-1)

This mature forest community is dominated by American Beech (*Fagus americana*), with Sugar Maple, Red Oak (*Quercus rubra*), White Ash, American Basswood (*Tilia americana*), Eastern Hemlock (*Tsuga canadensis*), Yellow Birch (*Betula alleghaniensis*), White Pine (*Pinus strobus*), Black Cherry (*Prunus serotina*), Butternut (*Juglans cinerea*) and White Birch (*Betula papyifera*) associates (**Photograph 4**). The understory consists of moderate cover of shrub such as Alternate-leaved Dogwood, Chokecherry, and Red Elderberry (*Sambucus racemosa*). Herbaceous ground cover includes Mayapple (*Podophyllum peltatum*), Trout Lily (*Erythronium americanum*), White Trillium (*Trillium grandiflorum*), Red Trillium (*Trillium erectum*), Sweet White Violet (*Viola blanda*), Garlic Mustard and Jack-in-the-pulpit (*Arisaema triphyllum*). Thus, this woodland community is primarily, but not wholly composed of native species.

Dry-Fresh Sugar Maple – White Ash Deciduous Forest (FOD5-8)

This fragmented woodland is surrounded by Cultural Meadow, Agricultural Land and neighboring parking lots. It is dominated by Sugar Maple, with White Ash, Ironwood (*Carpinus caroliniana*), Butternut, White Trillium, Trout Lily, False Solomon's Seal (*Maianthemum racemosum*), Red Baneberry (*Actaea rubra*), Garlic Mustard and Wild Leek (*Allium tricoccum*).

Fresh-Moist White Cedar – Hardwood Mixed Forest (FOM7-2)

This community is found along the southwest boundary of the swamp at the interface with the adjacent agricultural fields. It is an upland extension of the White Cedar – Hardwood Organic Mixed Swamp (see below) and consists of Eastern White Cedar, American Basswood, Sugar Maple and Manitoba Maple. This community is entirely edge habitat that supports many of the shrubs and herbs found in the culturally-modified communities described above.

Reed Canary Grass Mineral Meadow Marsh (MAM2-2)

This community occurs on the periphery of the large interior wetland complex and is likely the result of historic clearing. It is dominated, and almost entirely occupied by Blue-joint Reedgrass (*Calamagrostis canadensis*) (**Photograph 5**).

Broad-leaved Sedge Meadow Marsh (MAM3-6)

This community occurs within the central wetland complex. It is densely occupied by Broad-leaved Sedge species (*Carex spp.*), with some Broad-leaved Cattail (*Typha latifolia*), Red-osier Dogwood (*Cornus sericea*) and White Cedar (**Photograph 6**).

Cattail Mineral Shallow Marsh (MAS2-1)

This community occurs on the periphery of the large interior wetland complex and is likely the result of historic clearing. The diversity here is low, as the community is dominated almost entirely by Broad-leaved Cattail.

Cattail Organic Shallow Marsh (MAS3-1)

This type of Cattail Marsh occurs within the large central wetland complex and is represented by shallow standing water, organic soils and Broad-leaved Cattail as the dominant vegetation.

White Cedar – Hardwood Organic Mixed Swamp (SWM4-1)

This community type forms the bulk of the central wetland complex for the subject property. It contains a variable mix of White Cedar, White Birch, Trembling Aspen and Speckled Alder. The understory is sedge (*Carex spp.*) and fern-rich and includes Lake-bank Sedge (*Carex lacustris*), Christmas Fern

(*Polystichum acrostichoides*), Ostrich Fern (*Matteuccia struthiopteris*) and Sensitive Fern (*Onoclea sensibilis*). There is little to no open water areas within this community, and its wetland status is most easily observed through the species composition.

Bullhead Lily Floating-leaved Shallow Aquatic (SAF1-1)

This community occurs in the centre of the wetland complex and features sections of open water. In some areas of shallow water, Bullhead Lily (*Nuphar variegata*) occurs. Some floating logs are found within this community and through other surveys it has been determined to be habitat for a variety of amphibians and reptiles (see Section 4.5.5).



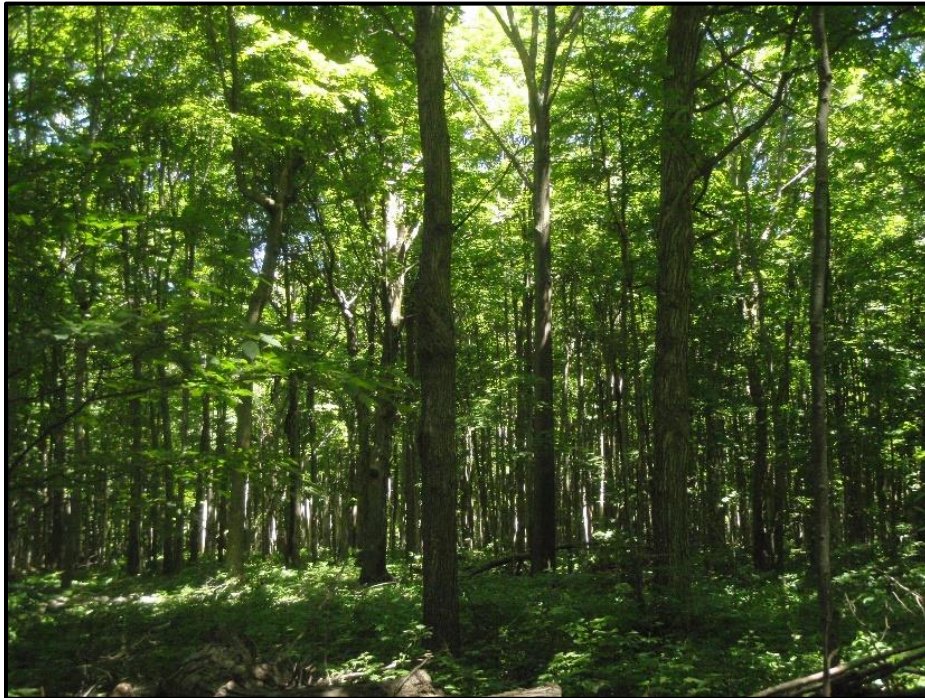
Photograph 1. Agricultural Field occupied by soy. (July 3, 2018)



Photograph 2. Fill area in centre of subject property. (July 3, 2018)



Photograph 3. CUP3-2 White Pine Plantation (June 29, 2018)



Photograph 4. FOD4-1 Dry-Fresh Beech Deciduous Forest Interior (July 3, 2018).



Photograph 5. MAM2-2 Reed Canary Grass Meadow Marsh, wetland boundary with Cultural Thicket CUT1 in foreground



Photograph 6. MAM3-6 Broad-leaved Sedge Organic Meadow Marsh within central Wetland Complex.

4.5.1.1 Flora and Rarity

A total of 147 plant species were observed on the subject property with 45 (30%) being non-native plant species (**Appendix B**). This high percentage of non-native plant species is common for properties with disturbed areas within an agricultural and urbanized landscape. The larger wetland and woodland blocks have a higher percentage of native species and good diversity.

None of the plant species are listed as uncommon or rare in Simcoe County (Riley 1989). All of the native plant species are ranked provincially as S5 (Secure) with the exception of Butternut, which is ranked “S3?” meaning its occurrence in Ontario is rare to uncommon. Butternut is designated as Endangered both provincially and federally and is protected under the *ESA* (2007).

A total of 35 individual Butternut were encountered during field investigations and are shown on (**Figure 2**). The main threat to Butternut is the lethal Butternut Canker (*Sirococcus clavigignenti-juglandacearum*), a fungus that attacks the species through any openings in the bark. Trees are categorized into one of three Categories through a a Butternut Health Assessment. Trees found to be severely affected by the canker, such that the individual is not expected to survive or contribute to the maintenance of the species on the landscape are Category 1 (non-retainable) and are not protected under the *ESA*. Trees that are less so or not affected by the canker are considered (Category 2 (retainable) and are protected under the *ESA*. Larger, retainable trees that are found within 40 m of a non-retainable (i.e. more diseased) tree are thought to potentially have a tolerance such that the province may have interest in collecting genetic samples to assist in breeding tolerant strains of the Butternut are considered Category 3 (potentially archivable). These are also protected under the *ESA*.

A Butternut Health Assessment conducted for each of these trees found that 21 trees were Category 1 (non-retainable), eight trees were Category 2 (retainable) and six trees were Category 3 (potentially archivable).

4.5.2 Breeding Bird Surveys

Fifty-two breeding bird species were recorded on the subject property (**Appendix C**). An additional two species, Great Blue Heron (*Ardea herodias*) and Barn Swallow (*Hirundo rustica*), were recorded as non-breeding foraging species. The results are divided in three different areas, to highlight the different bird communities and to describe areas that are expected to be developed separately from those expected to be retained.

Overall the birds observed were those found in three general habitat types: open disturbed areas, forests and open wetlands. Four of the five most abundant species observed are common and are considered disturbance-tolerant species found in a wide variety of rural habitats. These four species are: Song Sparrow (*Melospiza melodia*), Red-winged Blackbird (*Agelaius phoeniceus*), American Robin (*Turdus migratorius*), and American Goldfinch (*Spinus tristis*).

No species considered S1 through S3 (Critically Imperiled through Vulnerable) using the provincial ranks were recorded. All species are either S4 (Apparently Secure) or S5 (Secure).

4.5.2.1 South Woodland

The south woodland has a moderate diversity of avian species that are either woodland species or edge species. One or two pairs of most species were observed, however seven Red-eyed Vireo (*Vireo olivaceus*) and three Eastern Wood-Pewee (*Contopus virens*) pairs or territories were observed. This is not unexpected as these two species are among the most frequently observed species in upland deciduous woodlots such as this; in spite of the latter's status (see below). Single pairs of four forest area-sensitive species were recorded, as was an active woodpecker nest. The latter species is not listed in **Appendix C**, as the species was not determined. It was likely either a Downy Woodpecker (*Picoides pubescens*) or Hairy Woodpecker (*Picoides villosus*) nest. Area-sensitive species are those which either require a larger block of suitable habitat in which to breed or which are more productive in large habitat blocks.

4.5.2.2 North Wetland and Woodland

This area has the most numerous and diverse bird community of the three areas. This is in part because it supports three sub-communities of birds: open marsh, trees swamp/woodland and edge species. The marsh and adjacent swamp thicket are dominated by species such as Common Yellowthroat (*Geothlypis trichas*) Swamp Sparrow (*Melospiza georgiana*), Red-winged Blackbird, Song Sparrow, and Alder Flycatcher (*Empidonax alnorum*). Virginia Rail (*Rallus limicola*) was also present, but no further cattail marsh specialists were recorded.

The treed swamp and forest habitat supported a variety of widespread common forest birds such as: Red-eyed Vireo, American Robin, Great-crested Flycatcher (*Myiarchus crinitus*), as well as more specialist or northerly bird species such as Yellow-bellied Sapsucker (*Sphyrapicus varius*), Black-and-

White Warbler (*Mniotilta varia*), and Veery (*Catharus fuscescens*). More than one Green Heron (*Butorides virescens*) pair was thought to be present. Six of the forest species observed here were area-sensitive species – some species were present in multiple pairs.

4.5.2.3 Other Areas

The birds in the remainder of the site are mainly the disturbance-tolerant species found in many rural areas. There are a few swamp species present due to a treed area south of the new stormwater pond.

4.5.2.4 Avian Species at Risk

Three avian Species at Risk were observed; however only one of these was considered to be a breeding species.

Five breeding Eastern Wood-Pewee territories were recorded in total. Three were present in the south woodland and two in the northern forested area. The Eastern Wood-Pewee is designated by both the province and federally as Special Concern. The species has experienced population declines over at least 40 years, although the reasons for the decline are unclear (COSEWIC 2012). It is still a very common species in Ontario. Based on our experience it is a species with a small territory. It is found in deciduous and mixed forests of many sizes and of intermediate and mature age.

Four non-breeding Barn Swallows (*Hirundo rustica*) were observed foraging over the wetland. No nesting was observed on the subject property, as all the buildings and structures were checked for evidence of Barn Swallow nesting. Barn Swallow is an open land species, which nests primarily in barns and similar buildings and feeds aerially over fields, meadows and bodies of water. It has been listed as Threatened because it “has experienced very large declines that began somewhat inexplicably in the mid to late 1980s in Canada” (COSEWIC 2011).

One male Bobolink was observed in the hay field at the south end of the site, on July 6, 2018. This area-sensitive species of grasslands and hayfields is listed as Threatened in Ontario. As this hayfield had been surveyed twice in June and no Bobolinks were observed, it is presumed that the individual seen in early July was a non-breeding individual that moved to this site post-breeding. This species is quite vocal and generally is easily observed when it is present in late May or June. In our experience, Bobolinks are no longer singing by early July and thus may not be defending territories at this time.

4.5.3 Bat Habitat

Several of Ontario’s bat species were listed as *Endangered* in Ontario’s *Endangered Species Act (ESA)*, and Canada’s *Species at Risk Act (SARA)*. They are threatened by a rapidly spreading fungal disease known as White-nose Syndrome. To document their habitats, including trees (snags) which may provide habitat for maternal roosting, surveys were undertaken of the proposed development area.

The proposed plan involves most of the development occurring within agricultural (corn) fields, with some removal of vegetation within hedgerows and other small features on the landscape. According to the Midhurst District MNR “Maternity Roost Surveys of Treed Habitats, April 2017”, hedgerows are not considered treed habitats for bat maternity roosts.

Of the approximately 32 ha of forested areas on the subject property, approximately 1.19 ha are proposed for removal. All treed communities within the proposed development area were included in this analysis.

The treed communities within the proposed development area include a small, isolated Sugar Maple – White Ash forest (FOD5-8), which had five snags, and a White Pine plantation (CUP3-2) which had no snags (**Figure 2**). The investigation found a total of five snags within the estimated 60 ha of area proposed for future development on the property (**Figure 2**). Snags included four mature Sugar Maple (*Acer saccharum*), and one mature Black Cherry (*Prunus serotina*).

4.5.4 Blanding’s Turtle Surveys

Identification of potential or suitable Blanding’s Turtle habitat for surveys to occur was determined during background review at the outset of the project. While five visits are required as per the Blanding’s Turtle survey protocol, six were completed as Beacon staff were on the site for other requirements. The results of the survey are listed in **Table 5**.

Table 5. Blanding’s Turtle Survey Results

Date (2018)	Weather	Time	BLTU Observed?
May 17	Sunny, 14°C	9:15 AM	No
May 23	Sunny, 23°C	10:15 AM	No
May 24	Sunny, 19°C	9:40 AM	No
June 6	Cloudy, 11°C	8:30 AM	No
June 15	Sunny, 20°C	8:30 AM	No
June 29	Sunny, 24°C	8:00 AM	No

4.5.5 Other Wildlife

Incidental wildlife observations were noted throughout unrelated fieldwork and included amphibians vocalizing during the evening. Amphibian surveys were not required based on the City of Orillia comments; however, the following amphibians were recorded either by sight or by calls within the open water wetland in the northern portion of the subject property:

- Green Frog (*Lithobates clamitans*);
- Leopard Frog (*Lithobates pipiens*);
- Spring Peeper (*Pseudacris crucifer*);
- Gray Treefrog (*Hyla versicolor*); and
- American Toad (*Anaxyrus americanus*).

Most of these amphibian observations took place during the crepuscular bird survey as their peak levels of activity occur simultaneously.

Evidence of other species were noted and include White-tailed Deer (*Odocoileus virginianus*), Eastern Chipmunk (*Tamias striatus*), Red Squirrel (*Tamiasciurus hudsonicus*), Beaver (*Castor canadensis*),

Coyote (*Canis latrans*), and Red Fox (*Vulpes vulpes*). A beaver and beaver lodge were observed in the centre of the wetland.

A Snapping Turtle (Special Concern) carcass was observed at the edge of the open water portion of the wetland. A live Snapping Turtle, and several (25+) Painted Turtles were observed during Blanding's Turtle surveys and other field investigations within the core wetland area.

4.6 Landscape Connectivity

Landscape connectivity has become recognized as an important component of natural heritage planning. Although there is not universal agreement on the net benefits of corridors, a wide range of benefits can be attributed to maintaining connectivity within the natural landscape. In essence, corridors allow organisms to move between areas of high habitat importance. Conservation of distinct habitat types to protect species may be less effective unless the corridors between them are also protected or restored.

The subject property occurs in an area where the local landscape has been altered through past and present anthropogenic use. From a wildlife perspective, the property is situated directly adjacent to existing urban land uses to the east and south that present a terrestrial barrier to wildlife movement and a possible hazard. In addition to the residential development of the subject land, the paved roads along the north and west property boundaries preclude the presence of a high functioning wildlife corridor. However, the wetland located in the north is part of a local corridor going north and it functions for species associated with the watercourse. The woodlot, in association with other isolated woodlots in the area, may be used by species, such as birds and insects, that can use "stepping-stone" type features.

Under Section 4.2.6 West Orillia Lands Special Policy Area 3 and identified on Schedule 'C' - Overlay of the City's OP, there may be a potential environmental linkage area. Swale 'A' (Bass Lake Drain) occurs in this area and is described in Section 4.4.1 of this report. This is a seasonal drainage that had no flow during field investigation at the end of May 2018 when flows from the spring freshet would result in the highest potential flows of the year. Agricultural activities are occurring across the length of the drainage feature. No riparian natural vegetation or vegetation community is associated with this drainage feature. Tile drains from the agricultural fields outlet to this drainage feature which has resulted in several shallow pools of standing water. Without any permanent flows or vegetation communities associated with this drainage feature, it is highly unlikely that this area is functioning as a wildlife movement corridor.

4.7 Summary of Key Attributes

The 2018 field program documented the existing conditions of the subject property through detailed terrestrial and aquatic investigations.

The primary terrestrial sensitivities on the subject property primarily related to four main areas. These are 1) wetland 2) woodlands 3) watercourses and 4) threatened and endangered species.

Table 6. Summary of Key Functions and Attributes

Features	Key Functions and Attributes
Wetlands	<ul style="list-style-type: none"> Provides variety of habitat (swamp, marshes and open water) for a range of species including small fish, birds, mammals, amphibians and reptiles
Woodlands	<ul style="list-style-type: none"> Mature deciduous forest providing wildlife habitat for birds and mammals Considered a significant woodland in the context of Orillia (i.e., it is greater than 2 ha in size, exceeds the minimum number of trees per hectare, and has “substantive ecological functional importance due to a combination of characteristics”. Existing trails and proximity to residential areas provide social, cultural and recreational values.
Watercourses	<ul style="list-style-type: none"> Seasonal drainages Watercourse ‘A’ provides direct fish habitat. Swale ‘A’ provide indirect fish habitat (base flow). Swale ‘B’ provides indirect fish habitat (base flow).
Threatened and Endangered Species	<ul style="list-style-type: none"> Endangered Butternut trees (southern woodland and hedgerows) Potential habitat for Endangered Bats (swamp in the north and woodlands in the south).
Significant Wildlife Habitat	<ul style="list-style-type: none"> The wetlands and the woodlands support seasonal concentrations of wildlife (breeding birds, amphibians) and species designated as Special Concern (Eastern Wood-Pewee).

5. Proposed Development

The proposed development will be completed in several phases and will include approximately 1317 residential units (single family, medium density and high density) a 1.48 ha commercial block, a 2-ha school block, environmental protection and open space/park blocks, and associated roads (**Figure 3**).

The proposed development will be adjacent to and linked by roads to the approved residential development to the east of the subject property which is partially completed, and portions are still under construction (**Figure 3**).

6. Impact Assessment and Mitigation Measures

6.1 Impact Assessment

Beacon has reviewed the existing conditions on the subject property based on desktop review and field studies and has assessed the composition and functions of the natural heritage features on the subject property. The proposed development plan has been prepared to minimized impacts on these features.

A wetland of approximately 30 ha in area occurs on the subject property and a woodland of approximately 13.5 ha in size (7.7 ha is within the subject property) which extents beyond the eastern property boundary is located within the southern portion of the subject property (**Figure 2**). Both features

are designated “Environmental Protection” in the City of Orillia’s OP. because the wetland is greater than 0.5 ha in size and the woodland meets the definition of a “significant woodland” as defined in OP. The presence of these features and their designation, in part, has required the preparation of an EIS and will be retained in the proposed development.

Potential environmental effects of the proposed residential development of the subject property are the following:

- Direct loss of a seasonal drainage feature (Swale ‘A’) supporting a small amount of indirect fish habitat;
- Direct loss of open space/lawn areas and planted trees (Anthropogenic areas);
- Direct loss of Cultural Meadow (CUM1-1);
- Direct loss of Cultural Thicket (CUT1a, b and c) and hedgerows;
- Direct loss of approximately one hectare of peripheral, low functioning pine plantation (CUP3-2); and
- Direct loss of approximately 0.3 ha of isolated deciduous forest fragment (FOD5-8).

Overall, these impacts are minimal in the context of the proposed development, the majority of which will be within agricultural fields, cultural meadow communities as well as within the anthropogenic areas occupied by the existing houses, driveway, manicured lawns and hedgerows. No significant effects are anticipated on the wetland as no development is proposed within this feature. The impacts are discussed in greater detail in the following sections.

6.1.1 Vegetation Removals

The proposed development areas will occur mostly on agricultural fields and some smaller areas of culturally-modified communities such as hedgerows, meadows, shrub thickets, and plantations (**Figure 3**). None of the vegetation communities on the subject property are considered rare or endangered.

The loss of the pine plantation portion of the woodland that is designated “Environmental Protection” is not considered significant and will not result in the loss of the attributes that make this woodland “significant”. The loss of one hectare of a 13.5 ha woodland is minimal. The area is peripheral with a high degree of edge influences such as light penetration, noise from the adjacent Line 15 North and there is a dirt laneway through the centre. The portion of the woodland proposed for removal is also not a natural forest but a result of past (clearing and plantation) and ongoing human disturbance such as vehicular traffic and yard waste from the neighbouring residents. Three Butternut trees are found along the edges of this plantation but all three have been assessed as Category 1 (non-retainable) and are therefore not protected under the *ESA*. The vegetation or wildlife species found in this plantation are not considered locally or provincially rare or uncommon.

The proposed development should be limited to the approximate dripline of the woodland to protect the remaining tree roots.

The loss of the small, isolated forest and hedgerow (FOD5-8) in the southern portion of the subject property contains seven Butternut trees and five snag trees that are potential habitat for endangered bat species. Mitigation measures can be implemented to address the loss of these features. The need for, and type of mitigation measures, if necessary, should be determined in consultation with the MNRF



Legend

- Subject Property (Approximate)
- Vegetation Proposed to be Removed
- Proposed Limit of Development
- Proposed Development
- Staked Wetland (Beacon 2018)
- Staked Wetland +10m

Proposed Development

Figure 3

Charter Developments LP

UTM Zone 17 N, NAD 83

First Base Solutions
Web Mapping Service 2016



0 87.5 175 350 Metres

1:7,000



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closer to the time of site plan application. Mitigation measures may include planting replacement trees to mitigate tree loss and, or installation of bat boxes to replace potential roosting habitat.

Some of the Butternut trees within the subject property will require removal to accommodate the proposed development. The province provides a permit or registry process to ensure that any removals include mitigation measures to ensure an overall benefit to the species. Given that development may not occur in the areas of Butternut occurrences for several years, these trees should be re-assessed the season prior to site plan application as the condition of the trees may change.

6.1.2 Wetlands

No wetlands are proposed for removal to accommodate the proposed development. Development is proposed to the west and east of the wetland block. The wetland communities at the western edge of the wetland block (MAM2-2, MAM2-1) appear to have been cleared for agriculture in the past and consist of dense stands of Reed Canary Grass and cattails. The vegetation community nearest to the eastern edge of this area is an upland forest. These communities are not particularly sensitive and would provide a buffering function from the interior portion of the wetland block which contains more sensitive marsh and open water habitat for birds, amphibians and reptiles. A vegetated buffer could be applied along the western wetland boundaries and along the eastern edge of the forest and enhanced with a planting plan to further reduce any impacts to the wetlands. A recreation trail may be included within this vegetated buffer. Surface drainage from roads and driveways will be directed towards stormwater management facilities and away from the wetland features. The dense understory and wet soil reduce the likelihood of humans entering this area, and helps further minimize human disturbance.

A hydrogeological assessment was not part of the scope of this study. However, based on preliminary geotechnical investigations, it is our understanding that the majority of the subject property has an uppermost soil layer with low permeability and underlain with a deeper layer of coarse, water-bearing soil. Given the surrounding topography and the lack of any permanent, year-round surface water entering the wetlands, it is assumed that the deeper groundwater is the major source of water for this wetland. The proposed development should incorporate infiltration areas using Low Impact Development (LID) techniques, where feasible, to maintain some groundwater inputs to this wetland feature.

6.1.3 Aquatic Habitat

The drainage features on the subject property are not regulated under the Conservation Authorities Act as the subject property is outside the jurisdiction of the conservation authorities.

The subject property is within one kilometer of Bass Lake and in the watershed of Matchedash Bay (Lake Huron). Two drainage features were identified on the subject property i.e. Swale 'A' and 'B'. Watercourse 'A', located within the wetland, provides direct fish habitat in parts and contributing fish habitat in others (i.e. water supply, nutrients, substrate etc.). Cyprinids were observed within Swale 'A' in pools in the southwest corner of the subject property. Swale 'B' provides contributing fish habitat only. These types of drainage features are not exempt from DFO review based on guidance on the DFO website (DFO 2018). Thus, Beacon recommends consultation with DFO to obtain a letter of advice prior to removal.

6.1.4 Bat Habitat

The area of potential habitat proposed for removal includes an isolated patch of forest and a mid-aged pine plantation that total approximately 1.19 ha. Two larger forested areas, a swamp (~30 ha) and upland mature forest (~10 ha), will be retained within the subject property and contain an estimated 5 to 10 snags per hectare of potential maternity roosting habitat. Given the small number of snags (5) proposed for removal and the larger, more suitable habitat that will be retained on site, Beacon is of the opinion that these removals will not have a significant impact on species at risk bats or their habitat. and would not likely represent a contravention of the ESA. However, given that the development phase in this portion of the subject property may be 5 to 10 years away, re-surveying for potential bat habitat may be prudent, followed by consultations with the MNRF.

6.1.5 Significant Wildlife Habitat

The woodlands and the wetland block both represent Significant Wildlife Habitat based on the presence of several breeding pair of Eastern Wood Pewee (Special Concern) in the swamp and in the woodland, and the seasonal concentration of breeding amphibians in the wetlands. There will be no negative impacts on these habitats as there will be no intrusion on the wetlands and, as outlined above in Section 6.1.1, the tree removals proposed at the western end of the woodland are minor in extent and of low quality with sufficient breeding habitat remaining within the older, higher quality deciduous forest.

6.2 Mitigation Measures

The following mitigation measures are recommended to be employed before, during and after the construction of the proposed development plan.

6.2.1 Wetland Buffer

Based on field investigations, sensitivity analysis and impact assessment, a minimum 10 m vegetated buffer should be implemented along the west and east sides of the wetland and woodland block located in the northern portion of the subject property. A recreation trail may be included within the buffer, but no residential or road development shall occur within this buffer. Stormwater from the development areas should be directed away from the wetland and other natural features and towards approved stormwater management facilities.

6.2.2 Buffer Planting Plan

A buffer planting plan is recommended for the buffer areas adjacent to the wetland area. This plan will include a mix of native trees, shrubs and groundcover consistent with what is found within the region.

6.2.3 Construction Timing

The federal *Migratory Bird Convention Act* (1994) protects the nests, eggs and young of most bird species from harm or destruction. Environment Canada considers the 'general nesting period' of

breeding birds in southern Ontario to be between early April and the end of August. This includes times at the beginning and end of the season when only a few species might be nesting. In light of this we recommend that during the peak period of bird nesting, no vegetation clearing or disturbance to nesting bird habitat occur between May 01 and mid-July. In the ‘shoulder’ seasons of April 1 to 30, and July 16 to August 31, we suggest that vegetation clearing could occur, but only after an ecologist with appropriate avian knowledge has surveyed the area to confirm lack of nesting. If nesting is found, then vegetation clearing (in an area around the nest) has to wait until nesting has concluded. Generally speaking, the smaller and simpler the habitat is, the easier it is to confirm that no nesting is occurring. The likelihood of nesting birds being present in the ‘shoulder’ seasons also depends on the habitat type. From September 1 through to March 31, of any year, vegetation clearing can occur without nest surveys, but the law for nest protection still applies (i.e. if an active nest is known it should be protected).

As a precaution to protect bat species at risk, forested area tree removals should not occur during the season when bats may be roosting or rearing young (i.e., April 15th to September 1st).

6.2.4 Access Restrictions

A chain-link fence should be placed along the outside edge of the future lots that back on to the woodlot or wetlands, to manage access into the natural system and mitigate against rear-yard dumping.

6.2.5 Erosion and Sediment Control

Construction works such as grading, grubbing and excavation can cause the movement of sediment into watercourses or wetlands, both on and downstream of the property, especially on steeper slopes. An erosion and sediment control plan should be prepared and approved by the City prior to construction works. This plan should be designed and constructed as per the City of Orillia’s “Engineering Design Criteria” document (C.C. Tatham & Associates Ltd. 2012) and address phasing, inspection and monitoring aspects of erosion and sediment control.

Silt fencing should be installed to minimize sediment leaving the site and should be removed when development work is completed, and exposed soils stabilized.

Standard Best Management Practices should also be employed during the construction process.

6.2.6 Butternut Mitigation Plan

The proposed development plan currently will impact five Category 3 (Archivable) and eight Category 2 (Retainable) Butternut trees. Removal or harm to Category 3 trees will require further consultations with the MNRF to obtain an Overall Benefit Permit. Through this process a mitigation plan will be formulated that may include the collection of cuttings (scions) from one or more of the Category 3 trees and/or mitigation plantings of Butternut seedlings and companion trees. However, as mentioned previously, the condition of these trees will likely change over time. If these trees are re-assessed, and 10 or less Category 2 trees, and no Category 3 trees are proposed to be removed or harmed, then the project may follow the much simpler Registry process with the MNRF, which would include a mitigation planting plan. The open cultural meadow located on the east side of the northern wetland and forest block has been identified as a potentially suitable planting area.

7. Policy Conformity

Section 2 of this report provided an overview of the natural heritage policies and regulations of the Provincial Policy Statement, City of Orillia, and the *Endangered Species Act*. This section examines conformity with those specific policies and regulations.

7.1 Provincial Policy Statement

The subject property does not support any Provincially Significant Wetlands, Significant Valleylands, Areas of Natural and Scientific Interest, nor any Coastal Wetlands.

7.1.1 Significant Woodlands

The woodlands within the southern portion of the subject property are designated Significant Woodlands by the City of Orillia. The proposed development will not negatively impact this feature; the health or integrity of the functions and features that contribute to the significance of this woodland will not be threatened.

7.1.2 Significant Wildlife Habitat

The identification of this element is the responsibility of the planning authority as it requires the relative assessment of features and the determination of thresholds. Based on field observations, there is Significant Wildlife Habitat on the subject property in the form of part or all of the wetland and the FOD4-1 woodland community. If the recommended mitigation measures are implemented, there will be no negative impact to the Significant Wildlife Habitat on the subject property.

7.1.3 Habitat of Endangered and Threatened Species

There is potential habitat of endangered and threatened species based on the findings of the various field investigations (bat habitat surveys, breeding bird surveys and Butternut surveys). Further consultations with the MNR should be undertaken to determine if the project is in conformity with the *Endangered Species Act*. Should development not commence after 3 years, re-surveys would be required in June for birds, bats and in the leaf-on season for Butternuts.

7.2 City of Orillia Official Plan

This EIS demonstrates conformity with the policies under Section 3.5 – The Environment/Open Space Areas, and Section 4.2.6 – West Orillia Lands Special Policy Area. Through avoidance, minimization and mitigation, the features and functions of the Environmental Protection Areas will not be negatively affected.

7.3 *Endangered Species Act*

Closer to development, Butternut trees on the subject property will be re-assessed using the Butternut Health Assessment process and will be addressed through O. Reg 242/08, as applicable.

Prior to any site development or site plan application, potential habitat of Endangered species of bats on the subject property will be subject to consultations with the MNRF – Midhurst District in order to be in conformity with the ESA.

8. Conclusions

This EIS has been prepared as a requirement of the City of Orillia's Official Plan and to address the potential of species regulated under the *Endangered Species Act*. The preparation of this report also adheres to the terms of reference and study requirements agreed upon with the City's peer reviewer.

Beacon described the natural heritage conditions on the subject property based on a background review and field investigations.

Several natural heritage features and functions on the subject property, including species or habitat that require protection under the *Endangered Species Act*, have been identified, described and assessed. The proposed development has been designed to avoid and minimize negative impacts and measures have been recommended to mitigate any residual negative impacts on the natural heritage features.

Prior to each phase of development, updates to some to the seasonal surveys (bats, birds and Butternuts) will be needed to determine the presence and status of any species or habitat that require protection under the ESA.

Conformity with the ESA notwithstanding, the development as proposed can proceed and in our professional opinion it will be in compliance with applicable natural heritage policies.

Prepared by:
Beacon Environmental



Ryan Morin, B.Sc.
Ecologist/GIS Specialist

Prepared and Reviewed by:
Beacon Environmental



Geri Poisson, B.A. (Hons), CAN-CISEC
Terrestrial Ecologist, ISA-certified Arborist

Reviewed by:
Beacon Environmental



Rosalind Chaundy, M.Sc.F
Senior Ecologist

9. References

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Appendix A

Agency Correspondence



RIVERSTONE
ENVIRONMENTAL SOLUTIONS INC.

April 20, 2018
RS# 2018-040

Jill Lewis

Jill Lewis, B.Com., M.A. (Pl), MCIP, RPP
Senior Planner, City of Orillia
Development Services and Engineering Department – Planning Division

via email: JLewis@orillia.ca

SUBJECT: Meeting Summary, Terms of Reference – Charter Construction Environmental Impact Study

Dear Jill:

RiverStone Environmental Solutions Inc. (hereafter RiverStone) is pleased to provide the City of Orillia with a summary of our meeting with the consulting group representing Charter Construction. The purpose of the meeting was to discuss the development proposal and come to an agreement on the required components, Terms of Reference, for the Environmental Impact Study (EIS) that is required to further the *Planning Act* application to develop the subject lands.

The meeting was held at the RiverStone office in Bracebridge on March 29, 2018. The consulting team representing Charter Construction included Mr. Paul Neals (Orion Environmental Solutions), Geri Poisson (Beacon Environmental), and Ryan Morin (Beacon Environmental).

It is our understanding that Charter Construction is proposing to continue developing adjacent to an existing subdivision that they have been building for some time. The property is location to the south of Bass Lake Sideroad and immediately to the east of Line 15 North. The property consists of agricultural fields, woodlots and wetlands. Some infrastructure is already in place, such as a stormwater pond, and some roads; however, several roads, some with crossings of watercourses, will be required to service the lots that are being proposed.

It regard to the completion of an EIS, Section 7.1.9 (pages 199-205) of the City of Orillia Official Plan sets out the policies and expectations for an EIS. The guiding principal is that “An Environmental Impact Study shall demonstrate that there will be no *negative impact* resulting form the proposed use on the nature and significance of the natural features that have been identified and includes a statement about the presence or absence of species identified for protection by the relevant legislation”. It was noted at the meeting that the EIS should follow the details of this section of the Official Plan in terms of the features and functions that would be addressed. As discussed with the City prior to the meeting and relayed to the Charter Construction consultants, the EIS was not expected to include any details regarding groundwater recharge/discharge or aquifer conditions. These details are expected to be considered by others.

In addition to the policies above, Official Plan policy 4.2.6 a) refers to Environmental Features, Functions and Linkages on the West Orillia Lands. This policy should be reviewed and included in the assessment of the lands and impacts related to the proposed development.

In order to address the significance and need to protect certain features and functions, field studies will need to be completed. The type of field studies and breadth of site assessment are not necessarily outlined in the Official Plan, which were the primary details discussed at the meeting. Based on our meeting notes, the following items were agreed to be included in the field assessment:

- Wetland boundary – assessment of the boundary of the central wetland adjacent to the proposed development (using Provincial standards).
- Watercourse assessment (particularly creek under Line 15 N draining the agricultural field to the west, with proposed road crossing). Includes the determination of whether the watercourse is coldwater or warmwater, may include sampling the fish community, if there are fish.
- Ecological Land Classification of vegetation communities. Does not require four season vegetation studies, but does require enough detail to accurately assign ELC for the purposes of assessing the potential for species at risk and significant wildlife habitat.
- Species at Risk (SAR), assessment for species potential on the property – either by a habitat-based approach or through species specific studies. We discussed Bobolink in particular as much of the subject property is presently under active agriculture. It was also noted that it is our responsibility to review the EIS for SAR.
- Breeding Bird Survey – assessment using standard protocols, in the agriculture, wetland edge and woodlot habitats.
- Amphibian surveys – not necessary given the wetland is to be protected and there are no other wetlands.
- Significant Wildlife Habitat – should be assessed against the Provincial tools (SWH Technical Guide, Ecoregion Criteria Schedules and Mitigation Tool).
- Significant Woodlands – Woodlands along the south portion of the property should be considered for classification as Significant Woodlands.
- Based on the assessment of each of the natural features above, the appropriate protection should be assigned to significant features along with development setbacks/buffers to protect those features and functions. This is consistent with Official Plan Policy 7.1.9 d) viii), that refers to a management plan, and is synonymous with a map of environmental constraints.
- The site assessments were to be completed during the appropriate time of year according to industry/Provincial standards, unless otherwise agreed.

It was our expectation that we would attend the site during the field season, first giving notice to the consultant team. We would likely wait until some of the field work has been completed.

These are the pertinent details of our meeting related to the TOR for the EIS.

Should you have any questions please call me at 705.645.9887 (office).

RiverStone Environmental Solutions Inc.

Per:

A handwritten signature in black ink, appearing to read 'Al Shaw', with a long horizontal flourish extending to the right.

Al Shaw, M.Sc.,
Senior Ecologist/Principal

Gerri Poisson

From: Shirley, Brent (MNRF) <brent.shirley@ontario.ca>
Sent: April 23, 2018 1:25 PM
To: Gerri Poisson
Subject: RE: Information request West Orillia

Hi Gerri,

As you are likely aware the species at risk records found in the NHIC database are not exhaustive and are based on **known** occurrences only. As a result, although there may be no record (or confirmation) of a species at risk on site it does not mean that they are not present if appropriate habitat exists. Due diligence is therefore still required and would include an appropriate consideration of what species could be present based on available habitat at the location noted above. Your field work should inform you on what species on the SARO list could possibly be encountered based on available habitats in the area of the study and the possible survey methodologies required during your site assessments.

I think that you should consider Blanding's turtle, Barn Swallow, Bobolink, Eastern Meadowlark, Eastern Wood-pewee, Snapping Turtle, Wood Thrush and SAR bat species as having potential to be on site based on known occurrences in the immediate vicinity of the study area. Based on the available habitat on site, you might be able to conclude many of these species would not be reasonably found on the subject property. That will be determined through your ecological assessment and field work.

The province has centralized and made publicly available digital and species data that lends to inform data needs such as the information requests MNRF receives. Given the volume of information requests received by the district, it is our expectation that you complete a preliminary screening for your project and obtain available information from the following sources prior to requesting additional information from MNRF. Going forward, your information requirements can largely be met through the use of the following data sources and reference documents:

- Digital data for natural heritage features (e.g. wetland and ANSI mapping, fish community data) can be obtained through Land Information Ontario (LIO) and/or through the Make a Map: Natural Heritage Areas tool through LIO at the link below.

Land Information Ontario: <https://www.ontario.ca/page/land-information-ontario>

- Make a Map: Natural Heritage Areas: http://www.gisapplication.lrc.gov.on.ca/mamnh/Index.html?site=MNR_NHLUPS_NaturalHeritage&viewer=NaturalHeritage&locale=en-US. Natural Heritage Information Centre (NHIC) data is also available through this interactive map tool.
- Other resources to consider include:
 "Atlas of the Breeding Birds of Ontario"
 "Ontario Reptile and Amphibian Atlas"

Please contact me if you have any questions or concerns.

Best Regards,

Brent Shirley

A/ Management Biologist

Midhurst District Ministry of Natural Resources & Forestry
2284 Nursery Rd
Midhurst, ON
L9X 1N8

Phone- 705-725-7547

Fax- 705-725-7584

From: Geri Poisson [mailto:gpoisson@beaconenviro.com]

Sent: April 19, 2018 4:11 PM

To: MIDHURSTINFO (MNRF)

Subject: Information request West Orillia

Hello,

Beacon has been retained to undertake an Environmental Impact Study for a proposed residential development in Orillia, in the city's northwest corner. I have attached a Info Request Form and a site location map.

No NHIC data was available for the subject properties, but there is a record of a Snapping Turtle to the west. The site also has a wetland area and mature forest block. Initial site investigations have found a number of Butternut trees (not yet assessed) and potential bat maternity roosting trees (snags). Information on these features is being compiled. We have conducted a snag survey and will be contacting you soon regarding our findings and next steps.

Please let me know if the MNRF has any further information or records of species at risk or other natural heritage features of the subject lands.

Thank you,

Geris Poisson, B.A. (Hon) / Certified Arborist, Terrestrial Ecologist

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Appendix B

Vascular Plant List (2018)

Appendix B

Plant List - West Orillia Neighbourhood Plan Area, City of Orillia

Family Name	Scientific Name	Common Name	Origin	COSEWIC	COSSARO	S-RANK	Simcoe County (Riley 1989)
Anacardiaceae	<i>Rhus typhina</i>	Staghorn Sumac	N			S5	
Anacardiaceae	<i>Toxicodendron rydbergii</i>	Western Poison Ivy	N			S5	
Apiaceae	<i>Daucus carota</i>	Queen Anne's Lace	I			SNA	
Apocynaceae	<i>Apocynum androsaemifolium</i> ssp. <i>androsaemifolium</i>	Spreading Dogbane	N			S5	
Araceae	<i>Arisaema triphyllum</i> ssp. <i>triphyllum</i>	Jack-in-the-pulpit	N			S5	
Araliaceae	<i>Aralia nudicaulis</i>	Wild Sarsaparilla	N			S5	
Aristolochiaceae	<i>Asarum canadense</i>	Wild Ginger	N			S5	
Asclepiadaceae	<i>Asclepias syriaca</i>	Common Milkweed	N			S5	
Asteraceae	<i>Achillea millefolium</i> var. <i>millefolium</i>	Common Yarrow	I			SNA	
Asteraceae	<i>Ambrosia artemisiifolia</i>	Annual Ragweed	N			S5	
Asteraceae	<i>Arctium minus</i>	Lesser Burdock	I			SNA	
Asteraceae	<i>Bidens frondosa</i>	Devil's Beggar's Ticks	N			S5	
Asteraceae	<i>Cichorium intybus</i>	Chicory	I			SNA	
Asteraceae	<i>Cirsium arvense</i>	Creeping Thistle	I			SNA	
Asteraceae	<i>Doellingeria umbellata</i> var. <i>umbellata</i>	Flat-topped White Aster	N			S5	
Asteraceae	<i>Erigeron annuus</i>	White-top Fleabane	N			S5	
Asteraceae	<i>Euthamia graminifolia</i>	Grass-leaved Goldenrod	N			S5	
Asteraceae	<i>Hieracium aurantiacum</i>	Orange Hawkweed	I			SNA	
Asteraceae	<i>Lactuca</i> sp.	Lettuce Species	N				
Asteraceae	<i>Leucanthemum vulgare</i>	Oxeye Daisy	I			SNA	
Asteraceae	<i>Solidago canadensis</i>	Canada Goldenrod	N			S5	
Asteraceae	<i>Solidago rugosa</i> ssp. <i>rugosa</i>	Rough Goldenrod	N			S5	
Asteraceae	<i>Symphyotrichum lanceolatum</i> ssp. <i>lanceolatum</i>	Panicled Aster	N			S5	
Asteraceae	<i>Symphyotrichum novae-angliae</i>	New England Aster	N			S5	
Asteraceae	<i>Symphyotrichum puniceum</i> var. <i>puniceum</i>	Purple-stemmed Aster	N			S5	
Asteraceae	<i>Taraxacum officinale</i>	Common Dandelion	I			SNA	
Asteraceae	<i>Tussilago farfara</i>	Colt's Foot	I			SNA	
Balsaminaceae	<i>Impatiens capensis</i>	Spotted Jewel-weed	N			S5	
Berberidaceae	<i>Caulophyllum thalictroides</i>	Blue Cohosh	N			S5	
Berberidaceae	<i>Podophyllum peltatum</i>	May Apple	N			S5	
Betulaceae	<i>Betula alleghaniensis</i>	Yellow Birch	N			S5	
Betulaceae	<i>Betula papyrifera</i>	Paper Birch	N			S5	
Betulaceae	<i>Ostrya virginiana</i>	Eastern Hop-hornbeam	N			S5	
Boraginaceae	<i>Echium vulgare</i>	Common Viper's-bugloss	I			SNA	
Boraginaceae	<i>Hackelia virginiana</i>	Virginia Stickseed	N			S5	
Boraginaceae	<i>Myosotis scorpioides</i>	True Forget-me-not	I			SNA	

Family Name	Scientific Name	Common Name	Origin	COSEWIC	COSSARO	S-RANK	Simcoe County (Riley 1989)
Caprifoliaceae	<i>Sambucus canadensis</i>	Common Elderberry	N			S5	
Caprifoliaceae	<i>Sambucus racemosa</i>	Red-berried Elder	N			S5	
Caprifoliaceae	<i>Triosteum aurantiacum</i>	Horse Gentian	N			S5	
Caprifoliaceae	<i>Viburnum opulus</i>	Guelder-rose Viburnum	I			SNA	
Caryophyllaceae	<i>Silene latifolia</i>	Bladder Champion	I			SNA	
Caryophyllaceae	<i>Stellaria longifolia</i>	Longleaf Stitchwort	N			S5	
Clusiaceae	<i>Hypericum perforatum</i>	St. John's-wort	I			SNA	
Cornaceae	<i>Cornus alternifolia</i>	Alternate-leaf Dogwood	N			S5	
Cornaceae	<i>Cornus sericea</i> ssp. <i>sericea</i>	Red-osier Dogwood	N			S5	
Cupressaceae	<i>Thuja occidentalis</i>	Northern White Cedar	N			S5	
Cyperaceae	<i>Carex arctata</i>	Black Sedge	N			S5	
Cyperaceae	<i>Carex bebbii</i>	Bebb's Sedge	N			S5	
Cyperaceae	<i>Carex gracillima</i>	Graceful Sedge	N			S5	
Cyperaceae	<i>Carex hystericina</i>	Porcupine Sedge	N			S5	
Cyperaceae	<i>Carex lacustris</i>	Lake-bank Sedge	N			S5	
Cyperaceae	<i>Carex rosea</i>	Rosy Sedge	N			S5	
Cyperaceae	<i>Carex stipata</i>	Stalk-grain Sedge	N			S5	
Cyperaceae	<i>Carex vulpinoidea</i>	Fox Sedge	N			S5	
Cyperaceae	<i>Scirpus atrovirens</i>	Woolgrass Bulrush	N			S5	
Dryopteridaceae	<i>Athyrium filix-femina</i> var. <i>angustum</i>	Lady-fern	N			S5	
Dryopteridaceae	<i>Dryopteris carthusiana</i>	Spinulose Wood Fern	N			S5	
Dryopteridaceae	<i>Dryopteris intermedia</i>	Evergreen Wood Fern	N			S5	
Dryopteridaceae	<i>Matteuccia struthiopteris</i> var. <i>pensylvanica</i>	Ostrich Fern	N			S5	
Dryopteridaceae	<i>Onoclea sensibilis</i>	Sensitive Fern	N			S5	
Fabaceae	<i>Coronilla varia</i>	Crown-vetch	I			SNA	
Fabaceae	<i>Lathyrus latifolius</i>	Everlasting Pea	I			SNA	
Fabaceae	<i>Medicago lupulina</i>	Black Medic	I			SNA	
Fabaceae	<i>Medicago sativa</i> ssp. <i>sativa</i>	Alfalfa	I			SNA	
Fabaceae	<i>Trifolium pratense</i>	Red Clover	I			SNA	
Fabaceae	<i>Vicia cracca</i>	Tufted Vetch	I			SNA	
Fagaceae	<i>Fagus grandifolia</i>	American Beech	N			S5	
Fagaceae	<i>Quercus rubra</i>	Northern Red Oak	N			S5	
Geraniaceae	<i>Geranium robertianum</i>	Herb-robert	I			S5	
Grossulariaceae	<i>Ribes cynosbati</i>	Prickly Gooseberry	N			S5	
Hydrophyllaceae	<i>Hydrophyllum virginianum</i>	Virginia Waterleaf	N			S5	
Juglandaceae	<i>Juglans cinerea</i>	Butternut	N	END	END	S3?	
Juncaceae	<i>Juncus articulatus</i>	Jointed Rush	N			S5	
Juncaceae	<i>Juncus effusus</i> ssp. <i>solutus</i>	Soft Rush	N			S5	
Lamiaceae	<i>Nepeta cataria</i>	Catnip	I			SNA	
Lamiaceae	<i>Prunella vulgaris</i> ssp. <i>vulgaris</i>	Common Heal-all	I			SNA	
Lemnaceae	<i>Lemna minor</i>	Lesser Duckweed	N			S5	

Family Name	Scientific Name	Common Name	Origin	COSEWIC	COSSARO	S-RANK	Simcoe County (Riley 1989)
Liliaceae	<i>Allium tricoccum</i>	Wild Leek	N			S5	
Liliaceae	<i>Asparagus officinalis</i>	Asparagus	I			SNA	
Liliaceae	<i>Erythronium americanum</i> ssp. <i>americanum</i>	Yellow Trout-lily	N			S5	
Liliaceae	<i>Hemerocallis fulva</i>	Orange Daylily	I			SNA	
Liliaceae	<i>Maianthemum canadense</i>	Wild-lily-of-the-valley	N			S5	
Liliaceae	<i>Maianthemum racemosum</i> ssp. <i>racemosum</i>	False Solomon's Seal	N			S5	
Liliaceae	<i>Trillium erectum</i>	Red Trillium	N			S5	
Liliaceae	<i>Trillium grandiflorum</i>	White Trillium	N			S5	
Oleaceae	<i>Fraxinus americana</i>	White Ash	N			S5	
Oleaceae	<i>Fraxinus nigra</i>	Black Ash	N			S5	
Oleaceae	<i>Fraxinus pennsylvanica</i>	Green Ash	N			S5	
Onagraceae	<i>Circaea lutetiana</i> ssp. <i>canadensis</i>	Enchanter's Nightshade	N			S5	
Onagraceae	<i>Oenothera biennis</i>	Common Evening-primrose	N			S5	
Orchidaceae	<i>Epipactis helleborine</i>	Eastern Helleborine	I			SNA	
Osmundaceae	<i>Osmunda claytoniana</i>	Interrupted Fern	N			S5	
Pinaceae	<i>Pinus strobus</i>	Eastern White Pine	N			S5	
Pinaceae	<i>Pinus sylvestris</i>	Scotch Pine	I			SNA	
Pinaceae	<i>Tsuga canadensis</i>	Eastern Hemlock	N			S5	
Plantaginaceae	<i>Plantago lanceolata</i>	English Plantain	I			SNA	
Plantaginaceae	<i>Plantago major</i>	Nipple-seed Plantain	I			SNA	
Poaceae	<i>Agrostis gigantea</i>	Redtop	I			SNA	
Poaceae	<i>Bromus inermis</i> ssp. <i>inermis</i>	Smooth Brome	I			SNA	
Poaceae	<i>Calamagrostis canadensis</i>	Blue-joint Reedgrass	N			S5	
Poaceae	<i>Dactylis glomerata</i>	Orchard Grass	I			SNA	
Poaceae	<i>Danthonia spicata</i>	Poverty Oat-grass	N			S5	
Poaceae	<i>Elymus hystrix</i>	Bottle-brush Grass	N			S5	
Poaceae	<i>Glyceria striata</i>	Fowl Manna Grass	N			S5	
Poaceae	<i>Leersia oryzoides</i>	Rice Cutgrass	N			S5	
Poaceae	<i>Phalaris arundinacea</i>	Reed Canary Grass	N			S5	
Poaceae	<i>Phleum pratense</i>	Timothy	I			SNA	
Polygonaceae	<i>Polygonum cuspidatum</i>	Japanese Knotweed	I			SNA	
Primulaceae	<i>Lysimachia nummularia</i>	Moneywort	I			SNA	
Ranunculaceae	<i>Actaea pachypoda</i>	White Baneberry	N			S5	
Ranunculaceae	<i>Anemone canadensis</i>	Canada Anemone	N			S5	
Ranunculaceae	<i>Clematis virginiana</i>	Virginia Virgin-bower	N			S5	
Ranunculaceae	<i>Ranunculus acris</i>	Tall Buttercup	I			SNA	
Ranunculaceae	<i>Thalictrum dioicum</i>	Early Meadowrue	N			S5	
Ranunculaceae	<i>Thalictrum pubescens</i>	Tall Meadowrue	N			S5	
Rhamnaceae	<i>Rhamnus cathartica</i>	Buckthorn	I			SNA	
Rosaceae	<i>Crataegus</i> sp.	Hawthorn Species	N				
Rosaceae	<i>Geum urbanum</i>	Clover-root	I			SNA	

Family Name	Scientific Name	Common Name	Origin	COSEWIC	COSSARO	S-RANK	Simcoe County (Riley 1989)
Rosaceae	<i>Malus</i> sp.	Apple Species	I				
Rosaceae	<i>Prunus serotina</i>	Wild Black Cherry	N			S5	
Rosaceae	<i>Prunus virginiana</i> var. <i>virginiana</i>	Choke Cherry	N			S5	
Rosaceae	<i>Rubus allegheniensis</i>	Allegheny Blackberry	N			S5	
Rosaceae	<i>Rubus idaeus</i> ssp. <i>strigosus</i>	Wild Red Raspberry	N			S5	
Rubiaceae	<i>Galium palustre</i>	Marsh Bedstraw	N			S5	
Salicaceae	<i>Populus balsamifera</i> ssp. <i>balsamifera</i>	Balsam Poplar	N			S5	
Salicaceae	<i>Populus deltoides</i> ssp. <i>monilifera</i>	Eastern Cottonwood	N			S5	
Salicaceae	<i>Populus grandidentata</i>	Large-tooth Aspen	N			S5	
Salicaceae	<i>Populus tremuloides</i>	Quaking Aspen	N			S5	
Salicaceae	<i>Salix discolor</i>	Pussy Willow	N			S5	
Salicaceae	<i>Salix fragilis</i>	Crack Willow	I			SNA	
Salicaceae	<i>Salix petiolaris</i>	Meadow Willow	N			S5	
Sapindaceae	<i>Acer negundo</i>	Manitoba Maple	N			S5	
Sapindaceae	<i>Acer platanoides</i>	Norway Maple	I			SNA	
Sapindaceae	<i>Acer rubrum</i>	Red Maple	N			S5	
Sapindaceae	<i>Acer saccharum</i> var. <i>saccharum</i>	Sugar Maple	N			S5	
Sapindaceae	<i>Acer x freemanii</i>	Freeman's Maple	N			S5	
Scrophulariaceae	<i>Linaria vulgaris</i>	Butter-and-eggs	I			SNA	
Scrophulariaceae	<i>Verbascum thapsus</i>	Common Mullein	I			SNA	
Scrophulariaceae	<i>Veronica beccabunga</i>	European Speedwell	I			SNA	
Solanaceae	<i>Solanum dulcamara</i>	Climbing Nightshade	I			SNA	
Tiliaceae	<i>Tilia americana</i>	American Basswood	N			S5	
Typhaceae	<i>Typha angustifolia</i>	Narrow-leaved Cattail	N			S5	
Typhaceae	<i>Typha latifolia</i>	Broad-leaf Cattail	N			S5	
Ulmaceae	<i>Ulmus americana</i>	American Elm	N			S5	
Violaceae	<i>Viola blanda</i>	Smooth White Violet	N			S4S5	
Vitaceae	<i>Parthenocissus vitacea</i>	Thicket Creeper	N			S5	
Vitaceae	<i>Vitis riparia</i>	Riverbank Grape	N			S5	

LEGEND:

Origin: N - Native, I - Introduced

COSEWIC - Committee on the Status of Endangered Wildlife in Canada

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

S-RANK: S5 Secure - Common, widespread, and abundant; S4 Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors., while concern about its status increases as the score declines; S3 Vulnerable—Vulnerable due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation; SNA Not Applicable —A conservation status rank is not applicable because the species is not a suitable target for conservation activities. These ranks are not legal designations.

Appendix C

Breeding Bird List (2018)

Appendix C

Breeding Bird List - West Orillia Neighbourhood Plan Area, City of Orillia

Common Name	Scientific Name	Status		Locations * / Numbers of Pairs				
		National Species at Risk COSEWICa	Species at Risk in Ontario Listing a	Provincial breeding season SRANK b	Area-sensitive (OMNR)c	South Woodland	North Wetland / Woodland	Other Areas
Great Blue Heron	<i>Ardea herodias</i>			S4			1 F	1 F
Green Heron	<i>Butorides virescens</i>			S4			3	3
Mallard	<i>Anas platyrhynchos</i>			S5			1	8 F
Red-tailed Hawk	<i>Buteo jamaicensis</i>			S5		1		1
Wild Turkey	<i>Meleagris gallopavo</i>			S5			10	10
Ruffed Grouse	<i>Bonasa umbellus</i>			S4			1	1
Virginia Rail	<i>Rallus limicola</i>			S5			2	2
Killdeer	<i>Charadrius vociferus</i>			S5			1	2
Spotted Sandpiper	<i>Actitis macularia</i>			S5				1
Mourning Dove	<i>Zenaida macroura</i>			S5			1	1
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>			S5		1		1
Great Horned Owl	<i>Bubo virginianus</i>			S4			1	1
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>			S5	A		3	3
Northern Flicker	<i>Colaptes auratus</i>			S4			1	1
Pileated Woodpecker	<i>Dryocopus pileatus</i>			S5	A	1		1
Eastern Wood-Pewee	<i>Contopus virens</i>	SC	SC	S4		3	2	5
Alder Flycatcher	<i>Empidonax alnorum</i>			S5			8	1
Great Crested Flycatcher	<i>Myiarchus crinitus</i>			S4			5	5
Eastern Kingbird	<i>Tyrannus tyrannus</i>			S4			1	1
Tree Swallow	<i>Tachycineta bicolor</i>			S4			1	1
Barn Swallow	<i>Hirundo rustica</i>	THR	THR	S4			4 F	4 F
Blue Jay	<i>Cyanocitta cristata</i>			S5		1	2	1
American Crow	<i>Corvus brachyrhynchos</i>			S5		1	1	1
Black-capped Chickadee	<i>Poecile atricapillus</i>			S5		1	3	1
Red-breasted Nuthatch	<i>Sitta canadensis</i>			S5	A	1	1	2
House Wren	<i>Troglodytes aedon</i>			S5		1	3	1
Veery	<i>Catharus fuscescens</i>			S4	A		2	2
American Robin	<i>Turdus migratorius</i>			S5		2	7	3
Gray Catbird	<i>Dumetella carolinensis</i>			S4			2	1
Cedar Waxwing	<i>Bombycilla cedrorum</i>			S5			2	2
European Starling	<i>Sturnus vulgaris</i>			SE				1
Red-eyed Vireo	<i>Vireo olivaceus</i>			S5		7	7	1
Yellow Warbler	<i>Setophaga petechia</i>			S5			3	1
Chestnut-sided Warbler	<i>Setophaga pensylvanica</i>			S5			1	1
Pine Warbler	<i>Setophaga pinus</i>			S5	A	1		1
Black-and-white Warbler	<i>Mniotilta varia</i>			S5	A		3	3
American Redstart	<i>Setophaga ruticilla</i>			S5	A	1	4	1
Ovenbird	<i>Seiurus aurocapillus</i>			S4	A		1	1

Common Name	Scientific Name	Status		Locations * / Numbers of Pairs					
		National Species at Risk COSEWICa	Species at Risk in Ontario Listing a	Provincial breeding season SRANK ^b	Area-sensitive (OMNR)c	South Woodland	North Wetland / Woodland	Other Areas	Total
Mourning Warbler	<i>Geothlypis philadelphia</i>			S4		1			1
Common Yellowthroat	<i>Geothlypis trichas</i>			S5			11		11
Northern Cardinal	<i>Cardinalis cardinalis</i>			S5		1		1	2
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>			S4			1		1
Indigo Bunting	<i>Passerina cyanea</i>			S4		2	6	1	9
Chipping Sparrow	<i>Spizella passerina</i>			S5				1	1
Vesper Sparrow	<i>Pooecetes gramineus</i>			S4				1	1
Savannah Sparrow	<i>Passerculus sandwichensis</i>			S4	A			3	3
Song Sparrow	<i>Melospiza melodia</i>			S5		2	11	9	22
Swamp Sparrow	<i>Melospiza georgiana</i>			S5			6	1	7
Red-winged Blackbird	<i>Agelaius phoeniceus</i>			S4			11	6	17
Common Grackle	<i>Quiscalus quiscula</i>			S5			1	1	2
Brown-headed Cowbird	<i>Molothrus ater</i>			S4			1	2	3
Baltimore Oriole	<i>Icterus galbula</i>			S4			1		1
American Goldfinch	<i>Spinus tristis</i>			S5			6	6	12
House Sparrow	<i>Passer domesticus</i>			SNA				1	1

Field Work Conducted On: June 6, June 29 and July 3, 2018

F = Foraging only (non-breeding)

Total
 Number of Species: 52 (plus two non-breeding)
 Number of breeding (provincial and national) Species at Risk: 1 (Eastern Wood-Pewee)
 Number of S1 to S3 Species: 0
 Number of Forest Area-sensitive Species: 8

Location 1 - South Woodland
 Number of Species: 17
 Number of breeding (provincial and national) Species at Risk: 1 (Eastern Wood-Pewee)
 Number of S1 to S3 Species: 0
 Number of Forest Area-sensitive Species: 4

Location 2 - North Wetland/Woodland (and northeast clearings)
 Number of Species: 39 (plus two non-breeding)
 Number of breeding (provincial and national) Species at Risk: 1 (Eastern Wood-Pewee)
 Number of S1 to S3 Species: 0
 Number of Forest Area-sensitive Species: 6

Location 3 - Other Areas - Mainly fields and hedgerows

Number of Species: 29 (plus one non-breeding)
 Number of (provincial and national) Species at Risk:
 Number of S1 to S3 Species: 0
 Number of Forest Area-sensitive Species: 0

KEY

a COSEWIC = Committee on the Status of Endangered Wildlife in Canada

a Species at Risk in Ontario List (as applies to ESA) as designated by COSSARO (Committee on the Status of Species at Risk in Ontario)

END = Endangered, THR = Threatened, SC = Special Concern

^b SRANK (from Natural Heritage Information Centre) for breeding status if:

S1 (Critically Imperiled), S2 (Imperiled), S3 (Vulnerable), S4 (Apparently Secure), S5 (Secure)

SNA (Not applicable... 'because the species is not a suitable target for conservation activities'; includes non-native species)

^c Ontario Ministry of Natural Resources (OMNR). 2000. Significant Wildlife Habitat Technical Guide (Appendix G). 151 p plus appendices.

Appendix C

Paul Neals

From: Al Shaw <al@rsenviro.ca>
Sent: Thursday, August 8, 2019 3:33 PM
To: Paul Neals
Cc: JLewis@orillia.ca; hglavic@charterconstruction.ca; Geri Poisson; Nicola Mitchinson (nicola.mitchinson@sympatico.ca); Phil Hammell
Subject: RE: Re: Charter Construction - EIS Comments from Site Visit and Preliminary Review

Good day Paul. You are correct, it is a bust time, which is a good thing for the most part! I hope you are getting a chance to enjoy the summer.

Please see my answers to your comments below.

Please feel free to connect through the City if you have any further comments.

Al Shaw
RiverStone Environmental Solutions Inc.

From: Paul Neals <paul@orionenvironmentalsolutions.com>
Sent: August 8, 2019 10:02 AM
To: Al Shaw <al@rsenviro.ca>
Cc: JLewis@orillia.ca; hglavic@charterconstruction.ca; Geri Poisson <gpoisson@beaconenviro.com>; Nicola Mitchinson (nicola.mitchinson@sympatico.ca) <nicola.mitchinson@sympatico.ca>; Phil Hammell <phil@charterconstruction.ca>
Subject: FW: Re: Charter Construction - EIS Comments from Site Visit and Preliminary Review

Hi Al

Appreciate you are very busy this time of year with field work but can you give me a date when you expect you can respond to our email below regarding your peer review comments.

Thanks
Paul

From: Paul Neals
Sent: Monday, July 22, 2019 12:57 PM
To: Al Shaw <al@rsenviro.ca>
Cc: Henry Glavic <hglavic@charterconstruction.ca>; Nicola Mitchinson (nicola.mitchinson@sympatico.ca) <nicola.mitchinson@sympatico.ca>; Geri Poisson <gpoisson@beaconenviro.com>; Phil Hammell <phil@charterconstruction.ca>
Subject: Re: Charter Construction - EIS Comments from Site Visit and Preliminary Review

Hi Al

Apologize for the delay in our response to your preliminary comments based on the site walk in June. It is our understanding you will review our comments and incorporate them into your formal peer review response to the City.

- Butternut – It is noted that there are a great number of Butternut on the site, including individuals in Categories 1, 2 and 3. The Endangered Species Act (ESA) allows for a fairly straight forward process to take down Category 1 and 2 trees. It is an online process with a plan submitted to replace Category 2 trees that are being removed with planted Butternuts. Removing or developing within 50 m of a Category 3 tree (Archivable) can only be done through the ESA permit process. I know from experience that this can be an onerous process that can take months. We had very good dialog onsite regarding the re-assessment of the trees in several years when development got closer to those archivable Butternuts, given that their status may even downgrade from Category 3 to Category 2 during that time, if the disease progressed on these individuals. I was in agreement that going through the ESA permit process right now is not necessary, as it can be costly (up to \$25 k per tree) and is not necessary at this time. I would agree that the current process not be held up by Butternut. Although not discussed onsite, it would be suitable to impose a Holding provision on those lots that are within 50 m of the Category 3 Butternuts, that states they are not to be developed until the ESA process is completed. I think we can discuss this option or others that may be suitable from a planning perspective. The goal would be to ensure that the proper process is completed on those lots and not have the fact that the lots have been created be a trump card down the road. **Response : We have no issue with your proposal on how to address Butternut at the time of development.**

RS RESPONSE – Process agreed, Butternut will be dealt with further along the process with a holding provision, subject to approval by the City, until the lots adjacent to the Butternut are closer to being developed. At that time the classification of the trees will be finalized and the proper process through the MECP (or appropriate ministry at that time). We would recommend that this process be articulated in your EIS

- Large central wetland – The development setback proposed in the EIS is 10 m. We discussed the merits of 10 m versus the industry standard of 30 m. Geri noted that he has had a 10 m setback approved in Barrie around a PSW. I am not entirely sure of those circumstances, but 10 m did not seem appropriate to me. There is no guideline for wetland setbacks in the City OP. We also discussed the function of the setback given it is currently agriculture field, and by revegetating a 10 m buffer, it would be more functional than a 30 m agriculture setback. I do agree to an extent, that a more function yet smaller buffer, is better than a larger setback that has little function; however, I would say that the setback would eventually revegetate by itself and become functional. That is why the trade off of small functioning buffer versus larger non-functioning only goes so far. We did have discussions about a variable setback having some sections larger than 30 m and some smaller. I agreed that this could be considered with justification. **Response: Beacon will provide a more detailed justification on the variable setback for your review. We are of the opinion that there must be a technical rational to impose a set back, rather than just precedence from other jurisdictions.**

RS RESPONSE – The wetland is a wetland and identified as an Environmental Protection Area in the OP and Zoning Bylaw. OP policies say that development within the EP area and lands adjacent to the EP must be demonstrated through the EIS that there is no negative impact to the feature or its function. OP policies also say that the size of the extent of the buffer be determined through EIS. Regarding a technical rational to impose a buffer, the OP policies require a buffer, to be determined through the EIS process. We would suggest that the rational required is related to how the size and extent of buffer proposed results in no negative impact to the feature and its functions.

- Swale B – this watercourse drains west to east, under Sideroad 15 and through the south-central portion of the property. There was discussion as to whether the watercourse eventually emptied into the stormwater ponds or not. We agreed that this should be figured out as water supply to the wetland should be maintained. It was also our observation that the watercourse and its buffer would act as a linkage or corridor between the forest community that will be protected in the south portion of the property, to the wetland in the north. Identifying corridor features and connecting natural areas is a component of an EIS for the City and this seemed to be the natural piece to provide that function. In addition, the watercourse has fish (observed while onsite and noted in the EIS), and was measured to be 12 C during our site visit, which is trending toward being coldwater. The discussion in the EIS was that this feature was going to be removed or piped following discussions with DFO later

in the process. The more pertinent discussion would be whether this feature belongs in the EP zoning or not. Given the presence of fish, coldwater thermal regime, and contribution of water to the wetland (even if it goes through the SWM ponds), it should be considered for the EP zone, which requires a 15 m buffer. I agreed I would discuss this with the City and get their opinion on our line of thinking. **Response: We submitted Beacon's assessment of Drainage Swale B to the Department of Fisheries and Oceans under a Request for Review. DFO confirmed piping the off-site drainage to the existing storm water management pond will not result in serious harm to fish and approved the works with a Letter of Advice (copy attached).**

- **RS RESPONSE – The DFO letter of advice has been reviewed and accepted. It is still our view that this watercourse/swale may represent a feature that should potentially be within the EP zoning and considered a linkage feature to the wetland. IN an attempt to better understand the feature and its function, I would ask permission to walk the swale from the road up to the wetland. I want to make sure about its functions before finalizing the opinion on protection vs piping. Please let me know and I will go to the site as soon as possible.**
- Significant Wildlife Habitat (SWH) – we discussed the treatment of SWH in the report and we noted that the report would benefit from a more robust discussion on all of the SWH possibilities. We would encourage Beacon to go through the Ecoregion criteria schedules and assess the potential for each of these features and functions to be present on the site. **Response: Beacon will undertake this assessment.**
RS RESPONSE – Process agreed.

Please contact me if you want to discuss our comments further before you finalize your peer review to the City. Thank you for your cooperation and advice, it is greatly appreciated.

Regards

Paul Neals

Orion Environmental Solutions
1930 George Johnston Road
Minesing, ON L9X 1C1

705-794-7107

Email: paul@orionenvironmentalsolutions.com
www.orionenvironmentalsolutions.com



Request for Review

A) Contact information

Name of Business/Company:

Charter Construction LP

Name of Proponent:

Angelo Orsi

Mailing address:

Charter Development LP
P.O. Box 2088

City/Town:

Orillia

Province/Territory:

Ontario

Postal Code:

L3V 6R9

Tel. No. :

705-329-1992

Fax No.:

Email:

hglavic@charterconstruction.ca

Is the Proponent the main/primary contact? Yes No

If no, please enter information for the primary contact or any additional contact.

Paul Neals, Orion Environmental Solutions

Select additional contact:

Contractor/Agency/Consultant (if applicable):

Paul Neals

Mailing address:

Orion Environmental Solutions, Inc.
1930 George Johnston Road

City/Town:

Minesing

Province/Territory:

Ontario

Postal Code:

L9X 1C1

Tel. No. :

705-794-7107

Fax No.:

Email:

paul@orionenvironmentalsolutions.com



B) Description of Project

If your project has a title, please provide it.

Stone Ridge Secondary Plan

Is the project in response to an emergency circumstance*? Yes No

Does your project involve work in water? Yes No

If yes, is the work below the High Water Mark*? Yes No

What are you planning to do? Briefly describe all project components you are proposing in or near water.

Stone Ridge is a proposed residential development in the City of Orillia. The first half of the Stone Ridge residential/commercial development has been approved and constructed, we are now undertaking the studies to obtain draft plan approval for the second half of the development. A drainage swale within cultivated agricultural lands conveys surface water during spring runoff and major precipitation events to the existing storm water pond approved by the Ontario Ministry of the Environment in Sept. 2008, C of A # 6909-7JSKQY. The swale has no defined bed or bank and is a topographic low in the field that conveys off-site water from a forest/wetland complex to the storm water pond. The storm water pond discharges via a reverse grade standing pipe in the permanent pool of the pond to a wetland that drains north to Bass Lake. Prior to the construction of the storm water pond flow from the drainage swale discharged into a forested wetland as diffuse overland flow with no defined channel. The swale dries up by end of May and is traversed by agricultural equipment. We are proposing to convey the off-site flows to the storm water pond via a pipe.

During field studies we observed 10-20 minnows in a shallow pool within the road side ditch approximately 2m long and 0.3 m deep on the east side of the 15th Line. Given there is no defined channel or pools on the contributing lands upstream and no defined channel or pools on the Stone Ridge Lands we cannot rationalize the source of the fish in the roadside ditch based on the site characteristics.

How are you planning to do it? Briefly describe the construction materials, methods and equipment that you plan to use.

The storm sewer pipe that will convey the flow will be constructed during the summer months when there is no flow from the off-site lands. The pipe will be sized to convey the off site spring freshet and storm flows in accordance with Ontario government storm water management requirements.

Include a site plan (figure/drawing) showing all project components in and near water.

Are details attached? Yes No

Identify which work categories apply to your project.

- | | |
|---|--|
| <input type="checkbox"/> Aquaculture Operations | <input type="checkbox"/> Log Handling / Dumps |
| <input type="checkbox"/> Aquatic Vegetation Removal | <input type="checkbox"/> Log Removal |
| <input type="checkbox"/> Beaches | <input type="checkbox"/> Moorings |
| <input type="checkbox"/> Berms | <input type="checkbox"/> Open Water Disposal |
| <input type="checkbox"/> Blasting / Explosives | <input type="checkbox"/> Piers |
| <input type="checkbox"/> Boat Houses | <input type="checkbox"/> Riparian Vegetation Removal |
| <input type="checkbox"/> Boat Launches / Ramps | <input type="checkbox"/> Seismic Work |
| <input type="checkbox"/> Breakwaters | <input type="checkbox"/> Shoreline Protection |
| <input type="checkbox"/> Bridges | <input checked="" type="checkbox"/> Stormwater Management Facilities |
| <input type="checkbox"/> Cable Crossings | <input type="checkbox"/> Surface Water Taking |
| <input type="checkbox"/> Causeways | <input type="checkbox"/> Tailings Impoundment Areas |
| <input type="checkbox"/> Culverts | <input type="checkbox"/> Temporary Structures |
| <input type="checkbox"/> Dams | <input type="checkbox"/> Turbines |
| <input type="checkbox"/> Dewatering / Pumping | <input type="checkbox"/> Water Control Structures |
| <input type="checkbox"/> Docks | <input type="checkbox"/> Water Intakes / Fish Screens |



- Dredging / Excavation
- Dykes
- Fishways / Ladders
- Flow Modification (hydro)
- Groundwater Extraction
- Groynes
- Habitat Restoration
- Ice Bridges

- Water Outfalls
- Watercourse Realignment
- Weirs
- Wharves
- Wind Power Structures

Other Please Specify

Was your project submitted for review to another federal or provincial department or agency? Yes No

If yes, indicate to whom and associated file number(s).

C) Location of the Project

Coordinates of the proposed project Latitude N Longitude W

OR UTM zone ; Easting
 Northing

Include a map clearly indicating the location of the project as well as surrounding features.

Name of Nearest Community (City, Town, Village):

Municipality, District, Township, County, Province:

Name of watershed (if applicable):

Name of watercourse(s) or waterbody(ies) near the proposed project:

Provide detailed directions to access the project site:

Site can be accessed from the 15th Line on the west side of the development

D) Description of the Aquatic Environment

Identify the predominant type of aquatic habitat where the project will take place.

- Estuary (Estuarine)
- Lake (Lacustrine)
- On the bank/shore at the interface between land and water (Riparian)
- River or stream (Riverine)
- Salt water (Marine)



Wetlands (Palustrine)

Provide a detailed description of biological and physical characteristics of the proposed project site.

The drainage swale has no defined channel (i.e., no bed or bank), is grassed and varies in width from 4 to 12m. The swale is the topographic low in an agricultural field that historically conveyed off-site spring runoff and major precipitation events to an existing wetland at the north end of the development. Surface water from the wetland is conveyed north to Bass Lake via a watercourse. Historically a forested wetland, beaver activity over the years has created permanent pools. The watercourse discharge from the wetland has been observed to dry up during the summer months. As part of the existing approved residential/commercial/institutional development a storm water management pond was constructed within the northern limit of the wetland. The SWMP was designed to accept the surface flow from the drainage swale in the undeveloped portion of the development in recognition of the need to treat surface flows from the westerly portion of the site.

Given there is no potential fish habitat in the wetland west of the drainage swale, that the swale dries up every summer and the swale has no physical connection to the pooled water in the downgradient wetland, it is our opinion the minnows in the road side ditch were deposited by waterfowl.

Attached Figure 1 shows the site characteristic and the attached proposed concept plan show the drainage swale and existing development is appended.

Include representative photos of affected area (including upstream and downstream area) and clearly identify the location of the project.

E) Potential Effects of the Proposed Project

Have you reviewed the Pathways of Effects (PoE) diagrams (<http://www.dfo-mpo.gc.ca/pnw-ppe/pathways-sequences/index-eng.html>) that describe the type of cause-effect relationships that apply to your project?

Yes No

If yes, select the PoEs that apply to your project.

- | | |
|---|---|
| <input type="checkbox"/> Addition or removal of aquatic vegetation | <input type="checkbox"/> Placement of material or structures in water |
| <input type="checkbox"/> Change in timing, duration and frequency of flow | <input type="checkbox"/> Riparian Planting |
| <input type="checkbox"/> Cleaning or maintenance of bridges or other structures | <input type="checkbox"/> Streamside livestock grazing |
| <input type="checkbox"/> Dredging | <input type="checkbox"/> Structure removal |
| <input type="checkbox"/> Excavation | <input type="checkbox"/> Use of explosives |
| <input type="checkbox"/> Fish passage issues | <input type="checkbox"/> Use of industrial equipment |
| <input checked="" type="checkbox"/> Grading | <input type="checkbox"/> Vegetation Clearing |
| <input type="checkbox"/> Marine seismic surveys | <input type="checkbox"/> Wastewater management |
| <input type="checkbox"/> Organic debris management | <input type="checkbox"/> Water extraction |
| <input type="checkbox"/> Placement of marine finfish aquaculture site | |

Will there be changes (i.e., alteration) in the fish habitat*? Yes No Unknown

If yes, provide description.

Will the fish habitat alteration be permanent*? Yes No Unknown

Is there likely to be destruction or loss of habitat used by fish? Yes No Unknown

What is the footprint (area in square meters) of your project that will take place below the high water mark*?



Is your project likely to change water flows or water levels? Yes No Unknown

If your project includes withdrawing water, provide source, volume, rate and duration.

If your project includes water control structure, provide the % of flow reduction.

If your project includes discharge of water, provide source, volume and rate.

Will your project cause death of fish? Yes No Unknown

If yes, how many fish will be killed (for multi-year project, provide average)? What species and lifestages?

Are there aquatic species at risk (http://www.sararegistry.gc.ca/species/aquatic_e.cfm) present? If yes, which ones?

NO

What is the time frame of your project?

The construction will start on and end by

If applicable, the operation will start on and end by

If applicable, provide schedule for the maintenance

Environmental studies being completed for Secondary Plan Approval for the proposed development, construction start date for homes unknown.

If applicable, provide schedule for decommissioning

Are there additional effects to fish and fish habitat that will happen outside of the time periods identified above? Yes No

(If yes, provide details)

Have you considered and incorporated all options for redesigning and relocating your project to avoid negative effects to fish and fish habitat?

Yes No

If yes, describe.

Alternative design is not warranted given their is no fish habitat within the agricultural lands to be negatively impacted

Have you consulted DFO's Measures to Avoid Harm to Fish and Fish Habitat (<http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/index-eng.html>) to determine which measures apply to your project?

Yes No

Will you be incorporating applicable measures into your project? Yes No



If yes, identify which ones. If No, identify which ones and provide reasons.

All work on the drainage swale will be done after area dries up during the summer months to ensure spring freshet flows are conveyed to storm water pond and wetland downgradient of the storm water pond.

Have you considered and incorporated additional best practices and mitigation measures recommended in relevant guidelines to avoid negative effects to fish and fish habitat?

- No Yes

If Yes, include a list of the guidelines being used to avoid negative effects to fish and fish habitat.

[Empty text box]

Are there any relevant best practices or mitigation measures that you are unable to incorporate? Yes No

(If yes, identify which ones.)

[Empty text box]

Can you follow appropriate Timing Windows (<http://www.dfo-mpo.gc.ca/pnw-ppe/timing-periodes/index-eng.html>) for all your project activities below the High Water Mark*?

- Yes No

(If no, provide explanations.)

There is no high water mark, swale conveys spring runoff and flow from major storm events, swale is dry be late May.

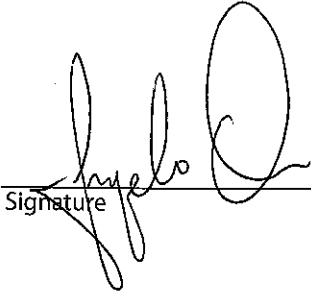
What residual effects to fish and fish habitat do you foresee after taking into account the avoidance and mitigation measures described above?

None



F) Signature

I, (print name) certify that the information given on this form is to the best of my knowledge, correct and completed.



Signature

Date

Information about the above-noted proposed work or undertaking is collected by DFO under the authority of the *Fisheries Act* for the purpose of administering the fisheries protection provisions of the *Fisheries Act*. Personal information will be protected under the provisions of the *Privacy Act* and will be stored in the Personal Information Bank DFO-PPU-680. Under the *Privacy Act*, Individuals have a right to, and on request shall be given access to any personal information about them contained in a personal information bank. Instructions for obtaining personal information are contained in the Government of Canada's Info Source publications available at www.infosource.gc.ca or in Government of Canada offices. Information other than "personal" information may be accessible or protected as required by the provision of the *Access to Information Act*.

*All definitions are provided in Section G of the *Guidance on Submitting a Request for Review*



LEGEND

■ ■ ■ Drainage Swale

Note: aerial photo 2016, source County of Simcoe web mapping

ORION ENVIRONMENTAL SOLUTIONS

DATE ISSUED: FEB 2019

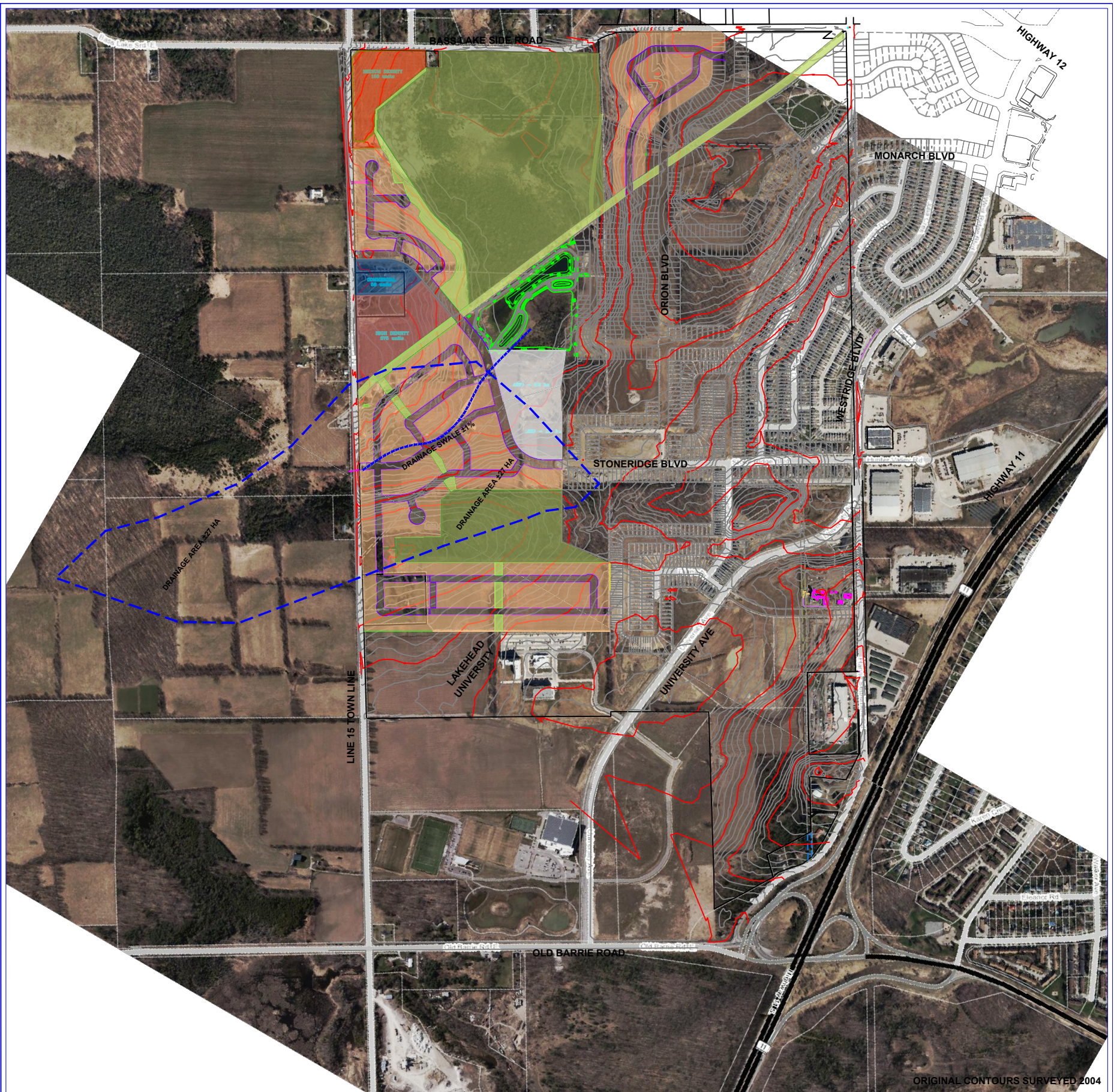
CREATED BY: PCN

PROJECT NO. - 16-010

Not To Scale

Stone Ridge

Figure 1



PROPOSED NEIGHBOURHOOD PLAN



Suite 103 - 1800 11th Ave
Regina, SK
S4P 0H8

June 18, 2019

Your file Votre référence

Our file Notre référence

19-HCAA-00269

Charter Construction LP
ATTENTION: Angelo Orsi
Charter Development LP
P.O. Box 2088
Orillia, Ontario
L3V 6R9

Subject: Stone Ridge Secondary Plan- Stormwater Management – Implementation of Measures to Avoid and Mitigate Serious Harm to Fish and Prohibited Effects on Listed Aquatic Species at Risk

Dear Mr. Orsi:

The Fish and Fish Habitat Protection Program (the Program) of Fisheries and Oceans Canada (DFO) received your proposal on March 14, 2019. We understand that you propose to:

- To convey off-site flows to the stormwater pond via a pipe from the new developed neighbourhood surrounding the stormwater pond in the City of Orillia, Ontario; and,
- Construct a storm sewer pipe (approximate 260 meters long) during the summer months under dry conditions in a agricultural drainage swale.

Our review considered the following information:

- DFO Request for Review, dated March 13, 2019;
- Orion Environmental Solutions: Supplemental Information: Fig1 photo locations Apr 30 2019, dated April 30, 2019;
- Orion Environmental Solutions: Supplemental Information: Site photos April 30 2019, dated April 30, 2019;
- Email correspondence between Shona Derlukewich (DFO) and Paul Neals (Orion Environmental Solutions), dated May 9, 28, and 29, 2019; and,
- Phone correspondence between Shona Derlukewich (DFO) and Paul Neals (Orion Environmental Solutions), May 29, 2019.

Your proposal has been reviewed to determine whether it is likely to result in serious harm to fish which is prohibited under subsection 35(1) of the *Fisheries Act* unless authorized. Your proposal has also been reviewed to determine whether it is likely to

affect listed aquatic species at risk, any part of their critical habitat or the residences of their individuals in a manner which is prohibited under sections 32, 33 and subsection 58(1) of the *Species at Risk Act*, unless authorized.

To avoid and mitigate the potential for serious harm to fish, we recommend implementing the measures listed below:

- Follow DFO's Measure to Avoid Harm to Fish Habitat if water is present during construction (<http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/measures-mesures-eng.html>).

Provided that you incorporate these measures into your plans, the Program is of the view that your proposal will not result in serious harm to fish or prohibited effects on listed aquatic species at risk. As such, an authorization under the *Fisheries Act* or a permit under the *Species at Risk Act* is not required.

Should your plans change or if you have omitted some information in your proposal, further review by the Program may be required. Consult our website (<http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html>) or consult with a qualified environmental consultant to determine if further review may be necessary. It remains your responsibility to avoid causing serious harm to fish and avoid prohibited effects on listed aquatic species at risk, any part of their critical habitat or the residences of their individuals.

It is also your *Duty to Notify* DFO if you have caused, or are about to cause, serious harm to fish that are part of or support a commercial, recreational or Aboriginal fishery. Such notifications should be directed to <http://www.dfo-mpo.gc.ca/pnw-ppe/CONTACT-eng.html>.

Please notify this office **at least 10 days before** starting your project. A copy of this letter should be kept on site while the work is in progress. It remains your responsibility to meet all other federal, territorial, provincial and municipal requirements that apply to your proposal.

If you have any questions with the content of this letter, please contact Shona Derlukewich at 306-780-8728, or by email at Shona.Derlukewich@dfo-mpo.gc.ca. Please refer to the file number referenced above when corresponding with the Program.

Yours sincerely,



Shona Derlukewich
Senior Fish and Fish Habitat Protection Biologist

cc: Tara Schweitzer (DFO)
Paul Neals (Orion Environmental Solutions)

Appendix D

Paul Neals

From: Al Shaw <al@rsenviro.ca>
Sent: Tuesday, October 1, 2019 12:29 PM
To: Paul Neals
Cc: Jill Lewis; 218-040 Orillia PR-Charter Construction
Subject: RE: Stone Ridge Secondary Plan

Paul – thank you for meeting me out on site recently to review the couple outstanding items on the Charter Property in Orillia. It was our intention as the peer reviewer to meet at the property to discuss two items; the watercourse and wetland boundary/buffer. After reviewing the watercourse onsite, it seems that there is less of a feature than I expected. The channel was not well defined at all and its function really was just moving water and not related to any habitat. In review of the wetland, the specified buffer in the draft EIS was small in our opinion and needed to be expanded. Although the wetland has not been reviewed, we are confident that its features and functions would make it a Provincially Significant Wetland if reviewed. The 10 m buffer proposed in the EIS is not suitable in our opinion for a feature of this quality. We did not discuss a specific setback as there are no recommended setbacks in the planning documents from the City; however, we would suggest 30 m.

One final item that we discussed again was the inclusion of a raised walkway through the wetland feature permit pedestrians to move through the feature. You were going to discuss this possibility with your client. The Revised EIS should include an evaluation of the viability of installing a boardwalk to be constructed through the wetland.

I hope this summarizes our discussion material sufficiently for you to pass along to your client.

Al Shaw
RiverStone Environmental Solutions Inc.

From: Paul Neals <paul@orionenvironmentalsolutions.com>
Sent: September 3, 2019 2:38 PM
To: Al Shaw <al@rsenviro.ca>
Subject: Stone Ridge Secondary Plan

Hi Al

After we walked the site you were going to meet with the Town to discuss your comments. I talked with my client regarding the wetland buffer width and the swale and he requested we obtain your final comments for us to respond to formally. Please provide your formal comments for us to respond.

Regards

Paul Neals

Orion Environmental Solutions
1930 George Johnston Road
Minesing, ON L9X 1C1

705-794-7107

Email: paul@orionenvironmentalsolutions.com
www.orionenvironmentalsolutions.com

Appendix E

December 20, 2019

BEL 218059

City of Orillia
Development Services and Engineering – Planning Division
50 Andrew Street South, Suite 300
Orillia, Ontario L3V 7T5

Attention: Jill Lewis, Senior Planner

**Re: Charter Development LP's New Neighbourhood Plan Area (West Development Lands,
west of Stone Ridge Subdivision) – Revised Environmental Impact Study (EIS).**

Dear Ms. Lewis:

Following comments received from the City's peer reviewer, Beacon has revised our Environmental Impact Study and have attached the EIS for final review.

For your information, the comments received were generally regarding:

- Endangered Butternut trees, the process and timing for application for removal or harm under the Endangered Species Act;
- Further rationale for the recommended buffers to the wetland block in the northern portion of the property;
- Potential fish habitat in a drainage swale and consultations with the Department of Fisheries and Oceans; and
- A more thorough review of potential candidate Significant Wildlife Habitat on the subject property.

Please don't hesitate to contact me should you have any questions or concerns.

Thank you,

Yours truly,
Beacon Environmental



Geris Poisson, B.A. (Hons.), Dipl. Eco. Restoration
Terrestrial Ecologist, ISA Certified Arborist (ON-1288A)



GUIDING SOLUTIONS IN THE
NATURAL ENVIRONMENT

Environmental Impact Study West Orillia Neighbourhood Plan Area City of Orillia

Prepared For:

Charter Development LP

Prepared By:

Beacon Environmental Limited

Date: Project:

April 2019. Revised December 2019 218059

MARKHAM
80 Main Street North
Markham, ON L3P 1X5
T) 905.201.7622 ✉ F) 905.201.0639

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PETERBOROUGH
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Peterborough, ON K9J 3R2
T) 705.243.7251

BARRIE
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Barrie, ON L4N 2P4
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1. Introduction

Beacon Environmental Limited (Beacon) has been retained by Charter Development LP, to prepare an Environmental Impact Study (EIS) as part of the proposed West Orillia Neighbourhood Plan Area at properties identified as 825 and 925 Line 15 North (Lot 6 Concession 2 southern division), in the City of Orillia (subject property). The subject property is located at the western extent of the City of Orillia planning area and is one concession south of Bass Lake Provincial Park, north of Bass Lake Sideroad (**Figure 1**).

The purpose of the EIS is to identify existing natural heritage features on and adjacent to the site and to address the interaction between the proposed development and existing conditions as related to natural heritage features. In this EIS, we identify and evaluate the natural heritage features on the subject property, analyze the potential impacts on these features from the proposed development and provide recommendations to avoid or mitigate potential impacts, consistent with the relevant policies of the City of Orillia Official Plan (2013, Consolidated 2018), the Provincial Policy Statement (PPS 2014) and the *Endangered Species Act* (ESA 2007).

2. Policy Context

Relevant municipal, provincial and federal environmental policies that apply to the subject property are addressed in this section. These include:

- Provincial Policy Statement (2014);
- Endangered Species Act (2007); and
- The City of Orillia Official Plan (2010, Consolidated 2018).

2.1 Provincial Policy (2014)

Policy 2.1 of the *Provincial Policy Statement* (PPS) (2014) provides direction to municipalities regarding planning policies for the protection and management of natural heritage features and resources. The PPS defines six natural heritage features, providing planning policies for each. The *Natural Heritage Reference Manual* (OMNR 2010) is a technical document used to help assess the six PPS natural heritage features listed below:

- a) Significant wetlands;
- b) Significant woodlands;
- c) Significant valleylands;
- d) Significant wildlife habitat;
- e) Significant Areas of Natural and Scientific Interest (ANSIs); and
- f) Coastal wetlands.

Each of these features is afforded varying levels of protection subject to the PPS, guidelines contained in the Natural Heritage Reference Manual, and in some cases, regulations.

It is also important to recognize the lands surrounding a study area as the Provincial Policy Statement states in Policy 2.1.8:

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

Determining what constitutes *Adjacent Lands* requires consideration of a number of factors including the type of feature (e.g., Provincially Significant Wetland), the sensitivity of a feature to disturbance (e.g., based on habitat function or ecological community), the ecological attributes that are species-specific, and the scale and type of development being considered.

2.2 Endangered Species Act (2007)

The Ontario *Endangered Species Act (ESA)* came into force in June 2008 and the *Act* is having a significant role in land use activities and planning due to protection of both the species as well as their habitat on all lands (i.e., private and public). Under the new *ESA* there are over 200 species in Ontario that are identified as Extirpated, Endangered, Threatened, or of Special Concern.

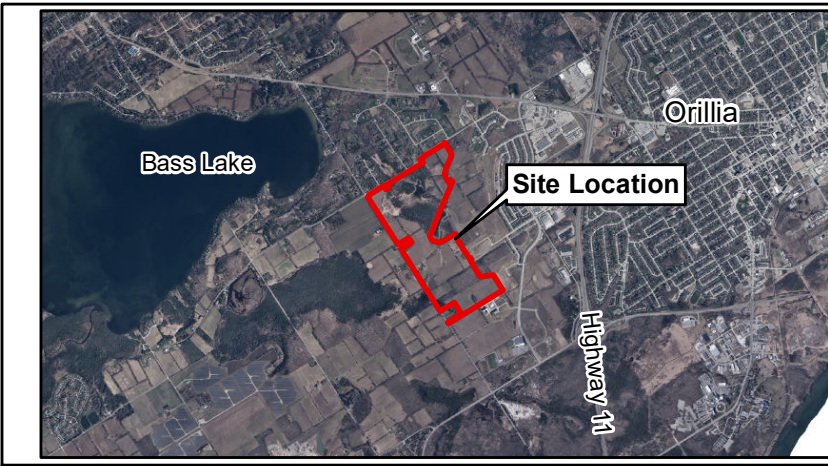
The *Act* prohibits the killing or harming of Threatened and Endangered species, as well as the destruction of particular species habitat. There are, however, several transitional provisions that provide extended timelines before the protection of the habitats for certain species comes into force. For Special Concern species the *Act* does not afford protection to the individual or their habitat.

Under the *ESA*, Habitat is defined as follows

- “Habitat” means,
 - (a) With respect to a species of animal, plant or other organism for which a regulation made under clause 55 (1) (a) is in force, the area prescribed by that regulation as the habitat of the species, or
 - (b) With respect to any other species of animal, plant or other organism, an area on which the species depends, directly or indirectly, to carry on its life processes, including life processes such as reproduction, rearing, hibernation, migration or feeding, and includes places in the area described in clause (a) or (b), whichever is applicable, that are used by members of the species as dens, nets, hibernacula or other residence; (habitat).
- Definition of “habitat”, cl. (B)
 - (2) For greater certainty, clause (b) of the definition of “habitat” in subsection (1) does not include an area where the species formerly occurred or has the potential to be reintroduced unless existing members of the species depend on that area to carry on their life processes. 2007, c. 6, s. 2 (2).



First Base Solutions Web Mapping Service 2016



Site Location		Figure 1	
Charter Developments LP			
UTM Zone 17 N, NAD 83			
Project 218059 November, 2019			
0 137.5 275 550 Metres		1:15,000	

There are two key protection provisions in the ESA:

- Section 9 describes prohibited activities (e.g., kill, harm, harass, possess, collect, buy and sell) for species listed as Extirpated, Endangered or Threatened on the Species at Risk in Ontario (SARO) List; and
- Section 10 prohibits the damage or destruction of protected habitat of species listed as Extirpated, Endangered or Threatened on the SARO List.

It is important to note that the owner of the land, as well as the individual or organization carrying out any activities on those lands, are both subject to the enforcement and penalty provisions of the *ESA* should Sections 9 or 10 of the *ESA* be contravened.

Under the *ESA*, native species that are in danger of becoming extinct or extirpated from the province are identified as being Extirpated, Endangered, Threatened or Special Concern. These designations are defined as follows:

- Extirpated - a species that no longer exists in the wild in Ontario but still occurs elsewhere;
- Endangered – a species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario's *Endangered Species Act*;
- Threatened - a species that is at risk of becoming endangered in Ontario if limiting factors are not reversed; and
- Special Concern (formerly Vulnerable) - a species with characteristics that make it sensitive to human activities or natural events.

Under the *Act*, protection is provided to Endangered or Threatened species and their habitat, as well as providing stewardship and recovery strategies for species.

Species of Special Concern require management plans from the MNR but are not directly protected under the *ESA* nor is their Habitat protected under the *ESA*.

2.3 City of Orillia Official Plan (2010, Consolidated 2018)

Under Section 4.2.6 of the City's Official Plan (OP), the subject lands are part of the West Orillia Lands Special Policy Area (SPA) and include lands that are designated as "Living Area-Neighborhood Greenfield" and "Environmental Protection Area" on Schedule A – Land Use of the City of Orillia Official Plan. Section 3.5.3.2 of the OP defines "Environmental Protection Areas" as:

- Provincially Significant Wetlands;
- Other wetlands that are 0.5 hectares or greater in size;
- Significant woodlands;
- Significant valleylands;
- Significant wildlife habitat;
- Significant habitat of threatened and/or endangered species;
- Significant Areas of Natural and Scientific Interest; and
- Fish habitat.

The 'Environmental Protection Area' designation may also include lands that, due to steep slopes or other physical hazards, such as floodplains, are not appropriate for development.

Under the SPA and Section 3.5.3.3 c) and d) of the OP, no development is permitted within or adjacent to an Environmental Protection Area designation unless it has been demonstrated, through an Environmental Impact Study that there will be no negative impacts on the natural heritage features and areas or on their ecological functions. Where there are lands adjacent to an Environmental Protection Area designation, the nature, extent and size of the environmental buffer or other mitigation measures, will be determined and refined if necessary, through an Environmental Impact Study.

Section 7.1.9 of the Orillia OP outlines the terms of reference for an Environmental Impact Study which are to be determined in consultation with any agency having jurisdiction and approved by the City. The terms of reference for this EIS have been agreed upon with the City's peer reviewer and are outlined in our study methodology below.

3. Study Methodology

3.1 Background Review and Agency Contact

Background review was undertaken to gain a richer understanding of the subject property and surrounding lands, including an Environmental Impact Study completed for the lands to the east (Azimuth Environmental Consulting Inc. 2004). The following resources were available and consulted in conjunction with our field program expanded upon below:

- Ministry of Natural Resources and Forestry (MNRF) Ontario Base Mapping (OBM);
- MNRF's Make-a-map Natural Heritage Information Centre website;
- Land Information Ontario (LIO 2018); and
- Google Earth Historical Imagery.

Prior to undertaking field investigations, Beacon met with the City's peer reviewer Riverstone Environmental Solutions Inc. (Riverstone) on March 29, 2018 to scope the terms of reference and study requirements (**Appendix A**). This EIS follows these established terms of reference and all study requirements. In addition, Beacon contacted the MNRF Midhurst and received Species at Risk screening correspondence via email from Brent Shirley, Management Biologist (**Appendix A**). As outlined in the email from MNRF, the following species at risk are known to occur in the vicinity of the subject property:

- Blanding's Turtle (*Emydoidea blandingii*);
- Barn Swallow (*Hirundo rustica*);
- Bobolink (*Dolichonyx oryzivorus*);
- Eastern Meadowlark (*Sturnella magna*);
- Eastern Wood-pewee (*Contopus virens*);
- Snapping Turtle (*Chelydra serpentina*);
- Wood Thrush (*Hylocichla mustelina*); and

- Species at Risk (SAR) bat species (Little Brown Myotis, Northern Myotis and Tri-coloured Bat).

Based on previous studies by others (Azimuth 2004) there are known occurrences of Butternut on the subject property.

3.2 Field Investigations

Field investigations of the subject property were undertaken by Beacon staff throughout 2018 and are detailed below.

The following **Table 1** provides a summary of the completed field studies.

Table 1. Field Study Timetable

Survey Type	Dates Undertaken (2018)
Breeding Birds	June 6, 29, and July 6
Vegetation, ELC and Soils (concurrent Butternut search)	May 23, June 29, July 3, September 6
Bat Snag Survey	April 11
Aquatic Habitat Assessment	May 31
Wetland Boundary Delineation	August 16 and September 6
Blanding’s Turtle Surveys	May 17, 23, 24 and June 6, 15, 29

3.2.1 Vegetation Mapping and Botany

General vegetation communities were mapped throughout the subject property and described according to the Ecological Land Classification (ELC) system for southern Ontario (Lee *et al.* 1998). A plant species list was simultaneously generated and is provided in **Appendix B**.

3.2.2 Aquatic Habitat Assessment

An assessment of aquatic habitat was completed on May 31, 2018. Weather on this date included a maximum daily high of 25 degrees Celsius (°C). Light south and southeast winds. No precipitation on this date or in the 24 hours prior to the survey. The following characteristics were noted: channel morphology, water depth, flow velocity, cover, substrate and bank condition. Water quality measurements were taken using a YSI Multiparameter water quality probe.

3.2.3 Breeding Bird Surveys

Breeding bird surveys were undertaken on three early mornings, between dawn and 10:00 a.m. (11:00 a.m. on June 29), on the dates noted in **Table 1**. Surveys were undertaken during times of no precipitation, light winds, and typical temperatures. All birds that were either heard or seen were recorded by walking surveys that would record all singing birds in the surveyed area. Birds were

recorded on an orthophotograph in the approximate location that they were observed. All birds observed or heard singing in suitable habitat were assumed to be breeding on-site. Non-breeding birds using the site were also recorded.

Three surveys were undertaken in order to comply with MNRF protocols concerning Bobolink and Eastern Meadowlark potential habitat.

3.2.4 Bat Habitat Surveys

An ecologist from Beacon Environmental visited the site on Wednesday, April 11, 2018 to investigate the presence or absence of potential species at risk bat habitat within the proposed development area.

Snag surveys were conducted in accordance with the Midhurst District MNRF “Maternity Roost Surveys of Treed Habitats, April 2017” (MNRF 2017). Data was collected on a handheld tablet with GPS points taken to 3m of accuracy. Given the smaller size of vegetated units within the proposed development area, the approach was to survey these areas in their entirety, forgoing the development of randomized plots.

3.2.5 Blanding’s Turtle Surveys

Blanding’s Turtle surveys were conducted for the property in accordance with the MNRF’s Survey Protocol for the Blanding’s Turtle in Ontario (OMNR 2013). This involves the identification of survey sites and choosing three to five days to conduct intensive surveys of potential habitat during the window in which Blanding’s most actively bask (May-June). Two ecologists from Beacon conducted a total of five basking surveys for this species using the MNRF protocol.

3.2.6 Other Wildlife

During field investigations, all wildlife species encountered, or presence noted from tracks, scat, calls, or nests were recorded and listed in Section 4.7 of this report.

3.2.7 Feature Staking with City of Orillia

A feature staking was undertaken on August 16, 2018 by Beacon with a review in the field by staff from Riverstone, the City of Orillia’s environmental peer reviewer. Members of the consulting team (Ryan Morin and Geri Poisson – Beacon, Paul Neals – Orion Environmental Solutions) were also present.

4. Existing Conditions

4.1 General Conditions and Landscape Context

The subject property is approximately 103 ha in area, the majority of which is agricultural and Environmental Protection. The property is bounded by Bass Lake Sideroad East to the north, residential subdivision under construction to the east, agricultural field and institutional (Lakehead University) to the south, and Line 15 North to the west. Four existing single detached residences are currently present on the property. There is an existing natural gas pipeline right of way with two large diameter transmission pipes traversing the subject property. The vegetation communities are woodlands, wetlands, meadows, hedgerow and active agricultural fields.

4.2 Physiography

According to the physiographic regions of Ontario identified by Chapman and Putnam (1984), the property is located in an area of glacial Till Plains. The soils range from mostly sandy, gravelly in the higher elevations in the southern portion of the subject property to silty, sandy in the northern, lower elevation areas near the Bass Lake drain wetlands.

4.3 Watershed Context

The subject property straddles two major watersheds. The northern portion of the subject property is located within the Bass Lake watershed which eventually drains to the Lake Huron. The southern portion, generally south of the woodlot, drains to the south into the Mill Creek watershed and eventually to Lake Simcoe. The City of Orillia is not within the jurisdiction of any conservation authority.

4.4 Aquatic Habitat

The subject property is within the Bass Lake drainage area which is located one (1) km northeast of the subject property (**Figure 1**). Bass Lake is drained by the North River which flows northeast to Matchedash Bay (Lake Huron). The subject property is not within the jurisdiction of a conservation authority.

An assessment of aquatic habitat was completed on May 31, 2018. Weather on this date included a maximum daily high of 25 degrees Celsius (°C), light south and southeast winds, and no precipitation nor in the 24 hours prior to the survey. Two drainage swales were identified on the property and are discussed below as Swale 'A' and 'B'.

4.4.1 Swale A

An intermittent drainage swale traverses the subject property generally from south to north (**Figure 2**). This swale originates in a swamp immediately west of Line 15 North. It enters the subject property through a rusty and partially collapsed 0.5 m diameter corrugated steel pipe (CSP) culvert. No flow was observed through this culvert on May 31, 2018. The culvert connects to the roadside ditch on the east side of Line 15 North. Standing water, 0.3 m deep was observed in the ditch and cyprinids were observed in these pools (species unknown). East of Line 15 North standing water less than 3 cm deep was observed in a grassy area with no defined channel. Tile drain pipes observed in this area could alter flow in this swale. Water quality in this area is shown in **Table 2** below.

Table 2. Swale ‘A’ Water Quality East of Line 15 North.

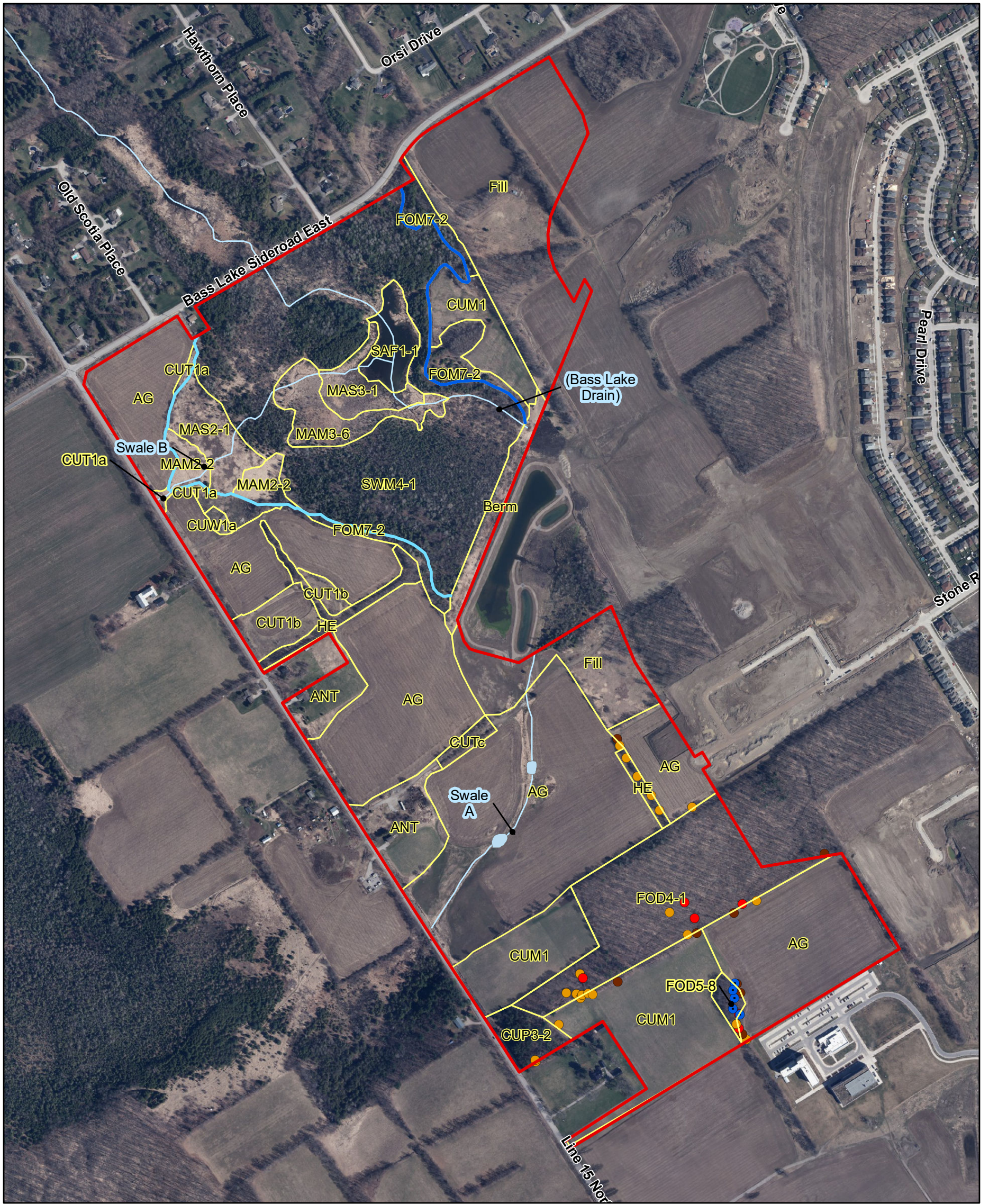
Water Temperature	22°C
Conductivity	572 µs/cm
Conductivity	0.544 mS/cm
Total Dissolved Solids	0.372 g/l
Dissolved Oxygen	54.7 %
Dissolved Oxygen	4.73 mg/l

The drainage swale continues northeast as a grassy swale approximately 12 m wide without a defined channel. There are two areas with pooled water approximately 5 m by 5 m that contained tadpoles (species unknown). Another tile drain connects to the swale in this area. One section of the swale has a constructed channel approximately 0.3 m wide. Some sections of the channel are dry. The swale passes through a constructed channel on the southeast side of the existing stormwater management (SWM) pond and into an existing swamp beyond the property boundary. The constructed channel southeast of the SWM pond was dry on May 31, 2018. The route of Swale ‘A’, after flowing into the off property swamp, enters the main SWM pond.

4.4.2 Watercourse ‘A’ (Bass Lake Drain)

The outlet of the SWM pond flows into Watercourse ‘A’, also known as Bass Lake Drain, which flows into the wetland to the north. The wetland drains via Bass Lake Drain towards the north and exits the property through a 1.5 m diameter CSP. Flow was observed through this culvert, which is installed at-grade and embedded into the substrate. It would not constitute a barrier to upstream fish migration during the flow conditions observed on May 31, 2018.

This watercourse (Bass Lake Drain) continues northwest and eventually crosses under Line 15 North and into Bass Lake approximately one (1) km northwest. It was not confirmed if there are any barriers to fish migration between the subject property and Bass Lake as the watercourse passes through private properties.



Legend

- Subject Property
- ELC Communities
- Drainage Feature
- Small Pools
- Wetland (MNRF 2018)
- Wetland Limit (Beacon 2018)
- Category 1 (Non-retainable)
- Category 2 (Retainable)
- Category 3 (Potentially Archivable)
- Potential Bat Habitat

ELC Code	Description
ANT	Anthropogenic
AG	Agricultural
HE	Hedgerow
CUM1	Mineral Cultural Meadow
CUT1	Mineral Cultural Thicket
CUW1	Mineral Cultural Woodland
CUP3-2	White Pine Cultural Plantation
FOD4-1	Dry-Fresh Beech Deciduous Forest
FOD5-8	Dry-Fresh Sugar Maple - White Ash Deciduous Forest
FOM7-2	Fresh-Moist White Cedar - Hardwood Mixed Forest
MAM2-2	Reed Canary Grass Mineral Meadow Marsh
MAM3-6	Broad-leaved Sedge Meadow Marsh
MAS2-1	Cattail Mineral Shallow Marsh
MAS3-1	Cattail Organic Shallow Marsh
SWM4-1	White Cedar - Hardwood Organic Mixed Swamp
SAF1-1	Bullhead Lily Floating-leaved

Existing Conditions

Figure 2

Charter Developments LP

UTM Zone 17 N, NAD 83

First Base Solutions
Web Mapping Service 2016

0 87.5 175 350 Metres



1:7,000



Project 218059
December, 2019

Table 3. Watercourse ‘A’ Water Quality at Bass Lake Sideroad East.

Water Temperature	22 °C
Conductivity	516 µs/cm
Conductivity	0.489 mS/cm
Total Dissolved Solids	0.335 g/l
Dissolved Oxygen	62.1 %
Dissolved Oxygen	5.38 mg/l

The northern half of this drainage feature, within the wetland, is likely a permanent watercourse and it provides permanent, direct habitat for fish. The southern half of this drainage feature, between Line 15 North and the SWM Pond is likely intermittent or ephemeral and provides seasonal contributing habitat for fish by contributing to the base flow downstream. The pools in the ditch along the east side of Line 15 North in the southern portion of the subject property provide direct habitat for fish. It is not certain that fish can complete their life cycle in these pools. It is likely that these fish were transported into these pools from the nearby upstream swamp to the west of Line 15 North during high flow events. However, it could not be confirmed if there is existing, suitable habitat upstream as this area is beyond the subject property boundaries.

4.4.3 Swale B

In the northwest corner of the subject property another drainage feature enters the property through a 0.5 m diameter CSP culvert under Line 15 North which was dry on May 31, 2018. West of Line 15 North no defined channel was observed in an actively cropped field. Within the subject property no defined channel was observed and no flow or standing water was associated with this swale. This swale likely only conveys water during the spring freshet or possibly during extreme rain events and provides only seasonal contributing habitat for fish in the form of baseflow.

4.4.4 Fish Community

A fish survey was not completed by Beacon. Fish species that may be present in this aquatic resource area based on the review of the Land Information Ontario database are listed in the table below.

Table 4. Watercourse ‘A’ (Bass Lake Drain) Fish Species (MNR)

Common Name	Scientific Name
Bluntnose Minnow	<i>Pimephalus notatus</i>
Brook Stickleback	<i>Culaea inconstans</i>
Brook Trout	<i>Salvelinus fontinalis</i>
Central Mudminnow	<i>Umbra limi</i>
Common Shiner	<i>Luxilus cornutus</i>
Creek Chub	<i>Semotilus atromaculatus</i>
Northern Redbelly Dace	<i>Chrosomus eos</i>
White Sucker	<i>Catostomus comersonii</i>

The swale on-site, upstream of the site and downstream of the site all the way to Bass Lake is identified as Aquatic Resource Area MH-0139-BAS. The species listed above were captured somewhere in this watercourse, most likely closer to the lake. The data is effective from 19 January 2010.

All the fish species identified by MNR in the aquatic resource area are common and widespread throughout Southern Ontario.

Based on the existing aquatic habitat and proposed development, DFO was consulted. A letter from DFO is discussed further in Section 6.1.3 of this report.

4.5 Terrestrial Resources

4.5.1 Vegetation Communities

General vegetation communities mapped according to the Ecological Land Classification (ELC) system for southern Ontario (Lee *et al.* 1998) are described in greater detail below and are illustrated on **Figure 2**. A plant list was generated to characterize vegetation communities during the course of ELC investigation and is included in **Appendix B**.

Much of the terrain on the subject property is former agricultural lands, with a large natural feature in the north containing a complex of wetland habitats and a mature woodland near the south end. Outside of these natural areas the property is dominated by former agricultural lands, and contains hedgerows, meadows, several residential properties along Line 15 North.

Agricultural Land (AG)

Agricultural Lands on the subject property are either occupied by corn, soy, or were plowed through to soil during field investigations and an areas of fill from the neighbouring approved residential development (**Photograph 1** and **2**).

Hedgerow (HE)

Hedgerows on the property occur as agricultural windbreaks. They contain a mix of tree species such as Manitoba Maple (*Acer negundo*), Basswood (*Tilia americana*), Black Cherry (*Prunus serotina*), White Ash (*Fraxinus americana*), and American Elm (*Ulmus americana*). Introduced, invasive Common Buckthorn (*Rhamnus cathartica*) also dominates.

Mineral Cultural Meadow (CUM1)

Cultural Meadow communities occur in the southern portion of the subject property south and west of the FOD4-1 forest community. During site investigations these areas were uncultivated (fallow) agricultural land and dominated by grasses and herbaceous species such as Smooth Brome (*Bromus inermis*), Timothy (*Phleum pratense*) and Orchard Grass (*Dactylis glomerata*), Wild Carrot (*Daucus carota*), Red Clover (*Trifolium pratense*) and Tall Sweet Clover (*Melilotus albus*).

Mineral Cultural Thicket (CUT1a)

This Cultural Thicket type occurs in several areas bordering on the west side of the central wetland complex. One is a low-lying area where a culvert outlets from under Line 15 North that drains overland flow from the agricultural land to the west of the property. These thickets contain Wild Red Raspberry (*Rubus idaeus*), Staghorn Sumac (*Rhus typhina*), Manitoba Maple, Tartarian Honeysuckle (*Lonicera tartarica*), Canada Goldenrod (*Solidago canadensis*), Garlic Mustard (*Alliaria petiolata*), as well as some grassy areas dominated by Smooth Brome.

Mineral Cultural Thicket (CUT1b)

This Cultural Thicket type occurs in two sections on the west side of the subject property and contains the sapling tree species: White Ash, Red Cedar (*Juniperus virginiana*), Trembling Aspen (*Populus tremuloides*), and Balsam Poplar (*Populus balsamifera*), with Staghorn Sumac, Wood Avens (*Geum urbanum*), Garlic Mustard, Rough Goldenrod (*Solidago rugosa*) and Smooth Brome also present.

Mineral Cultural Thicket (CUT1c)

This thicket type occurs between two agricultural areas, and contains American Elm, with Alternate-leaved Dogwood (*Cornus alternifolia*), Wild Red Raspberry, Thicket Creeper (*Parthenocissus vitacea*), Smooth Brome and Crown-vetch (*Coronilla varia*).

Mineral Cultural Woodland (CUW1a)

This small fragmented Cultural Woodland is occupied entirely by densely growing, sapling-sized Trembling Aspen.

White Pine Cultural Plantation (CUP3-2)

A Cultural Plantation occurs in the southwest end of the subject property and is dominated by intermediate-aged (< 50 years old, average ~25 to 30 cm dbh – diameter at breast height), planted rows of White Pine with some immature saplings of White and Green Ash (*Fraxinus americana*, *F. pennsylvanica*), Trembling Aspen and Sugar Maple (*Acer saccharum*) (**Photograph 3**). The shrub layer is moderate to dense with Chokecherry (*Prunus virginiana*), European Buckthorn (*Rhamnus cathartica*), Alternate-leaved Dogwood (*Cornus alternifolia*), European Mountain Ash (*Sorbus aucuparia*), and Wild Red Raspberry. The herbaceous ground cover consists of scattered False Solomon's Seal (*Maianthemum racemosum*), Enchanter's Nightshade (*Circaea lutetiana*), Coltsfoot (*Tussilago farfara*), and localized patches of Japanese Knotweed (*Fallopia japonica*), a non-native invasive species.

Dry-Fresh Beech Deciduous Forest (FOD4-1)

This mature forest community is dominated by American Beech (*Fagus americana*), with Sugar Maple, Red Oak (*Quercus rubra*), White Ash, American Basswood (*Tilia americana*), Eastern Hemlock (*Tsuga canadensis*), Yellow Birch (*Betula alleghaniensis*), White Pine (*Pinus strobus*), Black Cherry (*Prunus*

serotina), Butternut (*Juglans cinerea*) and White Birch (*Betula papyifera*) associates (**Photograph 4**). The understory consists of moderate cover of shrub such as Alternate-leaved Dogwood, Chokecherry, and Red Elderberry (*Sambucus racemosa*). Herbaceous ground cover includes Mayapple (*Podophyllum peltatum*), Trout Lily (*Erythronium americanum*), White Trillium (*Trillium grandiflorum*), Red Trillium (*Trillium erectum*), Sweet White Violet (*Viola blanda*), Garlic Mustard and Jack-in-the-pulpit (*Arisaema triphyllum*). Thus, this woodland community is primarily, but not wholly composed of native species.

Dry-Fresh Sugar Maple – White Ash Deciduous Forest (FOD5-8)

This fragmented woodland is surrounded by Cultural Meadow, Agricultural Land and neighboring parking lots. It is dominated by Sugar Maple, with White Ash, Ironwood (*Ostrya virginiana*), Butternut, White Trillium, Trout Lily, False Solomon's Seal (*Maianthemum racemosum*), Red Baneberry (*Actaea rubra*), Garlic Mustard and Wild Leek (*Allium tricoccum*).

Fresh-Moist White Cedar – Hardwood Mixed Forest (FOM7-2)

This community is found along the southwest boundary of the swamp at the interface with the adjacent agricultural fields. It is an upland extension of the White Cedar – Hardwood Organic Mixed Swamp (see below) and consists of Eastern White Cedar, American Basswood, Sugar Maple and Manitoba Maple. This community is entirely edge habitat that supports many of the shrubs and herbs found in the culturally-modified communities described above.

Reed Canary Grass Mineral Meadow Marsh (MAM2-2)

This community occurs on the periphery of the large interior wetland complex and is likely the result of historic clearing. It is dominated, and almost entirely occupied by Reed Canary Grass (*Phalaris arundinacea*) (**Photograph 5**).

Broad-leaved Sedge Meadow Marsh (MAM3-6)

This community occurs within the central wetland complex. It is densely occupied by Broad-leaved Sedge species (*Carex spp.*), with some Broad-leaved Cattail (*Typha latifolia*), Red-osier Dogwood (*Cornus sericea*) and White Cedar (**Photograph 6**).

Cattail Mineral Shallow Marsh (MAS2-1)

This community occurs on the periphery of the large interior wetland complex and is likely the result of historic clearing. The diversity here is low, as the community is dominated almost entirely by Broad-leaved Cattail with some Reed Canary Grass and scattered willow shrubs and Red-osier Dogwood (**Photograph 7**).

Cattail Organic Shallow Marsh (MAS3-1)

This type of Cattail Marsh occurs within the large central wetland complex and is represented by shallow standing water, organic soils and Broad-leaved Cattail as the dominant vegetation.

White Cedar – Hardwood Organic Mixed Swamp (SWM4-1)

This community type forms the bulk of the central wetland complex for the subject property. It contains a variable mix of White Cedar, White Birch, Trembling Aspen and Speckled Alder. The understory is sedge (*Carex spp.*) and fern-rich and includes Lake-bank Sedge (*Carex lacustris*), Christmas Fern (*Polystichum acrostichoides*), Ostrich Fern (*Matteuccia struthiopteris*) and Sensitive Fern (*Onoclea sensibilis*). There is little to no open water areas within this community, and its wetland status is most easily observed through the species composition.

Bullhead Lily Floating-leaved Shallow Aquatic (SAF1-1)

This community occurs in the centre of the wetland complex and features sections of open water. In some areas of shallow water, Bullhead Lily (*Nuphar variegata*) occurs. Some floating logs are found within this community and through other surveys it has been determined to be habitat for a variety of amphibians and reptiles (see Section 4.5.5).



Photograph 1. Agricultural Field occupied by Soy (July 3, 2018)



Photograph 2. Fill area in Centre of Subject Property (July 3, 2018)



Photograph 3. CUP3-2 White Pine Plantation (June 29, 2018)



Photograph 4. FOD4-1 Dry-Fresh Beech Deciduous Forest Interior (July 3, 2018)



Photograph 5. MAM2-2 Reed Canary Grass Meadow Marsh with Cultural Thicket CUT1a in Foreground (Sept. 6, 2018)



Photograph 6. MAM3-6 Broad-leaved Sedge Organic Meadow Marsh (June 6, 2018)



Photograph 7. MAS2-1 Cattail Shallow Marsh on Western Edge of Wetland Complex, Facing North, CUT1a in Foreground (Sept. 6, 2018)

4.5.1.1 Flora and Rarity

A total of 147 plant species were observed on the subject property with 45 (30%) being non-native plant species (**Appendix B**). This high percentage of non-native plant species is common for properties with disturbed areas within an agricultural and urbanized landscape. The larger wetland and woodland blocks have a higher percentage of native species and good diversity.

None of the plant species are listed as uncommon or rare in Simcoe County (Riley 1989). All of the native plant species are ranked provincially as S5 (Secure) with the exception of Butternut, which is ranked “S3?” meaning its occurrence in Ontario is rare to uncommon. Butternut is designated as Endangered both provincially and federally and is protected under the *ESA* (2007).

A total of 35 individual Butternut were encountered during field investigations and are shown on (**Figure 2**). The main threat to Butternut is the lethal Butternut Canker (*Sirococcus clavigignenti-juglandacearum*), a fungus that attacks the species through any openings in the bark. Trees are categorized into one of three Categories through a Butternut Health Assessment. Trees found to be severely affected by the canker, such that the individual is not expected to survive or contribute to the maintenance of the species on the landscape are Category 1 (non-retainable) and are not protected under the *ESA*. Trees that are less so or not affected by the canker are considered (Category 2 (retainable) and are protected under the *ESA*. Larger, retainable trees that are found within 40 m of a non-retainable (i.e. more diseased) tree are thought to potentially have a tolerance such that the province may have interest in collecting genetic samples to assist in breeding tolerant strains of the Butternut are considered Category 3 (potentially archivable). These are also protected under the *ESA*.

A Butternut Health Assessment conducted for each of these trees found that 21 trees were Category 1 (non-retainable), eight trees were Category 2 (retainable) and six trees were Category 3 (potentially archivable).

4.5.2 Breeding Bird Surveys

Fifty-two breeding bird species were recorded on the subject property (**Appendix C**). An additional two species, Great Blue Heron (*Ardea herodias*) and Barn Swallow (*Hirundo rustica*), were recorded as non-breeding foraging species. The results are divided in three different areas, to highlight the different bird communities and to describe areas that are expected to be developed separately from those expected to be retained.

Overall the birds observed were those found in three general habitat types: open disturbed areas, forests and open wetlands. Four of the five most abundant species observed are common and are considered disturbance-tolerant species found in a wide variety of rural habitats. These four species are: Song Sparrow (*Melospiza melodia*), Red-winged Blackbird (*Agelaius phoeniceus*), American Robin (*Turdus migratorius*), and American Goldfinch (*Spinus tristis*).

No species considered S1 through S3 (Critically Imperiled through Vulnerable) using the provincial ranks were recorded. All species are either S4 (Apparently Secure) or S5 (Secure).

4.5.2.1 South Woodland

The south woodland has a moderate diversity of avian species that are either woodland species or edge species. One or two pairs of most species were observed, however seven Red-eyed Vireo (*Vireo olivaceus*) and three Eastern Wood-Pewee (*Contopus virens*) pairs or territories were observed. This is not unexpected as these two species are among the most frequently observed species in upland deciduous woodlots such as this; in spite of the latter's status (see below). Single pairs of four forest area-sensitive species were recorded, as was an active woodpecker nest. The latter species is not listed in **Appendix C**, as the species was not determined. It was likely either a Downy Woodpecker (*Picoides pubescens*) or Hairy Woodpecker (*Picoides villosus*) nest. Area-sensitive species are those which either require a larger block of suitable habitat in which to breed or which are more productive in large habitat blocks.

4.5.2.2 North Wetland and Woodland

This area has the most numerous and diverse bird community of the three areas. This is in part because it supports three sub-communities of birds: open marsh, trees swamp/woodland and edge species. The marsh and adjacent swamp thicket are dominated by species such as Common Yellowthroat (*Geothlypis trichas*) Swamp Sparrow (*Melospiza georgiana*), Red-winged Blackbird, Song Sparrow, and Alder Flycatcher (*Empidonax alnorum*). Virginia Rail (*Rallus limicola*) was also present, but no further cattail marsh specialists were recorded.

The treed swamp and forest habitat supported a variety of widespread common forest birds such as: Red-eyed Vireo, American Robin, Great-crested Flycatcher (*Myiarchus crinitus*), as well as more specialist or northerly bird species such as Yellow-bellied Sapsucker (*Sphyrapicus varius*), Black-and-White Warbler (*Mniotilta varia*), and Veery (*Catharus fuscescens*). More than one Green Heron (*Butorides virescens*) pair was thought to be present. Six of the forest species observed here were area-sensitive species – some species were present in multiple pairs.

4.5.2.3 Other Areas

The birds in the remainder of the site are mainly the disturbance-tolerant species found in many rural areas. There are a few swamp species present due to a treed area south of the new stormwater pond.

4.5.2.4 Avian Species at Risk

Three avian Species at Risk were observed; however only one of these was considered to be a breeding species.

Five breeding Eastern Wood-Pewee territories were recorded in total. Three were present in the south woodland and two in the northern forested area. The Eastern Wood-Pewee is designated by both the province and federally as Special Concern. The species has experienced population declines over at least 40 years, although the reasons for the decline are unclear (COSEWIC 2012). It is still a very common species in Ontario. Based on our experience it is a species with a small territory. It is found in deciduous and mixed forests of many sizes and of intermediate and mature age.

Four non-breeding Barn Swallows (*Hirundo rustica*) were observed foraging over the wetland. No nesting was observed on the subject property, as all the buildings and structures were checked for evidence of Barn Swallow nesting. Barn Swallow is an open land species, which nests primarily in barns and similar buildings and feeds aerially over fields, meadows and bodies of water. It has been listed as Threatened because it “has experienced very large declines that began somewhat inexplicably in the mid to late 1980s in Canada” (COSEWIC 2011).

One male Bobolink was observed in the hay field at the south end of the site, on July 6, 2018. This area-sensitive species of grasslands and hayfields is listed as Threatened in Ontario. As this hayfield had been surveyed twice in June and no Bobolinks were observed, it is presumed that the individual seen in early July was a non-breeding individual that moved to this site post-breeding. This species is quite vocal and generally is easily observed when it is present in late May or June. In our experience, Bobolinks are no longer singing by early July and thus may not be defending territories at this time.

4.5.3 Bat Habitat

Several of Ontario’s bat species were listed as *Endangered* in Ontario’s *ESA, 2007*, and Canada’s Species at Risk Act (*SARA*). They are threatened by a rapidly spreading fungal disease known as White-nose Syndrome. To document their habitats, including trees (snags) which may provide habitat for maternal roosting, surveys were undertaken of the proposed development area.

The proposed plan involves most of the development occurring within agricultural fields, approximately 1.5 ha of forest, some removal of vegetation within hedgerows and other small vegetated features on the landscape. According to the Midhurst District MNR “Maternity Roost Surveys of Treed Habitats, April 2017”, hedgerows are not considered treed habitats for bat maternity roosts.

Of the approximately 32 ha of forested areas on the subject property, approximately 1.5 ha are proposed for removal. All treed communities within the proposed development area were included in this analysis.

The treed communities within the proposed development area include a small, isolated Sugar Maple – White Ash forest (FOD5-8), which had five snags, and a White Pine plantation (CUP3-2) which had no snags (**Figure 2**). The investigation found a total of five snags within the estimated 60 ha of area proposed for future development on the property (**Figure 2**). Snags included four mature Sugar Maple (*Acer saccharum*), and one mature Black Cherry (*Prunus serotina*).

4.5.4 Blanding’s Turtle Surveys

Identification of potential or suitable Blanding’s Turtle habitat for surveys to occur was determined during background review at the outset of the project. While five visits are required as per the Blanding’s Turtle survey protocol, six were completed as Beacon staff were on the site for other requirements. The results of the survey are listed in **Table 5**.

Table 5. Blanding’s Turtle Survey Results

Date (2018)	Weather	Time	BLTU Observed?
May 17	Sunny, 14°C	9:15 AM	No
May 23	Sunny, 23°C	10:15 AM	No
May 24	Sunny, 19°C	9:40 AM	No
June 6	Cloudy, 11°C	8:30 AM	No
June 15	Sunny, 20°C	8:30 AM	No
June 29	Sunny, 24°C	8:00 AM	No

4.5.5 Other Wildlife

Incidental wildlife observations were noted throughout unrelated fieldwork and included amphibians vocalizing during the evening. Amphibian surveys were not required based on the City of Orillia comments; however, the following amphibians were recorded either by sight or by calls within the open water wetland in the northern portion of the subject property:

- Green Frog (*Lithobates clamitans*);
- Leopard Frog (*Lithobates pipiens*);
- Spring Peeper (*Pseudacris crucifer*);
- Gray Treefrog (*Hyla versicolor*); and
- American Toad (*Anaxyrus americanus*).

Most of these amphibian observations took place during the crepuscular bird survey as their peak levels of activity occur simultaneously.

Evidence of other species were noted and include White-tailed Deer (*Odocoileus virginianus*), Eastern Chipmunk (*Tamias striatus*), Red Squirrel (*Tamiasciurus hudsonicus*), Beaver (*Castor canadensis*), Coyote (*Canis latrans*), and Red Fox (*Vulpes vulpes*). A beaver and beaver lodge were observed in the centre of the wetland.

A Snapping Turtle (Special Concern) carcass was observed at the edge of the open water portion of the wetland. A live Snapping Turtle, and several (25+) Painted Turtles were observed during Blanding’s Turtle surveys and other field investigations within the core wetland area.

4.6 Significant Wildlife Habitat Analysis

Based on the Ecoregion Criteria (OMNRF 2015), an analysis in **Appendix E** has been prepared to indicate whether there are candidate Significant Wildlife Habitat (SWH) present in the study area. Note that the numbers-based approach taken by the Ecoregion Criteria does not always take into account the size of an area, nor does it consider the local context. Thus, we consider these *candidate* SWH only, in the absence of a larger study.

4.7 Landscape Connectivity

Landscape connectivity has become recognized as an important component of natural heritage planning. Although there is not universal agreement on the net benefits of corridors, a wide range of benefits can be attributed to maintaining connectivity within the natural landscape. In essence, corridors allow organisms to move between areas of high habitat importance. Conservation of distinct habitat types to protect species may be less effective unless the corridors between them are also protected or restored.

The subject property occurs in an area where the local landscape has been altered through past and present anthropogenic use. From a wildlife perspective, the property is situated directly adjacent to existing urban land uses to the east and south that present a terrestrial barrier to wildlife movement and a possible hazard. In addition to the residential development of the subject land, the paved roads along the north and west property boundaries preclude the presence of a high functioning wildlife corridor. However, the wetland located in the north is part of a local corridor going north and it functions for species associated with the watercourse. The woodlot, in association with other isolated woodlots in the area, may be used by species, such as birds and insects, that can use “stepping-stone” type features.

Under Section 4.2.6 West Orillia Lands Special Policy Area 3 and identified on Schedule ‘C’ - Overlay of the City’s OP, there may be a potential environmental linkage area. Swale ‘A’ (Bass Lake Drain) occurs in this area and is described in Section 4.4.1 of this report. This is a seasonal drainage that had no flow during field investigation at the end of May 2018 when flows from the spring freshet would result in the highest potential flows of the year. Agricultural activities are occurring across the length of the drainage feature. No riparian natural vegetation or vegetation community is associated with this drainage feature. Tile drains from the agricultural fields outlet to this drainage feature which has resulted in several shallow pools of standing water. Without any permanent flows or vegetation communities associated with this drainage feature, it is highly unlikely that this area is functioning as a wildlife movement corridor.

4.8 Summary of Key Attributes

The 2018 field program documented the existing conditions of the subject property through detailed terrestrial and aquatic investigations.

The primary terrestrial sensitivities on the subject property primarily related to four main areas. These are 1) wetland 2) woodlands 3) watercourses and 4) threatened and endangered species.

Table 6. Summary of Key Functions and Attributes

Features	Key Functions and Attributes
Wetlands	<ul style="list-style-type: none"> • Provides variety of habitat (swamp, marshes and open water) for a range of species including small fish, birds, mammals, amphibians and reptiles
Woodlands	<ul style="list-style-type: none"> • Mature deciduous forest providing wildlife habitat for birds and mammals • Considered a significant woodland in the context of Orillia (i.e., it is greater than 2 ha in size, exceeds the minimum number of trees per hectare, and has

Features	Key Functions and Attributes
	“substantive ecological functional importance due to a combination of characteristics”). Existing trails and proximity to residential areas provide social, cultural and recreational values.
Watercourses	<ul style="list-style-type: none"> • Seasonal drainages • Watercourse ‘A’ provides direct fish habitat. • Swale ‘A’ provide indirect fish habitat (base flow). • Swale ‘B’ provides indirect fish habitat (base flow).
Threatened and Endangered Species	<ul style="list-style-type: none"> • Endangered Butternut trees (southern woodland and hedgerows) • Potential habitat for Endangered Bats (swamp in the north and woodlands in the south).
Significant Wildlife Habitat (Candidate)	<ul style="list-style-type: none"> • The wetlands and the woodlands support seasonal concentrations of wildlife (wintering turtles, breeding birds, amphibians) and species designated as Special Concern (Eastern Wood-Pewee). See Section 6.1.5 and Appendix E.

5. Proposed Development

The proposed development will be completed in several phases and will include approximately 1317 residential units (single family, medium density and high density) a 1.48 ha commercial block, a 2-ha school block, environmental protection and open space/park blocks, and associated roads (**Figure 3** and **3b**).

The proposed development will be adjacent to and linked by roads to the approved residential development to the east of the subject property, which is partially completed, and portions are still under construction (**Figure 3**).

6. Impact Assessment and Mitigation Measures

6.1 Impact Assessment

Beacon has reviewed the existing conditions on the subject property based on desktop review and field studies and has assessed the composition and functions of the natural heritage features on the subject property. The proposed development plan has been prepared to minimized impacts on these features.

A wetland of approximately 30 ha in area occurs on the subject property and a woodland of approximately 13.5 ha in size (7.7 ha is within the subject property) which extends beyond the eastern property boundary is located within the southern portion of the subject property (**Figure 2**). Both features are designated “Environmental Protection” in the City of Orillia’s OP because the wetland is greater than 0.5 ha in size and the woodland meets the definition of a “significant woodland” as defined in OP. The presence of these features and their designation, in part, has required the preparation of an EIS and will be retained in the proposed development.



Legend

- Subject Property
- Proposed Limit of Development
- Wetland Limit (Beacon 2018 (West) MNRF LIO (East))
- Wetland Limit +10m
- Vegetation Proposed to be Removed
- Proposed Development

**Proposed
Development**

Figure 3

Charter Developments LP

UTM Zone 17 N, NAD 83

First Base Solutions
Web Mapping Service 2016

0 87.5 175 350 Metres



1:7,009



Project 218059
November, 2019

Approved Development
in Progress



Legend

- Subject Property
- Proposed Development
- Proposed Limit of Development
- Wetland Limit (Beacon 2018)
- Wetland Limit +10m
- Vegetation Proposed to be Removed

**Proposed
Development**

Figure 3b

Charter Developments LP

UTM Zone 17 N, NAD 83

First Base Solutions
Web Mapping Service 2016



0 37.5 75 150 Metres

1:3,000



BEACON
ENVIRONMENTAL

Project 218059
November, 2019

Potential environmental effects of the proposed residential development of the subject property are the following:

- Direct loss of portions of seasonal drainage features (Swale ‘A’ and Swale ‘B’) supporting a small amount of indirect fish habitat;
- Direct loss of a small area (~80m²) of previously cultivated wet meadow (MAM2-2);
- Direct loss of open space/lawn areas and planted trees (Anthropogenic areas);
- Direct loss of Cultural Meadow (CUM1-1);
- Direct loss of Cultural Thicket (CUT1a, b and c) and hedgerows;
- Direct loss of approximately 0.5 hectares of peripheral, deciduous forest (FOD4-1) and one hectare of low functioning pine plantation (CUP3-2); and
- Direct loss of approximately 0.3 ha of isolated deciduous forest fragment (FOD5-8).

Overall, these impacts are minimal in the context of the proposed development, the majority of which will be within agricultural fields, cultural meadow communities as well as within the anthropogenic areas occupied by the existing houses, driveway, manicured lawns and hedgerows. No significant effects are anticipated on the wetland as no development is proposed within this feature. The impacts are discussed in greater detail in the following sections.

6.1.1 Vegetation Removals

The proposed development areas will occur mostly on agricultural fields and some smaller areas of culturally-modified communities such as hedgerows, meadows, shrub thickets, and plantations (**Figure 3**). None of the vegetation communities on the subject property are considered rare or endangered.

The loss of the pine plantation (CUP3-2) and a portion of the deciduous forest (FOD4-1) that is designated “Environmental Protection” is not considered significant as it will not result in the loss of the attributes that make this woodland “significant”. The loss of approximately 1.5 ha of a 13.5 ha woodland is minimal. The area is the narrowest part of the woodland and peripheral to the main, contiguous woodland. The area has a high degree of edge influences such as light penetration, noise from the adjacent Line 15 North and there is a dirt laneway through the centre. The larger, contiguous core of the woodland is to be retained. A portion of the woodland proposed for removal is a result of past (clearing and plantation) and ongoing human disturbance such as vehicular traffic and yard waste from the neighbouring residents. Twelve Butternut trees are found within the portion of woodland proposed for removal, but 10 of the trees have been assessed as Category 1 (non-retainable) and are therefore not protected under the *ESA*. One Butternut is assessed as Category 2 (retainable) and one is Category 3 (archivable). These two trees are regulated under the *ESA*. The vegetation and wildlife species found in the plantation are not considered locally or provincially rare or uncommon. The presence of Eastern Wood-Pewee (Candidate Significant Wildlife Habitat) in the woodland is expected to continue post-development; despite the removal of a portion of this woodland, there remains sufficient habitat to support the numbers of breeding pairs found in the woodland in 2018.

Similar to the existing, recent development to the east, the proposed development should be limited to the approximate dripline of the woodland to protect the majority of remaining tree roots.

The loss of the small, isolated forest and hedgerow (FOD5-8) in the southern portion of the subject property contains seven Butternut trees and five snag trees that are potential habitat for endangered bat species. Mitigation measures can be implemented to address the loss of these features. The need

for, and type of mitigation measures, if necessary, should be determined in consultation with the Ministry of the Environment, Conservation and Parks (MECP) closer to the time of site plan application. Mitigation measures may include planting replacement trees to mitigate tree loss and, or installation of bat boxes to replace potential roosting habitat.

Some of the Butternut trees within the subject property will require removal to accommodate the proposed development. The province provides a permit or registry process to ensure that any removals include mitigation measures to ensure an overall benefit to the species. Given that development may not occur in the areas of Butternut occurrences for several years, these trees should be re-assessed the season prior to site plan application as the condition of the trees may change.

6.1.2 Wetlands

No wetlands are proposed for removal to accommodate the proposed development, apart from a small, disturbed area of previously cultivated wet meadow (MAM2-2) close to Line 15 North on the western edge of the northern wetland block (**Figure 3b**). The area is approximately 80 sq. m and composed mostly of invasive Reed Canary Grass with some scattered sedges and bulrushes. Development is proposed to the west and east of the wetland block. The wetland communities at the western edge of the wetland block (MAM2-2, MAS2-1) appear to have been cleared for agriculture in the past and consist of dense stands of Reed Canary Grass and cattails. The vegetation community nearest to the eastern edge of the wetland block is an upland forest (FOM7-2). These communities are not particularly sensitive and would provide a buffering function for the interior portion of the wetland block which contains more sensitive marsh and open water habitat for birds, amphibians and reptiles.

The nearest distance from the open water marsh or watercourse to the outer edge of the larger wetland complex is approximately 150 m. Given these distances, the most sensitive communities in the central portion of the wetland block would not be negatively affected by the proposed development both in terms of disturbance to wildlife and impacts on water quality. Noise and light effects from surrounding development would be minimal given the distances to the central portion of the wetland. Any overland stormwater drainage would be well filtered and buffered prior to reaching the central open marsh and watercourse. A vegetated buffer should be applied along the western wetland boundaries and along the eastern edge of the forest and enhanced with a planting plan to further reduce any impacts to the wetlands (see discussion on buffers in Section 6.2.1 below). A recreation trail may be included within this vegetated buffer. Surface drainage from roads and driveways will be directed towards stormwater management facilities and away from the wetland features.

A pedestrian boardwalk trail is contemplated through this area to link the residential developments on the east and west sides. Further details regarding location, design, construction methods and timing would be provided at a future stage of development (i.e. site plan approval). This boardwalk trail should be designed to avoid the most sensitive habitats. Construction methods should be chosen with the least impact on the wetland communities (i.e. helical piles) and timing of construction should be outside of breeding season for birds, bats, amphibians and reptiles (i.e., November to March).

A hydrogeological assessment was not part of the scope of this study. However, based on previous hydrological investigations, it is our understanding that the majority of the subject property has an uppermost soil layer with low permeability and underlain with a deeper layer of coarse, water-bearing soil (Azimuth Environmental 2004). Given the surrounding topography and the lack of any permanent, year-round surface water entering the wetlands, it is assumed that the deeper groundwater is the major

source of water for this wetland. The proposed development should incorporate infiltration areas using Low Impact Development (LID) techniques, where feasible, to maintain some groundwater inputs to this wetland feature.

6.1.3 Aquatic Habitat

The drainage features on the subject property are not regulated under the Conservation Authorities Act as the subject property is outside the jurisdiction of the conservation authorities.

The subject property is within one kilometer of Bass Lake and in the watershed of Matchedash Bay (Lake Huron). Two drainage features were identified on the subject property i.e. Swale 'A' and 'B'. Watercourse 'A', located within the wetland, provides direct fish habitat in parts and contributing fish habitat in others (i.e. water supply, nutrients, substrate etc.). Cyprinids were observed within Swale 'A' in pools on the east side of the road within the roadside ditch in the southwest corner of the subject property. Swale 'B' provides contributing fish habitat only. These types of drainage features are not exempt from DFO review based on guidance on the DFO website (DFO 2018). Thus, DFO was provided with Beacon's review and self assessment and subsequently, a letter of advice has been obtained and is provided in **Appendix D**.

6.1.4 Bat Habitat

The area of potential habitat proposed for removal includes an isolated patch of forest and a mid-aged pine plantation that total approximately 1.19 ha. Two larger forested areas, a swamp (~30 ha) and upland mature forest (~10 ha), will be retained within the subject property and contain an estimated 5 to 10 snags per hectare of potential maternity roosting habitat. Given the small number of snags (5) proposed for removal and the larger, more suitable habitat that will be retained on site, Beacon is of the opinion that these removals will not have a significant impact on species at risk bats or their habitat. and would not likely represent a contravention of the ESA. However, given that the development phase in this portion of the subject property may be 5 to 10 years away, re-surveying for potential bat habitat may be prudent, followed by consultations with the MECF.

6.1.5 Significant Wildlife Habitat

An assessment of potential Significant Wildlife Habitat (SWH) based on Beacon's site investigations and the MNRF's Criteria Schedules for Ecoregion 6E (OMNRF 2015) is provided in **Appendix E**.

The wetland block in the northern portion of the subject property is considered Candidate SWH for wintering turtles, breeding amphibians, and for marsh breeding birds (Green Heron and Virginia Rail) . The woodland block in the southern part of the subject property is also Candidate SWH for breeding Eastern Wood-pewee.

The small area of woodland at the end of a hedgerow in the south end may be potential bat maternity habitat (Candidate SWH). As mentioned above, development and site plan applications may not occur in this area for 5 to 10 years. The season prior to a site plan application, a cavity tree survey and possibly acoustic survey should be considered to determine what habitat and what species of bats may be present.

There will be no negative impacts on these habitats as there will be no intrusion on the wetlands and a 10m minimum set back is recommended for all wetland communities. As outlined above in Section 6.1.1, the tree removals proposed at the western end of the woodland are relatively minor in extent, of low quality habitat, and consist of a narrow, peripheral extension of the main woodland. There will be sufficient breeding habitat retained within the larger, older, higher quality deciduous forest for Eastern Wood-pewee.

6.2 Mitigation Measures

The following mitigation measures are recommended to be employed before, during and after the construction of the proposed development plan.

6.2.1 Wetland Buffer

A vegetation protection zone (VPZ), or riparian or forested buffer can be an area along a shoreline, wetland, or stream where development is restricted or prohibited. The primary function is to physically protect and separate a stream, lake, or wetland from future disturbance or encroachment.

It is well documented in scientific and technical literature within the past 20 years that maintenance of a VPZ or buffer along watercourses can mitigate against some impacts on the watercourse related to land use changes. Parameters such as sediment, nutrients, toxins, stream temperature, as well as the ability to protect aquatic organisms.

Pollutant removal is primarily achieved by slowing the surface water flow that transports the sediments and the pollutants adhered to them. The effectiveness will vary according to a number of conditions including soil type, pollutant concentrations, land use and the size of the area draining into the buffer, width and slope, and the size, age and density of the vegetation in the buffer.

In order for a vegetated buffer to effectively remove pollutants and sediments, the surface water flow must be slow, shallow and uniform (Desbonnet et al., 1994), and the surface water should progress as sheet flow and not become channelized. Slow flow allows particulates to settle out promoting utilization of nutrients by the vegetation, as well as assisting in flow control by allowing water to permeate into the soil, reducing erosion within the buffer area. Dilleha *et al.* (1986) reported a range of 40 to 95% reduced efficiency of sediment and nutrient removal in vegetated buffers when runoff was changed from shallow sheet flow to a more channelized flow.

The protection of a shoreline, open wetland, or stream by a buffer is dependent on the site specific conditions. A review of pertinent research indicates that while the results are highly variable between and even within studies (e.g., Leavitt 1998; Lowrance et al. 1997; Lowrance et al. 2002), effective water quality protection is best afforded by buffers in the 30 m range (e.g., Dillaha et al. 1986; Environmental Law Institute 2008; Wenger 1999). The distance from the edge of the development and the watercourse or open water is in excess of 150 m and separated by broad, flat areas, densely vegetated with Reed Canary Grass with other herbaceous plants and shrubs, or Mixed Swamp. The distance and intervening dense vegetation, based on the research, are well suited to provide effective water quality protection.

Since the open water wetlands (SAF1-1, MAS3-1) are separated by over 150 m of densely vegetated marsh, or swamp, and Watercourse 'A' is classified as a warm water fisheries stream, **Beacon recommends** that:

- A minimum 10 m buffer from the outer edge of the wetland block should be included in the design of the proposed development.

A recreation trail may be included within the buffer, but no residential or road development shall occur within this buffer. Stormwater from the development areas should be directed away from the wetland and other natural features and towards approved stormwater management facilities.

As mentioned earlier, residential developments can have impacts on adjacent forest and wetlands. Noise, light, intrusions of backyards and yard waste, and the introduction of domestic pets are among the effects that can be mitigated. A vegetated setback from the forest and wetland edge can reduce and mitigate impacts on these natural features. The planting of woody, especially coniferous evergreen, vegetation such as cedars, spruce or pine, can help reduce light and wind penetration into the natural forest and wetland. Fencing can help reduce the intrusion of pets, dumping of waste and expansion of yards into the forest and wetland.

Along the eastern and western edges of the northern wetland/forest block and the edges of the woodland in the southern portion of the subject property, **Beacon recommends** that:

- A fence should be installed at the limit of development to prevent intrusion of pets, people and yard waste into the forest or wetland unit.

6.2.2 Buffer Planting Plan

A buffer planting plan is recommended for the buffer areas adjacent to the wetland area. This plan will include a mix of native trees, shrubs and groundcover consistent with what is found within the region.

6.2.3 Construction Timing

The federal *Migratory Bird Convention Act* (1994) protects the nests, eggs and young of most bird species from harm or destruction. Environment Canada considers the 'general nesting period' of breeding birds in southern Ontario to be between early April and the end of August. This includes times at the beginning and end of the season when only a few species might be nesting. In light of this we recommend that during the peak period of bird nesting, no vegetation clearing or disturbance to nesting bird habitat occur between May 01 and mid-July. In the 'shoulder' seasons of April 1 to 30, and July 16 to August 31, we suggest that vegetation clearing could occur, but only after an ecologist with appropriate avian knowledge has surveyed the area to confirm lack of nesting. If nesting is found, then vegetation clearing (in an area around the nest) must wait until nesting has concluded. The smaller and simpler the habitat is, the easier it is to confirm that no nesting is occurring. The likelihood of nesting birds being present in the 'shoulder' seasons also depends on the habitat type. From September 1 through to March 31, of any year, vegetation clearing can occur without nest surveys, but the law for nest protection still applies (i.e. if an active nest is known it should be protected).

As a precaution to protect bat species at risk, forested area tree removals should not occur during the season when bats may be roosting or rearing young (i.e., April 15th to September 1st).

6.2.4 Access Restrictions

A fence should be placed along the outside edge of the future lots that back on to the woodlot or wetlands, to manage access into the natural system and mitigate against rear-yard dumping.

6.2.5 Erosion and Sediment Control

Construction works such as grading, grubbing and excavation can cause the movement of sediment into watercourses or wetlands, both on and downstream of the property, especially on steeper slopes. An erosion and sediment control plan should be prepared and approved by the City prior to construction works. This plan should be designed and constructed as per the City of Orillia's "Engineering Design Criteria" document (C.C. Tatham & Associates Ltd. 2012) and address phasing, inspection and monitoring aspects of erosion and sediment control.

Silt fencing should be installed to minimize sediment leaving the site and should be removed when development work is completed, and exposed soils stabilized.

Standard Best Management Practices should also be employed during the construction process.

6.2.6 Butternut Mitigation Plan

The proposed development plan currently will impact five Category 3 (Archivable) and eight Category 2 (Retainable) Butternut trees. Removal or harm to Category 3 trees will require further consultations with the MECP to obtain an Overall Benefit Permit. Through this process a mitigation plan will be formulated that may include the collection of cuttings (scions) from one or more of the Category 3 trees and/or mitigation plantings of Butternut seedlings and companion trees. However, as mentioned previously, the condition of these trees will likely change over time. These trees will be re-assessed during the season prior to site plan approval application to the City of Orillia. If at that time there are 10 or less Category 2 trees proposed for removal, and no Category 3 trees are proposed to be removed or harmed, then the project may follow the much simpler Registry process with the MECP, which would include a mitigation planting plan. The open cultural meadow located on the east side of the northern wetland and forest block has been identified as a potentially suitable planting area.

7. Policy Conformity

Section 2 of this report provided an overview of the natural heritage policies and regulations of the Provincial Policy Statement, City of Orillia, and the *Endangered Species Act*. This section examines conformity with those specific policies and regulations.

7.1 Provincial Policy Statement

The subject property does not support any Provincially Significant Wetlands, Significant Valleylands, Areas of Natural and Scientific Interest, nor any Coastal Wetlands.

7.1.1 Significant Woodlands

The woodlands within the southern portion of the subject property are designated Significant Woodlands by the City of Orillia. The proposed development will not negatively impact this feature; the health or integrity of the functions and features that contribute to the significance of this woodland will not be threatened.

7.1.2 Significant Wildlife Habitat

The identification of this element is the responsibility of the planning authority as it requires the relative assessment of features and the determination of thresholds. Based on field observations, and an assessment of the MNRF (MECP) criteria provided in **Appendix E**, there is Candidate Significant Wildlife Habitat on the subject property in the form of part or all of the wetland and the FOD4-1 woodland community. If the recommended mitigation measures are implemented, there will be no negative impact to the Candidate Significant Wildlife Habitat on, or adjacent to, the subject property.

7.1.3 Habitat of Endangered and Threatened Species

There is potential habitat of endangered and threatened species based on the findings of the various field investigations (bat habitat surveys, breeding bird surveys and Butternut surveys). Closer to the time of development, consultations with the MECP should be undertaken to determine if the project is in conformity with the *Endangered Species Act*. Should development not commence after 3 years, re-surveys would be required in June for birds, bats and in the leaf-on season for Butternuts.

7.2 City of Orillia Official Plan

This EIS demonstrates conformity with the policies under Section 3.5 – The Environment/Open Space Areas, and Section 4.2.6 – West Orillia Lands Special Policy Area. Through avoidance, minimization and mitigation, the features and functions of the Environmental Protection Areas will not be negatively affected.

7.3 Endangered Species Act

Closer to the time of development, Butternut trees on the subject property will be re-assessed using the Butternut Health Assessment process and will be addressed through O. Reg 242/08, as applicable.

Prior to any site development or site plan application, potential habitat of Endangered species of bats on the subject property will be subject to consultations with the MECP in order to be in conformity with the ESA.

8. Conclusions

This EIS has been prepared as a requirement of the City of Orillia's Official Plan and to address the potential of species regulated under the *Endangered Species Act*. The preparation of this report also adheres to the terms of reference and study requirements agreed upon with the City's peer reviewer.

Beacon described the natural heritage conditions on the subject property based on a background review and field investigations.

Several natural heritage features and functions on the subject property, including species or habitat that require protection under the *Endangered Species Act*, have been identified, described and assessed. The proposed development has been designed to avoid and minimize negative impacts and measures have been recommended to mitigate any residual negative impacts on the natural heritage features.

Buffers, of a size that is supported in the scientific literature have been recommended. Candidate Significant Wildlife Habitat have been protected or retained to maintain the habitat.

Prior to each phase of development, updates to some of the seasonal surveys (bats, birds and Butternuts) will be needed to determine the presence and status of any species or habitat that require protection under the ESA.

Conformity with the ESA notwithstanding, the development as proposed can proceed and in our professional opinion it will be in compliance with applicable natural heritage policies.

Prepared by:
Beacon Environmental



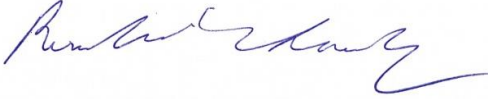
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Senior Ecologist

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Appendix A

Agency Correspondence



RIVERSTONE

ENVIRONMENTAL SOLUTIONS INC.

April 20, 2018
RS# 2018-040

Jill Lewis

Jill Lewis, B.Com., M.A. (Pl), MCIP, RPP
Senior Planner, City of Orillia
Development Services and Engineering Department – Planning Division

via email: JLewis@orillia.ca

SUBJECT: Meeting Summary, Terms of Reference – Charter Construction Environmental Impact Study

Dear Jill:

RiverStone Environmental Solutions Inc. (hereafter RiverStone) is pleased to provide the City of Orillia with a summary of our meeting with the consulting group representing Charter Construction. The purpose of the meeting was to discuss the development proposal and come to an agreement on the required components, Terms of Reference, for the Environmental Impact Study (EIS) that is required to further the *Planning Act* application to develop the subject lands.

The meeting was held at the RiverStone office in Bracebridge on March 29, 2018. The consulting team representing Charter Construction included Mr. Paul Neals (Orion Environmental Solutions), Geri Poisson (Beacon Environmental), and Ryan Morin (Beacon Environmental).

It is our understanding that Charter Construction is proposing to continue developing adjacent to an existing subdivision that they have been building for some time. The property is location to the south of Bass Lake Sideroad and immediately to the east of Line 15 North. The property consists of agricultural fields, woodlots and wetlands. Some infrastructure is already in place, such as a stormwater pond, and some roads; however, several roads, some with crossings of watercourses, will be required to service the lots that are being proposed.

It regard to the completion of an EIS, Section 7.1.9 (pages 199-205) of the City of Orillia Official Plan sets out the policies and expectations for an EIS. The guiding principal is that “An Environmental Impact Study shall demonstrate that there will be no *negative impact* resulting form the proposed use on the nature and significance of the natural features that have been identified and includes a statement about the presence or absence of species identified for protection by the relevant legislation”. It was noted at the meeting that the EIS should follow the details of this section of the Official Plan in terms of the features and functions that would be addressed. As discussed with the City prior to the meeting and relayed to the Charter Construction consultants, the EIS was not expected to include any details regarding groundwater recharge/discharge or aquifer conditions. These details are expected to be considered by others.

In addition to the policies above, Official Plan policy 4.2.6 a) refers to Environmental Features, Functions and Linkages on the West Orillia Lands. This policy should be reviewed and included in the assessment of the lands and impacts related to the proposed development.

In order to address the significance and need to protect certain features and functions, field studies will need to be completed. The type of field studies and breadth of site assessment are not necessarily outlined in the Official Plan, which were the primary details discussed at the meeting. Based on our meeting notes, the following items were agreed to be included in the field assessment:

- Wetland boundary – assessment of the boundary of the central wetland adjacent to the proposed development (using Provincial standards).
- Watercourse assessment (particularly creek under Line 15 N draining the agricultural field to the west, with proposed road crossing). Includes the determination of whether the watercourse is coldwater or warmwater, may include sampling the fish community, if there are fish.
- Ecological Land Classification of vegetation communities. Does not require four season vegetation studies, but does require enough detail to accurately assign ELC for the purposes of assessing the potential for species at risk and significant wildlife habitat.
- Species at Risk (SAR), assessment for species potential on the property – either by a habitat-based approach or through species specific studies. We discussed Bobolink in particular as much of the subject property is presently under active agriculture. It was also noted that it is our responsibility to review the EIS for SAR.
- Breeding Bird Survey – assessment using standard protocols, in the agriculture, wetland edge and woodlot habitats.
- Amphibian surveys – not necessary given the wetland is to be protected and there are no other wetlands.
- Significant Wildlife Habitat – should be assessed against the Provincial tools (SWH Technical Guide, Ecoregion Criteria Schedules and Mitigation Tool).
- Significant Woodlands – Woodlands along the south portion of the property should be considered for classification as Significant Woodlands.
- Based on the assessment of each of the natural features above, the appropriate protection should be assigned to significant features along with development setbacks/buffers to protect those features and functions. This is consistent with Official Plan Policy 7.1.9 d) viii), that refers to a management plan, and is synonymous with a map of environmental constraints.
- The site assessments were to be completed during the appropriate time of year according to industry/Provincial standards, unless otherwise agreed.

It was our expectation that we would attend the site during the field season, first giving notice to the consultant team. We would likely wait until some of the field work has been completed.

These are the pertinent details of our meeting related to the TOR for the EIS.

Should you have any questions please call me at 705.645.9887 (office).

RiverStone Environmental Solutions Inc.

Per:

A handwritten signature in black ink, appearing to read 'Al Shaw', with a long horizontal flourish extending to the right.

Al Shaw, M.Sc.,
Senior Ecologist/Principal

Gerri Poisson

From: Shirley, Brent (MNRF) <brent.shirley@ontario.ca>
Sent: April 23, 2018 1:25 PM
To: Gerri Poisson
Subject: RE: Information request West Orillia

Hi Gerri,

As you are likely aware the species at risk records found in the NHIC database are not exhaustive and are based on **known** occurrences only. As a result, although there may be no record (or confirmation) of a species at risk on site it does not mean that they are not present if appropriate habitat exists. Due diligence is therefore still required and would include an appropriate consideration of what species could be present based on available habitat at the location noted above. Your field work should inform you on what species on the SARO list could possibly be encountered based on available habitats in the area of the study and the possible survey methodologies required during your site assessments.

I think that you should consider Blanding's turtle, Barn Swallow, Bobolink, Eastern Meadowlark, Eastern Wood-pewee, Snapping Turtle, Wood Thrush and SAR bat species as having potential to be on site based on known occurrences in the immediate vicinity of the study area. Based on the available habitat on site, you might be able to conclude many of these species would not be reasonably found on the subject property. That will be determined through your ecological assessment and field work.

The province has centralized and made publicly available digital and species data that lends to inform data needs such as the information requests MNRF receives. Given the volume of information requests received by the district, it is our expectation that you complete a preliminary screening for your project and obtain available information from the following sources prior to requesting additional information from MNRF. Going forward, your information requirements can largely be met through the use of the following data sources and reference documents:

- Digital data for natural heritage features (e.g. wetland and ANSI mapping, fish community data) can be obtained through Land Information Ontario (LIO) and/or through the Make a Map: Natural Heritage Areas tool through LIO at the link below.

Land Information Ontario: <https://www.ontario.ca/page/land-information-ontario>

- Make a Map: Natural Heritage Areas: http://www.gisapplication.lrc.gov.on.ca/mamnh/Index.html?site=MNR_NHLUPS_NaturalHeritage&viewer=NaturalHeritage&locale=en-US. Natural Heritage Information Centre (NHIC) data is also available through this interactive map tool.
- Other resources to consider include:
 "Atlas of the Breeding Birds of Ontario"
 "Ontario Reptile and Amphibian Atlas"

Please contact me if you have any questions or concerns.

Best Regards,

Brent Shirley

A/ Management Biologist

Midhurst District Ministry of Natural Resources & Forestry
2284 Nursery Rd
Midhurst, ON
L9X 1N8

Phone- 705-725-7547

Fax- 705-725-7584

From: Geri Poisson [mailto:gpoisson@beaconenviro.com]

Sent: April 19, 2018 4:11 PM

To: MIDHURSTINFO (MNRF)

Subject: Information request West Orillia

Hello,

Beacon has been retained to undertake an Environmental Impact Study for a proposed residential development in Orillia, in the city's northwest corner. I have attached a Info Request Form and a site location map.

No NHIC data was available for the subject properties, but there is a record of a Snapping Turtle to the west. The site also has a wetland area and mature forest block. Initial site investigations have found a number of Butternut trees (not yet assessed) and potential bat maternity roosting trees (snags). Information on these features is being compiled. We have conducted a snag survey and will be contacting you soon regarding our findings and next steps.

Please let me know if the MNRF has any further information or records of species at risk or other natural heritage features of the subject lands.

Thank you,

Geris Poisson, B.A. (Hon) / Certified Arborist, Terrestrial Ecologist

BEACON ENVIRONMENTAL

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www.beaconenviro.com

Paul Neals

From: Al Shaw <al@rsenviro.ca>
Sent: Thursday, August 8, 2019 3:33 PM
To: Paul Neals
Cc: JLewis@orillia.ca; hglavic@charterconstruction.ca; Geri Poisson; Nicola Mitchinson (nicola.mitchinson@sympatico.ca); Phil Hammell
Subject: RE: Re: Charter Construction - EIS Comments from Site Visit and Preliminary Review

Good day Paul. You are correct, it is a bust time, which is a good thing for the most part! I hope you are getting a chance to enjoy the summer.

Please see my answers to your comments below.

Please feel free to connect through the City if you have any further comments.

Al Shaw
RiverStone Environmental Solutions Inc.

From: Paul Neals <paul@orionenvironmentalsolutions.com>
Sent: August 8, 2019 10:02 AM
To: Al Shaw <al@rsenviro.ca>
Cc: JLewis@orillia.ca; hglavic@charterconstruction.ca; Geri Poisson <gpoisson@beaconenviro.com>; Nicola Mitchinson (nicola.mitchinson@sympatico.ca) <nicola.mitchinson@sympatico.ca>; Phil Hammell <phil@charterconstruction.ca>
Subject: FW: Re: Charter Construction - EIS Comments from Site Visit and Preliminary Review

Hi Al

Appreciate you are very busy this time of year with field work but can you give me a date when you expect you can respond to our email below regarding your peer review comments.

Thanks
Paul

From: Paul Neals
Sent: Monday, July 22, 2019 12:57 PM
To: Al Shaw <al@rsenviro.ca>
Cc: Henry Glavic <hglavic@charterconstruction.ca>; Nicola Mitchinson (nicola.mitchinson@sympatico.ca) <nicola.mitchinson@sympatico.ca>; Geri Poisson <gpoisson@beaconenviro.com>; Phil Hammell <phil@charterconstruction.ca>
Subject: Re: Charter Construction - EIS Comments from Site Visit and Preliminary Review

Hi Al

Apologize for the delay in our response to your preliminary comments based on the site walk in June. It is our understanding you will review our comments and incorporate them into your formal peer review response to the City.

- Butternut – It is noted that there are a great number of Butternut on the site, including individuals in Categories 1, 2 and 3. The Endangered Species Act (ESA) allows for a fairly straight forward process to take down Category 1 and 2 trees. It is an online process with a plan submitted to replace Category 2 trees that are being removed with planted Butternuts. Removing or developing within 50 m of a Category 3 tree (Archivable) can only be done through the ESA permit process. I know from experience that this can be an onerous process that can take months. We had very good dialog onsite regarding the re-assessment of the trees in several years when development got closer to those archivable Butternuts, given that their status may even downgrade from Category 3 to Category 2 during that time, if the disease progressed on these individuals. I was in agreement that going through the ESA permit process right now is not necessary, as it can be costly (up to \$25 k per tree) and is not necessary at this time. I would agree that the current process not be held up by Butternut. Although not discussed onsite, it would be suitable to impose a Holding provision on those lots that are within 50 m of the Category 3 Butternuts, that states they are not to be developed until the ESA process is completed. I think we can discuss this option or others that may be suitable from a planning perspective. The goal would be to ensure that the proper process is completed on those lots and not have the fact that the lots have been created be a trump card down the road. **Response : We have no issue with your proposal on how to address Butternut at the time of development.**

RS RESPONSE – Process agreed, Butternut will be dealt with further along the process with a holding provision, subject to approval by the City, until the lots adjacent to the Butternut are closer to being developed. At that time the classification of the trees will be finalized and the proper process through the MECP (or appropriate ministry at that time). We would recommend that this process be articulated in your EIS

- Large central wetland – The development setback proposed in the EIS is 10 m. We discussed the merits of 10 m versus the industry standard of 30 m. Geri noted that he has had a 10 m setback approved in Barrie around a PSW. I am not entirely sure of those circumstances, but 10 m did not seem appropriate to me. There is no guideline for wetland setbacks in the City OP. We also discussed the function of the setback given it is currently agriculture field, and by revegetating a 10 m buffer, it would be more functional than a 30 m agriculture setback. I do agree to an extent, that a more function yet smaller buffer, is better than a larger setback that has little function; however, I would say that the setback would eventually revegetate by itself and become functional. That is why the trade off of small functioning buffer versus larger non-functioning only goes so far. We did have discussions about a variable setback having some sections larger than 30 m and some smaller. I agreed that this could be considered with justification. **Response: Beacon will provide a more detailed justification on the variable setback for your review. We are of the opinion that there must be a technical rational to impose a set back, rather than just precedence from other jurisdictions.**

RS RESPONSE – The wetland is a wetland and identified as an Environmental Protection Area in the OP and Zoning Bylaw. OP policies say that development within the EP area and lands adjacent to the EP must be demonstrated through the EIS that there is no negative impact to the feature or its function. OP policies also say that the size of the extent of the buffer be determined through EIS. Regarding a technical rational to impose a buffer, the OP policies require a buffer, to be determined through the EIS process. We would suggest that the rational required is related to how the size and extent of buffer proposed results in no negative impact to the feature and its functions.

- Swale B – this watercourse drains west to east, under Sideroad 15 and through the south-central portion of the property. There was discussion as to whether the watercourse eventually emptied into the stormwater ponds or not. We agreed that this should be figured out as water supply to the wetland should be maintained. It was also our observation that the watercourse and its buffer would act as a linkage or corridor between the forest community that will be protected in the south portion of the property, to the wetland in the north. Identifying corridor features and connecting natural areas is a component of an EIS for the City and this seemed to be the natural piece to provide that function. In addition, the watercourse has fish (observed while onsite and noted in the EIS), and was measured to be 12 C during our site visit, which is trending toward being coldwater. The discussion in the EIS was that this feature was going to be removed or piped following discussions with DFO later

in the process. The more pertinent discussion would be whether this feature belongs in the EP zoning or not. Given the presence of fish, coldwater thermal regime, and contribution of water to the wetland (even if it goes through the SWM ponds), it should be considered for the EP zone, which requires a 15 m buffer. I agreed I would discuss this with the City and get their opinion on our line of thinking. **Response: We submitted Beacon's assessment of Drainage Swale B to the Department of Fisheries and Oceans under a Request for Review. DFO confirmed piping the off-site drainage to the existing storm water management pond will not result in serious harm to fish and approved the works with a Letter of Advice (copy attached).**

- **RS RESPONSE – The DFO letter of advice has been reviewed and accepted. It is still our view that this watercourse/swale may represent a feature that should potentially be within the EP zoning and considered a linkage feature to the wetland. IN an attempt to better understand the feature and its function, I would ask permission to walk the swale from the road up to the wetland. I want to make sure about its functions before finalizing the opinion on protection vs piping. Please let me know and I will go to the site as soon as possible.**
- Significant Wildlife Habitat (SWH) – we discussed the treatment of SWH in the report and we noted that the report would benefit from a more robust discussion on all of the SWH possibilities. We would encourage Beacon to go through the Ecoregion criteria schedules and assess the potential for each of these features and functions to be present on the site. **Response: Beacon will undertake this assessment.**
RS RESPONSE – Process agreed.

Please contact me if you want to discuss our comments further before you finalize your peer review to the City. Thank you for your cooperation and advice, it is greatly appreciated.

Regards

Paul Neals

Orion Environmental Solutions
1930 George Johnston Road
Minesing, ON L9X 1C1

705-794-7107

Email: paul@orionenvironmentalsolutions.com
www.orionenvironmentalsolutions.com

Appendix B

Vascular Plant List (2018)

Appendix B

Plant List - West Orillia Neighbourhood Plan Area, City of Orillia

Family Name	Scientific Name	Common Name	Origin	COSEWIC	COSSARO	S-RANK	Simcoe County (Riley 1989)
Anacardiaceae	<i>Rhus typhina</i>	Staghorn Sumac	N			S5	
Anacardiaceae	<i>Toxicodendron rydbergii</i>	Western Poison Ivy	N			S5	
Apiaceae	<i>Daucus carota</i>	Queen Anne's Lace	I			SNA	
Apocynaceae	<i>Apocynum androsaemifolium</i> ssp. <i>androsaemifolium</i>	Spreading Dogbane	N			S5	
Araceae	<i>Arisaema triphyllum</i> ssp. <i>triphyllum</i>	Jack-in-the-pulpit	N			S5	
Araliaceae	<i>Aralia nudicaulis</i>	Wild Sarsaparilla	N			S5	
Aristolochiaceae	<i>Asarum canadense</i>	Wild Ginger	N			S5	
Asclepiadaceae	<i>Asclepias syriaca</i>	Common Milkweed	N			S5	
Asteraceae	<i>Achillea millefolium</i> var. <i>millefolium</i>	Common Yarrow	I			SNA	
Asteraceae	<i>Ambrosia artemisiifolia</i>	Annual Ragweed	N			S5	
Asteraceae	<i>Arctium minus</i>	Lesser Burdock	I			SNA	
Asteraceae	<i>Bidens frondosa</i>	Devil's Beggar's Ticks	N			S5	
Asteraceae	<i>Cichorium intybus</i>	Chicory	I			SNA	
Asteraceae	<i>Cirsium arvense</i>	Creeping Thistle	I			SNA	
Asteraceae	<i>Doellingeria umbellata</i> var. <i>umbellata</i>	Flat-topped White Aster	N			S5	
Asteraceae	<i>Erigeron annuus</i>	White-top Fleabane	N			S5	
Asteraceae	<i>Euthamia graminifolia</i>	Grass-leaved Goldenrod	N			S5	
Asteraceae	<i>Hieracium aurantiacum</i>	Orange Hawkweed	I			SNA	
Asteraceae	<i>Lactuca</i> sp.	Lettuce Species	N				
Asteraceae	<i>Leucanthemum vulgare</i>	Oxeye Daisy	I			SNA	
Asteraceae	<i>Solidago canadensis</i>	Canada Goldenrod	N			S5	
Asteraceae	<i>Solidago rugosa</i> ssp. <i>rugosa</i>	Rough Goldenrod	N			S5	
Asteraceae	<i>Symphotrichum lanceolatum</i> ssp. <i>lanceolatum</i>	Panicked Aster	N			S5	
Asteraceae	<i>Symphotrichum novae-angliae</i>	New England Aster	N			S5	
Asteraceae	<i>Symphotrichum puniceum</i> var. <i>puniceum</i>	Purple-stemmed Aster	N			S5	
Asteraceae	<i>Taraxacum officinale</i>	Common Dandelion	I			SNA	
Asteraceae	<i>Tussilago farfara</i>	Colt's Foot	I			SNA	
Balsaminaceae	<i>Impatiens capensis</i>	Spotted Jewel-weed	N			S5	
Berberidaceae	<i>Caulophyllum thalictroides</i>	Blue Cohosh	N			S5	
Berberidaceae	<i>Podophyllum peltatum</i>	May Apple	N			S5	
Betulaceae	<i>Betula alleghaniensis</i>	Yellow Birch	N			S5	
Betulaceae	<i>Betula papyrifera</i>	Paper Birch	N			S5	
Betulaceae	<i>Ostrya virginiana</i>	Eastern Hop-hornbeam	N			S5	
Boraginaceae	<i>Echium vulgare</i>	Common Viper's-bugloss	I			SNA	
Boraginaceae	<i>Hackelia virginiana</i>	Virginia Stickseed	N			S5	

Family Name	Scientific Name	Common Name	Origin	COSEWIC	COSSARO	S-RANK	Simcoe County (Riley 1989)
Boraginaceae	<i>Myosotis scorpioides</i>	True Forget-me-not	I			SNA	
Caprifoliaceae	<i>Sambucus canadensis</i>	Common Elderberry	N			S5	
Caprifoliaceae	<i>Sambucus racemosa</i>	Red-berried Elder	N			S5	
Caprifoliaceae	<i>Triosteum aurantiacum</i>	Horse Gentian	N			S5	
Caprifoliaceae	<i>Viburnum opulus</i>	Guelder-rose Viburnum	I			SNA	
Caryophyllaceae	<i>Silene latifolia</i>	Bladder Campion	I			SNA	
Caryophyllaceae	<i>Stellaria longifolia</i>	Longleaf Stitchwort	N			S5	
Clusiaceae	<i>Hypericum perforatum</i>	St. John's-wort	I			SNA	
Cornaceae	<i>Cornus alternifolia</i>	Alternate-leaf Dogwood	N			S5	
Cornaceae	<i>Cornus sericea</i> ssp. <i>sericea</i>	Red-osier Dogwood	N			S5	
Cupressaceae	<i>Thuja occidentalis</i>	Northern White Cedar	N			S5	
Cyperaceae	<i>Carex arctata</i>	Black Sedge	N			S5	
Cyperaceae	<i>Carex bebbii</i>	Bebb's Sedge	N			S5	
Cyperaceae	<i>Carex gracillima</i>	Graceful Sedge	N			S5	
Cyperaceae	<i>Carex hystericina</i>	Porcupine Sedge	N			S5	
Cyperaceae	<i>Carex lacustris</i>	Lake-bank Sedge	N			S5	
Cyperaceae	<i>Carex rosea</i>	Rosy Sedge	N			S5	
Cyperaceae	<i>Carex stipata</i>	Stalk-grain Sedge	N			S5	
Cyperaceae	<i>Carex vulpinoidea</i>	Fox Sedge	N			S5	
Cyperaceae	<i>Scirpus atrovirens</i>	Woolgrass Bulrush	N			S5	
Dryopteridaceae	<i>Athyrium filix-femina</i> var. <i>angustum</i>	Lady-fern	N			S5	
Dryopteridaceae	<i>Dryopteris carthusiana</i>	Spinulose Wood Fern	N			S5	
Dryopteridaceae	<i>Dryopteris intermedia</i>	Evergreen Wood Fern	N			S5	
Dryopteridaceae	<i>Matteuccia struthiopteris</i> var. <i>pennsylvanica</i>	Ostrich Fern	N			S5	
Dryopteridaceae	<i>Onoclea sensibilis</i>	Sensitive Fern	N			S5	
Fabaceae	<i>Coronilla varia</i>	Crown-vetch	I			SNA	
Fabaceae	<i>Lathyrus latifolius</i>	Everlasting Pea	I			SNA	
Fabaceae	<i>Medicago lupulina</i>	Black Medic	I			SNA	
Fabaceae	<i>Medicago sativa</i> ssp. <i>sativa</i>	Alfalfa	I			SNA	
Fabaceae	<i>Trifolium pratense</i>	Red Clover	I			SNA	
Fabaceae	<i>Vicia cracca</i>	Tufted Vetch	I			SNA	
Fagaceae	<i>Fagus grandifolia</i>	American Beech	N			S5	
Fagaceae	<i>Quercus rubra</i>	Northern Red Oak	N			S5	
Geraniaceae	<i>Geranium robertianum</i>	Herb-robert	I			S5	
Grossulariaceae	<i>Ribes cynosbati</i>	Prickly Gooseberry	N			S5	
Hydrophyllaceae	<i>Hydrophyllum virginianum</i>	Virginia Waterleaf	N			S5	
Juglandaceae	<i>Juglans cinerea</i>	Butternut	N	END	END	S3?	
Juncaceae	<i>Juncus articulatus</i>	Jointed Rush	N			S5	
Juncaceae	<i>Juncus effusus</i> ssp. <i>solutus</i>	Soft Rush	N			S5	
Lamiaceae	<i>Nepeta cataria</i>	Catnip	I			SNA	
Lamiaceae	<i>Prunella vulgaris</i> ssp. <i>vulgaris</i>	Common Heal-all	I			SNA	

Family Name	Scientific Name	Common Name	Origin	COSEWIC	COSSARO	S-RANK	Simcoe County (Riley 1989)
Lemnaceae	<i>Lemna minor</i>	Lesser Duckweed	N			S5	
Liliaceae	<i>Allium tricoccum</i>	Wild Leek	N			S5	
Liliaceae	<i>Asparagus officinalis</i>	Asparagus	I			SNA	
Liliaceae	<i>Erythronium americanum</i> ssp. <i>americanum</i>	Yellow Trout-lily	N			S5	
Liliaceae	<i>Hemerocallis fulva</i>	Orange Daylily	I			SNA	
Liliaceae	<i>Maianthemum canadense</i>	Wild-lily-of-the-valley	N			S5	
Liliaceae	<i>Maianthemum racemosum</i> ssp. <i>racemosum</i>	False Solomon's Seal	N			S5	
Liliaceae	<i>Trillium erectum</i>	Red Trillium	N			S5	
Liliaceae	<i>Trillium grandiflorum</i>	White Trillium	N			S5	
Oleaceae	<i>Fraxinus americana</i>	White Ash	N			S5	
Oleaceae	<i>Fraxinus nigra</i>	Black Ash	N			S5	
Oleaceae	<i>Fraxinus pennsylvanica</i>	Green Ash	N			S5	
Onagraceae	<i>Circaea lutetiana</i> ssp. <i>canadensis</i>	Enchanter's Nightshade	N			S5	
Onagraceae	<i>Oenothera biennis</i>	Common Evening-primrose	N			S5	
Orchidaceae	<i>Epipactis helleborine</i>	Eastern Helleborine	I			SNA	
Osmundaceae	<i>Osmunda claytoniana</i>	Interrupted Fern	N			S5	
Pinaceae	<i>Pinus strobus</i>	Eastern White Pine	N			S5	
Pinaceae	<i>Pinus sylvestris</i>	Scotch Pine	I			SNA	
Pinaceae	<i>Tsuga canadensis</i>	Eastern Hemlock	N			S5	
Plantaginaceae	<i>Plantago lanceolata</i>	English Plantain	I			SNA	
Plantaginaceae	<i>Plantago major</i>	Nipple-seed Plantain	I			SNA	
Poaceae	<i>Agrostis gigantea</i>	Redtop	I			SNA	
Poaceae	<i>Bromus inermis</i> ssp. <i>inermis</i>	Smooth Brome	I			SNA	
Poaceae	<i>Calamagrostis canadensis</i>	Blue-joint Reedgrass	N			S5	
Poaceae	<i>Dactylis glomerata</i>	Orchard Grass	I			SNA	
Poaceae	<i>Danthonia spicata</i>	Poverty Oat-grass	N			S5	
Poaceae	<i>Elymus hystrix</i>	Bottle-brush Grass	N			S5	
Poaceae	<i>Glyceria striata</i>	Fowl Manna Grass	N			S5	
Poaceae	<i>Leersia oryzoides</i>	Rice Cutgrass	N			S5	
Poaceae	<i>Phalaris arundinacea</i>	Reed Canary Grass	N			S5	
Poaceae	<i>Phleum pratense</i>	Timothy	I			SNA	
Polygonaceae	<i>Polygonum cuspidatum</i>	Japanese Knotweed	I			SNA	
Primulaceae	<i>Lysimachia nummularia</i>	Moneywort	I			SNA	
Ranunculaceae	<i>Actaea pachypoda</i>	White Baneberry	N			S5	
Ranunculaceae	<i>Anemone canadensis</i>	Canada Anemone	N			S5	
Ranunculaceae	<i>Clematis virginiana</i>	Virginia Virgin-bower	N			S5	
Ranunculaceae	<i>Ranunculus acris</i>	Tall Buttercup	I			SNA	
Ranunculaceae	<i>Thalictrum dioicum</i>	Early Meadowrue	N			S5	
Ranunculaceae	<i>Thalictrum pubescens</i>	Tall Meadowrue	N			S5	
Rhamnaceae	<i>Rhamnus cathartica</i>	Buckthorn	I			SNA	
Rosaceae	<i>Crataegus</i> sp.	Hawthorn Species	N				

Family Name	Scientific Name	Common Name	Origin	COSEWIC	COSSARO	S-RANK	Simcoe County (Riley 1989)
Rosaceae	<i>Geum urbanum</i>	Clover-root	I			SNA	
Rosaceae	<i>Malus</i> sp.	Apple Species	I				
Rosaceae	<i>Prunus serotina</i>	Wild Black Cherry	N			S5	
Rosaceae	<i>Prunus virginiana</i> var. <i>virginiana</i>	Choke Cherry	N			S5	
Rosaceae	<i>Rubus allegheniensis</i>	Allegheny Blackberry	N			S5	
Rosaceae	<i>Rubus idaeus</i> ssp. <i>strigosus</i>	Wild Red Raspberry	N			S5	
Rubiaceae	<i>Galium palustre</i>	Marsh Bedstraw	N			S5	
Salicaceae	<i>Populus balsamifera</i> ssp. <i>balsamifera</i>	Balsam Poplar	N			S5	
Salicaceae	<i>Populus deltoides</i> ssp. <i>monilifera</i>	Eastern Cottonwood	N			S5	
Salicaceae	<i>Populus grandidentata</i>	Large-tooth Aspen	N			S5	
Salicaceae	<i>Populus tremuloides</i>	Quaking Aspen	N			S5	
Salicaceae	<i>Salix discolor</i>	Pussy Willow	N			S5	
Salicaceae	<i>Salix fragilis</i>	Crack Willow	I			SNA	
Salicaceae	<i>Salix petiolaris</i>	Meadow Willow	N			S5	
Sapindaceae	<i>Acer negundo</i>	Manitoba Maple	N			S5	
Sapindaceae	<i>Acer platanoides</i>	Norway Maple	I			SNA	
Sapindaceae	<i>Acer rubrum</i>	Red Maple	N			S5	
Sapindaceae	<i>Acer saccharum</i> var. <i>saccharum</i>	Sugar Maple	N			S5	
Sapindaceae	<i>Acer x freemanii</i>	Freeman's Maple	N			S5	
Scrophulariaceae	<i>Linaria vulgaris</i>	Butter-and-eggs	I			SNA	
Scrophulariaceae	<i>Verbascum thapsus</i>	Common Mullein	I			SNA	
Scrophulariaceae	<i>Veronica beccabunga</i>	European Speedwell	I			SNA	
Solanaceae	<i>Solanum dulcamara</i>	Climbing Nightshade	I			SNA	
Tiliaceae	<i>Tilia americana</i>	American Basswood	N			S5	
Typhaceae	<i>Typha angustifolia</i>	Narrow-leaved Cattail	N			S5	
Typhaceae	<i>Typha latifolia</i>	Broad-leaf Cattail	N			S5	
Ulmaceae	<i>Ulmus americana</i>	American Elm	N			S5	
Violaceae	<i>Viola blanda</i>	Smooth White Violet	N			S4S5	
Vitaceae	<i>Parthenocissus vitacea</i>	Thicket Creeper	N			S5	
Vitaceae	<i>Vitis riparia</i>	Riverbank Grape	N			S5	

LEGEND:

Origin: N - Native, I - Introduced

COSEWIC - Committee on the Status of Endangered Wildlife in Canada

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

S-RANK: S5 Secure - Common, widespread, and abundant; S4 Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors., while concern about its status increases as the score declines; S3 Vulnerable—Vulnerable due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation; SNA Not Applicable —A conservation status rank is not applicable because the species is not a suitable target for conservation activities. These ranks are not legal designations.

Appendix C

Breeding Bird List (2018)

Appendix C

Breeding Bird List - West Orillia Neighbourhood Plan Area, City of Orillia

Common Name	Scientific Name	Status				Locations * / Numbers of Pairs			
		National Species at Risk COSEWICa	Species at Risk in Ontario Listing a	Provincial breeding season SRANK ^b	Area-sensitive (OMNR)c	South Woodland	North Wetland / Woodland	Other Areas	Total
Great Blue Heron	<i>Ardea herodias</i>			S4			1 F		1 F
Green Heron	<i>Butorides virescens</i>			S4			3		3
Mallard	<i>Anas platyrhynchos</i>			S5			1	8 F	1; 8F
Red-tailed Hawk	<i>Buteo jamaicensis</i>			S5		1			1
Wild Turkey	<i>Meleagris gallopavo</i>			S5				10	10
Ruffed Grouse	<i>Bonasa umbellus</i>			S4			1		1
Virginia Rail	<i>Rallus limicola</i>			S5			2		2
Killdeer	<i>Charadrius vociferus</i>			S5			1	2	3
Spotted Sandpiper	<i>Actitis macularia</i>			S5				1	1
Mourning Dove	<i>Zenaida macroura</i>			S5			1	1	2
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>			S5		1			1
Great Horned Owl	<i>Bubo virginianus</i>			S4			1		1
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>			S5	A		3		3
Northern Flicker	<i>Colaptes auratus</i>			S4			1		1
Pileated Woodpecker	<i>Dryocopus pileatus</i>			S5	A	1			1
Eastern Wood-Pewee	<i>Contopus virens</i>	SC	SC	S4		3	2		5
Alder Flycatcher	<i>Empidonax alnorum</i>			S5			8	1	9
Great Crested Flycatcher	<i>Myiarchus crinitus</i>			S4			5		5
Eastern Kingbird	<i>Tyrannus tyrannus</i>			S4			1	1	2
Tree Swallow	<i>Tachycineta bicolor</i>			S4			1		1
Barn Swallow	<i>Hirundo rustica</i>	THR	THR	S4			4 F		4 F
Blue Jay	<i>Cyanocitta cristata</i>			S5		1	2	1	4
American Crow	<i>Corvus brachyrhynchos</i>			S5		1	1	1	3
Black-capped Chickadee	<i>Poecile atricapillus</i>			S5		1	3	1	5
Red-breasted Nuthatch	<i>Sitta canadensis</i>			S5	A	1	1		2
House Wren	<i>Troglodytes aedon</i>			S5		1	3	1	5
Veery	<i>Catharus fuscescens</i>			S4	A		2		2
American Robin	<i>Turdus migratorius</i>			S5		2	7	3	12
Gray Catbird	<i>Dumetella carolinensis</i>			S4			2	1	3
Cedar Waxwing	<i>Bombycilla cedrorum</i>			S5			2	2	4
European Starling	<i>Sturnus vulgaris</i>			SE				1	1
Red-eyed Vireo	<i>Vireo olivaceus</i>			S5		7	7	1	15
Yellow Warbler	<i>Setophaga petechia</i>			S5			3	1	4
Chestnut-sided Warbler	<i>Setophaga pensylvanica</i>			S5			1		1
Pine Warbler	<i>Setophaga pinus</i>			S5	A	1			1
Black-and-white Warbler	<i>Mniotilta varia</i>			S5	A		3		3
American Redstart	<i>Setophaga ruticilla</i>			S5	A	1	4	1	6

Common Name	Scientific Name	Status				Locations * / Numbers of Pairs			
		National Species at Risk COSEWICa	Species at Risk in Ontario Listing a	Provincial breeding season SRANK ^b	Area-sensitive (OMNR)c	South Woodland	North Wetland / Woodland	Other Areas	Total
Ovenbird	<i>Seiurus aurocapillus</i>			S4	A		1		1
Mourning Warbler	<i>Geothlypis philadelphia</i>			S4		1			1
Common Yellowthroat	<i>Geothlypis trichas</i>			S5			11		11
Northern Cardinal	<i>Cardinalis cardinalis</i>			S5		1		1	2
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>			S4			1		1
Indigo Bunting	<i>Passerina cyanea</i>			S4		2	6	1	9
Chipping Sparrow	<i>Spizella passerina</i>			S5				1	1
Vesper Sparrow	<i>Pooecetes gramineus</i>			S4				1	1
Savannah Sparrow	<i>Passerculus sandwichensis</i>			S4	A			3	3
Song Sparrow	<i>Melospiza melodia</i>			S5		2	11	9	22
Swamp Sparrow	<i>Melospiza georgiana</i>			S5			6	1	7
Red-winged Blackbird	<i>Agelaius phoeniceus</i>			S4			11	6	17
Common Grackle	<i>Quiscalus quiscula</i>			S5			1	1	2
Brown-headed Cowbird	<i>Molothrus ater</i>			S4			1	2	3
Baltimore Oriole	<i>Icterus galbula</i>			S4			1		1
American Goldfinch	<i>Spinus tristis</i>			S5			6	6	12
House Sparrow	<i>Passer domesticus</i>			SNA				1	1

Field Work Conducted On: June 6, June 29 and July 3, 2018

F = Foraging only (non-breeding)

Total

Number of Species: 52 (plus two non-breeding)
 Number of breeding (provincial and national) Species at Risk: 1 (Eastern Wood-Pewee)
 Number of S1 to S3 Species: 0
 Number of Forest Area-sensitive Species: 8

Location 1 - South Woodland

Number of Species: 17
 Number of breeding (provincial and national) Species at Risk: 1 (Eastern Wood-Pewee)
 Number of S1 to S3 Species: 0
 Number of Forest Area-sensitive Species: 4

Location 2 - North Wetland/Woodland (and northeast clearings)

Number of Species: 39 (plus two non-breeding)
 Number of breeding (provincial and national) Species at Risk: 1 (Eastern Wood-Pewee)
 Number of S1 to S3 Species: 0
 Number of Forest Area-sensitive Species: 6

Location 3 - Other Areas - Mainly fields and hedgerows

Number of Species: 29 (plus one non-breeding)
 Number of (provincial and national) Species at Risk:
 Number of S1 to S3 Species: 0
 Number of Forest Area-sensitive Species: 0

KEY

a COSEWIC = Committee on the Status of Endangered Wildlife in Canada
 a Species at Risk in Ontario List (as applies to ESA) as designated by COSSARO (Committee on the Status of Species at Risk in Ontario)

END = Endangered, THR = Threatened, SC = Special Concern

^b SRANK (from Natural Heritage Information Centre) for breeding status if:

S1 (Critically Imperiled), S2 (Imperiled), S3 (Vulnerable), S4 (Apparently Secure), S5 (Secure)

SNA (Not applicable...because the species is not a suitable target for conservation activities'; includes non-native species)

c Ontario Ministry of Natural Resources (OMNR). 2000. Significant Wildlife Habitat Technical Guide (Appendix G). 151 p plus appendices.

Appendix D

DFO Letter of Advice



Suite 103 - 1800 11th Ave
Regina, SK
S4P 0H8

June 18, 2019

Your file Votre référence

Our file Notre référence

19-HCAA-00269

Charter Construction LP
ATTENTION: Angelo Orsi
Charter Development LP
P.O. Box 2088
Orillia, Ontario
L3V 6R9

Subject: Stone Ridge Secondary Plan- Stormwater Management – Implementation of Measures to Avoid and Mitigate Serious Harm to Fish and Prohibited Effects on Listed Aquatic Species at Risk

Dear Mr. Orsi:

The Fish and Fish Habitat Protection Program (the Program) of Fisheries and Oceans Canada (DFO) received your proposal on March 14, 2019. We understand that you propose to:

- To convey off-site flows to the stormwater pond via a pipe from the new developed neighbourhood surrounding the stormwater pond in the City of Orillia, Ontario; and,
- Construct a storm sewer pipe (approximate 260 meters long) during the summer months under dry conditions in a agricultural drainage swale.

Our review considered the following information:

- DFO Request for Review, dated March 13, 2019;
- Orion Environmental Solutions: Supplemental Information: Fig1 photo locations Apr 30 2019, dated April 30, 2019;
- Orion Environmental Solutions: Supplemental Information: Site photos April 30 2019, dated April 30, 2019;
- Email correspondence between Shona Derlukewich (DFO) and Paul Neals (Orion Environmental Solutions), dated May 9, 28, and 29, 2019; and,
- Phone correspondence between Shona Derlukewich (DFO) and Paul Neals (Orion Environmental Solutions), May 29, 2019.

Your proposal has been reviewed to determine whether it is likely to result in serious harm to fish which is prohibited under subsection 35(1) of the *Fisheries Act* unless authorized. Your proposal has also been reviewed to determine whether it is likely to

affect listed aquatic species at risk, any part of their critical habitat or the residences of their individuals in a manner which is prohibited under sections 32, 33 and subsection 58(1) of the *Species at Risk Act*, unless authorized.

To avoid and mitigate the potential for serious harm to fish, we recommend implementing the measures listed below:

- Follow DFO's Measure to Avoid Harm to Fish Habitat if water is present during construction (<http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/measures-mesures-eng.html>).

Provided that you incorporate these measures into your plans, the Program is of the view that your proposal will not result in serious harm to fish or prohibited effects on listed aquatic species at risk. As such, an authorization under the *Fisheries Act* or a permit under the *Species at Risk Act* is not required.

Should your plans change or if you have omitted some information in your proposal, further review by the Program may be required. Consult our website (<http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html>) or consult with a qualified environmental consultant to determine if further review may be necessary. It remains your responsibility to avoid causing serious harm to fish and avoid prohibited effects on listed aquatic species at risk, any part of their critical habitat or the residences of their individuals.

It is also your *Duty to Notify* DFO if you have caused, or are about to cause, serious harm to fish that are part of or support a commercial, recreational or Aboriginal fishery. Such notifications should be directed to <http://www.dfo-mpo.gc.ca/pnw-ppe/CONTACT-eng.html>.

Please notify this office **at least 10 days before** starting your project. A copy of this letter should be kept on site while the work is in progress. It remains your responsibility to meet all other federal, territorial, provincial and municipal requirements that apply to your proposal.

If you have any questions with the content of this letter, please contact Shona Derlukewich at 306-780-8728, or by email at Shona.Derlukewich@dfo-mpo.gc.ca. Please refer to the file number referenced above when corresponding with the Program.

Yours sincerely,



Shona Derlukewich
Senior Fish and Fish Habitat Protection Biologist

cc: Tara Schweitzer (DFO)
Paul Neals (Orion Environmental Solutions)

Appendix E

Candidate SWH Criteria Analysis

Seasonal Concentration Areas of Animals.

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	SWH on Subject Property?
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Yes or No with Comments
<p>Waterfowl Stopover and Staging Areas (Terrestrial)</p> <p>Rationale: Habitat important to migrating waterfowl.</p>	<p>American Black Duck Wood Duck Green-winged Teal Blue-winged Teal Mallard Northern Pintail Northern Shoveler American Wigeon Gadwall</p>	<p>CUM1 CUT1 - Plus evidence of annual spring flooding from melt water or run-off within these Ecosites.</p>	<p>Fields with sheet water during Spring (mid-March to May). Fields flooding during spring melt and run-off provide important invertebrate foraging habitat for migrating waterfowl.</p> <ul style="list-style-type: none"> • Agricultural fields with waste grains are commonly used by waterfowl, these are not considered SWH unless they have spring sheet water available. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> • Anecdotal information from the landowner, adjacent landowners or local naturalist clubs may be good information in determining occurrence. • Reports and other information available from Conservation Authorities • Sites documented through waterfowl planning processes (eg. EHJV implementation plan) • Field Naturalist Clubs • Ducks Unlimited Canada • Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area 	<p>Studies carried out and verified presence of an annual concentration of any listed species, evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects</p> <ul style="list-style-type: none"> • Any mixed species aggregations of 100 or more individuals required. • The flooded field ecosite habitat plus a 100-300m radius area, dependent on local site conditions and adjacent land use is the significant wildlife habitat. • Annual use of habitat is documented from information sources or field studies (annual use can be based on studies or determined by past surveys with species numbers and dates). • SWHMiST Index #7 provides development effects and mitigation measures. 	<p>NO. No candidate SWH present on the subject property.</p>

Environmental Impact Study West Orillia Neighbourhood Plan Area, City of Orillia - Criteria For Significant Wildlife Habitat in Ecoregion 6E (2015)

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	SWH on Subject Property?
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Yes or No with Comments
<p>Waterfowl Stopover and Staging Areas (Aquatic)</p> <p>Rationale: Important for local and migrant waterfowl populations during the spring or fall migration or both periods combined. Sites identified are usually only one of a few in the eco-district.</p>	<p>Canada Goose Cackling Goose Snow Goose American Black Duck Northern Pintail Northern Shoveler American Wigeon Gadwall Green-winged Teal Blue-winged Teal Hooded Merganser Common Merganser Lesser Scaup Greater Scaup Long-tailed Duck Surf Scoter White-winged Scoter Black Scoter Ring-necked duck Common Goldeneye Bufflehead Redhead Ruddy Duck Red-breasted Merganser Brant Canvasback Ruddy Duck</p>	<p>MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7</p>	<ul style="list-style-type: none"> Ponds, marshes, lakes, bays, coastal inlets, and watercourses used during migration. Sewage treatment ponds and storm water ponds do not qualify as a SWH, however a reservoir managed as a large wetland or pond/lake does qualify. These habitats have an abundant food supply (mostly aquatic invertebrates and vegetation in shallow water) <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Environment Canada. Naturalist clubs often are aware of staging/stopover areas. OMNRF Wetland Evaluations indicate presence of locally and regionally significant waterfowl staging. Sites documented through waterfowl planning processes (eg. EHJV implementation plan) Ducks Unlimited projects Element occurrence specification by Nature Serve: http://www.natureserve.org Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area 	<p>Studies carried out and verified presence of:</p> <ul style="list-style-type: none"> Aggregations of 100 or more of listed species for 7 days, results in > 700 waterfowl use days. Areas with annual staging of ruddy ducks, canvasbacks, and redheads are SWH. The combined area of the ELC ecosites and a 100m radius area is the SWH Wetland area and shorelines associated with sites identified within the SWHTG Appendix K are significant wildlife habitat. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” Annual Use of Habitat is Documented from Information Sources or Field Studies (Annual can be based on completed studies or determined from past surveys with species numbers and dates recorded). SWHMiST Index #7 provides development effects and mitigation measures. 	<p>NO. None of the wildlife species listed for this habitat were observed on the subject property.</p>

Environmental Impact Study West Orillia Neighbourhood Plan Area, City of Orillia - Criteria For Significant Wildlife Habitat in Ecoregion 6E (2015)

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	SWH on Subject Property?
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Yes or No with Comments
<p>Shorebird Migratory Stopover Area</p> <p>Rationale: High quality shorebird stopover habitat is extremely rare and typically has a long history of use.</p>	<p>Greater Yellowlegs Lesser Yellowlegs Marbled Godwit Hudsonian Godwit Black-bellied Plover American Golden-Plover Semipalmated Plover Solitary Sandpiper Spotted Sandpiper Semipalmated Sandpiper Pectoral Sandpiper White-rumped Sandpiper Baird's Sandpiper Least Sandpiper Purple Sandpiper Stilt Sandpiper Short-billed Dowitcher Red-necked Phalarope Whimbrel Ruddy Turnstone Sanderling Dunlin</p>	<p>BBO1 BBO2 BBS1 BBS2 BBT1 BBT2 SDO1 SDS2 SDT1 MAM1 MAM2 MAM3 MAM4 MAM5</p>	<ul style="list-style-type: none"> • Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats. • Great Lakes coastal shorelines, including groynes and other forms of armour rock lakeshores, are extremely important for migratory shorebirds in May to mid-June and early July to October. • Sewage treatment ponds and storm water ponds do not qualify as a SWH. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> • Western hemisphere shorebird reserve network. • Canadian Wildlife Service (CWS) Ontario Shorebird Survey. • Bird Studies Canada • Ontario Nature • Local birders and naturalist clubs <p>Natural Heritage Information Center (NHIC) Shorebird Migratory Concentration Area</p>	<p>Studies confirming:</p> <ul style="list-style-type: none"> • Presence of 3 or more of listed species and > 1000 shorebird use days during spring or fall migration period. (shorebird use days are the accumulated number of shorebirds counted per day over the course of the fall or spring migration period) • Whimbrel stop briefly (<24hrs) during spring migration, any site with >100 Whimbrel used for 3 years or more is significant. • The area of significant shorebird habitat includes the mapped ELC shoreline ecosites plus a 100m radius area • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" • SWHMiST Index #8 provides development effects and mitigation measures. 	<p>NO. No candidate SWH is present on the subject property.</p>

Environmental Impact Study West Orillia Neighbourhood Plan Area, City of Orillia - Criteria For Significant Wildlife Habitat in Ecoregion 6E (2015)

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	SWH on Subject Property?
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Yes or No with Comments
<p>Raptor Wintering Area</p> <p><u>Rationale:</u> Sites used by multiple species, a high number of individuals and used annually are most significant</p>	<p>Rough-legged Hawk Red-tailed Hawk Northern Harrier American Kestrel Snowy Owl</p> <p><u>Special Concern:</u> Short-eared Owl Bald Eagle</p>	<p><u>Hawks/Owls:</u> Combination of ELC Community Series; need to have present one Community Series from each land class; Forest: FOD, FOM, FOC.</p> <p>Upland: CUM; CUT; CUS; CUW.</p> <p><u>Bald Eagle:</u> Forest community Series: FOD, FOM, FOC, SWD, SWM or SWC on shoreline areas adjacent to large rivers or adjacent to lakes with open water (hunting area).</p>	<ul style="list-style-type: none"> • The habitat provides a combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors. • Raptor wintering sites (hawk/owl) need to be > 20 ha with a combination of forest and upland. • Least disturbed sites, idle/fallow or lightly grazed field/meadow (>15ha) with adjacent woodlands • Field area of the habitat is to be wind swept with limited snow depth or accumulation. • Eagle sites have open water, large trees and snags available for roosting <p><u>Information Sources:</u></p> <ul style="list-style-type: none"> • OMNRF Ecologist or Biologist • Field Naturalist Clubs • Natural Heritage Information Center (NHIC) Raptor Winter Concentration Area • Data from Bird Studies Canada • Results of Christmas Bird Counts <p>Reports and other information available from Conservation Authorities.</p>	<p>Studies confirm the use of these habitats by:</p> <ul style="list-style-type: none"> • One or more Short-eared Owls or; One or more Bald Eagles or; At least 10 individuals and two of the listed hawk/owl species. • To be significant a site must be used regularly (3 in 5 years) for a minimum of 20 days by the above number of birds. • The habitat area for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” • SWHMiST Index #10 and #11 provides development effects and mitigation measures. 	<p>NO. Although one pair of Red-tailed Hawks were observed in the south woodlot (FOD), the size of the woodlot (~13 ha) and number of pairs does not meet the SWH criteria.</p>

Environmental Impact Study West Orillia Neighbourhood Plan Area, City of Orillia - Criteria For Significant Wildlife Habitat in Ecoregion 6E (2015)

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	SWH on Subject Property?
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Yes or No with Comments
<p>Bat Hibernacula</p> <p>Rationale: Bat hibernacula are rare habitats in all Ontario landscapes.</p>	<p>Big Brown Bat Tri-coloured Bat</p>	<p>Bat Hibernacula may be found in these ecosites: CCR1 CCR2 CCA1 CCA2 (Note: buildings are not considered to be SWH)</p>	<ul style="list-style-type: none"> Hibernacula may be found in caves, mine shafts, underground foundations and Karsts. Active mine sites should not be considered as SWH The locations of bat hibernacula are relatively poorly known. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> OMNRF for possible locations and contact for local experts Natural Heritage Information Center (NHIC) Bat Hibernaculum Ministry of Northern Development and Mines for location of mine shafts. Clubs that explore caves (eg. Sierra Club) University Biology Departments with bat experts. 	<ul style="list-style-type: none"> All sites with confirmed hibernating bats are SWH. The habitat area includes a 200m radius around the entrance of the hibernaculum for most development types and 1000m for wind farms. Studies are to be conducted during the peak swarming period (Aug. – Sept.). Surveys should be conducted following methods outlined in the “Bats and Bat Habitats: Guidelines for Wind Power Projects”. SWHMiST Index #1 provides development effects and mitigation measures. 	<p>NO. No candidate SWH is present on the subject property.</p>
<p>Bat Maternity Colonies</p> <p>Rationale: Known locations of forested bat maternity colonies are extremely rare in all Ontario landscapes.</p>	<p>Big Brown Bat Silver-haired Bat</p>	<p>Maternity colonies considered SWH are found in forested Ecosites.</p> <p>All ELC Ecosites in ELC Community Series: FOD FOM SWD SWM</p>	<ul style="list-style-type: none"> Maternity colonies can be found in tree cavities, vegetation and often in buildings (buildings are not considered to be SWH). Maternity roosts are not found in caves and mines in Ontario. Maternity colonies located in Mature deciduous or mixed forest stands with >10/ha large diameter (>25cm dbh) wildlife trees Female Bats prefer wildlife tree (snags) in early stages of decay, class 1-3 or class 1 or 2. Silver-haired Bats prefer older 	<ul style="list-style-type: none"> Maternity Colonies with confirmed use by; <ul style="list-style-type: none"> >10 Big Brown Bats >5 Adult Female Silver-haired Bats The area of the habitat includes the entire woodland or a forest stand ELC Ecosite or an Ecoelement containing the maternity colonies. Evaluation methods for maternity colonies should be conducted following methods outlined in the “Bats and Bat 	<p>NO. No known bat maternity colonies for the listed species.</p>

Environmental Impact Study West Orillia Neighbourhood Plan Area, City of Orillia - Criteria For Significant Wildlife Habitat in Ecoregion 6E (2015)

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	SWH on Subject Property?
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Yes or No with Comments
			<p>mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest areas with at least 21 snags/ha are preferred</p> <p><u>Information Sources</u></p> <ul style="list-style-type: none"> • OMNRF for possible locations and contact for local experts • University Biology Departments with bat experts. 	<p>Habitats: Guidelines for Wind Power Projects”.</p> <ul style="list-style-type: none"> • SWHMiST Index #12 provides development effects and mitigation measures. 	
<p>Turtle Wintering Areas <u>Rationale:</u> Generally, sites are the only known sites in the area. Sites with the highest number of individuals are most significant.</p>	<p>Midland Painted Turtle <u>Special Concern:</u> Northern Map Turtle Snapping Turtle</p>	<p>Snapping and Midland Painted Turtles; ELC Community Classes; SW, MA, OA and SA, ELC Community Series; FEO and BOO</p> <p>Northern Map Turtle; Open Water areas such as deeper rivers or streams and lakes with current can also be used as over-wintering habitat.</p>	<p>For most turtles, wintering areas are in the same general area as their core habitat. Water has to be deep enough not to freeze and have soft mud substrates.</p> <ul style="list-style-type: none"> • Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate Dissolved Oxygen • Man-made ponds such as sewage lagoons or storm water ponds should not be considered SWH. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> • EIS studies carried out by Conservation Authorities. • Local field naturalists and experts, as well as university herpetologists may also know where to find some of these sites. • OMNRF Ecologist or Biologist • Field Naturalist clubs • Natural Heritage Information Center (NHIC) 	<ul style="list-style-type: none"> • Presence of 5 over-wintering Midland Painted Turtles is significant. • One or more Northern Map Turtle or Snapping Turtle over-wintering within a wetland is significant. • The mapped ELC ecosite area with the over wintering turtles is the SWH. If the hibernation site is within a stream or river, the deep-water pool where the turtles are over wintering is the SWH. • Over wintering areas may be identified by searching for congregations (Basking Areas) of turtles on warm, sunny days during the fall (Sept. – Oct.) or spring (Mar. – May). • Congregation of turtles is more common where wintering areas are limited and therefore significant. • SWHMiST Index #28 	<p>YES. One Snapping Turtle and 25+ Midland Painted Turtles were observed within the core of the wetland (SAF1-1). The ELC community, SAF1-1 is assumed to be the community for overwintering and therefore considered SWH.</p>

Environmental Impact Study West Orillia Neighbourhood Plan Area, City of Orillia - Criteria For Significant Wildlife Habitat in Ecoregion 6E (2015)

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	SWH on Subject Property?
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Yes or No with Comments
				provides development effects and mitigation measures for turtle wintering habitat.	
<p>Reptile Hibernaculum</p> <p>Rationale: Generally, sites are the only known sites in the area. Sites with the highest number of individuals are most significant.</p>	<p>Snakes: Eastern Gartersnake Northern Watersnake Northern Red-bellied Snake Northern Brownsnake Smooth Green Snake Northern Ring-necked Snake</p> <p>Special Concern: Milksnake Eastern Ribbonsnake</p> <p>Lizard: Special Concern (Southern Shield population): Five-lined Skink</p>	<p>For all snakes, habitat may be found in any ecosite other than very wet ones. Talus, Rock Barren, Crevice, Cave, and Alvar sites may be directly related to these habitats. Observations or congregations of snakes on sunny warm days in the spring or fall is a good indicator.</p> <p>For Five-lined Skink, ELC Community Series of FOD and FOM and Ecosites: FOC1 FOC3</p>	<ul style="list-style-type: none"> For snakes, hibernation takes place in sites located below frost lines in burrows, rock crevices and other natural or naturalized locations. The existence of features that go below frost line; such as rock piles or slopes, old stone fences, and abandoned crumbling foundations assist in identifying candidate SWH. Areas of broken and fissured rock are particularly valuable since they provide access to subterranean sites below the frost line. Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover. Five-lined skink prefer mixed forests with rock outcrop openings providing cover rock overlaying granite bedrock with fissures. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> In spring, local residents or landowners may have observed 	<p>Studies confirming:</p> <ul style="list-style-type: none"> Presence of snake hibernacula used by a minimum of five individuals of a snake sp. <u>or</u>; individuals of two or more snake spp. Congregations of a minimum of five individuals of a snake sp. <u>or</u>; individuals of two or more snake spp. near potential hibernacula (e.g. foundation or rocky slope) on sunny warm days in Spring (Apr/May) and Fall (Sept/Oct) <u>Note:</u> If there are Special Concern Species present, then site is SWH <u>Note:</u> Sites for hibernation possess specific habitat parameters (e.g. temperature, humidity, etc.) and consequently are used annually, often by many of the same individuals of a local population (i.e. strong hibernation site fidelity). Other critical life processes (e.g. mating) often take place in close proximity to hibernacula. The feature in which the hibernacula is located plus a 30 m radius area is the SWH 	<p>NO. No known reptile hibernacula within the subject property.</p>

Environmental Impact Study West Orillia Neighbourhood Plan Area, City of Orillia - Criteria For Significant Wildlife Habitat in Ecoregion 6E (2015)

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	SWH on Subject Property?
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Yes or No with Comments
			<p>the emergence of snakes on their property (e.g. old dug wells).</p> <ul style="list-style-type: none"> • Reports and other information available from Conservation Authorities. • Field Naturalists clubs • University herpetologists • Natural Heritage Information Center (NHIC) • OMNRF ecologist or biologist may be aware of locations of • wintering skinks 	<ul style="list-style-type: none"> • SWHMiST Index #13 provides development effects and mitigation measures for snake hibernacula. • Presence of any active hibernaculum for skink is significant. • SWHMiST Index #37 provides development effects and mitigation measures for five-lined skink wintering habitat. 	
<p>Colonially - Nesting Bird Breeding Habitat (Bank and Cliff)</p> <p>Rationale: Historical use and number of nests in a colony make this habitat significant. An identified colony can be very important to local populations. All swallow population are declining in Ontario.</p>	<p>Cliff Swallow Northern Rough-winged Swallow (this species is not colonial but can be found in Cliff Swallow colonies)</p>	<p>Eroding banks, sandy hills, borrow pits, steep slopes, and sand piles. Cliff faces, bridge abutments, silos, barns.</p> <p>Habitat found in the following ecosites: CUM1 CUT1 CUS1 BLO1 BLS1 BLT1 CLO1 CLS1 CLT1</p>	<ul style="list-style-type: none"> • Any site or areas with exposed soil banks, undisturbed or naturally eroding that is not a licensed/permitted aggregate area. • Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles. • Does not include a licensed/permitted Mineral Aggregate Operation. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> • Reports and other information available from Conservation Authorities. • Ontario Breeding Bird Atlas • Bird Studies Canada; <i>NatureCounts</i> 	<p>Studies confirming:</p> <ul style="list-style-type: none"> • Presence of 1 or more nesting sites with 8 or more cliff swallow pairs and/or rough-winged swallow pairs during the breeding season. • A colony identified as SWH will include a 50m radius habitat area from the peripheral nests • Field surveys to observe and count swallow nests are to be completed during the breeding season. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” <p>SWHMiST Index #4 provides development effects and mitigation measures</p>	<p>NO. No known habitats within the subject property.</p>

Environmental Impact Study West Orillia Neighbourhood Plan Area, City of Orillia - Criteria For Significant Wildlife Habitat in Ecoregion 6E (2015)

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	SWH on Subject Property?
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Yes or No with Comments
			<p>http://www.birdscanada.org/birdmon/</p> <ul style="list-style-type: none"> Field Naturalist Clubs. 		
<p>Colonially - Nesting Bird Breeding Habitat (Tree/Shrubs)</p> <p>Rationale: Large colonies are important to local bird population, typically sites are only known colony in area and are used annually.</p>	<p>Great Blue Heron Black-crowned Night-Heron Great Egret Green Heron</p>	<p>SWM2 SWM3 SWM5 SWM6 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7 FET1</p>	<ul style="list-style-type: none"> Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used. Most nests in trees are 11 to 15 m from ground, near the top of the tree. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Ontario Breeding Bird Atlas, colonial nest records. Ontario Heronry Inventory 1991 available from Bird Studies Canada or NHIC (OMNRF). Natural Heritage Information Center (NHIC) Mixed Wader Nesting Colony Aerial photographs can help identify large heronries. Reports and other information available from CAs. MNRF District Offices. Local naturalist clubs. 	<p>Studies confirming:</p> <ul style="list-style-type: none"> Presence of 5 or more active nests of Great Blue Heron or other listed species. The habitat extends from the edge of the colony and a minimum 300m radius or extent of the Forest Ecosite containing the colony or any island <15.0ha with a colony is the SWH Confirmation of active heronries are to be achieved through site visits conducted during the nesting season (April to August) or by evidence such as the presence of fresh guano, dead young and/or eggshells SWHMiST Index #5 provides development effects and mitigation measures. 	<p>NO. No large colonies within the subject property.</p>

Environmental Impact Study West Orillia Neighbourhood Plan Area, City of Orillia - Criteria For Significant Wildlife Habitat in Ecoregion 6E (2015)

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	SWH on Subject Property?
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Yes or No with Comments
<p>Colonially - Nesting Bird Breeding Habitat (Ground)</p> <p>Rationale: Colonies are important to local bird population, typically sites are only known colony in area and are used annually.</p>	<p>Herring Gull Great Black-backed Gull Little Gull Ring-billed Gull Common Tern Caspian Tern Brewer's Blackbird</p>	<p>Any rocky island or peninsula (natural or artificial) within a lake or large river (two-lined on a 1:50,000 NTS map).</p> <p>Close proximity to watercourses in open fields or pastures with scattered trees or shrubs (Brewer's Blackbird)</p> <p>MAM1 – 6; MAS1 – 3; CUM CUT CUS</p>	<ul style="list-style-type: none"> Nesting colonies of gulls and terns are on islands or peninsulas associated with open water or in marshy areas. Brewers Blackbird colonies are found loosely on the ground in low bushes in close proximity to streams and irrigation ditches within farmlands. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Ontario Breeding Bird Atlas , rare/colonial species records. Canadian Wildlife Service Reports and other information available from CAs. Natural Heritage Information Center (NHIC) Colonial Waterbird Nesting Area MNRF District Offices. Field Naturalist clubs. 	<p>Studies confirming:</p> <ul style="list-style-type: none"> Presence of > 25 active nests for Herring Gulls or Ring-billed Gulls, >5 active nests for Common Tern or >2 active nests for Caspian Tern. Presence of 5 or more pairs for Brewer's Blackbird. Any active nesting colony of one or more Little Gull, and Great Black-backed Gull is significant. The edge of the colony and a minimum 150m radius area of habitat, or the extent of the ELC ecosites containing the colony or any island <3.0ha with a colony is the SWH Studies would be done during May/June when actively nesting. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" SWHMiST Index #6 provides development effects and mitigation measures. 	<p>NO. None of the listed species are present on the subject property.</p>

Environmental Impact Study West Orillia Neighbourhood Plan Area, City of Orillia - Criteria For Significant Wildlife Habitat in Ecoregion 6E (2015)

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	SWH on Subject Property?
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Yes or No with Comments
<p>Migratory Butterfly Stopover Areas</p> <p>Rationale: Butterfly stopover areas are extremely rare habitats and are biologically important for butterfly species that migrate south for the winter.</p>	<p>Painted Lady Red Admiral</p> <p><u>Special Concern</u> Monarch</p>	<p>Combination of ELC Community Series; need to have present one Community Series from each land class:</p> <p><u>Field:</u> CUM CUT CUS</p> <p><u>Forest:</u> FOC FOD FOM CUP</p> <p>Anecdotally, a candidate site for butterfly stopover will have a history of butterflies being observed.</p>	<p>A butterfly stopover area will be a minimum of 10 ha in size with a combination of field and forest habitat present, and will be located within 5 km of Lake Ontario ^{cxlix}.</p> <ul style="list-style-type: none"> The habitat is typically a combination of field and forest, and provides the butterflies with a location to rest prior to their long migration south. The habitat should not be disturbed, fields/meadows with an abundance of preferred nectar plants and woodland edge providing shelter are requirements for this habitat. Staging areas usually provide protection from the elements and are often spits of land or areas with the shortest distance to cross the Great Lakes. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> OMNRF (NHIC) Agriculture Canada in Ottawa may have list of butterfly experts. Field Naturalist Clubs Toronto Entomologists Association Conservation Authorities 	<p>Studies confirm:</p> <ul style="list-style-type: none"> The presence of Monarch Use Days (MUD) during fall migration (Aug/Oct). MUD is based on the number of days a site is used by Monarchs, multiplied by the number of individuals using the site. Numbers of butterflies can range from 100-500/day, significant variation can occur between years and multiple years of sampling should occur. Observational studies are to be completed and need to be done frequently during the migration period to estimate MUD. MUD of >5000 or >3000 with the presence of Painted Ladies or Red Admirals is to be considered significant. SWHMiST Index #16 provides development effects and mitigation measures. 	<p>NO. Subject property not located within 5km of Lake Ontario.</p>

Environmental Impact Study West Orillia Neighbourhood Plan Area, City of Orillia - Criteria For Significant Wildlife Habitat in Ecoregion 6E (2015)

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	SWH on Subject Property?
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Yes or No with Comments
<p>Landbird Migratory Stopover Areas</p> <p>Rationale: Sites with a high diversity of species as well as high numbers are most significant.</p>	<p>All migratory songbirds.</p> <p>Canadian Wildlife Service Ontario website: http://www.ec.gc.ca/nature/default.asp?lang=En&n=421B7A9D-1</p> <p>All migrant raptors species:</p> <p>Ontario Ministry of Natural Resources: Fish and Wildlife Conservation Act, 1997. Schedule 7: Specially Protected Birds (Raptors)</p>	<p>All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD</p>	<p>Woodlots need to be >10 ha in size and within 5 km of Lake Ontario.</p> <ul style="list-style-type: none"> • If multiple woodlands are located along the shoreline those Woodlands <2km from Lake Ontario are more significant • Sites have a variety of habitats; forest, grassland and wetland complexes. • The largest sites are more significant • Woodlots and forest fragments are important habitats to migrating birds, these features located along the shore and located within 5km of Lake Ontario are Candidate SWH. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> • Bird Studies Canada • Ontario Nature • Local birders and naturalist club • Ontario Important Bird Areas (IBA) Program 	<p>Studies confirm:</p> <ul style="list-style-type: none"> • Use of the habitat by >200 birds/day and with >35 spp. with at least 10 bird spp. recorded on at least 5 different survey dates. This abundance and diversity of migrant bird species is considered above average and significant. • Studies should be completed during spring (Apr./May) and fall (Aug/Oct) migration using standardized assessment techniques. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” • SWHMiST Index #9 provides development effects and mitigation measures. 	<p>NO. Subject property not located within 5km of Lake Ontario.</p>
<p>Deer Yarding Areas</p> <p>Rationale: Winter habitat for deer is considered to be the main</p>	<p>White-tailed Deer</p>	<p>Note: OMNRF to determine this habitat.</p> <p>ELC Community Series providing a thermal cover</p>	<ul style="list-style-type: none"> • Deer yarding areas or winter concentration areas (yards) are areas deer move to in response to the onset of winter snow and cold. This is a behavioural response and deer will establish traditional use areas. The yard is composed 	<p>No Studies Required:</p> <ul style="list-style-type: none"> • Snow depth and temperature are the greatest influence on deer use of winter yards. Snow depths > 40cm for more than 60 days in a typically winter are minimum criteria for a deer yard to be 	<p>NO. The forests on the subject property are not known Deer Yards. The wetland block is potential deer habitat, but no removals are proposed for this community.</p>

Environmental Impact Study West Orillia Neighbourhood Plan Area, City of Orillia - Criteria For Significant Wildlife Habitat in Ecoregion 6E (2015)

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	SWH on Subject Property?
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Yes or No with Comments
<p>limiting factor for northern deer populations. In winter, deer congregate in “yards” to survive severe winter conditions. Deer yards typically have a long history of annual use by deer, yards typically represent 10-15% of an areas summer range.</p>		<p>component for a deer yard would include; FOM, FOC, SWM and SWC.</p> <p>Or these ELC Ecosites; CUP2 CUP3 FOD3 CUT</p>	<p>of two areas referred to as Stratum I and Stratum II. Stratum II covers the entire winter yard area and is usually a mixed or deciduous forest with plenty of browse available for food. Agricultural lands can also be included in this area. Deer move to these areas in early winter and generally, when snow depths reach 20 cm, most of the deer will have moved here. If the snow is light and fluffy, deer may continue to use this area until 30 cm snow depth. In mild winters, deer may remain in the Stratum II area the entire winter.</p> <ul style="list-style-type: none"> • The Core of a deer yard (Stratum I) is located within the Stratum II area and is critical for deer survival in areas where winters become severe. It is primarily composed of coniferous trees (pine, hemlock, cedar, spruce) with a canopy cover of more than 60%. • OMNRF determines deer yards following methods outlined in “Selected Wildlife and Habitat Features: Inventory Manual” • Woodlots with high densities of deer due to artificial feeding are not significant. 	<p>considered as SWH.</p> <ul style="list-style-type: none"> • Deer Yards are mapped by OMNRF District offices. Locations of Core or Stratum 1 and Stratum 2 Deer yards considered significant by OMNRF will be available at local MNRF offices or via Land Information Ontario (LIO). • Field investigations that record deer tracks in winter are done to confirm use (best done from an aircraft). Preferably, this is done over a series of winters to establish the boundary of the Stratum I and Stratum II yard in an "average" winter. MNRF will complete these field investigations. • If a SWH is determined for Deer Wintering Area or if a proposed development is within Stratum II yarding area, then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. • SWHMiST Index #2 provides development effects and mitigation measures. 	

Environmental Impact Study West Orillia Neighbourhood Plan Area, City of Orillia - Criteria For Significant Wildlife Habitat in Ecoregion 6E (2015)

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	SWH on Subject Property?
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Yes or No with Comments
<p>Deer Winter Congregation Areas</p> <p><u>Rationale:</u> Deer movement during winter in the southern areas of Ecoregion 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands to reduce or avoid the impacts of winter conditions.</p>	White-tailed Deer	<p>All Forested Ecosites with these ELC Community Series; FOC FOM FOD SWC SWM SWD</p> <p>Conifer plantations much smaller than 50 ha may also be used.</p>	<ul style="list-style-type: none"> Woodlots will typically be >100 ha in size. Woodlots <100ha may be considered as significant based on MNRF studies or assessment. Deer movement during winter in the southern areas of Ecoregion 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands. If deer are constrained by snow depth refer to the Deer Yarding Area habitat within Table 1.1 of this Schedule. Large woodlots > 100ha and up to 1500 ha are known to be used annually by densities of deer that range from 0.1-1.5 deer/ha. Woodlots with high densities of deer due to artificial feeding are not significant. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> MNRF District Offices. LIO/NRVIS 	<p>Studies confirm:</p> <ul style="list-style-type: none"> Deer management is an MNRF responsibility, deer winter congregation areas considered significant will be mapped by MNRF. Use of the woodlot by white-tailed deer will be determined by MNRF, all woodlots exceeding the area criteria are significant, unless determined not to be significant by MNRF Studies should be completed during winter (Jan/Feb) when >20cm of snow is on the ground using aerial survey techniques ground or road surveys or a pellet count deer density survey. If a SWH is determined for Deer Wintering Area or if a proposed development is within Stratum II yarding area then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. SWHMiST Index #2 provides development effects and mitigation measures. 	<p>NO. Forested areas on subject property not large enough to meet habitat criteria.</p>

Rare Vegetation Communities.

Rare Vegetation Community	CANDIDATE SWH			CONFIRMED SWH	SWH on Subject Property?
	ELC Ecosite Code	Habitat Description	Detailed Information and Sources	Defining Criteria	Yes or No with Comments
<p>Cliffs and Talus Slopes</p> <p>Rationale: Cliffs and Talus Slopes are extremely rare habitats in Ontario.</p>	<p>Any ELC Ecosite within Community Series:</p> <p>TAO CLO TAS CLS TAT CLT</p>	<p>A Cliff is vertical to near vertical bedrock >3m in height.</p> <p>A Talus Slope is rock rubble at the base of a cliff made up of coarse rocky debris</p>	<p>Most cliff and talus slopes occur along the Niagara Escarpment.</p> <p><u>Information Sources</u></p> <ul style="list-style-type: none"> The Niagara Escarpment Commission has detailed information on location of these habitats. OMNRF District Natural Heritage Information Center (NHIC) has location information available on their website Field Naturalist clubs Conservation Authorities 	<ul style="list-style-type: none"> Confirm any ELC Vegetation Type for Cliffs or Talus Slopes SWHMiST Index #21 provides development effects and mitigation measures. 	<p>NO. No candidate ecosites on the subject property.</p>
<p>Sand Barren</p> <p>Rationale: Sand barrens are rare in Ontario and support rare species. Most Sand Barrens have been lost due to cottage development and forestry</p>	<p>ELC Ecosites: SBO1 SBS1 SBT1</p> <p>Vegetation cover varies from patchy and barren to continuous meadow (SBO1), thicket-like (SBS1), or more closed and treed (SBT1). Tree cover always ≤</p>	<p>Sand Barrens typically are exposed sand, generally sparsely vegetated and caused by lack of moisture, periodic fires and erosion. Usually located within other types of natural habitat such as forest or savannah. Vegetation can vary from patchy and barren to tree covered, but less</p>	<p>A sand barren area >0.5ha in size.</p> <p><u>Information Sources</u></p> <ul style="list-style-type: none"> OMNRF Distircts. Natural Heritage Information Center (NHIC) has location information available on their website. Field Naturalist clubs Conservation Authorities 	<ul style="list-style-type: none"> Confirm any ELC Vegetation Type for Sand Barrens Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). SWHMiST Index #20 provides development effects and mitigation measures. 	<p>NO. No candidate ecosites on the subject property.</p>

Environmental Impact Study West Orillia Neighbourhood Plan Area, City of Orillia - Criteria For Significant Wildlife Habitat in Ecoregion 6E (2015)

Rare Vegetation Community	CANDIDATE SWH			CONFIRMED SWH	SWH on Subject Property?
	ELC Ecosite Code	Habitat Description	Detailed Information and Sources	Defining Criteria	Yes or No with Comments
	60%.	than 60%.			
<p>Alvar</p> <p>Rationale: Alvars are extremely rare habitats in Ecosregion 6E. Most alvars in Ontario are in Ecoregions 6E and 7E. Alvars in 6E are small and highly localized just north of the Palaeozoic-Precambrian contact.</p>	<p>ALO1 ALS1 ALT1 FOC1 FOC2 CUM2 CUS2 CUT2-1 CUW2</p> <p>Five Alvar Indicator Species: 1) <i>Carex crawei</i> 2) <i>Panicum philadelphicum</i> 3) <i>Eleocharis compressa</i> 4) <i>Scutellaria parvula</i> 5) <i>Trichostema brachiatum</i></p> <p>These indicator species are very</p>	<p>An alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. The hydrology of alvars is complex, with alternating periods of inundation and drought. Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plants. Undisturbed alvars can be phyto- and</p>	<p>An Alvar site > 0.5 ha in size.</p> <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Alvars of Ontario (2000), Federation of Ontario Naturalists. Ontario Nature – Conserving Great Lakes Alvars. Natural Heritage Information Center (NHIC) has location information available on their website OMNRF Districts Feld Naturalist clubs. Conservation Authorities. 	<ul style="list-style-type: none"> Field studies that identify four of the five Alvar Indicator Species at a Candidate Alvar site is Significant. Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). The alvar must be in excellent condition and fit in with surrounding landscape with few conflicting land uses SWHMiST Index #17 provides development effects and mitigation measures. 	<p>NO. No candidate ecosites on the subject property.</p>

Environmental Impact Study West Orillia Neighbourhood Plan Area, City of Orillia - Criteria For Significant Wildlife Habitat in Ecoregion 6E (2015)

Rare Vegetation Community	CANDIDATE SWH			CONFIRMED SWH	SWH on Subject Property?
	ELC Ecosite Code	Habitat Description	Detailed Information and Sources	Defining Criteria	Yes or No with Comments
	specific to Alvars within Ecoregion 6E	zoogeographically diverse, supporting many uncommon or are relict plant and animals species. Vegetation cover varies from patchy to barren with a less than 60% tree cover.			
<p>Old Growth Forest</p> <p>Rationale: Due to historic logging practices, extensive old growth forest is rare in the Ecoregion. Interior habitat provided by old growth forests is required by many wildlife species.</p>	Forest Community Series: FOD FOC FOM SWD SWC SWM	Old Growth forests are characterized by heavy mortality or turnover of over-story trees resulting in a mosaic of gaps that encourage development of a multi-layered canopy and an abundance of snags and downed woody debris.	Woodland areas 30 ha or greater in size or with at least 10 ha interior habitat assuming 100 m buffer at edge of forest. <u>Information Sources</u> <ul style="list-style-type: none"> • OMNRF Forest Resource Inventory mapping • OMNRF Districts. • Field Naturalist clubs • Conservation Authorities • Sustainable Forestry License (SFL) companies will possibly know locations through field operations. • Municipal forestry departments 	Field Studies will determine: <ul style="list-style-type: none"> • If dominant trees species of the are >140 years old, then the area containing these trees is Significant Wildlife Habitat • The forested area containing the old growth characteristics will have experienced no recognizable forestry activities (cut stumps will not be present) The area of forest ecosites combined or an eco-element within an ecosite that contains the old growth characteristics is the SWH. • Determine ELC vegetation types for the forest area containing the old growth characteristics • SWHMiST Index #23 provides development effects and mitigation • measures. 	NO. No candidate ecosites of sufficient size or characteristics on the subject property.

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Rare Vegetation Community	CANDIDATE SWH			CONFIRMED SWH	SWH on Subject Property?
	ELC Ecosite Code	Habitat Description	Detailed Information and Sources	Defining Criteria	Yes or No with Comments
<p>Savannah</p> <p>Rationale: Savannahs are extremely rare habitats in Ontario.</p>	<p>TPS1 TPS2 TPW1 TPW2 CUS2</p>	<p>A Savannah is a tallgrass prairie habitat that has tree cover between 25 – 60%.</p>	<p>No minimum size to site. Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH.</p> <p><u>Information Sources</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Natural Heritage Information Center (NHIC) has location information available on their website • OMNRF Districts • Feld Naturalist clubs. • Conservation Authorities. 	<p>Field studies confirm one or more of the Savannah indicator species listed in Appendix N should be present. Note: Savannah plant spp. list from Ecoregion 6E should be used.</p> <ul style="list-style-type: none"> • Area of the ELC Ecosite is the SWH. • Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). • SWHMiST Index #18 provides development effects and mitigation measures. 	<p>NO. No candidate ecosites on the subject property.</p>
<p>Tallgrass Prairie</p> <p>Rationale: Tallgrass Prairies are extremely rare habitats in Ontario.</p>	<p>TPO1 TPO2</p>	<p>A Tallgrass Prairie has ground cover dominated by prairie grasses. An open Tallgrass Prairie habitat has < 25% tree cover.</p>	<p>No minimum size to site. Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH.</p> <p><u>Information Sources</u></p> <ul style="list-style-type: none"> • Natural Heritage Information Center (NHIC) has location information available on their website • OMNRF Districts • Feld Naturalist clubs. • Conservation Authorities. 	<p>Field studies confirm one or more of the Prairie indicator species listed in Appendix N should be present. Note: Prairie plant spp. list from Ecoregion 6E should be used</p> <ul style="list-style-type: none"> • Area of the ELC Ecosite is the SWH. Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). • SWHMiST Index #19 provides development effects and mitigation measures. 	<p>NO. No candidate ecosites on the subject property.</p>

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Rare Vegetation Community	CANDIDATE SWH			CONFIRMED SWH	SWH on Subject Property?
	ELC Ecosite Code	Habitat Description	Detailed Information and Sources	Defining Criteria	Yes or No with Comments
<p>Other Rare Vegetation Communities</p> <p>Rationale: Plant communities that often contain rare species which depend on the habitat for survival.</p>	<p>Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of the SWHTG. Any ELC Ecosite Code that has a possible ELC Vegetation Type that is Provincially Rare is Candidate SWH.</p>	<p>Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.</p>	<p>ELC Ecosite codes that have the potential to be a rare ELC Vegetation Type as outlined in Appendix M</p> <p>The OMNRF/NHIC will have up to date listing for rare vegetation communities.</p> <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Natural Heritage Information Center (NHIC) has location information available on their website OMNRF Districts Field Naturalist clubs. <p>Conservation Authorities.</p>	<p>Field studies should confirm if an ELC Vegetation Type is a rare vegetation community based on listing within Appendix M of SWHTG.</p> <ul style="list-style-type: none"> Area of the ELC Vegetation Type polygon is the SWH. SWHMiST Index #37 provides development effects and mitigation measures. 	<p>NO. No provincially rare vegetation communities on the subject property.</p>

Specialized Habitats of Wildlife considered SWH.

Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	SWH on Subject Property?
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Yes or No with Comments
<p>Waterfowl Nesting Area</p> <p>Rationale: Important to local waterfowl populations, sites with greatest number of species and highest number of individuals are significant.</p>	<p>American Black Duck Northern Pintail Northern Shoveler Gadwall Blue-winged Teal Green-winged Teal Wood Duck Hooded Merganser Mallard</p>	<p>All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SWT1 SWT2 SWD1 SWD2 SWD3 SWD4</p> <p>Note: includes adjacency to Provincially Significant Wetlands</p>	<p>A waterfowl nesting area extends 120 m from a wetland (> 0.5 ha) or a wetland (>0.5ha) and any small wetlands (0.5ha) within 120m or a cluster of 3 or more small (<0.5 ha) wetlands within 120 m of each individual wetland where waterfowl nesting is known to occur.</p> <ul style="list-style-type: none"> • Upland areas should be at least 120 m wide so that predators such as racoons, skunks, and foxes have difficulty finding nests. • Wood Ducks and Hooded Mergansers utilize large diameter trees (>40cm dbh) in woodlands for cavity nest sites. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> • Ducks Unlimited staff may know the locations of particularly productive nesting sites. OMNRF Wetland Evaluations for indication of significant waterfowl nesting habitat. • Reports and other information available from Conservation Authorities. 	<p>Studies confirmed:</p> <ul style="list-style-type: none"> • Presence of 3 or more nesting pairs for listed species excluding Mallards, or; • Presence of 10 or more nesting pairs for listed species including Mallards. • Any active nesting site of an American Black Duck is considered significant. • Nesting studies should be completed during the spring breeding season (April - June). Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” • A field study confirming waterfowl nesting habitat will determine the boundary of the waterfowl nesting habitat for the SWH, this may be greater or less than 120 m from the wetland and will provide enough habitat for waterfowl to successfully nest. • SWHMIST Index #25 provides development effects and mitigation measures. 	<p>NO. None of the wildlife species listed for this habitat were observed nor in the numbers of breeding pairs (i.e. only one breeding pair of Mallards) on the subject property.</p>

Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	SWH on Subject Property?
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Yes or No with Comments
<p>Bald Eagle and Osprey Nesting, Foraging and Perching Habitat</p> <p>Rationale: Nest sites are fairly uncommon in Eco-region 6E and are used annually by these species. Many suitable nesting locations may be lost due to increasing shoreline development pressures and scarcity of habitat.</p>	<p>Osprey</p> <p>Special Concern Bald Eagle</p>	<p>ELC Forest Community Series: FOD, FOM, FOC, SWD, SWM and SWC directly adjacent to riparian areas – rivers, lakes, ponds and wetlands</p>	<p>Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water.</p> <ul style="list-style-type: none"> Osprey nests are usually at the top a tree whereas Bald Eagle nests are typically in super canopy trees in a notch within the tree’s canopy. Nests located on man-made objects are not to be included as SWH (e.g. telephone poles and constructed nesting platforms). <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Natural Heritage Information Center (NHIC) compiles all known nesting sites for Bald Eagles in Ontario. MNRF values information (LIO/NRVIS) will list known nesting locations. Note: data from NRVIS is provided as a point and does not represent all the habitat. Nature Counts, Ontario Nest Records Scheme data. OMNRF Districts. Check the Ontario Breeding Bird Atlas or Rare Breeding Birds in Ontario for species documented Reports and other information available from Conservation Authorities. Field Naturalists clubs 	<p>Studies confirm the use of these nests by:</p> <ul style="list-style-type: none"> One or more active Osprey or Bald Eagle nests in an area. Some species have more than one nest in a given area and priority is given to the primary nest with alternate nests included within the area of the SWH. For an Osprey, the active nest and a 300 m radius around the nest or the contiguous woodland stand is the SWH, maintaining undisturbed shorelines with large trees within this area is important. For a Bald Eagle the active nest and a 400-800 m radius around the nest is the SWH. Area of the habitat from 400-800m is dependent on sight lines from the nest to the development and inclusion of perching and foraging habitat To be significant a site must be used annually. When found inactive, the site must be known to be inactive for ≥ 3 years or suspected of not being used for >5 years before being considered not significant. Observational studies to determine nest site use, 	<p>NO. None of the wildlife species listed for this habitat were observed on the subject property.</p>

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Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	SWH on Subject Property?
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Yes or No with Comments
				perching sites and foraging areas need to be done from mid-March to mid-August. <ul style="list-style-type: none"> • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” • SWHMiST Index #26 provides development effects and mitigation measures 	
Woodland Raptor Nesting Habitat Rationale: Nests sites for these species are rarely identified; these area sensitive habitats and are often used annually by these species.	Northern Goshawk Cooper’s Hawk Sharp-shinned Hawk Red-shouldered Hawk Barred Owl Broad-winged Hawk	May be found in all forested ELC Ecosites. May also be found in SWC, SWM, SWD and CUP3	All natural or conifer plantation woodland/forest stands >30ha with >10ha of interior habitat. Interior habitat determined with a 200m buffer <ul style="list-style-type: none"> • Stick nests found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within tops or crotches of trees. Species such as Coopers hawk nest along forest edges sometimes on peninsulas or small off-shore islands. • In disturbed sites, nests may be used again, or a new nest will be in close proximity to old nest. <u>Information Sources</u> <ul style="list-style-type: none"> • OMNRF Districts. • Check the Ontario Breeding Bird Atlas or Rare Breeding Birds in Ontario for species documented. • Check data from Bird Studies Canada. • Reports and other information available from Conservation 	Studies confirm: <ul style="list-style-type: none"> • Presence of one or more active nests from species list is considered significant. • Red-shouldered Hawk and Northern Goshawk – A 400m radius around the nest or 28 ha area of habitat is the SWH. (the 28 ha habitat area would be applied where optimal habitat is irregularly shaped around the nest) • Barred Owl – A 200m radius around the nest is the SWH. • Broad-winged Hawk and Coopers Hawk, – A 100m radius around the nest is the SWH. • Sharp-Shinned Hawk – A 50m radius around the nest is the SWH. • Conduct field investigations from mid-March to end of May. The use of call 	NO. None of the wildlife species listed for this habitat were observed on the subject property.

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Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	SWH on Subject Property?
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Yes or No with Comments
			Authorities.	broadcasts can help in locating territorial (courting/nesting) raptors and facilitate the discovery of nests by narrowing down the search area. <ul style="list-style-type: none"> • SWHMiST Index #27 provides development effects and mitigation measures. 	
Turtle Nesting Areas <u>Rationale:</u> These habitats are rare and when identified will often be the only breeding site for local populations of turtles.	Midland Painted Turtle <u>Special Concern Species</u> Northern Map Turtle Snapping Turtle	Exposed mineral soil (sand or gravel) areas adjacent (<100m) or within the following ELC Ecosites: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 BOO1 FEO1	<ul style="list-style-type: none"> • Best nesting habitat for turtles are close to water and away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals. • For an area to function as a turtle-nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas. Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH. • Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used. <u>Information Sources</u> <ul style="list-style-type: none"> • Use Ontario Soil Survey reports and maps to help find suitable substrate for nesting turtles (well-drained sands and fine gravels). • Check the Ontario Herpetofauna Summary Atlas records or other 	Studies confirm: <ul style="list-style-type: none"> • Presence of 5 or more nesting Midland Painted Turtles • One or more Northern Map Turtle or Snapping Turtle nesting is a SWH. • The area or collection of sites within an area of exposed mineral soils where the turtles nest, plus a radius of 30-100m around the nesting area dependent on slope, riparian vegetation and adjacent land use is the SWH. • Travel routes from wetland to nesting area are to be considered within the SWH as part of the 30-100m area of habitat. • Field investigations should be conducted in prime nesting season typically late spring to early summer. Observational studies observing the turtles nesting is a recommended 	NO. No exposed mineral soil sites (sand or gravel) within 100m of wetland

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Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	SWH on Subject Property?
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Yes or No with Comments
			<p>similar atlases for uncommon turtles; location information may help to find potential nesting habitat for them.</p> <ul style="list-style-type: none"> • Natural Heritage Information Center (NHIC) • Field Naturalist clubs 	<p>method. SWHMiST Index #28 provides development effects and mitigation measures for turtle nesting habitat.</p>	
<p>Seeps and Springs</p> <p><u>Rationale:</u> Seeps/Springs are typical of headwater areas and are often at the source of coldwater streams.</p>	<p>Wild Turkey Ruffed Grouse Spruce Grouse White-tailed Deer Salamander spp.</p>	<p>Seeps/Springs are areas where ground water comes to the surface. Often they are found within headwater areas within forested habitats. Any forested Ecosite within the headwater areas of a stream could have seeps/springs.</p>	<p>Any forested area (with <25% meadow/field/pasture) within the headwaters of a stream or river system.</p> <ul style="list-style-type: none"> • Seeps and springs are important feeding and drinking areas especially in the winter will typically support a variety of plant and animal species. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> • Topographical Map. • Thermography. • Hydrological surveys conducted by Conservation Authorities and MOE. • Field Naturalists clubs and landowners. • Municipalities and Conservation Authorities may have drainage maps and headwater areas mapped. 	<p>Field Studies confirm:</p> <ul style="list-style-type: none"> • Presence of a site with 2 or more seeps/springs should be considered SWH. • The area of a ELC forest ecosite or an ecoelement within ecosite containing the seeps/springs is the SWH. The protection of the recharge area considering the slope, vegetation, height of trees and groundwater condition need to be considered in delineation the habitat. • SWHMiST Index #30 provides development effects and mitigation measures 	<p>NO. No seeps or springs were identified on the subject property.</p>

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Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	SWH on Subject Property?
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Yes or No with Comments
<p>Amphibian Breeding Habitat (Woodland).</p> <p>Rationale : These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations</p>	<p>Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Western Chorus Frog Wood Frog</p>	<p>All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD</p> <p>Breeding pools within the woodland or the shortest distance from forest habitat are more significant because they are more likely to be used due to reduced risk to migrating amphibians</p>	<ul style="list-style-type: none"> • Presence of a wetland, pond or woodland pool (including vernal pools) >500m² (about 25m diameter) within or adjacent (within 120m) to a woodland (no minimum size. Some small wetlands may not be mapped and may be important breeding pools for amphibians. • Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat <p><u>Information Sources</u></p> <ul style="list-style-type: none"> • Ontario Herpetofauna Summary Atlas (or other similar atlases) for records • Local landowners may also provide assistance as they may hear spring-time choruses of amphibians on their property. • OMNRF District. • OMNRF wetland evaluations • Field Naturalist clubs • Canadian Wildlife Service Amphibian Road Call Survey • Ontario Vernal Pool Association: http://www.ontariovernalpools.org 	<p>Studies confirm;</p> <ul style="list-style-type: none"> • Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog species with Call Level Codes of 3. • A combination of observational study and call count surveys will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands. • The habitat is the wetland area plus a 230 m radius of woodland area. If a wetland area is adjacent to a woodland, a travel corridor connecting the wetland to the woodland is to be included in the habitat. • SWHMiST Index #14 provides development effects and mitigation measures. 	<p>YES. Open wetland and surrounding woodland are presumed to be SWH for breeding amphibians. Call count surveys were not required. Presence of two the listed species was confirmed.</p>
<p>Amphibian Breeding Habitat (Wetlands)</p>	<p>Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted</p>	<p>ELC Community Classes SW, MA, FE, BO, OA and SA.</p> <p>Typically these wetland ecosites will</p>	<p>Wetlands >500m² (about 25m diameter) supporting high species diversity are significant; some small or ephemeral habitats may not be identified on MNR mapping and could be important</p>	<p>Studies confirm:</p> <ul style="list-style-type: none"> • Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed 	<p>YES. Open wetland is presumed to be SWH for breeding amphibians. Call count surveys were not required. Presence of three the listed species was confirmed.</p>

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Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	SWH on Subject Property?
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Yes or No with Comments
<p><u>Rationale:</u> Wetlands supporting breeding for these amphibian species are extremely important and fairly rare within Central Ontario landscapes.</p>	<p>Salamander Gray Treefrog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog</p>	<p>be isolated (>120m) from woodland ecosites, however larger wetlands containing predominantly aquatic species (e.g. Bull Frog) may be adjacent to woodlands.</p>	<p>amphibian breeding habitats.</p> <ul style="list-style-type: none"> • Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators. • Bullfrogs require permanent water bodies with abundant emergent vegetation. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> • Ontario Herpetofauna Summary Atlas (or other similar atlases) • Canadian Wildlife Service Amphibian Road Surveys and Backyard Amphibian Call Count. • OMNRF Districts and wetland evaluations • Reports and other information available from Conservation Authorities. 	<p>frog/toad species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog/toad species with Call Level Codes of 3 or;</p> <ul style="list-style-type: none"> • Wetland with confirmed breeding Bullfrogs are significant. • The ELC ecosite wetland area and the shoreline are the SWH. • A combination of observational study and call count surveys will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the wetlands. • If a SWH is determined for Amphibian Breeding Habitat (Wetlands) then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. • SWHMIST Index #15 provides development effects and mitigation measures. 	
<p>Woodland Area-Sensitive Bird Breeding Habitat</p>	<p>Yellow-bellied Sapsucker Red-breasted Nuthatch Veery Blue-headed Vireo</p>	<p>All Ecosites associated with these ELC communities Series; FOC</p>	<ul style="list-style-type: none"> • Habitats where interior forest breeding birds are breeding, typically large mature (>60 yrs old) forest stands or woodlots >30 ha. Interior forest habitat is at least 200 m from forest edge habitat. 	<p>Studies confirm:</p> <ul style="list-style-type: none"> • Presence of nesting or breeding pairs of 3 or more of the listed wildlife species. • Note: any site with breeding 	<p>YES. Northern wetland/forest block, although less than 30ha, had breeding pairs of more than 3 of the listed species (Yellow-</p>

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Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	SWH on Subject Property?
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Yes or No with Comments
<p>Rationale: Large, natural blocks of mature woodland habitat within the settled areas of Southern Ontario are important habitats for area sensitive interior forest song birds.</p>	<p>Northern Parula Black-throated Green Warbler Blackburnian Warbler Black-throated Blue Warbler Ovenbird Scarlet Tanager Winter Wren</p> <p>Special Concern: Cerulean Warbler Canada Warbler</p>	<p>FOM FOD SWC SWM SWD</p>	<p><u>Information Sources</u></p> <ul style="list-style-type: none"> Local bird clubs. Canadian Wildlife Service (CWS) for the location of forest bird monitoring. Bird Studies Canada conducted a 3-year study of 287 woodlands to determine the effects of forest fragmentation on forest birds and to determine what forests were of greatest value to interior species Reports and other information available from Conservation Authorities. 	<p>Cerulean Warblers or Canada Warblers is to be considered SWH.</p> <ul style="list-style-type: none"> Conduct field investigations in spring and early summer when birds are singing and defending their territories. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” SWHMiST Index #34 provides development effects and mitigation measures. 	<p>bellied Sapsucker, Red-breasted Nuthatch, Veery, Ovenbird).</p> <p>Southern woodland is <u>not</u> of sufficient size and did <u>not</u> support breeding pairs of at least 3 of the listed species.</p>

Habitats of Species of Conservation Concern considered SWH.

Wildlife	Species	CANDIDATE SWH		CONFIRMED SWH	SWH on Subject Property?
		ELC Ecosite	Habitat Criteria and Information Sources	Defining Criteria	Yes or No with Comments
<p>Marsh Breeding Bird Habitat Rationale: Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes.</p>	<p>American Bittern Virginia Rail Sora Common Moorhen American Coot Pied-billed Grebe Marsh Wren Sedge Wren Common Loon Sandhill Crane Green Heron Trumpeter Swan</p> <p>Special Concern: Black Tern Yellow Rail</p>	<p>MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SAS1 SAM1 SAF1 FEO1 BOO1</p> <p>For Green Heron: All SW, MA and CUM1 sites.</p>	<ul style="list-style-type: none"> Nesting occurs in wetlands. All wetland habitat is to be considered as long as there is shallow water with emergent aquatic vegetation present. For Green Heron, habitat is at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Less frequently, it may be found in upland shrubs or forest a considerable distance from water. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> OMNRF District and wetland evaluations. Field Naturalist clubs Natural Heritage Information Center (NHIC) Records. Reports and other information available from Conservation Authorities. Ontario Breeding Bird Atlas. 	<p>Studies confirm:</p> <ul style="list-style-type: none"> Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren or one pair of Sandhill Cranes; or breeding by any combination of 5 or more of the listed species. Note: any wetland with breeding of one or more Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is SWH. Area of the ELC ecosite is the SWH. Breeding surveys should be done in May/June when these species are actively nesting in wetland habitats. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” SWHMiST Index #35 provides development effects and mitigation measures 	<p>YES. The swamp and marsh in the northern wetland are SWH based on observations of 3 breeding pairs of Green Herons and 2 pairs of Virginia Rail.</p>
<p>Open Country Bird Breeding Habitat</p>	<p>Upland Sandpiper Grasshopper Sparrow</p>	<p>CUM1 CUM2</p>	<ul style="list-style-type: none"> Large grassland areas (includes natural and cultural fields and meadows) >30 ha. 	<p>Field Studies confirm:</p> <ul style="list-style-type: none"> Presence of nesting or breeding of 2 or more of the listed species. 	<p>NO. Grasslands on the subject lands < 30 ha and being actively used for hay. Only one of the listed species observed.</p>

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Wildlife	Species	CANDIDATE SWH		CONFIRMED SWH	SWH on Subject Property?
		ELC Ecosite	Habitat Criteria and Information Sources	Defining Criteria	Yes or No with Comments
<p>Rationale: This wildlife habitat is declining throughout Ontario and North America. Species such as the Upland Sandpiper have declined significantly the past 40 years based on CWS (2004) trend records.</p>	<p>Vesper Sparrow Northern Harrier Savannah Sparrow</p> <p>Special Concern Short-eared Owl</p>		<ul style="list-style-type: none"> Grasslands not Class 1 or 2 agricultural lands, and not being actively used for farming (i.e. no row cropping or intensive hay or livestock pasturing in the last 5 years). Grassland sites considered significant should have a history of longevity, either abandoned fields, mature hayfields and pasturelands that are at least 5 years or older. The Indicator bird species are area sensitive requiring larger grassland areas than the common grassland species. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Agricultural land classification maps, Ministry of Agriculture. Local bird clubs. Ontario Breeding Bird Atlas Reports and other information available from Conservation Authorities. 	<ul style="list-style-type: none"> A field with 1 or more breeding Short-eared Owls is to be considered SWH. The area of SWH is the contiguous ELC ecosite field areas. Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” SWHMIST Index #32 provides development effects and mitigation measures 	
<p>Shrub/Early Successional Bird Breeding Habitat</p> <p>Rationale: This wildlife habitat is declining throughout Ontario and North America.</p>	<p><u>Indicator Spp:</u> Brown Thrasher Clay-coloured Sparrow</p> <p><u>Common Spp.</u> Field Sparrow Black-billed Cuckoo</p>	<p>CUT1 CUT2 CUS1 CUS2 CUW1 CUW2</p> <p>Patches of shrub ecosites can be</p>	<p>Large field areas succeeding to shrub and thicket habitats >10ha in size.</p> <ul style="list-style-type: none"> Shrub land or early successional fields, not class 1 or 2 agricultural lands, not being actively used for farming (i.e. no row-cropping, haying or live-stock pasturing in the last 5 	<p>Field Studies confirm:</p> <ul style="list-style-type: none"> Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species. A habitat with breeding Yellow-breasted Chat or Golden-winged Warbler is to be considered as Significant Wildlife Habitat. 	<p>NO. No Ecosites of sufficient size; no indicator species detected.</p>

Wildlife	Species	CANDIDATE SWH		CONFIRMED SWH	SWH on Subject Property?
		ELC Ecosite	Habitat Criteria and Information Sources	Defining Criteria	Yes or No with Comments
The Brown Thrasher has declined significantly over the past 40 years based on CWS (2004) trend records.	Eastern Towhee Willow Flycatcher Special Concern: Yellow-breasted Chat Golden-winged Warbler	complexed into a larger habitat for some bird species	years). <ul style="list-style-type: none"> Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species. Shrub and thicket habitat sites considered significant should have a history of longevity, either abandoned fields or pasturelands. <u>Information Sources</u> <ul style="list-style-type: none"> Agricultural land classification maps, Ministry of Agriculture. Local bird clubs. Ontario Breeding Bird Atlas Reports and other information available from Conservation Authorities. 	<ul style="list-style-type: none"> The area of the SWH is the contiguous ELC ecosite field/thicket area. Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” SWHMiST Index #33 provides development effects and mitigation measures. 	
Terrestrial Crayfish <u>Rationale:</u> Terrestrial Crayfish are only found within SW Ontario in Canada and their habitats are very rare.	Chimney or Digger Crayfish; (<i>Fallicambarus fodiens</i>) Devil Crayfish or Meadow Crayfish; (<i>Cambarus Diogenes</i>)	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 MAS1 MAS2 MAS3 SWD SWT SWM CUM1 with inclusions of above meadow marsh or swamp ecosites can be used by terrestrial crayfish.	Wet meadow and edges of shallow marshes (no minimum size) should be surveyed for terrestrial crayfish. <ul style="list-style-type: none"> Constructs burrows in marshes, mudflats, meadows, the ground can’t be too moist. Can often be found far from water. Both species are a semi-terrestrial burrower which spends most of its life within burrows consisting of a network of tunnels. Usually the soil is not too moist so that the tunnel is well formed. <u>Information Sources</u> <ul style="list-style-type: none"> Information sources from 	Studies Confirm: <ul style="list-style-type: none"> Presence of 1 or more individuals of species listed or their chimneys (burrows) in suitable meadow marsh, swamp or moist terrestrial sites Area of ELC ecosite or an ecoelement area of meadow marsh or swamp within the larger ecosite area is the SWH. Surveys should be done April to August in temporary or permanent water. Note the presence of burrows or chimneys are often the only indicator of presence, observance or collection of individuals is very 	NO. No listed species observed, nor any chimney burrows.

			<p>“Conservation Status of Freshwater Crayfishes” by Dr. Premek Hamr for the WWF and CNF March 1998</p>	<p>difficult</p> <ul style="list-style-type: none"> • SWHMiST Index #36 provides development effects and mitigation measures. 	
<p>Special Concern and Rare Wildlife Species</p> <p>Rationale: These species are quite rare or have experienced significant population declines in Ontario.</p>	<p>All Special Concern and Provincially Rare (S1-S3, SH) plant and animal species. Lists of these species are tracked by the Natural Heritage Information Centre.</p>	<p>All plant and animal element occurrences (EO) within a 1 or 10km grid.</p> <p>Older element occurrences were recorded prior to GPS being available, therefore location information may lack accuracy</p>	<p>When an element occurrence is identified within a 1 or 10 km grid for a Special Concern or provincially Rare species; linking candidate habitat on the site needs to be completed to ELC Ecosites</p> <p><u>Information Sources</u></p> <ul style="list-style-type: none"> • Natural Heritage Information Centre (NHIC) will have Special Concern and Provincially Rare (S1-S3, SH) species lists with element occurrences data. • NHIC Website “Get Information”: http://nhic.mnr.gov.on.ca • Ontario Breeding Bird Atlas • Expert advice should be sought as many of the rare spp. have little information available about their requirements. 	<p>Studies Confirm:</p> <ul style="list-style-type: none"> • Assessment/inventory of the site for the identified special concern or rare species needs to be completed during the time of year when the species is present or easily identifiable. • The area of the habitat to the finest ELC scale that protects the habitat form and function is the SWH, this must be delineated through detailed field studies. The habitat needs be easily mapped and cover an important life stage component for a species e.g. specific nesting habitat or foraging habitat. • SWHMiST Index #37 provides development effects and mitigation measures. 	<p>YES.</p> <p>Southern deciduous woodlot where 3 breeding pairs of Eastern Wood-pewee were observed. Given a regional study these numbers may be sufficient.</p> <p>The presence of two pairs in the northern wetland/woodland block is not considered sufficient numbers to warrant SWH status for this area.</p>

Animal Movement Corridors

Habitat	Species	CANDIDATE SWH		CONFIRMED SWH	SWH on Subject Property?
		ELC Eco-sites	Habitat Criteria and Information Sources	Defining Criteria	Yes or No with Comments
<p>Amphibian Movement Corridors</p> <p><u>Rationale:</u> Movement corridors for amphibians moving from their terrestrial habitat to breeding habitat can be extremely important for local populations.</p>	<p>Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Treefrog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog</p>	<p>Corridors may be found in all ecosites associated with water.</p> <ul style="list-style-type: none"> Corridors will be determined based on identifying the significant breeding habitat for these species in Table 1.1 	<p>Movement corridors between breeding habitat and summer habitat.</p> <p>Movement corridors must be determined when Amphibian breeding habitat is confirmed as SWH from Table 1.2.2 (Amphibian Breeding Habitat –Wetland) of this Schedule.</p> <p><u>Information Sources</u></p> <ul style="list-style-type: none"> MNRF District Office. Natural Heritage Information Center (NHIC). Reports and other information available from Conservation Authorities. <p>Field Naturalist Clubs.</p>	<ul style="list-style-type: none"> Field Studies must be conducted at the time of year when species are expected to be migrating or entering breeding sites. Corridors should consist of native vegetation, with several layers of vegetation. Corridors unbroken by roads, waterways or bodies, and undeveloped areas are most significant Corridors should have at least 15m of vegetation on both sides of waterway or be up to 200m wide of woodland habitat and with gaps <20m. Shorter corridors are more significant than longer corridors, however amphibians must be able to get to and from their summer and breeding habitat^{cxlix}. SWHMiST Index #40 provides development effects and mitigation measures 	<p>No. Amphibian breeding habitat in northern wetland is already adjacent to summer habitat (forest). Other potential amphibian breeding habitat is separated by roads, fields.</p>

Environmental Impact Study West Orillia Neighbourhood Plan Area, City of Orillia - Criteria For Significant Wildlife Habitat in Ecoregion 6E (2015)

Habitat	Species	CANDIDATE SWH		CONFIRMED SWH	SWH on Subject Property?
		ELC Eco-sites	Habitat Criteria and Information Sources	Defining Criteria	Yes or No with Comments
<p>Deer Movement Corridors</p> <p><u>Rationale:</u> Corridors important for all species to be able to access seasonally important life-cycle habitats or to access new habitat for dispersing individuals by minimizing their vulnerability while travelling.</p>	White-tailed Deer	<p>Corridors may be found in all forested ecosites.</p> <p>A Project Proposal in Stratum II Deer Wintering Area has potential to contain corridors.</p>	<p>Movement corridor must be determined when Deer Wintering Habitat is confirmed as SWH from Table 1.1 of this schedule.</p> <ul style="list-style-type: none"> • A deer wintering habitat identified by the OMNRF as SWH in Table 1.1 of this Schedule will have corridors that the deer use during fall migration and spring dispersion. • Corridors typically follow riparian areas, woodlots, areas of physical geography (ravines, or ridges). <p><u>Information Sources</u></p> <ul style="list-style-type: none"> • MNRF District Office. • Natural Heritage Information Center (NHIC). • Reports and other information available from Conservation Authorities. Field Naturalist Clubs. 	<ul style="list-style-type: none"> • Studies must be conducted at the time of year when deer are migrating or moving to and from winter concentration areas. • Corridors that lead to a deer wintering habitat should be unbroken by roads and residential areas. • Corridors should be at least 200m wide with gaps <20m and if following riparian area with at least 15m of vegetation on both sides of waterway. Shorter corridors are more significant than longer corridors. SWHMiST Index #39 provides development effects and mitigation measures 	<p>No. No known deer wintering habitat on the subject property.</p>

Appendix F



April 28, 2020

OEC 16-010

City of Orillia
Development Services and Engineering – Planning Division
50 Andrew Street South, Suite 300
Orillia, Ontario L3V 7T5

Attention: Jill Lewis, Senior Planner

**Re: Charter Development LP's New Neighbourhood Plan Area
(West Development Lands, west of Stone Ridge Subdivision)
Environmental Impact Study Peer Review**

Dear Ms. Lewis:

The purpose of this letter is to provide our response to the peer review comments provided by Al Shaw from Riverstone Environmental Solutions in his email of March 13, 2020. We want to firstly thank Mr. Shaw for working with us in a cooperative and professional manner throughout the peer review process. I am confident his comments have assisted the City in determining the recommendation on the environmental issues associated with development of the West Development Lands. Although we are in full agreement with Mr. Shaw on some issues, we are not in full agreement on the buffer issue. The following sections present Mr. Shaw's comments and our response.

Butternut

Peer Review Comment

We had agreed on a process for the Butternut trees, knowing that they may decline in condition further before development adjacent to the trees would occur. The lots could be placed in a holding provision until the Butternut were assessed and dealt with according to the *Endangered Species Act*. This process was largely included in the updated EIS as requested; however, it was not

mentioned in the updated EIS that there would be a Holding Provision on these lots. We would recommend that the EIS be updated to include the holding provision for the lots within 50 m of the butternuts.

Charter Response

We agree with the Holding Provision for the lots adjacent to the south woodlot (FOD4-1) that contains the Category 2 (retainable) and Category 3 (potentially archivable) Butternut trees. The policies of the new Neighbourhood Secondary Plan will provide direction for Butternut trees which will then be implemented through the conditions of draft plan approval and use of the Holding provision. Prior to submission of a formal draft plan application for the south side of the woodlot, the Category 2 and 3 Butternuts will be assessed to determine their health and the appropriate actions to be taken in accordance with the applicable regulations or guidelines for the species.

Large Central Wetland

Peer Review Comment

Following my discussion with Paul Neals on the property, I wrote an email summarizing the field meeting. I had suggested that the 10 m buffer proposed is not sufficient for the northern wetland and recommended that 30 m be a starting point. The updated EIS did not change the buffer size, but provided additional justification for the 10 m buffer. The details included review of the water quality and quantity functions of buffers and statement that the edge of the wetland is approximately 150 m from the edge of the open water portion of the wetland and therefore the buffer is effectively much larger than the 10 m proposed. Fundamentally, we disagree with this assessment. The EIS did point out that there are significant wildlife components that are in wetland areas that extend out to the edges of the wetland, included amphibian breeding. In these cases, the wetland units are the significant wildlife habitat. In addition, the hydrogeological assessment that was used to rationalize that there would be no change to the water balance in the wetland, was completed on an adjacent property. We disagree that this rationale is suitable to establish such a small buffer around this wetland. Unfortunately, there are no buffer recommendations within the Official Plan that applies to wetlands, and the policy suggests that the EIS is to determine the appropriate buffer. Should the City wish to approve the buffer as proposed in the updated EIS, we would recommend that the EIS be updated to include monitoring of the wetland water levels and contingencies if the water

levels change. We would also recommend that the details of the wetland buffer planting be formalized and completed as a condition of approval.

Charter Response

We fundamentally disagree with the need for a 30 buffer to the wetland for the following reasons:

- The northern wetland, which we assume Mr. Shaw is referring to, includes the wetland ELC units MAM3-6, MAS3-1, SAF1-1 and the northern portion of the SWM4-1 as shown in Figure 2 of the Beacon report. Beacon assessed the wetland habitat using the provincial criteria for significant wildlife habitat in Appendix E of their report. The significant wildlife habitat present included turtle wintering areas, amphibian breeding habitat (woodland & wetland), woodland area-sensitive bird breeding habitat and marsh breeding bird habitat. The turtle wintering areas, amphibian wetland breeding habitat and marsh breeding bird habitat occur in the interior water-dominated portions of the wetland. The amphibian breeding habitat woodland and the woodland area-sensitive bird breeding habitat will be retained because all the woodlands will be protected. The proposed buffer to the interior water-dominated habitat is approximately 150m and the buffer to the forested wetlands will be in excess of 30m for 80% of the wetland boundary and approximately 10m for the remaining 20% adjacent to in the south west portion of SWM4-1. In our opinion the significant wildlife habitat protection requested by Mr. Shaw is being provided.
- The wetland units MAM2-2, MAS2-1 and SWM4-1 that surround the interior open water amphibian breeding habitat have been confirmed through field study to not provide amphibian breeding habitat. Historic aerial photography (Simcoe County GIS mapping) shows MAM2-2 and MAS2-1 being used for livestock pasture. This supports our view that this significant wildlife habitat function is found only within the core of the wetland. Imposing a 30m buffer versus 10m will have no discernable effect on enhancing protection to the amphibian breeding habitat.
- The west edge of the wetland is dominated by MAM2-2 (Reed Canary Grass Mineral Meadow Marsh) and MAS2-1 (Cattail Mineral Shallow Marsh), as shown in Figure 2 of the Beacon report. Reed Canary Grass is an invasive species, which combined with the domination of the Cattails in the other wetland unit creates low plant diversity and low habitat quality.

Thirty metre buffers are often applied to significant wetland communities and high-quality aquatic habitat in watercourses, not to protect invasive species and low-quality habitat. Based on review of aerial photography this area was agricultural pasture, which accounts for the dominance by Reed Canary Grass and Cattails and would indicate historically a lack of standing water in the area for amphibian habitat.

- Figure 3 of the Beacon report defines the wetland boundary relative to the proposed development limit. On the east side of the feature the buffer ranges from 23m at the closest point to 150m with the majority for the entire length well in excess of 30m. The south limit is buffered by the existing storm water management pond. The west side of the wetland is approximately 880m in length of which approximately 380m has an existing White Cedar-Hardwood Mixed Forest buffer to the wetland averaging 10m width. The remaining 500m is the low-quality Reed Canary Grass and Cattail habitat. The proposed 10m mixed forest buffer to the forested wetland adjacent to the agricultural lands will be undisturbed. Maintaining the current forested buffer to the White Cedar-Hardwood Organic Mixed Swamp will protect amphibians and area sensitive woodland birds currently using the feature. The forested wetlands will not be affected by the development.
- Mr. Shaw stated significant wildlife components that are in the wetland areas extend to the edges of the wetland, included amphibian breeding. It is important to note that during the scoping of the EIS work with Mr. Shaw, it was agreed that amphibian surveys were not necessary given the wetland is to be protected. This determination was done when no field work had been undertaken, the buffer width had not been discussed and the proposal was to develop within the agricultural lands. Given that Beacon found no amphibian breeding habitat or significant wildlife habitat functions specific to the edges of the wetland we find no justification for the 30m buffer.
- Mr. Shaw stated in his email of March 27th that should the City approve the 10m buffer, his recommendation is to monitor water levels in the wetland and to develop contingency measures if the water levels change. His statement indicates with the maintenance of water levels to sustain wetland functions the 10m buffer can sustain significant wildlife habitat within the wetland. Stantec was retained to undertake hydrogeological investigations for the site. Stantec provided the following response to the buffer width and its implication to sustaining the wetland hydrology:

“The size of the buffer will have no notable effect on the water balance of the wetland, whether it be 10 m or 30 m. Based on hydrogeological studies completed by Stantec, the wetland is shown to be underlain by low permeability Newmarket Till (i.e., Newmarket Aquitard), which acts as a natural barrier to the upward movement of groundwater from the aquifer system present below the till (i.e., Upper Aquifer Complex). Any potential groundwater inputs to the wetland appear to originate from the surficial sands that sit on top of the Newmarket Till in the northeast portion of the subject lands, with groundwater becoming perched in this unit upon the Newmarket Till and flowing through the sand as interflow and discharging to the wetland. Groundwater that becomes perched in the surficial sand is expected to be of limited saturated thickness, occurring mainly during the spring freshet period. As such, the volumetric contribution of groundwater discharged to the wetland from these surficial sands is expected to be small when compared to surface water runoff volumes, which originate from the topographic high areas surrounding the feature. Overall, retaining an additional 20 metres of buffer on the west side of the wetland will not make a discernable difference in the quantity of surface water that is provided to the wetland under the post-development condition.”

Stantec’s hydrogeological assessment has confirmed that the water levels in the wetland are supplied primarily by surface water. In addition, water retention within the wetland is also influenced by the local beaver population, whose environment will be protected. Monitoring wetland water levels which are susceptible to weather conditions and biological actions will not provide any meaningful information, therefore not required.

A detailed wetland buffer planting plan will be provided as a condition of draft plan as recommended by Mr. Shaw.

Swale B

Peer Review Comment

Swale B was reviewed onsite with Paul. The DFO agreement to allow the piping of the creek is the approval that is necessary. No other details are required.

Charter Response

No comment required.

Significant Wildlife Habitat

Peer Review Comment

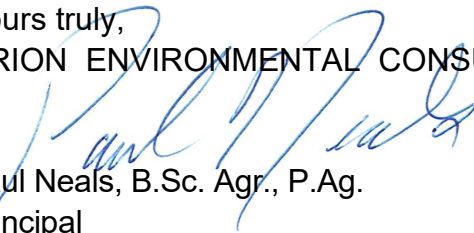
Significant wildlife habitat was reviewed in further detail in the updated EIS as requested. I believe that there are a couple additional categories of SWH that could apply, these would also be within the wetland feature discussed above. No additional work is required on significant wildlife habitat, outside of considering the comments above on the wetland feature.

Charter Response

No comment required; issues addressed in comments regarding Large Central Wetland.

Please contact me if you have any questions.

Yours truly,
ORION ENVIRONMENTAL CONSULTING, INC.



Paul Neals, B.Sc. Agr., P.Ag.
Principal

PCN:

Cc: Henry Glavic, Charter Construction
Geri Poisson, Beacon Environmental
Nicola Mitchinson, Mitchinson Planning & Development
Al Shaw, Riverstone Environmental Solutions
Jeff Duggan, City of Orillia

Appendix G

From: nicola.mitchinson@sympatico.ca
To: "Jeff Duggan"; "Henry Glavic"
Cc: "Jill Lewis"; Paul Neals
Subject: RE: Charter West Lands - Environmental

Thank you very much Jeff. This is excellent news.

Nicola

Nicola Mitchinson, RPP, MCIP
MITCHINSON Planning & Development Consultants Inc.
19 Baycrest Drive, Barrie, ON L4M 7C7
705.739.7175

From: Jeff Duggan <JDuggan@orillia.ca>
Sent: July 17, 2020 3:41 PM
To: Henry Glavic <hglavic@charterconstruction.ca>; nicola.mitchinson@sympatico.ca
Cc: Jill Lewis <JLewis@orillia.ca>
Subject: RE: Charter West Lands - Environmental

Hi Henry / Nicola

Yes, the City is satisfied with the Mr. Neals response to Mr. Shaw's final comments. Please ensure the April 28, 2020 memo from Orion Environmental Solutions is attached and submitted with the final EIS.

Thanks

Physical distancing saves lives – stay safe!
orillia.ca/COVID-19



Jeff Duggan | Senior Planner, M.Sc., MCIP, RPP
Development Services and Engineering Department
Planning Division
T: 705-325-2171
orillia.ca



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From: Henry Glavic <hglavic@charterconstruction.ca>
Sent: July-06-20 10:39 AM
To: Jeff Duggan <JDuggan@orillia.ca>
Subject: Charter West Lands - Environmental

Hi Jeff,

Can you please call me. I am just trying to understand when we might get a response or even better an approval to our report. The report is dated April 2019. These things have a shelf life and I'm worried it will be "still dated" before we can even make a complete planning submission. And as you can appreciate this is the foundation upon which everything else is built on.

Thanks

Henry