

**Ministry of Natural Resources
Confirmation Letter**

Renewable Energy Operations Team
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February 13, 2012

St. Columban Energy LP
Suite 440 Livingston Place, South Tower
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RE: Addendum to Natural Heritage Assessment Confirmation for St. Columban Wind Project

Dear José Menéndez,

The Ministry of Natural Resources (MNR) has received the Natural Heritage Assessment and Environmental Impact Study dated February 2012 that describes modifications to the St. Columban project location. The changes to the project location were made subsequent to MNR's confirmation letter of the Natural Heritage Assessment dated August 29, 2011.

Upon review of the modifications to the project location and the additional Natural Heritage Assessment information received, the MNR is satisfied that the Natural Heritage Assessment requirements of Ontario Regulation 359/09 have been met.

Please add this letter as an addendum to the confirmation letter issued August 29, 2011 for the St. Columban Wind Project. Should any changes be made to the proposed project that would alter the NHA, MNR may need to undertake additional review of the NHA.

Be aware that your project may be subject to additional legislative approvals as outlined in the Ministry of Natural Resources' *Approvals and Permitting Requirements Document*. These approvals are required prior to the construction of your renewable energy facility.

If you wish to discuss any part of this confirmation or additional comments provided, please contact me at jim.beal@ontario.ca or 705-755-3203.

Sincerely,



Jim Beal
Renewable Energy Provincial Field Program Coordinator
Regional Operations Division
Ministry of Natural Resources

cc. Ian Hagman, District Manager, MNR Guelph District
cc. Heather Riddell, Renewable Energy Planning Ecologist, MNR Aylmer District
cc. Amy Cameron, A/Renewable Energy Field Advisor, MNR REOT
cc. Narren Santos, Environmental Assessment and Approvals Branch, MOE

**Natural Heritage Assessment
and Environmental Impact Study
ADDENDUM**



Stantec

**ST. COLUMBAN WIND PROJECT
NATURAL HERITAGE
ASSESSMENT AND
ENVIRONMENTAL IMPACT STUDY
ADDENDUM**

File No. 160960649
February 2012

Prepared for:

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1.0 Introduction

1.1 PROJECT OVERVIEW

St. Columban Energy LP is proposing to develop, construct, and operate the 33 megawatt (MW) St. Columban Wind Project (the Project) in the Municipality of Huron East (Huron East), Municipality of Morris-Turnberry (Morris-Turnberry), and Township of Howick (Howick), County of Huron (Huron County), in response to the Government of Ontario's initiative to promote the development of renewable electricity in the province.

The basic components of the Project include:

- 15 Siemens SWT 2.3-101/SWT 2.3-113 wind turbine generators with a maximum installed nameplate capacity of 33 MW. To be conservative, two turbine models were assessed as part of the Renewable Energy Approval (REA) process – the SWT 2.3-113 (113m blade span) and the SWT 2.3-101 (101m blade span). For the noise assessment, the SWT 2.3-101 was assessed, due to its higher noise level. For potential impacts to the natural environment, and property line setback assessments, the SWT 2.3-113 was assessed, due to its longer blade length. This conservative approach ensured the 'worst case scenario' was assessed;
- A 34.5 kV underground power line collector system;
- A 27.6 kV underground power line collector system;
- Turbine access roads;
- Crane pads;
- Two connection points to the existing HONI system;
- Two un-serviced electrical control buildings;
- A 34.5 kV – approximately 43 kilometer (km) underground electrical interconnection line; and,
- A 44 kV/34.5 kV 15/20 MVA transformer station.

Temporary components during construction include work and storage areas at the turbine locations and along the underground electrical interconnection line. The electrical power line collector system will transport the electricity generated from the Project to connection points to the Hydro One Networks Inc. (HONI) local distribution system.

The St. Columban Wind Project Natural Heritage Assessment and Environmental Impact Study (NHA/EIS) was submitted to the Ministry of Natural Resources (MNR) on July 15, 2011. An NHA Confirmation Letter was issued for the St. Columban Wind Project by the MNR Peterborough Office on August 29, 2011. Since issuance of the Confirmation Letter, a proposed underground electrical interconnection line component has been added.

The overall Project Study Area is comprised of two sections – the Wind Project Study Area and the Interconnection Line Study Area. The Wind Project Study Area is bordered on the north by Winthrop Road, on the south by Huron Road/Highway 8, on the east to the west of Perth Road 180 and on the west by Maple Line. In addition, the Interconnection Line Study Area includes the path along which an approximately 43 km underground electrical interconnection line is proposed to extend from the Wind Project to a transformer station and one of two connection points to the existing HONI electrical distribution system.

This addendum to the NHA will consider assessment of the proposed underground electrical interconnection line. References to “Project Study Area” for the purposes of this addendum are for the underground electrical interconnection line Study Area. Please refer to the NHA/EIS for the Wind Project Study Area for discussion of features relating to the wind project.

The proposed Project Location for this report includes all parts of the land in, on or over which the Project is proposed (the ‘construction area’ for the Project). The proposed Project Location and Project Study Areas are shown in Appendix A, Figures 1-3.

St. Columban Energy LP retained Stantec Consulting Ltd. (Stantec) to prepare the REA application with input from Zephyr North Ltd., and Archaeological Services Inc. The REA application is a requirement under Ontario Regulation 359/09 - Renewable Energy Approvals under Part V.0.1 of the Act of the *Environmental Protection Act* (O. Reg. 359/09). According to subsection 6(3) of O. Reg. 359/09, the Project is classified as a Class 4 Wind Facility and will follow the requirements identified in O. Reg. 359/09 for such a facility.

This NHA/EIS Addendum has been prepared in accordance with O. Reg. 359/09 and is one component of the REA application for the Project.

1.2 RATIONALE FOR THE ADDENDUM

This addendum is submitted as a supplement to the St. Columban Wind Project NHA/EIS and should be read in association with REA reports submitted as part of the REA application for the Project. The current addendum document has been prepared to provide clarification to the MNR with respect to a change in the Project Layout regarding the underground electrical interconnection line.

The initial NHA/EIS was submitted to Ministry of Natural Resources (MNR) on July 15, 2011. An NHA Confirmation Letter was issued for the St. Columban Wind Project by the MNR Peterborough Office on August 29, 2011. Since issuance of the Confirmation Letter, St.

Columban Energy LP has assumed responsibility for the construction and operation of the electrical interconnection line, which will be buried in municipal road allowances. Potential impacts of construction, operation, and decommissioning of this line are assessed in the current REA application.

This addendum is comprised of an NHA/EIS for the addition of the approximately 43 km of underground electrical interconnection line within the municipal road right-of-way (ROW):

- Additional Records Review
- Amended Site Investigation Methodology and Results
- Additional Evaluation of Significance
- Additional EIS – impacts and mitigation

1.3 REPORT REQUIREMENTS

This NHA/EIS addendum is intended to satisfy the requirements outlined within O. Reg. 359/09 (s. 24 through 28, 37 and 38) and is to be submitted as a component of the REA application. The addition to the Project Study Area (underground electrical interconnection line) is not located within the Niagara Escarpment Plan, the Oak Ridges Moraine Conservation Plan Area or the Protected Countryside of the Greenbelt Plan.

Generally, an NHA is required to determine whether any of the following features exist in and/or within 120 m of the Project Location (construction area for the Project):

- Wetlands;
- Coastal wetlands;
- Life Science Areas of Natural and Scientific Interest (ANSIs);
- Earth Science ANSIs (within 50 m);
- Valleylands;
- Woodlands;
- Wildlife habitat; and,
- Provincial parks and conservation reserves.

This report identifies the existence and boundaries of all natural features in and within 120 m of the underground electrical interconnection line based on a review of background records and

on-site field investigations. As the Project Location for the underground electrical interconnection line is within 120 m of natural features, this report provides an evaluation of significance for each identified feature based on either an existing MNR designation of the feature or by using evaluation criteria or procedures established or accepted by the MNR.

If the Project extends into the 120 m Zone of Investigation for any of the identified significant features (50 m of a provincially significant Earth Science ANSI, 120 m for all other specified natural features) an EIS is required that identifies and assesses any negative environmental effects and identifies mitigation measures (O. Reg. 359/09, s.38).

The results of the NHA and its Addendum must be consolidated into a report and submitted to MNR for confirmation in advance of submission of the REA application to the Ministry of the Environment (MOE). Written confirmation from the MNR, as well as any written comments received from the MNR, must be submitted along with the NHA and EIS Addendum to the MOE as part of the REA application.

1.4 GUIDANCE DOCUMENTS

During the preparation of this report, several guidance documents were referenced to ensure compliance with current standards and agency requirements. These documents include:

- *Natural Heritage Assessment Guide for Renewable Energy Projects* (MNR, July 2011)
- *Bats and Bat Habitats Guideline for Renewable Energy Projects* (MNR, 2011)
- *Draft Birds and Bird Habitats Guideline for Renewable Energy Projects* (MNR, 2010) (Draft posted to EBR on November 5, 2010)
- *Natural Heritage Reference Manual* (MNR, 2010)
- *Significant Wildlife Habitat Technical Guide* (MNR, 2000)
- *Significant Wildlife Habitat Decision Support System* (MNR, 2000)
- *Ontario Wetland Evaluation System, Southern Manual* (MNR, 2002)

2.0 Records Review

2.1 METHODS

This records review report was prepared in accordance with O. Reg. 359/09, s. 25 (3).

Background data were collected and reviewed to identify natural features located in, or within, 120 m of the Project Location. Documents reviewed and agencies contacted as part of the records review included but were not limited to:

Federal

- Species at Risk Act (SARA), Schedule 1 (Environment Canada, 2009).

Provincial

- Ministry of Natural Resources. MNR provided background information on natural heritage features and species at risk for the Electrical Interconnection Line Study Area on November 15, 2011.
- Natural Heritage Information Centre (NHIC) database. 2011. Natural Areas and Species records search. Biodiversity explorer, <http://nhic.mnr.gov.on.ca>. MNR, Peterborough. Accessed November, 2011.
- Ministry of Natural Resources. 2011. Land Information Ontario (LIO) digital mapping of natural heritage features.
- *Natural Heritage Assessment Guide for Renewable Energy Projects* (MNR, July 2011).
- Renewable Energy Atlas (2010) Bat hibernacula mapping.
- Ontario Parks Planning and Management Information
<http://www.ontarioparks.com/english/plan-res.html>.

Conservation Authority

- Maitland Valley Conservation Authority (MVCA) – contacted January 20, 2012 and February 2, 2012 (no reply received as of Feb. 3, 2012).

Local Municipal Government

- Huron East Official Plan. 2009
- Municipality of Morris-Turnberry Official Plan. 2006

- Howick Township Official Plan. 2010

Other data sources

- Important Bird Areas database (Bird Studies Canada and BirdLife International, undated)
- Audubon Society Christmas Bird Count database
- Ontbirds Archives (monitoring for spring, fall and summer sightings)
- Various wildlife atlases (birds, mammals, herpetofauna)

A summary of agencies contacted, information requested and responses received is provided in **Table 2.1, Appendix B**.

The information received from each source and the manner in which it was used to identify natural features, provincial parks or conservation reserves that exist within 120 m of the Project Location (50 m for Earth Science ANSIs) is detailed below (**Section 2.2**).

2.2 RESULTS

A review of available background information has indicated the presence of known natural features occurring within the Project Study Area. The results of the records review were used to determine whether the Project Location is in a natural feature, within 50 m of an Earth Science ANSI, or within 120 m of other natural features (as defined in **Section 1.3**) (**Figures 2.1 – 2.5, Appendix A**).

2.2.1 Wetlands

A review of LIO mapping (MNR, 2011), the NHIC database (2011), correspondence with MNR (personal communication November 2011) and the municipal Official Plans (OP) (Huron East 2009, Morris-Turnberry 2006, and Howick 2010) indicated seven wetlands within the Project Study Area (**Figures 2.1 – 2.5, Appendix A**).

2.2.1.1 Provincially Significant

One provincially significant wetland (PSW) was identified in or within 120 m of the Project Location through the record review.

Wroxeter Complex

This PSW complex is comprised of 18 individual wetlands composed entirely of swamp. Maples, black ash, yellow birch and willow species are found throughout this complex. The Wroxeter Complex provides winter cover for wildlife. This wetland is located within 120 m of the Project Location. It is not located in the Project Location.

2.2.1.2 Locally Significant Wetlands

Six locally significant wetlands (LSWs) were identified in or within 120 m of the Project Location through the record review.

Grey South Complex

A LSW comprised of six individual wetlands composed entirely of swamp. The Grey South Wetland Complex is located within 120 m of the Project Location. It is not located in the Project Location.

Central Grey Complex

A LSW complex comprised of five individual wetlands composed entirely of swamp. Vegetation throughout the complex consists of deciduous and coniferous tree cover. The Central Grey Wetland Complex is located within 120 m of the Project Location. It is not located in the Project Location.

Hall Drain Headwater

A LSW complex comprised of four individual wetlands composed entirely of swamp. The Hall Drain Headwater complex is located within 120 m of the Project Location. It is not located in the Project Location.

Sixth Concession Drain Complex

A LSW complex comprised of four individual wetlands composed entirely of swamp. Vegetation is predominantly deciduous tree cover with some coniferous tree cover throughout this complex. The Sixth Concession Drain Wetland is located within 120 m of the Project Location. It is not located in the Project Location.

Jamestown Complex

A LSW complex comprised of two individual wetlands composed entirely of swamp. Vegetation is predominantly deciduous tree cover with some coniferous tree cover throughout this complex. Jamestown Wetland Complex is located within 120 m of the Project Location. It is not located in the Project Location.

Molesworth Complex

A LSW complex comprised of 15 individual wetlands composed entirely of swamp. Molesworth Wetland Complex is located within 120 m of the Project Location. It is not located in the Project Location.

2.2.1.3 Unevaluated Wetlands

No unevaluated wetlands were identified in or within 120 m of the Project Location through the records review.

Summary

Seven wetlands (one PSW and six LSWs) were identified within 120 m of the Project Location through the records review. No wetlands were identified within the Project Location.

2.2.2 Areas of Natural and Scientific Interest

MNR identifies two types of ANSIs; Life Science and Earth Science (NHRM, 2010). Life Science ANSIs are significant representative areas of Ontario's biodiversity and natural landscapes, while Earth Science ANSIs are geological in nature and consist of some of the more significant representative examples of the bedrock, fossils and landforms in Ontario.

There are no Earth Science ANSIs located within 50m of the Project Location.

One regionally significant Life Science ANSI was identified in and within 120 m of the Project Location through the records review.

Wroxeter Swamp

A regionally significant life science ANSI composed of a widespread lowland swamp situated on muck deposits, separated by various drumlins. Wroxeter Swamp covers approximately 400 ha, with portions located in and within 120 m of the Project Location. MNR records (November 15, 2011) indicate that this feature is in the Project Location (**Figures 2.1 – 2.5, Appendix A**). Site investigations will confirm the ANSIs boundaries within 120 m of the Project Location.

2.2.3 Valleylands

Valleylands are natural areas that occur in a valley or other landform depression with water flowing through or standing for some period of the year (NHRM, 2010). Topographic mapping indicates that the Project Location is flat with little change in elevation. Hazard lands can be used to help identify the presence of valleylands. A number of water crossings associated with the proposed underground electrical interconnection line indicates the potential of valleylands being present; however, no known valleylands were identified in or within 120 m of the Project Location through the records review.

2.2.4 Woodlands

The Project Study Area is located within the Huron-Ontario section of the Great Lakes – St. Lawrence Forest Region (Rowe, 1972). This section covers much of southwestern Ontario, the northern boundary of which is generally coincident with the Precambrian Shield. Sugar maple

and beech are common over the entire section, with associates such as basswood, white and red ash, yellow birch, red maple, red, white, black and bur oaks, aspen species, butternut, bitternut hickory, hop-hornbeam, black cherry, sycamore and black walnut. In lowlands, other hardwood species can be found, such as blue-beech, silver maple, red and rock elm, black ash and eastern white cedar. Coniferous species including eastern red cedar, eastern white pine, eastern hemlock and balsam fir can be found amongst hardwood species where appropriate conditions are present.

Forest cover in the Maitland Watershed is approximately 16.5% (Econundrum, 2009). MNR's LIO mapping (2011) and aerial photography indicate the Project Study Area is predominately agricultural.

The Huron East OP (2009) defines significant woodlands based on a combination of size, shape, linkages, diversity of vegetation types, and any unique attributes, as well as their economic and social values. This is consistent with criteria outlined in the NHRM (2010). Definitions of significant woodlands for both Howick Township and Municipality of Morris-Turnberry are not available.

The majority of the wooded areas within the Project Study Area are small, isolated and fragmented. Though most wooded areas are located outside of the Zone of Investigation, 18 woodlands were identified within 120 m Zone of Investigation. No woodlands occur in the Project Location (**Figures 2.1 – 2.5, Appendix A**).

2.2.5 Provincial Parks and Conservation Reserves

There were no provincial parks or conservation reserves identified in or within 120 m of the Project Location through the records review (NHIC, 2010; Ontario Parks 2010).

2.2.6 Wildlife and Wildlife Habitat

Wildlife habitat is defined as an area where plants, animals and other organisms live, including areas where species concentrate at a vulnerable point in their life cycle and that are important to migratory and non-migratory species (O.Reg 359/09; NHRM, 2010). These are grouped into four categories (i.e., seasonal concentration areas, rare vegetation communities or specialized habitats, movement corridors and habitats of species of conservation concern).

MNR has scoped the candidate significant wildlife habitats within 120 m of certain project components based on the potential for that project component to affect the use of the habitat by wildlife (MNR, July 2011). Winter Deer Yards are present within 120 m of the Project Location. A list of candidate species of conservation concern was also provided by MNR. The locations of all other candidate significant wildlife habitats are not known; however, a site investigation will be completed to determine the presence/absence of candidate significant wildlife habitat.

Winter Deer Yards

Deer yards are areas of key winter habitat for white-tailed deer identified and designated by MNR. They usually consist of a core area of coniferous forest, which provides shelter from snow and wind, adjacent to an area of deciduous forest or other foraging habitat. White-tailed deer are known to occur in the vicinity of the Study Area (Dobbyn, 1994).

MNR has identified a deer wintering area within 120 m of the Project Location (**Figures 2.1 – 2.5, Appendix A**). The Wroxeter Complex is also a deer wintering area (stratum 2) as defined in the Significant Wildlife Habitat Technical Guide (SWHTG) (MNR, 2000). A deer wintering area (stratum 2) is the area occupied by deer in early winter or occasionally all winter during mild winters. A mild winter occurs when the snow cover in the area is light and fluffy and less than 30 cm.

The area was surveyed aerially in 1984, 1987, 1988 and 1999 with deer present in all years. Winter deer yard data were reviewed by the Area Biologist (M. Malhiot) in 2005.

Species of Conservation Concern

NHIC (2011), wildlife atlases, and information provided by MNR (personal communication November 15, 2011) were used to identify historic records of species of conservation concern that occur in the vicinity of the Study Area. Wildlife species that would be considered of conservation concern (i.e. special concern, low s-ranks), and whose presence would be assessed within an evaluation of candidate significant wildlife habitat in the Study Area are listed in **Table 2.2 (Appendix B)**. This list of potential species at risk and their habitat requirements was cross referenced with habitat mapping, aerial photography and vegetation classifications to determine the suitability of the Study Area to support them.

Within the context of O. Reg. 359/09, endangered and threatened species are addressed as part of MNR's *Approval and Permitting Requirements Document for Renewable Energy Projects* (APRD) requirements (September 2009). Information required as part of these requirements is being submitted to MNR as part of the **St. Columban APRD Report** (separate cover). Where this information indicates that approvals or permits are required, these will be addressed separately through the applicable statute and its permitting process.

2.3 SUMMARY

A summary of known natural features as identified through the record review is provided in **Table 2.3, Appendix B**.

The following known natural features occur within 120 m of the Project Location:

- Wetlands - 7
- Woodlands - 18
- Wintering deer yards - 1

In addition, the presence/absence of the following features will be determined during site investigation:

- Valleylands
- Candidate Significant Wildlife Habitat, including:
 - Habitats of Seasonal Concentrations of Animals
 - Rare Vegetation Communities or Specialized Habitats for Wildlife
 - Habitats of Species of Conservation Concern
 - Animal movement corridors

3.0 Site Investigation

Site investigations were conducted in accordance with O. Reg. 359/09, s. 26 (1), Natural Heritage Site Investigation. This report is prepared in accordance with s. 26 (3) with guidance provided from the *Natural Heritage Assessment Guide for Renewable Energy Projects* (MNR, July 2011).

Site investigations in support of this report were completed with the purpose of confirming the status and boundaries of natural features identified through the records review and identifying any additional features (**Section 3.1**). Data collected during the records review concerning natural features and species occurrences were used to guide the scope and direction of site investigations. The extent of the site investigation program and type of field surveys included in the program is directly reflective of the extent of natural features that are identified within the revised Project Study Area. The St. Columban underground electrical interconnection line is sited entirely within the municipal road ROW.

MNR was consulted for a data request for the St. Columban Wind Project Underground Electrical Interconnection Line Addendum (November 1, 2011). MNR provided background data on natural features and species of conservation concern on November 15, 2011 (**Table 2.1, Appendix B**).

A map showing the boundaries of all natural features located within 120 m of the Project Location, the location and type of each natural feature, and the distance from the Project Location to the natural feature boundaries is provided in **Figures 2.1 – 2.5 (Appendix A)**.

3.1 METHODS

A field investigation to assess vegetation communities within 120 m of the Project Location was conducted on September 20 and 22 and October 24, 2011.

Field surveys undertaken detail current conditions in and within 120 m of the Project Location. The location of all field investigations was based on the information about the Project lands and layout that was current at the time of the respective survey. Dates, times, duration, field personnel and weather for each field survey are presented in **Table 3.1 (Appendix B)**. Where available, curricula vitae for each person involved in conducting site investigations are provided in **Appendix F**.

Alternative Site Investigation

Under Part IV, Section 26(1.1) of the REA Regulation, an alternative investigation may be conducted if the applicant determines that it is not reasonable to visit a site (a part of air, land or water within 120 m of the Project Location) to conduct a site investigation. An alternative

investigation must verify the accuracy of the Records Review Report while identifying any additional natural features not identified through the records review.

Because the transmission corridor is proposed along an existing open right of way and no negative environmental impacts are anticipated through the development of the transmission line, an alternative site investigation was determined to be reasonable for this portion of the natural heritage assessment. Lands within 120 m were assessed using roadside surveys.

3.1.1 Vegetation Community and Vascular Plants Assessment

Roadside fall botanical inventories and Ecological Land Classification (ELC) of the vegetation communities in the Project Study Area were conducted on September 20 and 22 and October 24, 2011. Survey times, weather conditions and field personnel are summarized in **Table 3.1, Appendix B**.

Vegetation communities were delineated on aerial photographs and checked in the field. Vascular plant species lists were recorded separately for each community. Community characterizations were then based on the ELC system (Lee et al., 1998). English colloquial names and scientific binomials of plant species generally follow Newmaster et al. (1998). Plant species were considered rare if designated provincially as S1 (critically imperiled), S2 (imperiled) or S3 (vulnerable). Species having a high coefficient of conservatism (9 or 10) as designated by Oldham et al. (1995) were also considered species of note.

3.1.2 Wetland Confirmation and Delineation

Site investigations were undertaken September 20 and 22 and October 24, 2011 to confirm the presence and extent of wetland communities that occur within 120 m of the Project Location. Wetland communities were identified and delineated in the field and assessed using desktop methodologies outlined by Ontario Wetland Evaluation System (OWES) Southern Manual protocol (OMNR, 2002), by an OWES certified surveyor. Desktop analysis of the wetland assessments of those wetlands within 120 m of the Project Location were completed on November 8, 18, 24, 25 and 29, 2011.

Survey dates, times, weather conditions and field personnel are summarized in **Table 3.1, Appendix B**.

3.1.3 Woodlands

The limits of all woodlands that occur, or partially occur, within 120 m of the Project Location were delineated through aerial photo interpretation. Information regarding woodland size, linkages and ecological function was collected as best as possible during roadside ELC surveys and through Geographical Information System (GIS) analysis. Treed areas identified during vegetation surveys were compared to the definition of woodlands provided in O. Reg. 359/09 to delineate the limits of "woodlands".

Vegetation communities and plant species inventories were collected for each woodland occurring within 120 m of the underground electrical interconnection line during roadside field investigations on September 20 and 22 and October 24, 2011. Roadside surveys are considered sufficient for these field investigations because the underground electrical interconnection line is sited entirely within the municipal road ROW, allowing the field investigation to focus on the exact Project Location.

3.1.4 Wildlife and Wildlife Habitat

Surveys to determine the presence of habitat that would support seasonal concentrations areas, rare vegetation communities, specialized habitats for wildlife, animal movement corridors and habitat for species of conservation concern as outlined in the Significant Wildlife Habitat Technical Guide (MNR, 2000) were conducted on September 20 and 22 and October 24, 2011. ELC information was cross referenced to determine if candidate significant wildlife habitat was present in and within 120 m of the Project Location.

Appendix D of the Natural Heritage Assessment Guide (MNR 2011) provides a process for identifying and addressing significant wildlife habitat. Any candidate significant wildlife habitat must be identified at the Project Location, its boundaries delineated, and determined whether any part of the Project Location is proposed within the boundary of a candidate significant wildlife habitat. Candidate significant wildlife habitat required to be identified within 120 m of the Project Location is based on the project component. Only Winter Deer Yards are required to be identified within 120 m of underground lines (as indicated by the X in Table 16 of Appendix D). For each candidate significant wildlife habitat identified at the Project Location and within 120 m of the project components listed in Table 16, the feature must be evaluated to determine significance of the habitat.

Habitats listed in Table 16 of Appendix D which are not required to be identified for a particular project component, but may exist within 120 m of that component, must be described as "Generalized Candidate Significant Wildlife Habitat". It is not required that these habitats be listed individually. All wildlife habitat features (with the exception of winter deer yards) are considered generalized candidate significant wildlife habitat within 120 m of underground lines (as indicated by no X in Table 16 of Appendix D). Generalized Candidate Significant Wildlife Habitat within 120 m of the Project Location must be treated as significant and this must be indicated in the Evaluation of Significance Report.

Therefore, specific emphasis was placed on determining whether the critical habitat features required to support winter deer yards or species of conservation concern (as identified through the records review) are present within the Project Study Area. All field surveys in the Project Study Area were conducted by qualified ecologists and are used as a means of recording all wildlife observed on site. Survey times, weather conditions and field personnel are summarized in **Table 3.1, Appendix B** for all field investigations noted below.

Winter Deer Yards

Delineating and mapping of winter deer yards is the responsibility of the Ministry of Natural Resources. This information was obtained through Land Information Ontario. No additional field work was required to identify or delineate the habitat for winter deer yards.

Species of Conservation Concern

Habitat provided within the Project Study Area was assessed for its suitability to support historic species of conservation concern that have been known to occur within the vicinity of the Project Study Area. Details regarding species' habitat preference and likelihood of presence are discussed in **Table 2.2, Appendix B**.

3.2 RESULTS

A summary of the corrections to the features, or potentially occurring features, identified through the records review as a result of the Site Investigation program is outlined in **Table 3.2, Appendix B. Figures 2.1 – 2.5 (Appendix A)** show the boundaries located within 120 m of the Project Location of natural features (location and type) and the distance from the Project Location to the closest point of the natural feature boundary. **Table 3.3, Appendix B** provides precise distances from the Project Location to the nearest point of the natural feature boundary. Field forms for the site investigation are provided in **Appendix C**.

All natural features are outside of, or adjacent to, the Project Location. No natural features are found in the Project Location, because the underground electrical interconnection line is sited in the municipal road ROW.

The Project Location, and associated 120 m is comprised primarily of actively cultivated cropland (corn, soybean and hay). Natural habitat within 120 m of the Project Location consists of deciduous forest, swamp, marshes and hedgerows (**Figures 2.1 – 2.5, Appendix A**).

Vegetation communities occurring within 120 m of the Project Location, as identified by field investigations, are described in **Table 3.4 (Appendix B)** and shown on **Figures 3.1 – 3.5 (Appendix A)**.

A list of vascular plant species occurring from the Project Study Area is provided in **Appendix D**. Field notes are provided in **Appendix C**.

3.2.1 Vegetation Community and Vascular Plants Assessment

Within the Project Location and 120 m Zone of Investigation, 31 species of vascular plants were recorded. Of that number, 22 species (71%) are native and nine species are exotic. Many of the exotic species exist primarily in anthropogenic communities, such as roadsides, forest edges and open habitat. All of the native species are ranked S5 (secure in Ontario). A complete

list of vascular plant species recorded in the Study Area is provided in **Appendix D**. The vegetation communities found within the Study Area are described in **Table 3.4, Appendix B** and shown on **Figures 3.1 – 3.5, Appendix A**.

Site investigations identified twenty-four discrete naturally-vegetated features within 120 m of the Project Location. Each feature has been assigned a unique identification number (**Table 3.5, Appendix B; Figures 2.1 – 2.5, Appendix A**) which serves as a point of reference for the discussions that follow in the next sections.

3.2.2 Wetlands

Wetlands in the Project Study Area are typically swamp maple or poplar and ash swamps. Descriptions of these features can be found in **Tables 3.4 and 3.5, Appendix B**.

3.2.2.1 Provincially Significant Wetlands

One PSW community was identified during field investigations (feature 28) and boundaries were confirmed. No corrections are required to the records review (**Table 3.2, Appendix B**). This feature will be carried forward to the Evaluation of Significance Report and identified as a known provincially significant wetland.

3.2.2.2 Locally Significant Wetlands

Six LSW communities were identified during field investigations (features 13, 14, 19, 20, 22, 24). Boundary changes were necessary for these wetlands; however, these wetlands remain LSWs (pers. corr. MNR, January, 2012) (**Table 3.2, Appendix B**). No evaluation of significance is required.

3.2.2.3 Unevaluated Wetlands

No unevaluated wetlands were identified in or within 120 m of the Project Location through the records review.

3.2.2.4 Additional Wetlands

Fourteen additional wetland units, not identified by MNR or LIO (2011), were identified within the 120 m Zone of Investigation during field investigations (Stantec, 2011). Deciduous swamps, reed-canary grass marshes and cattail marshes were identified in features 8, 10, 11, 12, 13, 15, 18, 19, 20, 21, 23, 24, 25 and 31. Details for each wetland feature are provided in **Table 3.5, Appendix B**.

Corrections made to the records review for additional wetlands 8, 10, 11, 12, 15, 18, 21, 23, 25 and 31 as a result of the site investigations are summarized in **Table 3.2 (Appendix B)**. An evaluation of significance is required for each of these wetlands (**Section 4.1.1**).

3.2.3 Areas of Natural and Scientific Interest (ANSIs)

One regionally significant Life Science ANSI was identified within 120 m of the Project Location through the records review. Site investigations confirmed its presence.

No corrections were required to the results of the record review as a result of the site investigation (**Table 3.2, Appendix B**). No evaluation of significance is required for regionally significant Life Science ANSIs.

3.2.4 Valleylands

Valleylands are linear natural areas that occur in a valley or other landform depression with water flowing through or standing for some period of the year (NHRM, 2010). Section 8.3 of the NHRM (2010) was used as a guide for the identification of valleylands within the Project Study Area. Site investigations confirmed that the topography of the Project Study Area is generally flat.

No corrections were required to the results of the record review as a result of the site investigation (**Table 3.2, Appendix B**). No evaluation of significance is required.

3.2.5 Woodlands

Woodland communities in the Project Study Area typically represent deciduous forest and deciduous swamp (**Figures 2.1 – 2.5, Appendix A; Table 3.5, Appendix B**).

A total of 18 significant woodlands (features 9, 10, 11, 12, 13, 14, 17, 18, 19, 20, 21, 22, 24, 26, 27, 28, 29 and 30) were identified within 120 m of the Project Location according to the records review (LIO, 2011; OP, 2009). Site investigations confirmed the presence of 19 woodlands (9, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20, 21, 22, 24, 26, 27, 28, 29 and 30) within 120 m of the Project Location and confirmed that no woodlands are in the Project Location.

One additional woodland was identified during field investigations (feature 16). Corrections made to the records review for woodlands as a result of site investigations are summarized in **Table 3.2 (Appendix B)**. An evaluation of significance is required for feature 16 (**Section 4.1.2**).

3.2.6 Wildlife and Wildlife Habitat

3.2.6.1 Candidate Significant Wildlife Habitat

Winter Deer Yards

Winter deer yards are identified by the MNR. One feature, 28, was identified as a winter deer yard within 120 m of the Project Location through the records review. Site investigations confirmed the boundaries of this habitat.

No corrections were required to the results of the record review as a result of the site investigation (**Table 3.2, Appendix B**). This feature will be carried forward to the Evaluation of Significance Report and identified as a known significant wildlife habitat (**Section 4.1.3.1**).

3.2.6.2 Generalized Candidate Significant Wildlife Habitat

According to Appendix D (MNR, July 2011), generalized candidate significant wildlife habitat (GCSWH) within 120 m of the Project Location is assumed to be present and must be treated as significant (**Section 4.1.3.2**). Prior to categorizing a habitat feature as GCSWH, there must be potential for the habitat to exist based on landscape and geography. **Table 3.6, Appendix B** identifies the potential for wildlife habitats listed in Table 16 of Appendix D to exist within 120 m of the proposed underground transmission line.

3.3 SITE INVESTIGATION RESULTS SUMMARY

The identification of natural features in the records review and as confirmed through the site investigation program is provided in **Table 3.5, Appendix B**. Corrections made to the records review are provided in **Table 3.2, Appendix B**.

The following natural features were identified or confirmed through site investigations as occurring within 120 m of the Project Location and require an evaluation of significance:

- Wetlands (in features 8, 10, 11, 12, 15, 18, 21, 23, 25 and 31);
- Woodlands (in feature 16);
- Candidate significant wildlife habitat – winter deer yards (in feature 28); and,
- Generalized candidate significant wildlife habitat.

3.4 QUALIFICATIONS

Personnel responsible for conducting the site investigation are listed in **Table 3.1, Appendix B**. Where available, curricula vitae are provided in **Appendix E**.

4.0 Evaluation of Significance

Natural heritage information collected from the records review and site investigations was analyzed to determine the significance and sensitivity of existing ecological features and functions. For all natural features existing in, or within 120 m of, the Project Location, a determination was made of whether the natural feature is provincially significant, significant, not provincially significant or not significant.

Wetlands and Life Science ANSIs were determined to be provincially significant if they have been identified as such by MNR.

Valleylands, wildlife habitat and woodlands were considered to be significant if MNR has identified them as such or when evaluated as significant using procedures established by MNR.

Global, national and provincial status of wildlife and plants was provided by the NHIC (November, 2011). Status rankings are primarily based on the number of occurrences within each respective jurisdiction.

Provincial designations for special concern species were obtained from the most recent Committee on the Status of Species at Risk in Ontario (COSSARO) assessments. Federally, designations for endangered, threatened and special concern species were obtained from the most recent Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assessments and the schedules of the *Species at Risk Act* (SARA) were used to determine species protection.

Within the context of O. Reg. 359/09, endangered and threatened species are addressed as part of MNR's APRD requirements (September 2009). Information required as part of these requirements is being submitted to MNR as part of the St. Columban APRD Report (separate cover). Where this information indicates that approvals or permits are required these will be addressed separately through the applicable statute and its permitting process.

The following natural features were identified or confirmed through site investigations as occurring within 120m of the Project Location and require an evaluation of significance:

- Wetlands (in features 8, 10, 11, 12, 15, 18, 21, 23, 25, and 31);
- Woodlands (in feature 16);
- Candidate significant wildlife habitat – winter deer yards (in feature 28); and,
- Generalized candidate significant wildlife habitat.

These are shown on **Figures 2.1 – 2.5, Appendix A**. Specific methods used in the evaluation of significance for each type of natural feature are detailed below.

4.1.1 Wetlands

4.1.1.1 Methods

A method for Wetland Characteristics and Ecological Functions Assessment (WCEFA) was developed by the MNR to provide a set of evaluation criteria focused on wetland attributes relevant to the completion of an EIS for renewable energy projects. The criteria to be evaluated are presented in Appendix C of the *Natural Heritage Assessment Guide for Renewable Energy Projects* (MNR, July 2011).

Wetlands that occur within the 120 m Study Area will be assessed using the WCEFA to determine potential impacts of construction activities related to renewable energy projects and their associated project components such as underground electrical interconnection lines.

Where the aforementioned wetland communities extend outside of the 120 m, they will be included in the assessment to ensure accurate documentation of the features and functions. Only wetland communities contiguous with those inside the 120 m Study Area will be assessed.

Data were collected through desktop procedures (e.g. aerial photograph interpretation) and on-site field investigations conducted from the property boundary. The criteria and procedures found within Appendix C of the Draft *Natural Heritage Assessment Guide for Renewable Energy Projects* (MNR, July 2011) are based on sections of the OWES – Southern Edition (MNR, 2002). Although this procedure does not evaluate the significance of these wetlands, it provides a procedure by which the significance of these wetlands can be assumed and their functions assessed based on the criteria established within the OWES manual. Specifically, these criteria were addressed in the following manner:

Biological Component

Wetland Size: This figure will be based on the overall size of the contiguous wetland, including areas that are within but extend outside of 120m zone. Data will be based on field surveys and/or aerial photo interpretation. (OWES Section 1.3)

Wetland Type: The dominant wetland type in the contiguous unit will be listed. Data will be based on field surveys and/or aerial photo interpretation. (OWES Section 1.1.2)

Site Type: The wetland site type will be stated. Data will be based on field surveys and/or aerial photo interpretation. (OWES Section 1.1.3)

Vegetation Communities: Each vegetation community in the contiguous unit will be listed, based on the requirements of OWES. Data will be based on field surveys where possible. (OWES Section 1.2.2)

Proximity to Other Wetlands: The approximate distance to the next closest wetland unit will be provided. Data will be based on field surveys and/or aerial photo interpretation. (OWES Section 1.2.4)

Interspersion: An estimate of the total number of interspersion points will be provided, with consideration given to the scale of the map and complexity of the wetland type delineations. The interspersion number will be provided in the Table. Data will be based on field surveys and/or aerial photo interpretation. (OWES Section 1.2.5)

Open Water Types: The open water type number (page 52 of the OWES manual) will be listed in the Table; data will be based on field surveys and/or aerial photo interpretation. (OWES Section 1.2.6)

Hydrological Component

Flood Attenuation: The general proximity of the wetland within the local watershed will be stated, indicating if it is headwater, mid-reach, or river-mouth. An estimate of the catchment area will also be provided, either based on Digital Elevation Mapping, or topographic map interpretation.

Water Quality Improvement (Short Term):

- *Watershed Improvement Factor (WIF)* – this is based on presence/absence of specific site types (i.e. riverine, lacustrine wetlands at lake inflow or outflow; or palustrine wetlands with inflow isolated wetlands, or palustrine wetlands with no inflow or lacustrine wetlands on lake shoreline. The data will be derived from field surveys where possible [OWES Section 3.2.1.1]):
- *Adjacent and Watershed Land Use (LUF)* – estimated percent of land use and land use type (i.e. agricultural, urban or forested) was included for the catchment (data derived from field surveys where possible [OWES Section 3.2.1.2]):
- *Pollutant Uptake Factor (PUT)* – this is based on the single *most* dominant vegetation form observed within the wetland community (data derived from field surveys where possible [OWES Section 3.2.1.3]), described as:
 - high proportion of emergent, submergent, and/or floating vegetation.
 - a high proportion of live trees, shrubs, herbs, or mosses.
 - a high proportion of wetland with little or no vegetation.

Water Quality Improvement (Long Term Nutrient Trap): Wetlands with a retentive capacity for nutrients (e.g., those with organic soils) provide protection for recharging groundwater. A characterization of wetland type and soil conditions is provided. Data was based on field surveys where possible, or soil series mapping (OWES Section 3.2.2):

- *Water Quality Improvement (Groundwater Discharge):* OWES establishes eight wetland features that provide evidence of discharge, where the evaluator must make observations on as many of the features as possible (OWES Section 3.2.3). Where available, data indicative of groundwater discharge was provided.
- *Shoreline Erosion Control:* Shoreline wetlands provide a measure of protection from shoreline erosion caused by flowing water or waves. A description of the dominant shoreline vegetation was provided based on field surveys and/or aerial photo interpretation (OWES Section 3.4):
- *Groundwater Recharge (Site Type):* Site type was included based on field surveys where possible (OWES Section 3.5.1):
- *Groundwater Recharge (Soils):* Soil type was indicated for each wetland unit, based on county soil mapping. (OWES Section 3.5.2)

Special Features

Species Rarity: All rare species observed during field surveys or species known to be present were documented and listed in the WCEFA results table (Table 2.3). Data was based on field surveys, review of background materials (including existing wetland evaluations), and correspondence with agencies where possible (OWES Section 4.1.2).

Significant Features and Habitats: All significant features and habitats present in the wetland were documented and listed in the Table. Features/Habitat of interest include Colonial Waterbird Habitat, Winter Wildlife Cover, Waterfowl Staging and/or Moulting Areas, Waterfowl Breeding, and Migratory Passerine, Shorebird, or Raptor Stopover Areas. Data will be based on field surveys, background data, and correspondence with agencies where possible (OWES Section 4.2). The extensive field and background data gathered for the Project, with respect to avian wildlife, was reviewed as part of the assessment of significant features and habitats. Information on significant deeryards, obtained from LIO mapping, was also reviewed.

Fish Habitat: OWES (guided by the Canada Fisheries Act) states that the presence of individual species of fish is not scored. Instead, fish habitat values are based on presence spawning and nursery habitat, and presence of staging and migration habitat. An indication of presence/absence was provided, as well as its hydro-period (i.e., permanent or intermittent). (OWES Section 4.2.6)

4.1.1.2 Results

Additional wetland units, not currently evaluated by MNR, were confirmed within features 8, 10, 11, 12, 15, 18, 21, 23, 25 and 31. Wetlands identified by MNR are considered significant.

All wetlands were assessed according to the WCEFA described above. Results are provided in **Table 4.1, Appendix B**. In accordance with Appendix C of the Natural Heritage Assessment

Guide for Renewable Energy Projects (MNR, July 2011), these features are conservatively treated as provincially significant for the purposes of this report and are included within the EIS.

No wetlands are found in the Project Location. Additional wetlands, which are considered provincially significant for the purposes of this report, occurring within 120 m of the Project Location include features 8, 10, 11, 12, 15, 18, 21, 23, 25 and 31. These are shown on **Figures 4.1 – 4.5, Appendix A**. Provincially significant wetlands within 120 m of the Project Location require an EIS.

4.1.2 Woodlands

The Study Area falls within Huron County. Significant woodlands are defined and mapped in the Huron East OP (2009). Eighteen woodlands within 120 m of the Project Location are significant (Huron East OP, 2009). An assessment of woodland significance was applied to one woodland (feature 16), which was not previously identified as significant within 120 m of the Project Location, using the NHRM (2010). Results from this assessment determined that this feature is significant for the purposes of this report (**Table 4.2, Appendix B**).

No woodlands are found within the Project Location; 19 woodlands (in features 9, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20, 21, 22, 24, 26, 27, 28, 29 and 30) are found within 120 m of the Project Location (**Table 3.5, Appendix B**). All 19 woodlands found within 120 m of the Project Location are considered significant.

Significant woodlands found within 120 m of the Project Location are shown on **Figures 4.1 – 4.5, Appendix A**. Significant woodlands within 120 m of the Project Location require an EIS.

4.1.3 Wildlife and Wildlife Habitat

Correspondence with MNR (November 15, 2011) and the SWHTG (MNR, 2000) was used to help decide what areas and features should be considered candidate significant wildlife habitat (**Section 3.2.6**). An analysis of the results of the site investigations determined that the following candidate significant wildlife habitat features are present within 120 m of the Project Location, requiring an evaluation of significance:

- Candidate significant wildlife habitat: winter deer yards – feature 28;
- Generalized candidate significant wildlife habitat.

4.1.3.1 Candidate Significant Wildlife Habitat

Winter Deer Yards

As a result of the records review and site investigations, one feature (feature 28) confirmed within 120 m of the Project Location, was identified as candidate significant wildlife habitat for wintering deer (Figure 1, Appendix D, MNR, July 2011). No candidate significant wildlife habitat

wintering deer was identified in the Project Location. Significant wildlife habitat in the form of wintering deer yards (feature 28) found within 120 m of the Project Location is shown on **Figures 4.1 – 4.5, Appendix A** and requires an EIS.

4.1.3.2 Generalized Candidate Significant Wildlife Habitat

According to Appendix D (MNR, July 2011), generalized candidate significant wildlife habitat within 120 m of the Project Location must be treated as significant and requires an EIS (**Table 3.6, Appendix B**).

4.2 SUMMARY

This NHA was undertaken to identify natural features found in, and within 120 m of, the Project Location and evaluate their significance. This report has been prepared in accordance with O. Reg. 359/09 s.24-27.

Based on an assessment of background information and the results of roadside field investigations, the following significant natural features were located within 120 m of the Project Location, requiring an EIS under O. Reg. 359/09 s.38:

- Provincially significant wetlands (features 8, 10, 11, 12, 15, 18, 21, 23, 25, 28 and 31);
- Significant woodlands (features 9, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20, 21, 22, 24, 26, 27, 28, 29 and 30);
- Significant wildlife habitat: winter deer yards (feature 28); and,
- Generalized significant wildlife habitat.

An EIS is required to identify and assess any negative environmental effects and develop mitigation measures to the above-noted significant features that occur within 120 m of the Project Location. No natural features are present in the Project Location.

4.3 DATES OF THE BEGINNING AND COMPLETION OF THE EVALUATION

The dates of the beginning and completion of the evaluation of significance are provided in **Table 3.1, Appendix B**. These dates include both field investigations and desktop analyses (WCEFA).

4.4 QUALIFICATIONS

The following Stantec personnel were responsible for the application of evaluation criteria and procedures:

- Shannon Catton, Terrestrial Ecologist and Natural Heritage Coordinator
- James Leslie, Terrestrial Ecologist (wetland evaluation)

Curricula vitae are provided in **Appendix F**.

5.0 Environmental Impact Study

The NHRM (MNR, 2010), the SWHTG (MNR, 2000), the SWHTG Decision Support System (SWHTGDSS; MNR undated) and the *Natural Heritage Assessment Guide for Renewable Energy Projects* (MNR, July 2011) were used to assist in the evaluation of impacts and mitigation measures.

The primary mitigation measure employed to reduce impacts to natural features and functions was avoidance; construction design decisions made during the development of the Project Layout considered minimizing impacts to natural features, wildlife and wildlife habitat. The Project is sited predominately within the municipal road ROW. No natural habitat removal is required for the underground electrical interconnection line.

5.1 PROJECT FOOTPRINT OVERVIEW

St. Columban Energy LP is proposing to develop the Project in Huron East, Morris-Turnberry, and Howick, Huron County, in response to the Government of Ontario's initiative to promote the development of renewable electricity in the province.

The NHA/EIS was submitted to MNR July 15, 2011. An NHA Confirmation Letter was issued for the St. Columban Wind Project by the MNR Peterborough Office on August 29, 2011. Since issuance of the Confirmation Letter, a proposed underground electrical interconnection line component has been added.

The overall Project Study Area is comprised of two sections – the Wind Project Study Area and the Interconnection Line Study Area. The Wind Project Study Area is bordered on the north by Winthrop Road, on the south by Huron Road/Highway 8, on the east to the west of Perth Road 180 and on the west by Maple Line. In addition, the Interconnection Line Study Area includes the path along which an approximately 43 km underground electrical interconnection line is proposed to extend from the Wind Project to a transformer station and one of two connection points to the existing HONI electrical distribution system.

The Interconnection Line Study Area follows municipal roads in the Municipalities of Huron East and Morris-Turnberry, and the Township of Howick: Manley Line; Canada Company Road; Beechwood Line; Blyth Road/Perth Line 55; McNabb Line; Browntown Road; Johnston Line; Centre Line Road; and McDonald Line to the proposed transformer station location at the south-east intersection of McDonald Line and Gough Road.

The proposed Project Location for this report includes all parts of the land in, on or over which the Project is proposed (the 'buildable area' for the Project). The proposed Project Location and Project Study Area are shown in **Appendix A, Figure 1**.

The Project Location is sited entirely within municipal road ROW. It will be buried approximately 1.2 m deep and will be constructed over a 12-week period (August-November) in 2013.

St. Columban Energy LP retained Stantec to prepare the REA application with input from Zephyr North Ltd., and Archaeological Services Inc. The REA application is a requirement under O. Reg. 359/09. According to subsection 6.(3) of O. Reg. 359/09, the Project is classified as a Class 4 Wind Facility and will follow the requirements identified in O. Reg. 359/09 for such a facility.

This NHA/EIS Addendum has been prepared in accordance with O. Reg. 359/09 and is one component of the REA application for the Project.

All components of the Project and the associated 120 m Zone of Investigation in relation to significant natural features are shown on **Figures 4.1 – 4.5, Appendix A**.

No significant natural features are found in the Project Location.

As noted in **Section 4.2**, the following significant features occur within 120 m of the Project Location:

- Provincially significant wetlands (features 8, 10, 11, 12, 15, 18, 21, 23, 25, 28 and 31);
- Significant woodlands (features 9, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20, 21, 22, 24, 26, 27, 28, 29 and 30);
- Significant wildlife habitat: winter deer yards (feature 28); and,
- Generalized significant wildlife habitat.

The Project Location is not permitted in a provincially significant southern wetland (O. Reg. 359/09). Projects may be sited within 120 m of a provincially significant southern wetland and in, or within 120 m of a significant valleyland, significant woodland or significant wildlife habitat if an EIS is prepared that identifies and addresses any negative environmental effects on the feature and identifies mitigation measures.

Given the diversity of natural heritage features, some of the features qualify as significant under multiple designations. For example, significant woodland is also considered generalized significant wildlife habitat. Where a feature is considered significant for multiple natural heritage designations, the impacts and mitigation as they relate to each designation are discussed within the analysis of impacts to the feature provided below.

Significant features found within 120 m of the Project Location are provided below (no features are found in the Project Location).

Feature Number	Significant Natural Features	Project Component(s) located in Project Location	Distance of Underground Electrical Interconnection Line to nearest point of Natural Feature located within 120 m
Feature 8	<ul style="list-style-type: none"> Provincially significant wetland 	None	>0.1 m
Feature 9	<ul style="list-style-type: none"> Significant woodland 	None	52.36 m
Feature 10	<ul style="list-style-type: none"> Provincially significant wetland Significant woodland 	None	94.35 m
Feature 11	<ul style="list-style-type: none"> Provincially significant wetland Significant woodland 	None	>0.1 m
Feature 12	<ul style="list-style-type: none"> Provincially significant wetland Significant woodland 	None	1.32 m
Feature 13	<ul style="list-style-type: none"> Significant woodland 	None	>0.1 m
Feature 14	<ul style="list-style-type: none"> Significant woodland 	None	2.8 m
Feature 15	<ul style="list-style-type: none"> Provincially significant wetland 	None	>0.1 m
Feature 16	<ul style="list-style-type: none"> Significant woodland 	None	>0.1 m
Feature 17	<ul style="list-style-type: none"> Significant woodland 	None	>0.1 m
Feature 18	<ul style="list-style-type: none"> Provincially significant wetland Significant woodland 	None	49.5 m
Feature 19	<ul style="list-style-type: none"> Significant woodland 	None	>0.1 m
Feature 20	<ul style="list-style-type: none"> Significant woodland 	None	>0.1 m
Feature 21	<ul style="list-style-type: none"> Provincially significant wetland Significant woodland 	None	>0.1 m
Feature 22	<ul style="list-style-type: none"> Significant woodland 	None	>0.1 m
Feature 23	<ul style="list-style-type: none"> Provincially significant wetland 	None	>0.1 m
Feature 24	<ul style="list-style-type: none"> Significant woodland 	None	>0.1 m
Feature 25	<ul style="list-style-type: none"> Provincially significant wetland 	None	>0.1 m
Feature 26	<ul style="list-style-type: none"> Significant woodland 	None	19.32 m
Feature 27	<ul style="list-style-type: none"> Significant woodland 	None	>0.1 m
Feature 28	<ul style="list-style-type: none"> Provincially significant wetland Significant woodland Winter deer yard 	None	>0.1 m
Feature 29	<ul style="list-style-type: none"> Significant woodland 	None	>0.1 m
Feature 30	<ul style="list-style-type: none"> Significant woodland 	None	88.84 m
Feature 31	<ul style="list-style-type: none"> Provincially significant wetland 	None	>0.1 m

An analysis of the potential impacts and proposed mitigation measures for each of these features is provided below.

A synthesis of all potential impacts and proposed mitigation measures for the Project is provided in **Table 5.1, Appendix B**.

5.2 SIGNIFICANT WETLANDS

There are 11 wetlands (features 8, 10, 11, 12, 15, 18, 21, 23, 25, 28 and 31) within 120 m of the Project Location that were evaluated or assumed as provincially significant using provincial guidance.

No direct loss of wetland habitat is proposed for the Project.

A summary of the potential impacts and mitigation measures for those significant wetlands within 120 m of the Project Location is provided in **Table 5.1, Appendix B**. Wetlands have been grouped according to potential Project effects (i.e. by Project components) and are discussed below.

The following Project components are within 120 m of significant wetlands:

Project Component	Wetland Features < 120 m	Distance of Features
Underground Line (Underground Electrical Interconnection Line)	11 wetlands (features 8, 10, 11, 12, 15, 18, 21, 23, 25, 28 and 31)	Range of >0.1 m to 49.5 m

5.2.1 Wetlands within 120 m of the Project Location

5.2.1.1 Potential Effects

As all components of the Project are sited outside wetland boundaries; there will be no direct loss of wetland habitat or function as a result of the construction and operation of the underground electrical interconnection line. There will be no clearing of trees in or near the features that could result in desiccation or drying. Indirect impacts resulting from construction activities, such as dust generation, sedimentation, and erosion are expected to be short term, temporary in duration and mitigable through the use of standard site control measures. During construction, there will be a temporary increase in traffic and the potential for accidental spills.

Though construction activities are proposed adjacent to some natural features, there will be no vegetation clearing or construction within any natural feature; no section of the Project Location is located in the natural feature. The majority of each individual wetland unit occurs more than 120 m from the Project Location, with a relatively small portion closest to the Project Location. Research indicates that impacts from development activities do not generally extend to distances beyond 120 m (NHRM, 2010), and burying an electrical interconnection line underground, outside of a natural feature is not anticipated to have any negative impacts if standard mitigation measures are applied (discussed below).

Changes in surface water drainage can affect wetlands. No grading for the installation of the underground electrical interconnection line is required, and therefore no changes to groundwater flow are anticipated.

5.2.1.2 Proposed Mitigation

Avoidance was the main strategy used to minimize impacts to wetland habitat within 120 m of the Project Location. All Project components are sited within the municipal road ROW, outside the feature boundaries. The assessment and development of mitigation measures has been based on the entire road ROW, and the exact side of the road will be determined during the municipal consultation process under the REA. Mitigation is dependent on proximity to construction activities – if construction is on the same side of the road as the feature, mitigation will be applied – if not, no mitigation is required. Standard best management practises should be applied to all construction activities:

- No development is permitted within the wetland boundary.
- Directional boring will occur where heavily vegetated (ie. trees and shrubs) wetlands are immediately adjacent to the road ROW to avoid damage to treed vegetation (applies to features 12 and 15).
 - Applies to feature 12 if the underground electrical interconnection line is installed on the west side of McNabb Line (see **Figure 4.2, Appendix A**)
 - Applies to feature 15 if the underground electrical interconnection line is installed on the east side of McNabb Line (see **Figure 4.3, Appendix A**)
- Inspectors will ensure construction vehicles and personnel stay within the construction envelope, thereby limiting the disturbance of natural vegetation.
- All refuelling should occur well away from the wetlands. In the event of an accidental spill, the MOE Spills Action Centre should be contacted and emergency spill procedures implemented immediately.
- Any fuel storage and activities with the potential for contamination should occur in properly protected and sealed areas.

Mitigation measures specific to wetlands are outlined in **Table 5.1 (Appendix B)**.

5.2.1.3 Net Effects

Limiting construction activities within the municipal road ROW will ensure that there is no disruption of wetland function and no net loss of wetland area. The mitigation measures described above will ensure no adverse effects to the wetland during construction.

5.3 SIGNIFICANT WOODLANDS

There are 19 woodlands (features 9, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20, 21, 22, 24, 26, 27, 28, 29 and 30) within the 120 m Zone of Investigation around the Project Location that were confirmed or evaluated as significant using provincial guidance.

No direct loss of woodland habitat is proposed for the Project.

A summary of the potential impacts and mitigation measures for those significant woodlands within 120 m of the Project Location is provided in **Table 5.1, Appendix B**. Woodlands have been grouped according to potential Project effects (i.e. by Project components) and are discussed below.

The following Project components are within 120 m of significant woodlands:

Project Component	Woodland Features < 120 m	Distance of Features
Underground Line (Underground Electrical Interconnection Line)	19 woodlands (features 9, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20, 21, 22, 24, 26, 27, 28, 29 and 30)	Range of >0.1 m to 94.35 m

5.3.1 Woodlands within 120 m of the Project Location

5.3.1.1 Potential Effects

As all components of the Project are sited outside the woodland boundaries, there will be no direct loss of woodland habitat or function as a result of the underground electrical interconnection line. No new edge will be created. Setbacks for the underground electrical interconnection line range from adjacent to the natural feature to 94 m to the closest woodland edge (**Table 5.1, Appendix B**).

Indirect impacts resulting from construction activities, such as dust generation, sedimentation and erosion are expected to be minimal and mitigable through the use of standard site control measures.

Woodlands provide habitat function for various wildlife species, including many species of forest breeding birds. Disturbance from construction of the underground electrical interconnection line has the potential to affect habitat use of woodlands by birds; however, with the temporary duration of the construction of the underground electrical interconnection line (4 weeks) during the anticipated construction window of August to November, 2013, it is anticipated that there will be no long-term negative effects. These potential effects, mitigation measures and net effects are discussed in detail in **Section 5.5**.

5.3.1.2 Proposed Mitigation

Avoidance was the main strategy used to minimize impacts to woodland habitat within 120 m of the Project Location. All components of the Project are sited within the municipal road ROW, outside the feature boundaries. Standard best management practises should be applied to all construction activities:

- Inspectors will ensure construction vehicles and personnel stay within the construction envelope, thereby limiting the disturbance of natural vegetation.
- All refuelling activities should occur well away from the wetland. In the event of an accidental spill, the MOE Spills Action Centre should be contacted and emergency spill procedures implemented immediately.
- Any fuel storage and activities with the potential for contamination should occur in properly protected and sealed areas.

Mitigation measures specific to woodlands are outlined in **Table 5.1 (Appendix B)**.

5.3.1.3 Net Effects

Limiting construction activities within the municipal road ROW will limit potential effects on woodlands from the underground electrical interconnection line; combined with effective proposed mitigation measures, there would be minimal to no effects from the Project on these woodlands.

5.4 CANDIDATE SIGNIFICANT WILDLIFE HABITAT

5.4.1 Winter Deer Yards

There is one feature that contains significant wildlife habitat (winter deer yards) (feature 28) within the 120 m Zone of Investigation around the Project Location.

No direct loss of winter deer yard habitat is proposed for the Project.

A summary of the potential impacts and mitigation measures for this significant winter deer yard within 120 m of the Project Location is provided in **Table 5.1, Appendix B**.

The following Project components are within 120 m of winter deer yards:

Project Component	Winter Deer Yard < 120 m	Distance of Features
Underground Line (Underground Electrical Interconnection Line)	Feature 28	Adjacent , >0.1 m

5.4.2 Significant Wildlife Habitat – Winter Deer Yards within 120 m of the Project Location

5.4.2.1 Potential Effects

As all components of the Project are sited outside the habitat, within municipal road ROW, there will be no direct loss of habitat or function as a result of the Project. Indirect impacts resulting from construction activities, such as dust generation, sedimentation and erosion are expected to be short term, temporary in duration and mitigable through the use of standard site control measures. During construction, there will be increased traffic and the potential for accidental spills.

Construction activities are proposed adjacent to feature 28, but the side of the road has not yet been determined. The majority of the deer yard occurs more than 120 m from the Project Location. Research indicates that impacts from development activities do not generally extend to distances beyond 120 m (NHRM, 2010).

There will be no clearing of trees in or near the feature that could result in desiccation or drying.

Given the temporary (i.e., one season or less) disturbance of increased traffic activity (four weeks) and avoidance of construction during the winter deer season (anticipated construction dates are August to November, 2013), the potential short-term and long-term effects to winter deer populations are anticipated to be minimal to non-existent.

5.4.2.2 Proposed Mitigation

Avoidance was the main strategy used to minimize impacts to the deer winter yard within 120 m of the Project Location. All components of the Project are sited outside the feature boundaries, within the municipal road ROW. Standard best management practises should be applied to all construction activities:

- Inspectors will ensure construction vehicles and personnel stay within the construction envelope, thereby limiting the disturbance of natural vegetation.
- All refuelling activities should occur well away from the deer yard. In the event of an accidental spill, the MOE Spills Action Centre should be contacted and emergency spill procedures implemented immediately.
- Any fuel storage and activities with the potential for contamination should occur in properly protected and sealed areas.

Mitigation measures are outlined in **Table 5.1 (Appendix B)**.

5.4.2.3 Net Effects

The temporary disturbance and anticipated construction date (August to November, 2013) will ensure that there is no disturbance to deer, disruption of habitat function and no net loss of habitat area. The mitigation measures described above will ensure no adverse effects to the winter deer yard during construction.

5.5 GENERALIZED CANDIDATE SIGNIFICANT WILDLIFE HABITAT

5.5.1 Generalized Significant Wildlife Habitat within 120 m of the Project Location

5.5.1.1 Potential Effects

As all components of the Project are sited outside the habitat in municipal road ROW, there will be no direct loss of habitat or function as a result of the Project (**Table 3.6, Appendix B**). Indirect impacts resulting from construction activities, such as dust generation, sedimentation and erosion are expected to be short term, temporary in duration and mitigable through the use of standard site control measures. During construction, there will be increased traffic and the potential for accidental spills.

There will be no clearing of trees in or near features that could result in desiccation or drying.

During construction of the underground electrical interconnection line, traffic will vary in intensity as the construction phase progresses. Given the temporary (i.e., one breeding season or less) nature of the increased traffic activity (four weeks) within the anticipated construction window of August to November, 2013 and the erection of barrier fencing (ie. silt fencing), the risk of increased mortality to wildlife during construction is considered low. Some limited mortality is possible; however, the potential long-term effects to wildlife populations from this mortality and from barrier effects are anticipated to be minimal.

5.5.1.2 Proposed Mitigation

Avoidance was the main strategy used to minimize impacts to general wildlife habitat within 120 m of the Project Location. All components of the Project are sited outside the feature boundaries. Standard best management practises should be applied to all construction activities:

- Inspectors will ensure construction vehicles and personnel stay within the construction envelope, thereby limiting the disturbance of natural vegetation.
- All refuelling should occur well away from the generalized significant wildlife habitat. In the event of an accidental spill, the MOE Spills Action Centre should be contacted and emergency spill procedures implemented immediately.

- Any fuel storage and activities with the potential for contamination should occur in properly protected and sealed areas.
- Silt barriers to be erected along feature edges that occur within 30 m of construction work to ensure prevention of wildlife access and work zone should be walked through prior to fencing installation to flush out any wildlife.
- Construction machinery should be checked daily prior to operating machinery.
- Observation of any snakes or turtles within the work zone should not be handled prior to contacting MNR.

Mitigation measures are outlined in **Table 5.1 (Appendix B)**.

5.5.1.3 Net Effects

The temporary construction activities of the underground electrical interconnection line, and the fact that no construction will occur within any habitat features, will ensure that there is no disruption of habitat function and no net loss of habitat area. The mitigation measures described above will ensure no adverse effects to general wildlife habitat during construction.

5.6 SUMMARY OF IMPACTS AND MITIGATION

Tables 5.1 and 5.2 (Appendix B) summarize the general impacts, suggested mitigation measures and application to minimize and mitigate the potential negative impacts to significant natural heritage features associated with the planning, design and construction of the proposed Project.

5.7 ENVIRONMENTAL EFFECTS MONITORING PLAN

The proposed underground transmission route does not require any additions to the Environmental Effects Monitoring Plan (EEMP) as there are no expected residual impacts to the natural features within 120 m of the proposed transmission route. The EEMP was addressed in the previously approved Natural Heritage Assessment Report and is not further addressed as part of this addendum. The EEMP, in respect of birds and bats, will be prepared in accordance with the Ministry of Natural Resources:

- *Birds and Bird Habitats: Guidelines for Wind Power Projects*
- *Bats and Bat Habitats: Guidelines for Wind Power Projects*

5.8 CONSTRUCTION MONITORING

Construction monitoring to demonstrate how any negative environmental effects identified in the EIS will be mitigated is required as part of the REA Application. This information is contained within the Construction Plan Report (under separate cover). This includes incorporation of all mitigation measures identified through the EIS and Tables 5.1 and 5.2 to ensure minimal to no adverse effects occur to the Project Study Area.

6.0 Conclusions

This NHA and EIS Addendum for the St. Columban Underground Electrical Interconnection Line Project has been prepared in accordance with O.Reg 359/09, s. 24-28 and 37-38.

Once the identified protective, mitigation and compensation measures are applied to the environmental features discussed above, the construction of the Project is expected to have acceptable net negative effects on the significant features and functions identified through the NHA process. All construction mitigation measures addressed in this report will also be implemented in the Construction Report (under separate cover).

Stantec Consulting Ltd. prepared this NHA and EIS Addendum for St. Columban Energy LP for the St. Columban Underground Electrical Interconnection Line Project Addendum. St. Columban Energy LP is committed to implementing the appropriate protection and mitigation measures as they apply to the construction and operation of the proposed Project.

Respectfully submitted,
STANTEC CONSULTING LTD



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Terrestrial Ecologist/Natural Heritage
Coordinator



Nicole Kopysh

Project Manager/Terrestrial Ecologist

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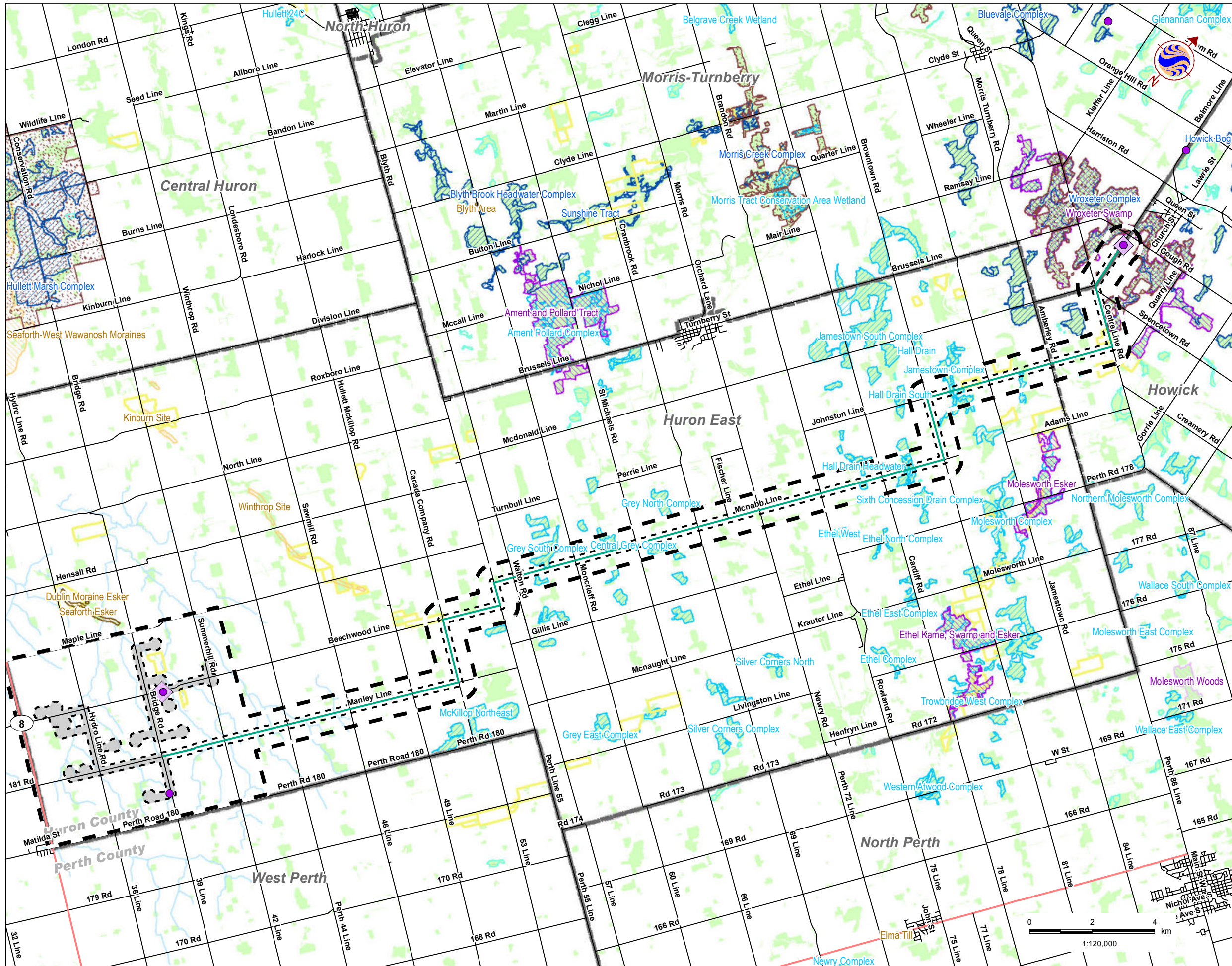
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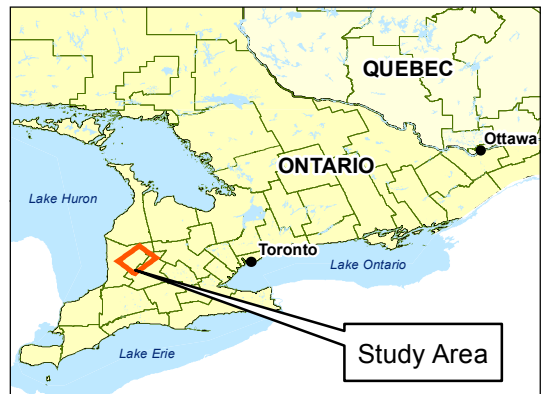
Appendix A

Figures



Legend

- Study Area Addition
- 120m Zone of Investigation
- Previously Assessed in NHA/EIS (Stantec, July 2011)
- Proposed Underground Electrical Interconnection Line
- Unserviced Electrical Control Building
- Point of Connection
- Watercourse
- Waterbody
- Highway
- Road
- Municipal Boundary
- Regional Boundary
- Aggregate Site
- Woodlands
- Winter Deer Yard
- Wetlands**
 - Provincially Significant Wetland
 - Locally Significant Wetland
 - Other Wetland
- ANSIs**
 - Provincially Significant Life Science
 - Regionally Significant Life Science
 - Provincially Significant Earth Science
 - Regionally Significant Earth Science



Notes

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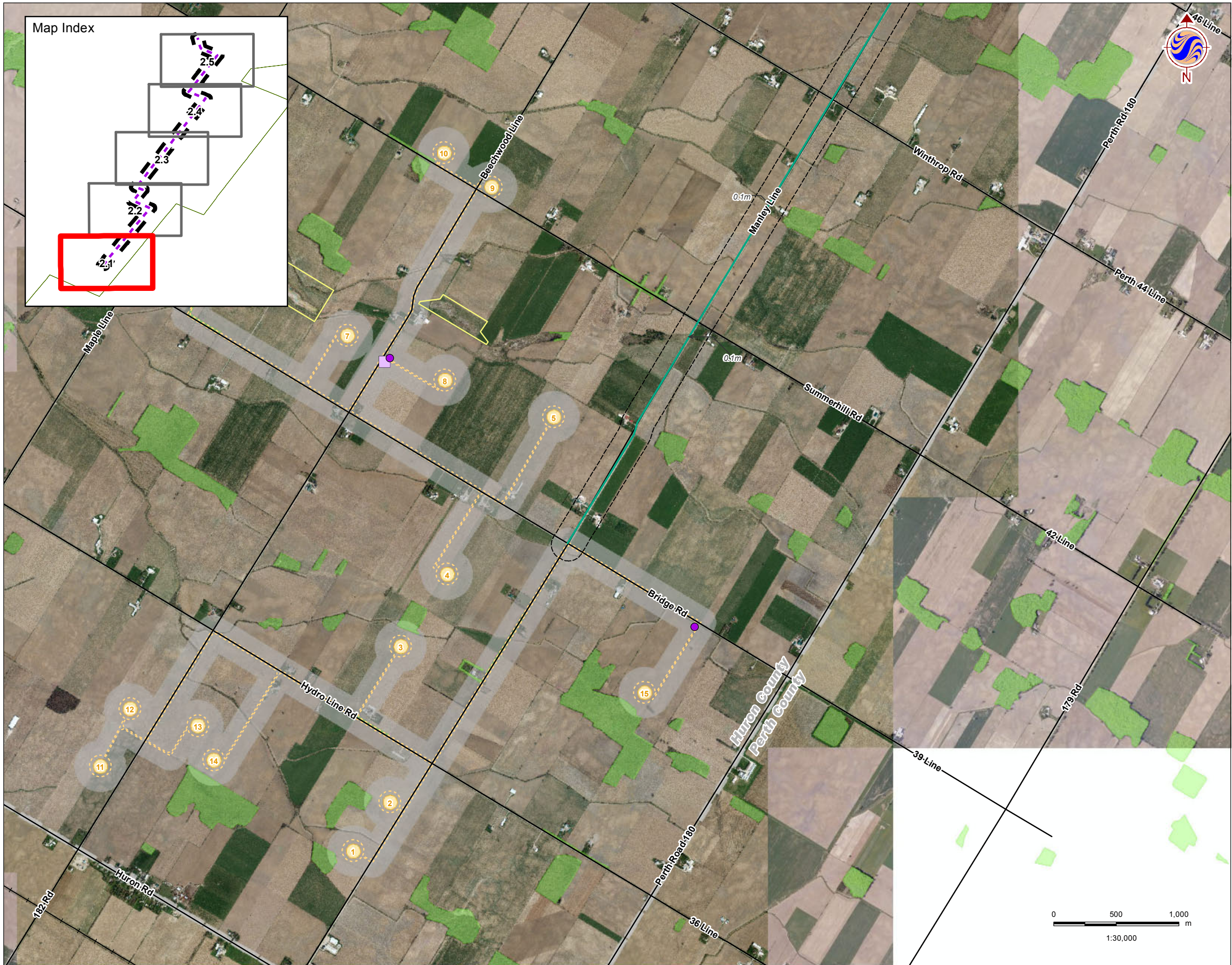
February, 2012
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Client/Project
**ST. COLUMBAN ENERGY LP
ST. COLUMBAN WIND PROJECT**

Figure No.
1.0

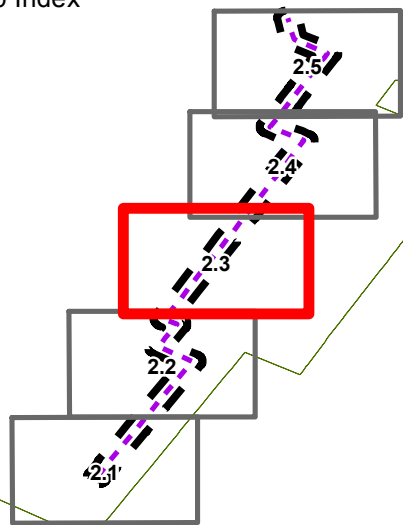
Title

PROJECT LOCATION AND STUDY AREA





Map Index



Legend

- 120m Zone of Investigation
- Previously Assessed in NHA/EIS (Stantec, July 2011)
- Turbine Location
- Unserviced Electrical Control Building
- Point of Connection
- Proposed Underground Electrical Interconnection Line
- Wind Construction Area
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- Railway
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- Regionally Significant Life Science ANSI (MNR, 2011)
- Provincially Significant Wetland (MNR, 2011)
- Locally Significant Wetland (MNR, 2011)
- Other Wetland (MNR, 2011)
- Winter Deer Yard (MNR, 2011)
- Wooded Area (MNR, 2011)

Notes

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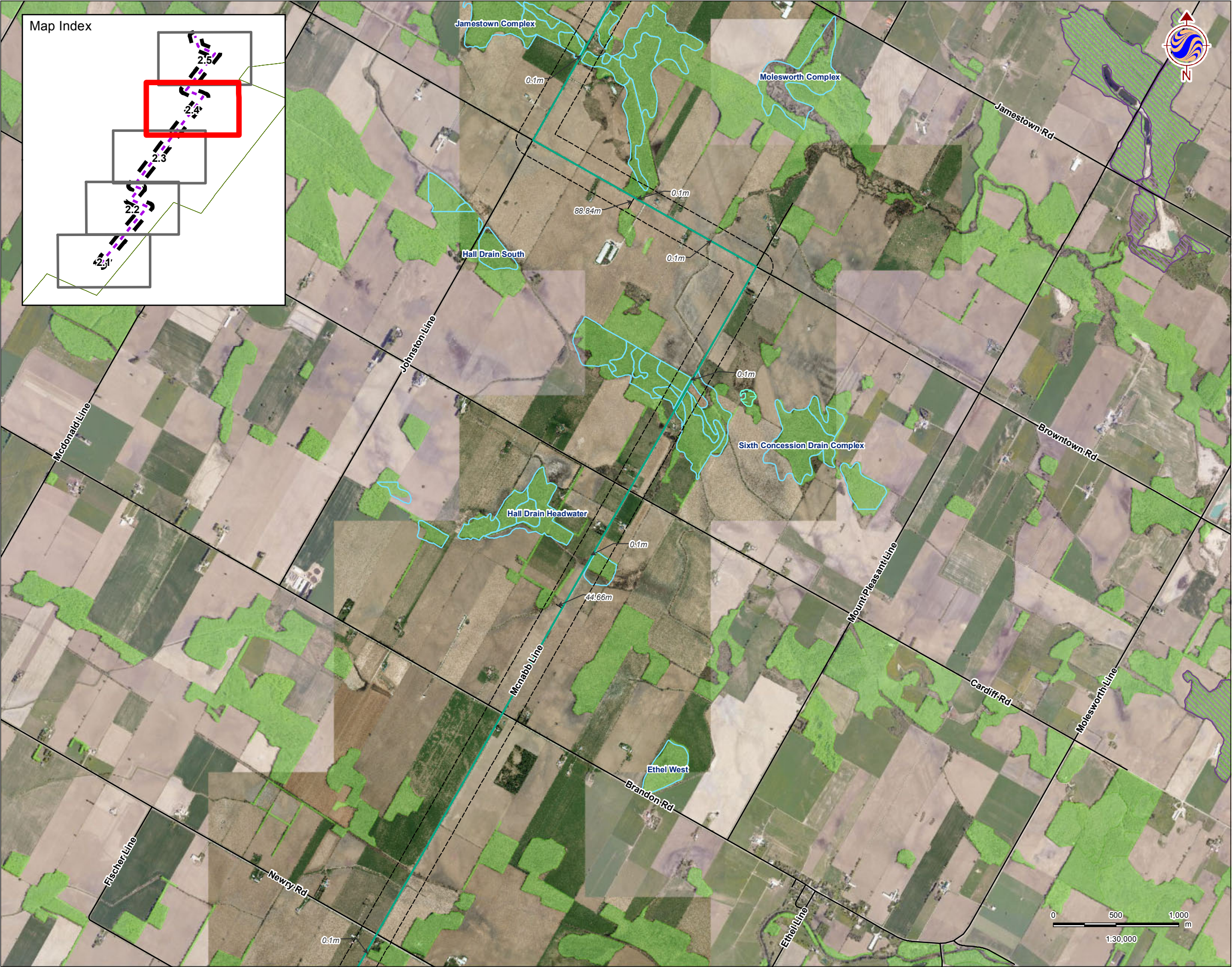
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ST. COLUMBAN WIND PROJECT

Figure No.
2.3

Title
NATURAL FEATURES



Legend

- 120m Zone of Investigation
- Previously Assessed in NHA/EIS (Stantec, July 2011)
- Turbine Location
- Unserviced Electrical Control Building
- Point of Connection
- Proposed Underground Electrical Interconnection Line
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- Regionally Significant Life Science ANSI (MNR, 2011)
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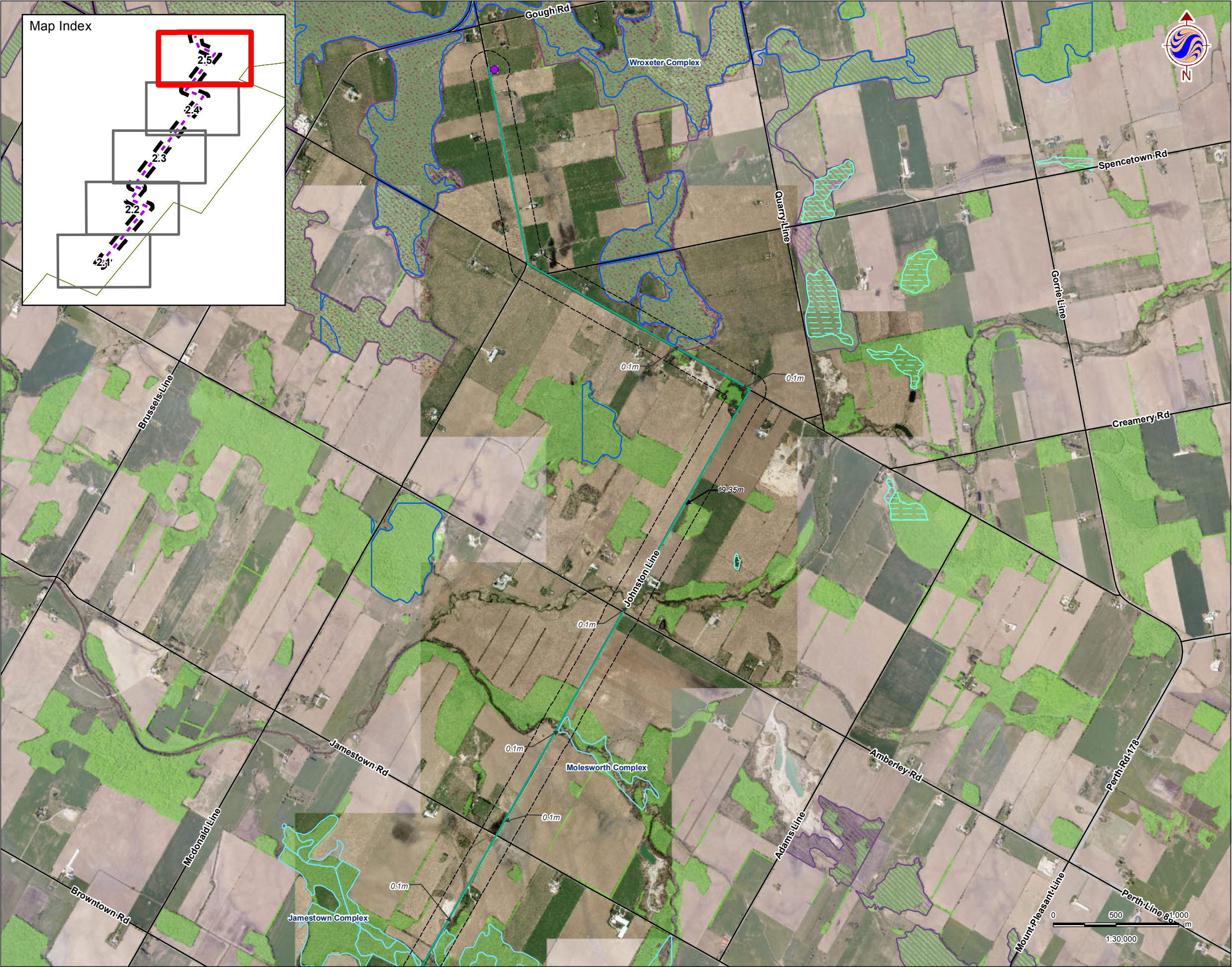
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ST. COLUMBAN WIND PROJECT

Figure No.
2.4

Title
NATURAL FEATURES



Legend

- 120m Zone of Investigation
- Previously Assessed in NHA/EIS (Stantec, July 2011)
- Turbine Location
- Unserved Electrical Control Building
- Point of Connection
- Proposed Underground Electrical Interconnection Line
- Wind Construction Area
- Road
- Railway
- Aggregate Site
- Regionally Significant Life Science ANSI (MNR, 2011)
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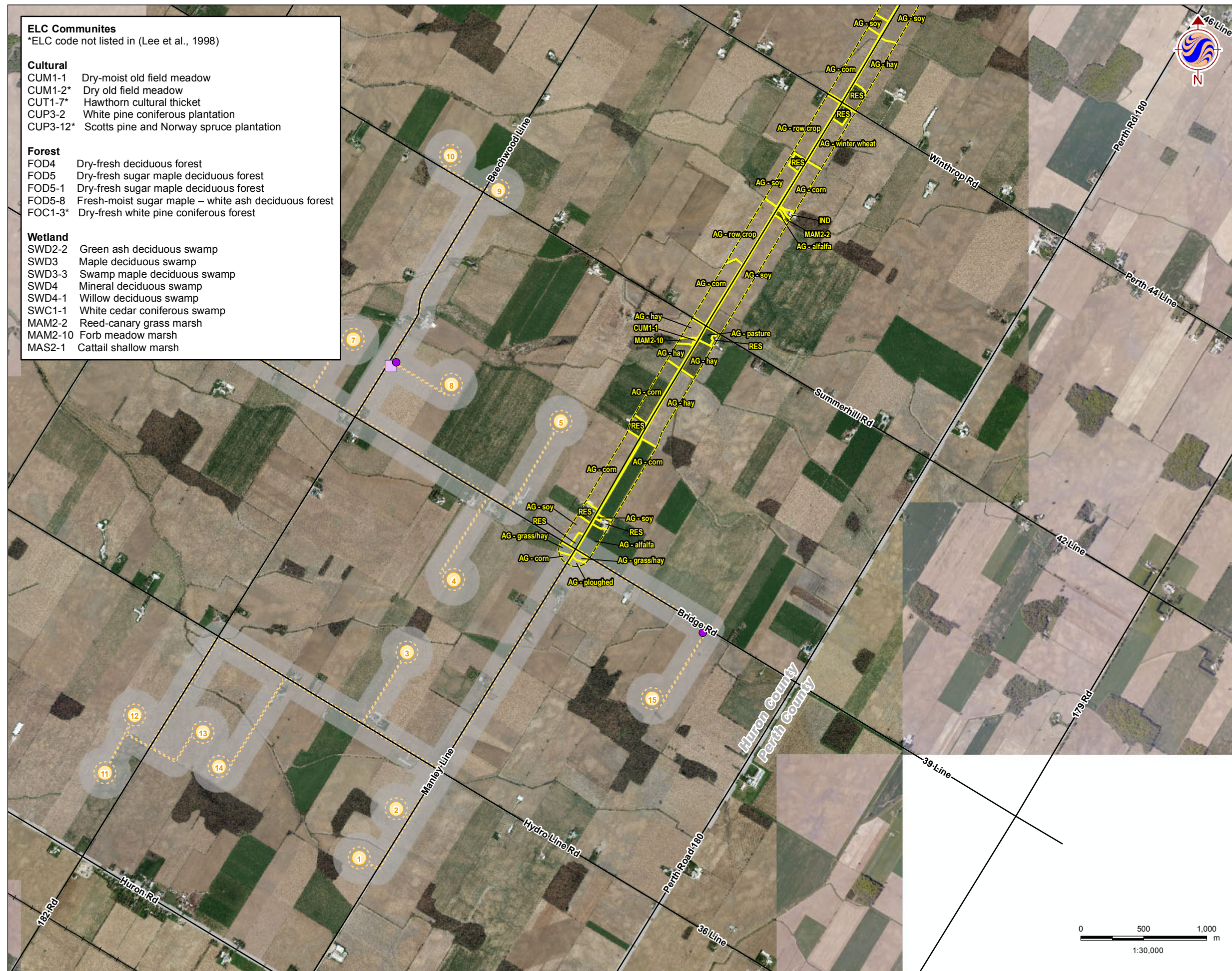
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ST. COLUMBAN ENERGY LP
ST. COLUMBAN WIND PROJECT

Figure No.
2.5

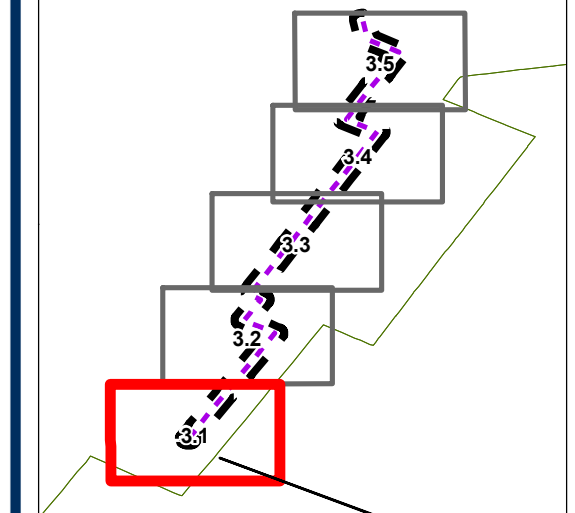
Title
NATURAL FEATURES



Legend

-
- | | |
|--|--|
| | 120m Zone of Investigation |
| | Previously Assessed in NHA/EIS (Stantec, July 2011) |
| | Turbine Location |
| | Unserviced Electrical Control Building |
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| | ELC Community |

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Notes

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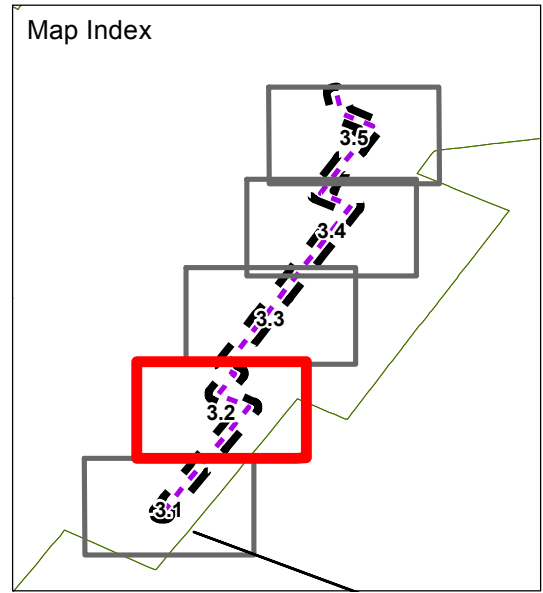
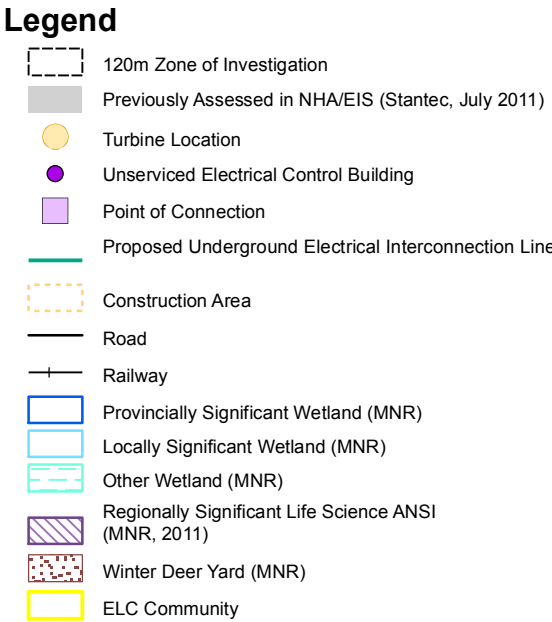
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ST. COLUMBAN ENERGY LP
ST. COLUMBAN WIND PROJECT

Figure No.
3.1

Title

VEGETATION COMMUNITIES

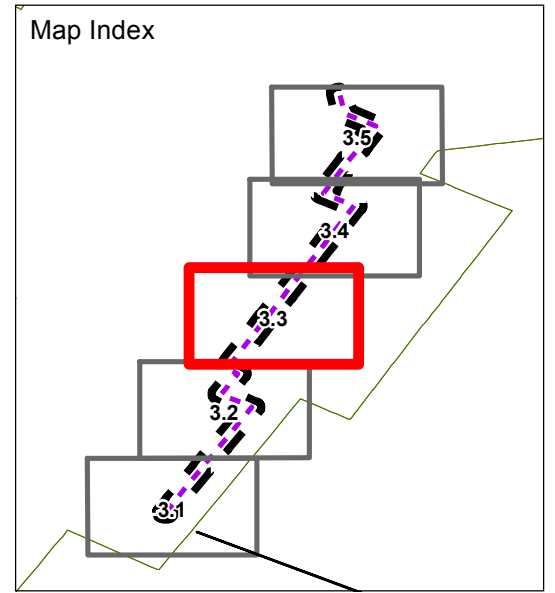
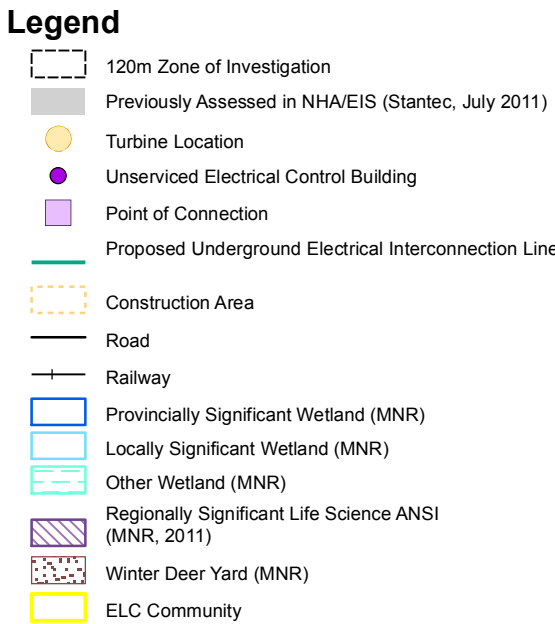


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Figure No.
3.2

Title
VEGETATION COMMUNITIES

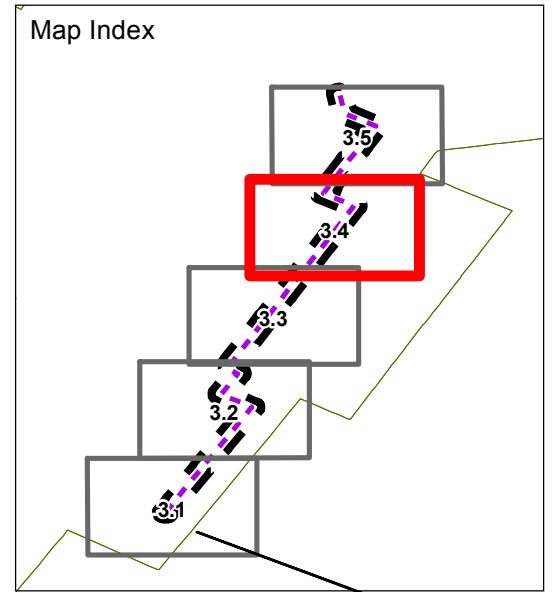
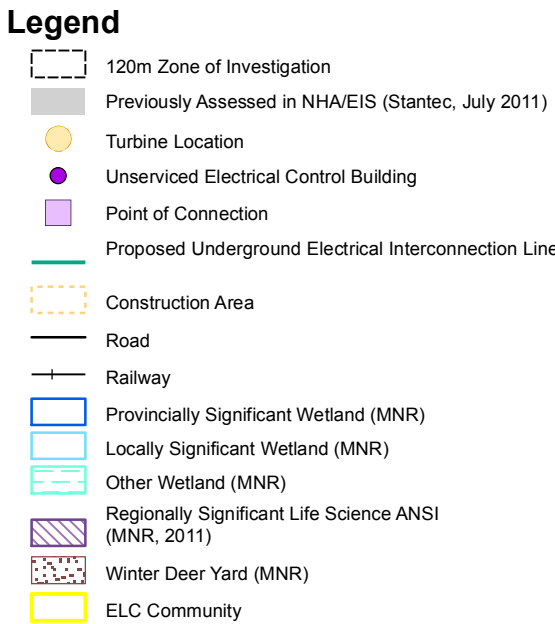


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Figure No.
3.3

Title
VEGETATION COMMUNITIES

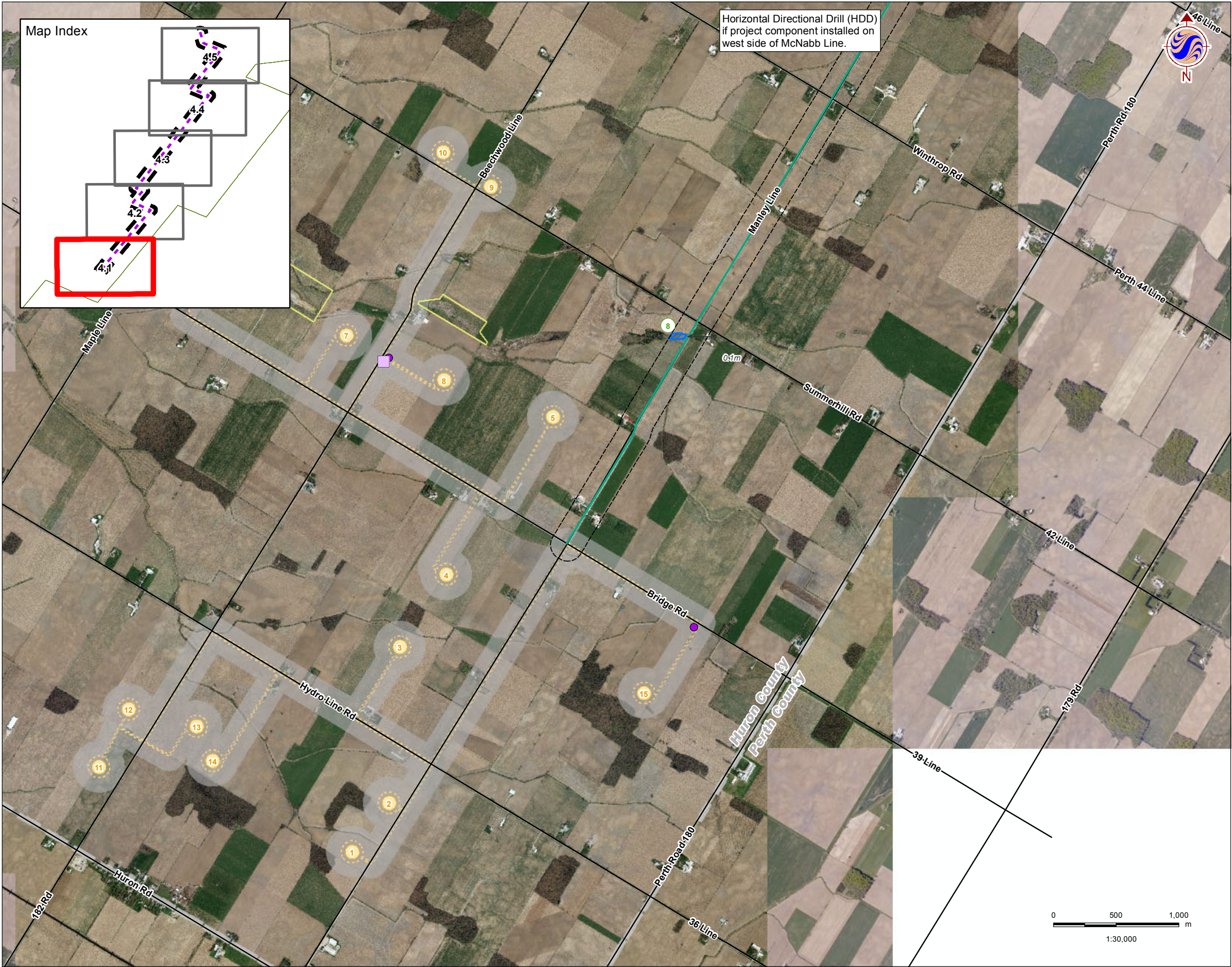


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Figure No.
3.4

Title
VEGETATION COMMUNITIES



Legend

- 120m Zone of Investigation
- Previously Assessed in NHA/EIS (Stantec, July 2011)
- Turbine Location
- Point of Connection
- Unserviced Electrical Control Building
- Proposed Underground Electrical Interconnection Line
- Wind Construction Area
- Road
- Railway
- Provincially Significant Wetland (MNR, 2011)
- Locally Significant Wetland (See Note)
- Wooded Area (MNR, 2011)
- Aggregate Site
- Regionally Significant Life Science ANSI (MNR, 2011)
- Winter Deer Yard (MNR, 2011)
- Significant Natural Features**
- Significant Woodlands and Generalized Candidate Significant Wildlife Habitat (Stantec, 2011)
- Significant Wetlands and Generalized Candidate Significant Wildlife Habitat (Stantec, 2011)
- Winter Deer Yards and Generalized Candidate Significant Wildlife Habitat (Stantec, 2011)
- Significant Natural Feature Number

Notes

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Figure No.
4.1

Title
**SIGNIFICANT NATURAL
FEATURES**



Legend


- 120m Zone of Investigation
- Previously Assessed in NHA/EIS (Stantec, July 2011)
- Turbine Location
- Point of Connection
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Significant Natural Features

- Significant Woodlands and Generalized Candidate Significant Wildlife Habitat (Stantec, 2011)
- Significant Wetlands and Generalized Candidate Significant Wildlife Habitat (Stantec, 2011)
- Winter Deer Yards and Generalized Candidate Significant Wildlife Habitat (Stantec, 2011)
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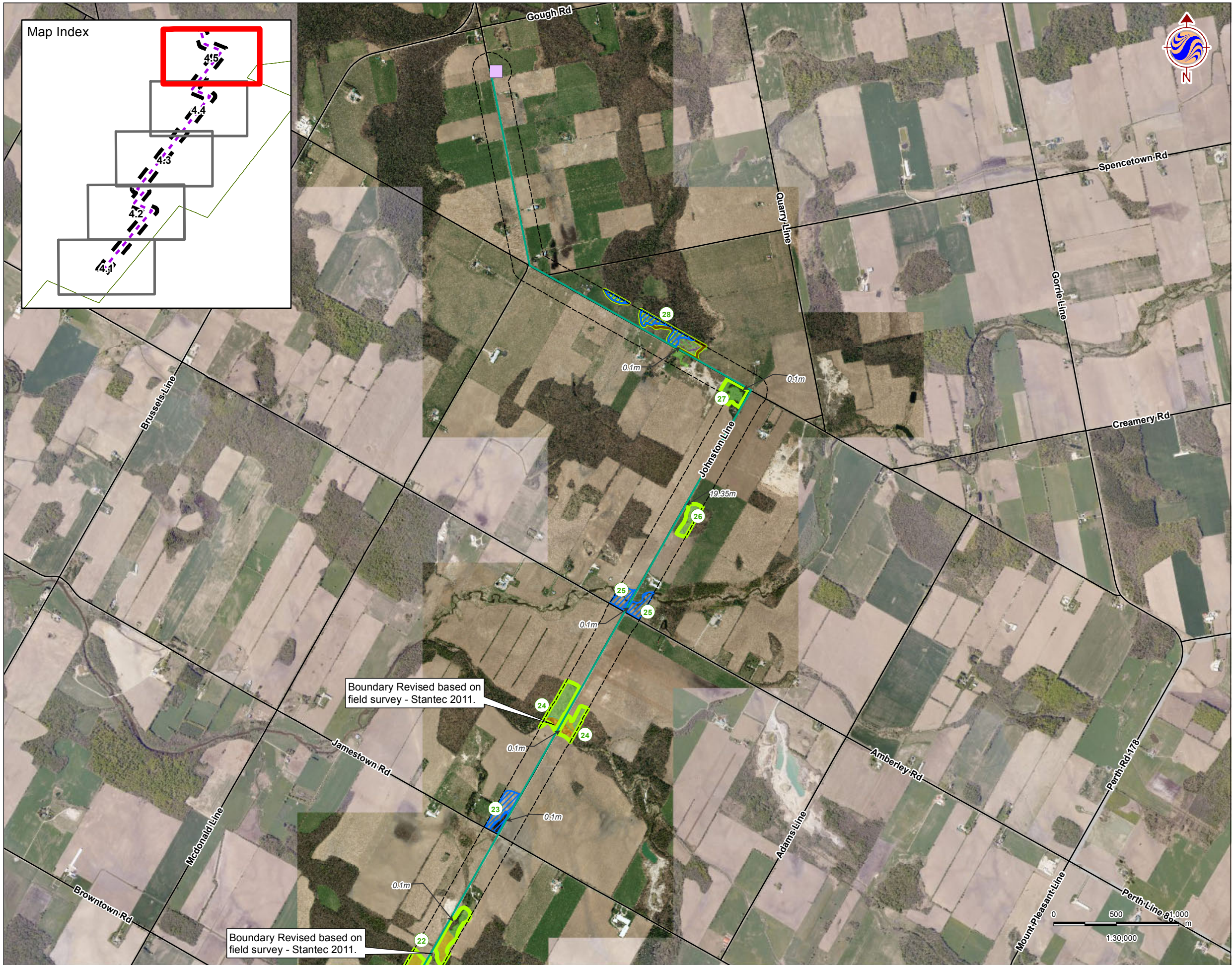

Stantec

February, 2012
160960649

Client/Project
ST. COLUMBAN ENERGY LP
ST. COLUMBAN WIND PROJECT

Figure No.
4.3

Title
SIGNIFICANT NATURAL FEATURES



Legend

- 120m Zone of Investigation
- Previously Assessed in NHA/EIS (Stantec, July 2011)
- Turbine Location
- Point of Connection
- Unserviced Electrical Control Building
- Proposed Underground Electrical Interconnection Line
- Wind Construction Area
- Road
- Railway
- Provincially Significant Wetland (MNR, 2011)
- Locally Significant Wetland (See Note)
- Wooded Area (MNR, 2011)
- Aggregate Site
- Regionally Significant Life Science ANSI (MNR, 2011)
- Winter Deer Yard (MNR, 2011)
- Significant Natural Features**
- Significant Woodlands and Generalized Candidate Significant Wildlife Habitat (Stantec, 2011)
- Significant Wetlands and Generalized Candidate Significant Wildlife Habitat (Stantec, 2011)
- Winter Deer Yards and Generalized Candidate Significant Wildlife Habitat (Stantec, 2011)
- Significant Natural Feature Number

Notes

- Coordinate System: UTM NAD 83 - Zone 17 (N).
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Figure No.
4.5

Title
**SIGNIFICANT NATURAL
FEATURES**

Appendix B

Tables

Table 2.1 Agencies Contacted, Records Requested and Records Received

Information Source and Contact Information	Records Requested	Records Received
Source: Ministry of Natural Resources Amy Cameron, A/Renewable Energy Field Advisor, Renewable Energy Operations Team Date(s) contacted: November 1, 2011	Natural heritage features, rare species and species at risk within the amended Project Study Area (transmission line addition)	NHA Records Review including Wetlands, ANSIs, Valleylands, Seasonal Concentration Areas, Animal Movement Corridors, Specialized Habitats and Species of Conservation Concern
Source: Maitland Valley Conservation Authority Date(s) contacted: January 20, 2012 and February 2, 2012	Natural heritage features, rare species and species at risk within the amended Project Study Area (transmission line addition)	No response to date (February 3, 2012)

Table 2.2: Records Review – Potential Species of Conservation Concern

Common Name	Scientific Name	SRANK	Provincial Status (COSSARO)	National Status (COSEWIC)	Source	Species Requirements/Limiting Factors	Results of Site Investigation
Vegetation							
Harbinger-of-spring	<i>Erigenia bulbosa</i>	S3?			NHIC (2011), MNR (2011)	This species is found in rich, shaded woods at or near the base of slopes or among alluvial soils at the base of slopes or valleys.	Field investigations did not identify adequate habitat conditions to support this species. Considered absent from the Project Location.
Tuberous Indian-plantain	<i>Arnoglossum plantagineum</i>	S3	Special Concern	Special Concern	MNR (2011)	Found in wet, sandy areas along river banks and wetlands. Restricted to limited occurrences within five shoreline areas of Lake Huron (GRCA, 2004).	Field investigations did not identify adequate habitat conditions to support this species. Considered absent from the Project Location.
Eastern Green-violet	<i>Hybanthus concolor</i>	S2			NHIC (2011), MNR (2011)	This species is found in moist to mesic deciduous woodlands, woodland slopes and shaded damp ravines, particularly over calcareous rock close to the ground.	Field investigations did not identify adequate habitat conditions to support this species. Considered absent from the Project Location.
Green Dragon	<i>Arisaema dracontium</i>	S3	Special Concern	Special Concern	NHIC (2011), MNR (2011)	Flowering late spring. Mesic to wet deciduous woods, thickets, and bottomlands (Flora of North America, 2008).	<i>Species is considered extirpated (NHIC, 2011).</i> Considered absent from the Project Location.
Hill's Pondweed	<i>Potamogeton hillii</i>	S2	Special Concern	Special Concern	MNR (2011)	Occurs in cold, clear, slow moving streams, ditches and ponds with muddy substrates. It is typically found in calcareous areas with dolomite limestone (COSEWIC 2005).	Field investigations did not identify adequate habitat conditions to support this species. Considered absent from the Project Location.
Butterflies							
West Virginia White	<i>Pieris virginiensis</i>	S3	Special Concern		MNR (2011)	West Virginia White butterfly are found in moist habitats, The only known food plants are toothworts, which generally occupy moister areas of good quality, mesic, sugar maple-dominated deciduous woodlands. These food plants are not expected to be found in wetland, cultural meadow or hedgerow habitat.	Field investigations did not identify adequate habitat conditions or the sole food source to support this species. Considered absent from the Project Location.
Monarch Butterfly	<i>Danaus plexippus</i>	S4B, S2N	Special Concern	Special Concern	Environment Canada; MNR (2011)	Much of the concern regarding the status of the eastern populations of monarchs is a result of the loss of habitat in their Mexican wintering grounds. In southern Ontario the Monarch is considered common and exists primarily wherever milkweed and wildflowers exist. This includes abandoned farmland, along roadsides, and other open spaces where these plants grow.	Site investigations confirmed that the habitat requirements to support significant populations of Monarch (old-field habitats with abundant milkweed plants within 5km of a Great Lakes shoreline) did not occur within the Project Study Area. Considered absent from the Project Location.
Reptiles							
Snapping Turtle	<i>Chelydra serpentina</i>	S3	Special Concern	Special Concern	MNR (2011)	Occurs in a variety of wetlands with standing	Considered generalized candidate significant

Table 2.2: Records Review – Potential Species of Conservation Concern

Common Name	Scientific Name	SRANK	Provincial Status (COSSARO)	National Status (COSEWIC)	Source	Species Requirements/Limiting Factors	Results of Site Investigation
						water, often preferring habitat with dense vegetation. The Snapping Turtle usually occurs in large wetland or bodies of water, but can sometimes be encountered in small ponds or creeks. Nesting occurs in loose soils in the proximity of wetlands.	wildlife habitat within 120m of the underground transmission line. Based on records review and site investigations, potential habitat is present within 120m of the underground transmission line. General construction mitigation measures are required for this species and its habitat (Table 5.1).
Eastern Ribbon Snake	<i>Thamnophis sauritus</i>	S3	Special Concern	Special Concern	MNR (2011)	Semi-aquatic and will utilize a variety of habitats, but rarely ventures far from streams, ponds, bogs, or swamps (Conant and Collins, 1998). This species may hibernate in mammal burrows, ant mounds, underground and occasionally underwater. (COSEWIC 2002).	Habitat for this species must be associated with a hibernacula feature. Therefore, this type of feature is considered generalized candidate significant wildlife habitat. Based on records review and site investigations, potential habitat is present within 120m of the underground transmission line. General construction mitigation measures are required for this species and its habitat (Table 5.1).
Eastern Milksnake	<i>Lampropeltis triangulum</i>	S3	Special Concern	Special Concern	Environment Canada; MNR (2011)	In Ontario, Eastern Milksnake is more common in heavily forested areas (COSEWIC, 2002b). Utilize a variety of habitats, including fields, woodlands, rocky hillsides and valley bottoms (Conant and Collins, 1998). This species is known to utilize human-made structures for hibernation or hibernates underground or in rock crevices. The milksnake lays eggs in abandoned mammal burrows, rotting logs, or sand.	Habitat for this species must be associated with a hibernacula feature. Therefore, this type of feature is considered generalized candidate significant wildlife habitat. Based on records review and site investigations, potential habitat is present within 120m of the underground transmission line. General construction mitigation measures are required for this species and its habitat (Table 5.1).
Birds							
Bald Eagle	<i>Haliaeetus leucocephalus</i>	SN2, S4B	Special Concern		MNR (2011)	The Bald Eagle almost always nests near water, usually on large lakes. Large stick nests are typically placed in trees located within mature woodlots. They usually require 250 ha of mature forest (Sandilands 2005).	No Bald Eagle nests were observed during field investigations. The Project Location does not provide the mature woodland required for Bald Eagle and is not located on a large lake. Considered absent from the Project Location.
Black Tern	<i>Chlidonias niger</i>	S3B	Special Concern		MNR (2011)	Nests semi-colonially in freshwater marshes with emergent vegetation. This species prefers marshes or marsh complexes of more than 20 ha in size for breeding (Dunn and Agro, 1995).	No marshes of suitable size present within 120 m of the Project Location. Considered absent from the Project Location.
Short-eared Owl	<i>Asio flammeus</i>	S2N, S4B	Special Concern	Special Concern – 3	MNR (2011)	In Ontario, Short-eared Owls typically breed in cattail and sedge marshes, adjacent fields,	Field investigations indicate that the Study Area is predominately actively cultivated

Table 2.2: Records Review – Potential Species of Conservation Concern

Common Name	Scientific Name	SRANK	Provincial Status (COSSARO)	National Status (COSEWIC)	Source	Species Requirements/Limiting Factors	Results of Site Investigation
						pastures, old fields, heath bogs and tundra (Cadman, 1994). This species is area sensitive, requiring a minimum of 75 hectares of suitable habitat for breeding (Sandilands, 2010). Short-eared Owls tend to nest away from development, with a minimum distance of 250 metres from buildings (Combs-Beattie, 1993).	agricultural fields (Figures 3.1 – 3.5). No grasslands of sufficient size to support Short-eared Owl were present within 120 m of the underground transmission line Project Location. Considered absent from the Project Location.
Common Nighthawk	<i>Chordeiles minor</i>	S4B	Special Concern		MNR (2011)	In rural areas of southern Ontario the species nests in grasslands, pastures, agricultural fields, gravel pits, prairies, alvars and at airports (Sandilands, 2010).	Presence of Nighthawk is not known from the Study Area. Habitat within 120m of the Project Location is comprised of actively managed agricultural lands subject to regular disturbance. The Project Location does not contain habitat that could be considered candidate significant wildlife habitat for Common Nighthawk. Considered absent from the Project Location.
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	S4B	Special Concern		MNR (2011)	The Red-headed Woodpecker prefers open deciduous woods, fields, pastures, city parks, river edges and roadsides where scattered large trees occur (Cadman et al., 2007). This species shows a preference for dead or dying trees, snags or large dead limbs in more open habitats (Smith et al., 2000).	Though this species was observed during field surveys for the Wind Project Location in 2006, it was not observed in or within the Transmission Line Project Location. Subsequent surveys of the Wind Project Location (in 2008 and 2010) have not identified the presence of RHWO. The Study Area does not contain open habitat that contains large trees with snags or dead limbs. Considered absent from the Project Location.
Yellow-breasted Chat	<i>Icteria virens</i>	S2B	Special Concern	Special Concern	Environment Canada; MNR (2011)	It is not widespread in Ontario, and most records from the province are from the Carolinian region (Eagles, 1987). This species prefers early second-growth forest and shrub in abandoned agricultural fields, fencerows, forest edges and openings, and near streams (Eckerle and Thompson, 2001). In Ontario, it is usually found in shrubby tangles and deciduous thickets (Eagles, 1987).	Shrub/early successional habitat did not occur in or within 120m of the Project Location (Figures 3.1 – 3.5). Considered absent from the Project Location.

Common Name	Scientific Name	SRANK	Provincial Status (COSSARO)	National Status (COSEWIC)	Source	Species Requirements/Limiting Factors	Results of Site Investigation
S2 – Imperiled S3 – Vulnerable S4 – Apparently secure S#B – Breeding Status S#N – Non-breeding Status ? – Rank uncertain							

Table 2.3: Natural Features Identified in, and within 120m, of Underground Electrical Interconnection Line Project Location through Records Review		
Natural Feature	In Project Location	Within 120m of Project Location
Wetlands- Provincially Significant	---	Feature 28
Wetlands- Non-provincially Significant	---	Features 13, 14, 19, 20, 22, 24
Wetlands- Unevaluated	---	---
ANSIs	Feature 28	Feature 28
Valleylands	---	---
Woodlands	---	Features 9, 10, 11, 12, 13, 14, 17, 18, 19, 20, 21, 22, 24, 26, 27, 28, 29, 30
Wildlife Habitat – Winter Deer Yards	---	Feature 28

Table 3.1: St. Columban Wind Project Site Investigation and Evaluation of Significance Record for Underground Electrical Interconnection Line Project Location

Survey Date	Survey Type	Completed By	Time	Weather Conditions*
September 20, 2011	ROADSIDE: Ecological Land Classification and Vegetation Survey, Woodland and Wildlife Habitat Assessment	S. Catton, N. Kopysh	10:30 – 15:00	18°C; wind of 1; 15% cloud cover; no precipitation during survey; none previous day
September 22, 2011	ROADSIDE: Ecological Land Classification and Vegetation Survey, Woodland and Wildlife Habitat Assessment	S. Catton, M. Ross	10:30 – 13:30	19°C; wind of 2; 5% cloud cover; no precipitation during survey; none previous day
October 24, 2011	ROADSIDE: Ecological Land Classification and Vegetation Survey, Woodland and Wildlife Habitat Assessment	S. Catton, N. Kopysh	10:30 – 12:30	14°C; wind of 2; 95% cloud cover; no precipitation during survey; rain previous day
November 8, 18, 24, 25, 29	Wetland Characteristics and Ecological Functions Assessment	J. Leslie	4, 9, 9, 5.5 and 9, respectively	n/a

* Wind conditions expressed using Beaufort Scale:

0 – calm, <2km/hr	2 – light, 7-12 km/hr	4 – moderate, 20-30 km/hr	6 – strong, 41-51 km/hr
1 – light, 2-6 km/hr	3 – moderate, 13-19 km/hr	5 – fresh, 31-40 km/hr	

Table 3.2: Summary of Corrections to Records Review based on Site Investigations

Feature	Records Review	Correction made as a result of site investigation	Report Section Providing Criteria Used in Determination of Correction
Wetlands	One provincially significant wetland (PSW) occurs in or within 120 m of the Project Location Six locally significant wetlands occur in or within 120 m of the Project Location No unevaluated wetlands occur in or within 120 m of the Project Location	No changes made to identification or boundaries of PSW in or within 120 m of the Project Location Boundary changes are required for all six locally significant wetlands within 120 m of the Project Location; these wetlands will maintain LSW designation (pers. corr. MNR, January 2012) (features 13, 14, 19, 20, 22 and 24) <u>Additional wetlands identified:</u> -10 additional wetland communities were observed (Features 8, 10, 11, 12, 15, 18, 21, 23, 25, 31)	3.2.2
ANSIs	One regionally significant Life Science ANSI occurs in or within 120 m of the Project Location. The records review (MNR, Nov. 15, 2011) indicates that the underground electrical interconnection line is in the ANSI.	No changes made to the identification of an ANSI within 120 m of the Project Location. A correction is required to the claim from MNR (Nov. 15, 2011); the underground electrical interconnection line Project Location is <i>not</i> in the ANSI (Figure 2.5, Appendix A).	3.2.3
Valleylands	No valleylands occur in or within 120m of the Project Location	None	3.2.4
Woodlands	Eighteen woodlands were identified within 120m of the Project Location	Nineteen woodlands were identified within 120 m of the Project Location <u>Additional features identified:</u> - one additional woodland community was observed (Feature 16) Features 18 and 28 require boundary corrections based on field investigations. - A hedgerow in feature 18 was removed from consideration as a woodland - Part of the woodland with feature 28 crosses to the south of Centre Line Rd. Field investigations confirmed that this section of the woodland is residential and has been excluded from the feature.	3.2.5
Wildlife Habitat: Seasonal Concentration Areas (all other areas are considered generalized candidate significant wildlife habitat and assumed to be existing within 120 m of underground electrical interconnection line Project Location).	Winter deer yard was identified within 120 m of the Project Location	No changes made to identification or boundaries of winter deer yard in or within 120m of the Project Location	3.2.6

Table 3.3 Distance of Underground Electrical Interconnection Line Project Location to Nearest Point of Natural Feature

Feature #	Distance to Project Component (m)
8	0.1
9	52.36
10	94.35
11	>0.1
12	1.32
13	>0.1
14	2.8
15	>0.1
16	>0.1
17	>0.1
18	49.5
19	>0.1
20	>0.1
21	>0.1
22	>0.1
23	>0.1
24	>0.1
25	>0.1
26	19.32
27	>0.1
28	>0.1
29	>0.1
30	88.84
31	>0.1

Table 3.4: Ecological Land Classification (ELC) Vegetation Types, St. Columban Underground Electrical Interconnection Line Project Location and 120 m Zone of Investigation

ELC TYPE	Community Description
Forest (FO)	
Deciduous Forest (FOD)	
FOD4 Dry-fresh deciduous forest	No access was available to this feature. Roadside assessment only. Ash is abundant to dominant in the canopy with lesser amounts of larch and Manitoba maple.
FOD5 Dry-fresh sugar maple deciduous forest	No access was available to this feature. Roadside assessment only. Sugar maple is abundant in the canopy with ash and trembling aspen associates. This feature is too far back from the roadside to further assess.
FOD5-1 Dry-fresh sugar maple deciduous forest	No access was available to this feature. Roadside assessment only. Sugar maple dominates this community.
FOD5-8 Fresh-moist sugar maple – white ash deciduous forest	No access was available to this feature. Roadside assessment only. The feature is dominated by sugar maple and white ash in the canopy. Rare occurrences of trembling aspen were observed in the canopy.
Coniferous Forest (FOC)	
FOC1-3* Dry-fresh white pine coniferous forest	No access was available to this feature. Roadside assessment only. White pine dominates this community.
Cultural (CU)	
Cultural Meadow (CUM)	
CUM1-1 Dry-moist old field meadow	No access was available to this small feature, so a roadside assessment was performed. The ground cover consists of goldenrods, asters, spotted knapweed, wild carrot, teasel, thistles, awnless Brome and other grasses.
CUM1-2* Dry old field meadow	No access was available to this feature. Roadside assessment only. Foxtail and witch grasses dominate this community.
Cultural Thicket (CUT)	
CUT1-7* Hawthorn cultural thicket	No access was available to this feature. Roadside assessment only. Hawthorns dominate this community.
Cultural Plantation (CUP)	
CUP3-2 White pine coniferous plantation	No access was available to this feature. Roadside assessment only. White pine dominates this community.
CUP3-12* Scotts pine and Norway spruce plantation	No access was available to this feature. Roadside assessment only. Scotts pine and Norway spruce make up the dominant canopy cover. Rare amounts of trembling aspen are identified near the edge. There is no understory or ground cover in this community.
Swamp (SW)	
Deciduous Swamp (SWD)	
SWD2-2 Green ash deciduous swamp	No access was available to this feature. Roadside assessment only. Green ash dominates this community. Occasional occurrences of Manitoba maple were observed in the canopy and understory. Rare to occasional amounts of white pine and eastern white cedar were observed in the canopy and were more common in the understory.
SWD3 Maple deciduous swamp	No access was available to this feature. Roadside assessment only. Silver and red maples are abundant in the canopy and occasional in the sub-canopy with rare amounts of white oak. Buckthorn is occasional to abundant in the understory with occasional amounts of dogwoods and rare amounts of Balsam fir. Zig-zag goldenrod and asters are occasional to abundant

Table 3.4: Ecological Land Classification (ELC) Vegetation Types, St. Columban Underground Electrical Interconnection Line Project Location and 120 m Zone of Investigation

ELC TYPE	Community Description
	in the remaining ground cover.
SWD3-3 Swamp maple deciduous swamp	No access was available to this feature. Roadside assessment only. This feature consists of a deciduous swamp, dominated by swamp maples with some trembling aspen in the canopy.
SWD4 Mineral deciduous swamp	No access was available to this feature. Roadside assessment only. Abundant amounts of trembling aspen and ash were observed in the canopy with occasional occurrences of swamp maple, willow and Manitoba maple.
SWD4-1 Willow deciduous swamp	No access was available to this feature. Roadside assessment only. The canopy of this floodplain community consists of willow and Manitoba maple. Buckthorn and dogwoods were observed in the understory.
Mixed Swamp (SWM)	
SWM2-2 Swamp maple – conifer mixed swamp	No access was available to this feature. Roadside assessment only. Swamp maple and eastern white cedar dominate this community.
Coniferous Swamp (SWC)	
SWC1-1 White cedar coniferous swamp	No access was available to this feature. Roadside assessment only. Eastern white cedar dominates this community.
Meadow Marsh (MAM)	
MAM2-2 Reed-canary grass marsh	No access was available to this feature. Roadside assessment only. Reed-canary grasses dominate this community.
MAM2-10 Forb meadow marsh	No access was available to this feature. Roadside assessment only. A complex of reed-canary grasses, cattails, asters, goldenrods, teasel and other grasses.
Shallow Marsh (MAS)	
MAS2-1 Cattail shallow marsh	No access was available to this feature. Roadside assessment only. Cattails dominate this community.

*ELC code not listed in (Lee et al., 1998)

Table 3.5 Description and Characterizations of Features found within 120 m of the St Columban Underground Electrical Interconnection Line Project Location

Feature #	Identification through Records Review	Feature Type as confirmed during Site Investigation	Feature Size (ha)	ELC Community Type	Description of Type (based on Roadside Assessments only)	Attributes, Characteristics and Functions
8	Not identified	Meadow Wetland	3.88	CUM1-1 MAM2-10	The ground cover consists of goldenrods, asters, spotted knapweed, wild carrot, teasel, thistles, awnless Brome and other grasses.	-no uncommon species composition or structures observed - no large trees or snags observed
9	Woodland (LIO, 2011)	Woodland	2.57	FOD5	Sugar maple is abundant in the canopy with ash and trembling aspen associates. This feature is too far back from the roadside to further assess.	-small, isolated woodland -no uncommon species composition or structure observed - no large trees or snags observed - no tree cavities observed
10	Woodland (LIO, 2011)	Woodland Wetland	20.64	FOD5	Sugar maple is abundant in the canopy with ash and trembling aspen associates. This feature is too far back from the roadside to further assess.	- isolated woodland with wetland complexing - no uncommon species composition or structure observed - no large trees or snags observed - no tree cavities observed
11	Woodland (LIO, 2011) Wetland (LIO, 2011)	Woodland Wetland	22.34	SWD3	Silver and red maples are abundant in the canopy and occasional in the sub-canopy with rare amounts of white oak. Buckthorn is occasional to abundant in the understory with occasional amounts of dogwoods and rare amounts of Balsam fir. Zig-zag goldenrod and asters are occasional to abundant in the remaining ground cover.	- isolated swamp - no uncommon species composition or structure observed - no large trees or snags observed - no tree cavities observed
12	Woodland (LIO, 2011)	Woodland Wetland	2.87	SWD4	Abundant amounts of trembling aspen and ash were observed in the canopy with occasional occurrences of swamp maple, willow and Manitoba maple.	- small, isolated swamp - no uncommon species composition or structure observed - no large trees or snags observed - no tree cavities observed
13	Woodland (LIO, 2011) Wetland (LIO, 2011)	Woodland Wetland	94.55	SWD MAM2-2 SWD3-3	Reed-canary grasses dominate this community. No access was available to this feature. Roadside assessment only. This feature consists of a deciduous swamp, dominated by swamp maples with some trembling aspen in the canopy.	- swamp and marsh complex - no uncommon species composition or structure observed - no large trees or snags observed - no tree cavities observed - locally significant wetland
14	Woodland (LIO, 2011) Wetland (LIO, 2011)	Woodland Wetland	23.58	SWD3-3	This feature consists of a deciduous swamp, dominated by swamp maples with some trembling aspen in the canopy.	- small, isolated swamp - no uncommon species composition or structure observed - no large trees or snags observed - no tree cavities observed - locally significant wetland
15	Not identified	Woodland Wetland	33.2	SWD SWD4	Abundant amounts of trembling aspen and ash were observed in the canopy with occasional occurrences of swamp maple, willow and	- woodland and wetland complex connected to additional natural features through watercourse -no uncommon species composition or structure observed - no large trees or snags observed

Table 3.5 Description and Characterizations of Features found within 120 m of the St Columban Underground Electrical Interconnection Line Project Location

Feature #	Identification through Records Review	Feature Type as confirmed during Site Investigation	Feature Size (ha)	ELC Community Type	Description of Type (based on Roadside Assessments only)	Attributes, Characteristics and Functions
					Manitoba maple.	- no tree cavities observed
16	Not identified	Woodland	3.17	FOD4	Ash is abundant to dominant in the canopy with lesser amounts of larch and Manitoba maple.	Roadside assessment only. Could not assess unique attributes or functions from roadside.
17	Woodland (LIO, 2011)	Woodland	4.43	FOD5-8	The feature is dominated by sugar maple and white ash in the canopy. Rare occurrences of trembling aspen were observed in the canopy.	-small woodland -no uncommon species composition or structure observed - no large trees or snags observed - no tree cavities observed
18	Woodland (LIO, 2011)	Woodland Wetland	2.92	SWC MAM2-2	This feature consists of a coniferous swamp. No access was available to this feature. Roadside assessment only. Reed-canary grasses dominate this community.	-small, isolated woodland and wetland complex -no uncommon species composition or structure observed - no large trees or snags observed - no tree cavities observed
19	Woodland (LIO, 2011) Wetland (LIO, 2011)	Woodland Wetland	27.01	SWD3-3	This feature consists of a deciduous swamp, dominated by swamp maples with some trembling aspen in the canopy.	- woodland and wetland complex connected to additional natural features through watercourse -no uncommon species composition or structure observed - no large trees or snags observed - no tree cavities observed - locally significant wetland
20	Woodland (LIO, 2011) Wetland (LIO, 2011)	Woodland Wetland	67.17	SWD SWM2-2 SWM/SWD SWD3-3 CUM1-2* CUT1-7*	Swamp maple and eastern white cedar dominate this community. No access was available to this feature. Roadside assessment only. This feature consists of a deciduous swamp, dominated by swamp maples with some trembling aspen in the canopy.	- woodland and wetland complex connected to additional natural features through watercourse -no uncommon species composition or structure observed - no large trees or snags observed - no tree cavities observed - locally significant wetland
21	Woodland (LIO, 2011)	Woodland Wetland	2.88	SWD4 MAM/MAS	Abundant amounts of trembling aspen and ash were observed in the canopy with occasional occurrences of swamp maple, willow and Manitoba maple. No access was available to this feature. Roadside assessment only. Cattails dominate this community.	- small woodland and wetland complex connected to additional natural features through watercourse -no uncommon species composition or structure observed - no large trees or snags observed - no tree cavities observed
22	Woodland (LIO, 2011) Wetland (LIO, 2011)	Woodland Wetland	232.61	CUP3-2 SWC1-1 SWD3-3 FOC1-3*	White pine dominates this community. No access was available to this feature. Roadside assessment only. Eastern white cedar dominates this community. No access was available to this feature. Roadside assessment only. This feature consists of a deciduous swamp, dominated by swamp	- woodland, plantation and wetland complex connected to additional natural features -no uncommon species composition or structure observed - no large trees or snags observed - no tree cavities observed - locally significant wetland

Table 3.5 Description and Characterizations of Features found within 120 m of the St Columban Underground Electrical Interconnection Line Project Location

Feature #	Identification through Records Review	Feature Type as confirmed during Site Investigation	Feature Size (ha)	ELC Community Type	Description of Type (based on Roadside Assessments only)	Attributes, Characteristics and Functions
					maples with some trembling aspen in the canopy. No access was available to this feature. Roadside assessment only. White pine dominates this community.	
23	Not identified	Wetland	3.94	MAS2-1 MAM2-2	Cattails dominate this community. No access was available to this feature. Roadside assessment only. Reed-canary grasses dominate this community.	-no uncommon species composition or structures observed - no large trees or snags observed
24	Woodland (LIO, 2011) Wetland (LIO, 2011)	Woodland Wetland	108.48	MAM2-2 FOD5-1 SWD4-1	Reed-canary grasses dominate this community. Sugar maple dominates this community. The canopy of this floodplain community consists of willow and Manitoba maple. Buckthorn and dogwoods were observed in the understory.	- woodland and wetland complex connected to additional natural features -no uncommon species composition or structure observed - no large trees or snags observed - no tree cavities observed - locally significant wetland
25	Not identified	Wetland	54.6	MAM2-2	Reed-canary grasses dominate this community.	- wetland complex connected to additional natural features through watercourse -no uncommon species composition or structure observed - no large trees or snags observed - no tree cavities observed - locally significant wetland
26	Woodland (LIO, 2011)	Woodland	4.57	FOD5-1	Sugar maple dominates this community.	-small woodland -no uncommon species composition or structure observed - no large trees or snags observed - no tree cavities observed
27	Woodland (LIO, 2011)	Woodland	3.23	CUP3-2	White pine dominates this community.	-small cultural plantation -no uncommon species composition or structure observed - no large trees or snags observed - no tree cavities observed
28	Woodland (LIO, 2011) Wetland (LIO, 2011) Winter Deer Yard (LIO, 2011)	Woodland Wetland	177.97	FOD5-8 SWD2-2	The feature is dominated by sugar maple and white ash in the canopy. Rare occurrences of trembling aspen were observed in the canopy.	- woodland and wetland complex connected to additional natural features -no uncommon species composition or structure observed - no large trees or snags observed - no tree cavities observed - provincially significant wetland - regionally significant life science ANSI - winter deer yard
29	Woodland (LIO, 2011)	Woodland	0.59	CUP3-12*	Scotts pine and Norway spruce make up the dominant canopy cover. Rare amounts of trembling aspen are identified near the edge. There is no understory or ground cover in this community.	-small cultural plantation -no uncommon species composition or structure observed - no large trees or snags observed - no tree cavities observed
30	Woodland (LIO, 2011)	Woodland	3.23	FOD5	No access was available to this feature.	-small woodland -no uncommon species composition or structure observed

Table 3.5 Description and Characterizations of Features found within 120 m of the St Columban Underground Electrical Interconnection Line Project Location

Feature #	Identification through Records Review	Feature Type as confirmed during Site Investigation	Feature Size (ha)	ELC Community Type	Description of Type (based on Roadside Assessments only)	Attributes, Characteristics and Functions
					Roadside assessment only. Sugar maple is abundant in the canopy with ash and trembling aspen associates. This feature is too far back from the roadside to further assess.	<ul style="list-style-type: none">- no large trees or snags observed- no tree cavities observed
31	Not identified	Wetland	5.11	MAM2-10	A complex of reed-canary grasses, cattails, asters, goldenrods, teasel and other grasses.	<ul style="list-style-type: none">- small wetland complex connected to additional natural features- no uncommon species composition or structure observed- no large trees or snags observed- no tree cavities observed

Table 3.6 Summary of (General) Candidate Significant Wildlife Habitat found within 120 m of the St Columban Underground Electrical Interconnection Line Project Location

Candidate Significant Wildlife Habitat (CSWH)	Assumed existing within 120m	Rationale (attributes, composition, function)	Carried forward to Evaluation of Significance as GCSWH
Seasonal Concentration Areas			
Moose Late Winter Habitat	No	Does not apply to Project Location; moose habitat does not exist in this part of the province.	No
Colonial Birds - Herons	Yes	Though shorelines of large bodies of water were not identified during aerial photo interpretation or during ELC site investigations, swamps were identified during field investigations.	Yes
Colonial Birds - Terns	No	Does not apply to Project Location; islands or peninsulas associated with open water or marshy areas were not identified during aerial photo interpretation or during ELC site investigations.	No
Colonial Birds - Swallows	Yes	Though cliffs and banks were not identified during aerial photo interpretation or during ELC site investigations, there is potential for areas with exposed soil banks to exist within 120 m of the Project Location. No artificial structures will be impacted or removed.	Yes
Waterfowl Staging - aquatic	No	Does not apply to Project Location; very large wetlands, especially marshes, associated with lakes were not identified during aerial photo interpretation or during ELC site investigations.	No
Waterfowl Staging - terrestrial	No	Does not apply to Project Location; very large wetlands, especially marshes, associated with lakes were not identified during aerial photo interpretation or during ELC site investigations.	No
Waterfowl Nesting	No	Does not apply to Project Location; a high density of small and medium sized ponds or a large, open, diverse wetland associated with a lake were not identified during aerial photo interpretation or during ELC site investigations.	No
Shorebird Staging	No	Does not apply to Project Location; not within 5km of Lake Ontario/Erie shoreline.	No
Landbird Stopover/Staging	No	Does not apply to Project Location; not within 5km of Lake Ontario/Erie shoreline.	No
Raptor Winter Feeding/Roosting	Yes	Hay fields, pastures and open meadows that support large and productive small mammal populations can provide critical winter feeding areas (MNR, 2000). The best roosting sites are typically found in relatively mature mixed or coniferous woodlands that abut windswept fields, with scattered trees and fence posts providing perches for hunting (MNR, 2000). These areas were identified during ELC site investigations.	Yes
Reptile Hibernacula	Yes	Habitat for this species must be associated with a hibernacula feature. Therefore, this type of feature is considered generalized candidate significant wildlife habitat. Based on records review and site investigations, potential habitat is present within 120m of the underground transmission line.	Yes
Bat Hibernacula	No	Does not apply to Project Location; features such as caves or abandoned mines and areas of karst topography or exposed bedrock were not identified during records review or during ELC site investigations.	No

Candidate Significant Wildlife Habitat (CSWH)	Assumed existing within 120m	Rationale (attributes, composition, function)	Carried forward to Evaluation of Significance as GCSWH
Bat Maternity colonies	Yes	Deciduous and mixed forests >10 ha were identified during ELC field investigations; there is potential for decaying snags (decay class 1 or 2) to be present within these communities. No anthropogenic structures will be removed for the Project.	Yes
Butterfly Stopover Habitat	No	Does not apply to Project Location; not within 5km of Lake Ontario shoreline.	No
Rare Vegetation Communities			
Alvar	No	Does not apply to Project Location; not identified in records review nor during ELC site investigations.	No
Prairie	No	Does not apply to Project Location; not identified in records review nor during ELC site investigations.	No
Savannah	No	Does not apply to Project Location; not identified in records review nor during ELC site investigations.	No
Rare Forest Types	No	Does not apply to Project Location; not identified in records review nor during ELC site investigations.	No
Cliff/Talus	No	Does not apply to Project Location; not identified in records review nor during ELC site investigations.	No
Rock Barrens	No	Does not apply to Project Location; not identified in records review nor during ELC site investigations.	No
Sand Barrens	No	Does not apply to Project Location; not identified in records review nor during ELC site investigations.	No
Great Lake Dunes	No	Does not apply to Project Location; not identified in records review nor during ELC site investigations.	No
Specialized Habitats for Wildlife			
Interior Forest Breeding Birds	Yes	Woodlands of at least 30 ha and contain interior forest habitat (200 m from woodland edge) are considered to have the potential to host populations of area-sensitive species. Though there are some features that are greater than 30 ha, there are only 4 features that meet both the size and interior forest criteria to be considered GCSWH: features 13, 20, 22 and 28 meet these criteria.	Yes
Open Country Breeding Birds	Yes	Grasslands of at least 30 ha are considered to have the potential to host populations of area-sensitive species. Agricultural habitat is found in the Project Location that could support grassland breeding bird species. Areas that are actively managed for agricultural activities are considered disturbed systems and are not considered candidates for significant wildlife habitat (MNR personal communication, January 26, 2011). Open country habitat contained in and within 120 m of the Project Location is restricted to actively hayed fields and grazed pasture.	Yes
Old-growth Forest	No	Does not apply to Project Location; not identified in records review nor during ELC site investigations.	No
Mast Areas	No	Does not apply to Project Location; not within the Great Lakes-St. Lawrence Forest Region.	No

Candidate Significant Wildlife Habitat (CSWH)	Assumed existing within 120m	Rationale (attributes, composition, function)	Carried forward to Evaluation of Significance as GCSWH
Amphibian Woodland Breeding	Yes	Woodland ponds may provide important habitat for local amphibian populations. Ponds that contain a variety of vegetation structures in and around the edge of the pond, are undisturbed and are found adjacent to closed canopy woodlands with dense undergrowth that maintain a damp environment typically provide the best ponds for breeding (MNR, 2000). These habitats may be found in the identified swamp communities.	Yes
Turtle Nesting	No	Does not apply to Project Location; sandy or fine gravel soils are a requirement for turtle nesting (SWHTG, 2000). Areas that would be considered candidate significant wildlife habitat for turtle nesting include areas containing sandy or fine gravel soils (i.e. shoreline beaches) adjacent to turtle habitat (weedy wetlands, lake or river shorelines). These areas were not identified in the records review, during aerial photo interpretation, nor during ELC site investigations. Roads are not considered candidate significant wildlife habitat for turtle nesting and were excluded from field investigations.	No
Specialized Raptor Nesting – Bald Eagle Nesting	No	Does not apply to Project Location; there are no known Bald Eagle nests within the Study Area (LIO, 2011; Cadman et al., 2007). Bald Eagle nests are found primarily along the Great Lakes shorelines in Ontario.	No
Specialized Raptor Nesting – Osprey Nesting	No	Does not apply to Project Location; there are no known Osprey nests within the Study Area (LIO, 2011; Cadman et al., 2007).	No
Moose Calving	No	Does not apply to Project Location; no moose habitat in this part of the province.	No
Moose Aquatic Feeding	No	Does not apply to Project Location; no moose habitat in this part of the province.	No
Mineral Licks	No	Does not apply to Project Location; no moose habitat in this part of the province.	No
Denning Sites	No	Does not apply to Project Location; marten, otter and fisher are found on the Canadian Shield and their range does not extend to within the Study Area (Dobbyn, 1994). Mink are found throughout southern Ontario and prefer natural undisturbed shorelines dominated by coniferous or mixed forests for feeding and denning (MNR, 2000). Mink are dependent on the presence of aquatic components such as lakes, ponds or rivers. These areas were not identified in the records review, during aerial photo interpretation, nor during ELC site investigations.	No
Seeps and Springs	Yes	This type of habitat has potential to exist within 120m of the Project Location.	Yes
Marsh Breeding Birds	No	Wetlands to support this type of habitat are typically productive and fairly rare in Southern Ontario. Wetland habitats should include presence of shallow water with emergent aquatic vegetation. These areas were not identified in the records review, during aerial photo interpretation, nor during ELC site investigations.	No
Amphibian Breeding Wetlands	Yes	Wetlands supporting high species diversity that contain shrubs and logs to support species with calling, foraging, escape and concealment. Based on the records review and field investigations, this type of habitat has potential to exist within 120m of the Project Location.	Yes
Species of Conservation Concern			

Candidate Significant Wildlife Habitat (CSWH)	Assumed existing within 120m	Rationale (attributes, composition, function)	Carried forward to Evaluation of Significance as GCSWH
ESA Special Concern and Provincially rare – Plant Species	Yes	See Appendix B Table 2.2 for a list of Candidate Species of Conservation Concern.	Yes
ESA Special Concern and Provincially rare – Other Species			
Declining Bird Guilds – Shrubland Birds			
Animal Movement Corridors			
Deer Migration Corridors	No	Deer corridors that lead to a deer wintering yard should be contiguous and unbroken by roads and residential areas. Corridors would typically follow riparian areas, woodlots, ravines or ridges. A deer yard was confirmed at the north end of the line (feature 28). According to MNR, these corridors will exist with relation to the deer yard; however, based on the Study Area in relation to the deer yard, and the fact that the impacts would involve an underground transmission line within the municipal road right-of-way, it is highly unlikely that this habitat exists within 120m of the Project Location.	No
Amphibian Corridors	Yes	These areas are important for amphibians to travel from their terrestrial habitat to their breeding habitat. Based on the records review and field investigations, this type of habitat has potential to exist within 120m of the Project Location.	Yes

Table 4.1 - Wetland Characteristics and Ecological Functions Assessment, St. Columban Electrical Interconnection Line Project Location Addendum

Feature #	Size (ha)	Wetland Type	Site Type	Vegetation Communities	Proximity to other wetlands (approximate)	Interspersion (estimate)	Flood Attenuation	Open Water Types	Water Quality Improvement (short term)	Water Quality Improvement (long term nutrient trap)	Water Quality Improvement (groundwater discharge)	Shoreline Erosion	Groundwater Recharge	Summary of Hydrology	Rare Species	Significant Features	Fish Habitat
8	0.9	Marsh	Palustrine	gc, ne	700m	25	Midreach; 602 hectare catchment area	Type 1	No evident inflow, intermittent outflow; over 50% agricultural landscape; high proportion of live herbs.	Marsh with <50% coverage of organic soil	No evidence of discharge observed	Not applicable	Palustrine feature with predominantly clay loam soil	Palustrine marsh on clay loam soils with no inflow. Situated in a predominantly agricultural watershed. Data based on surveys, air photo interpretation, and soil mapping*	None known to be present	None known to be present	Absent
10	7.4	Swamp	Riverine	h,ts, gc	120m	73	Headwater; 189 hectare catchment area	Type 1	Permanent inflow and outflow; over 50% agricultural landscape; high proportion of live trees.	Swamp with <50% coverage of organic soil	No evidence of discharge observed	Presence of tree and shrub shoreline species	Riverine feature with predominantly clay loam soil	Riverine swamp on clay loam soils with permanent inflow and outflow. The presence of the man-made drainage feature is the basis for riverine classification. Situated in a predominantly agricultural watershed. Data based on surveys, air photo interpretation, and soil mapping*	None known to be present	None known to be present	Present
11	19.3	Swamp	Palustrine	h,ts, gc	175m	60	Headwater; 120 hectare catchment area	Type 1	No evident inflow, intermittent outflow; over 50% agricultural landscape; high proportion of live trees.	Swamp with <50% coverage of organic soil	No evidence of discharge observed	Not applicable	Palustrine feature with predominantly clay loam soil	Palustrine swamp on clay loam soils with no inflow and intermittent outflow. Situated in a predominantly agricultural watershed. Data based on surveys, air photo interpretation, and soil mapping*	None known to be present	None known to be present	Absent
12	2.9	Swamp	Palustrine	h,ts, gc	300m	40	Headwater; 27 hectare catchment area	Type 1	No evident inflow, intermittent outflow; over 50% agricultural landscape; high proportion of live trees.	Swamp with <50% coverage of organic soil	No evidence of discharge observed	Not applicable	Palustrine feature with predominantly loam soil	Palustrine swamp on loam soils with no inflow and intermittent outflow. Situated in a predominantly agricultural watershed. Data based on surveys, air photo interpretation, and soil mapping*	None known to be present	None known to be present	Absent

Table 4.1 - Wetland Characteristics and Ecological Functions Assessment, St. Columban Electrical Interconnection Line Project Location Addendum

Feature #	Size (ha)	Wetland Type	Site Type	Vegetation Communities	Proximity to other wetlands (approximate)	Interspersion (estimate)	Flood Attenuation	Open Water Types	Water Quality Improvement (short term)	Water Quality Improvement (long term nutrient trap)	Water Quality Improvement (groundwater discharge)	Shoreline Erosion	Groundwater Recharge	Summary of Hydrology	Rare Species	Significant Features	Fish Habitat
15	26.3	Swamp	Riverine	h, ts, gc, ne	480m	60	River-mouth; 42477 hectare catchment area	Type 2	Permanent inflow and outflow; over 50% agricultural landscape; high proportion of live trees.	Swamp with <50% coverage of organic soil	No evidence of discharge observed	Presence of tree and shrub shoreline species	Riverine feature with predominantly alluvial soil	Riverine swamp on alluvial soils with permanent inflow and outflow. Situated in a predominantly agricultural watershed. Data based on surveys, air photo interpretation, and soil mapping*	None known to be present	None known to be present	Present
18	2.9	Swamp	Palustrine	c, h, gc, ne	225m	34	Headwater; 109 hectare catchment area	Type 1	Intermittent inflow and outflow; over 50% agricultural landscape; high proportion of live herbs.	Swamp with <50% coverage of organic soil	No evidence of discharge observed	Not applicable	Palustrine feature with predominantly loam soil	Palustrine swamp on loam soils with intermittent inflow and outflow. Situated in a predominantly agricultural watershed. Data based on surveys, air photo interpretation, and soil mapping*	None known to be present	None known to be present	Not known to be present
21	3.2	Swamp	Riverine	h, gc, ts	175m	40	River-mouth; 1148 hectare catchment area	Type 1	Permanent inflow and outflow; over 50% agricultural landscape; high proportion of live trees.	Swamp with <50% coverage of organic soil	No evidence of discharge observed	Presence of tree shoreline species	Riverine feature with predominantly loam soil	Riverine swamp on loam soils with permanent inflow and outflow. Situated in a predominantly agricultural watershed. Data based on surveys, air photo interpretation, and soil mapping*	None known to be present	None known to be present	Present
23	3.9	Marsh	Palustrine	gc, ne, re	215m	35	Headwater; 102 hectare catchment area	Type 1	No evident inflow, intermittent outflow; over 50% agricultural landscape; high proportion of live herbs.	Marsh with <50% coverage of organic soil	No evidence of discharge observed	Not applicable	Palustrine feature with predominantly loam soil	Palustrine marsh on loam soils with no inflow and intermittent outflow. Situated in a predominantly agricultural watershed. Data based on surveys, air photo interpretation, and soil mapping*	None known to be present	None known to be present	Absent

Table 4.1 - Wetland Characteristics and Ecological Functions Assessment, St. Columban Electrical Interconnection Line Project Location Addendum

Feature #	Size (ha)	Wetland Type	Site Type	Vegetation Communities	Proximity to other wetlands (approximate)	Interspersion (estimate)	Flood Attenuation	Open Water Types	Water Quality Improvement (short term)	Water Quality Improvement (long term nutrient trap)	Water Quality Improvement (groundwater discharge)	Shoreline Erosion	Groundwater Recharge	Summary of Hydrology	Rare Species	Significant Features	Fish Habitat
25a	14.3	Marsh	Riverine	ne, gc	20m	75	River-mouth; 14580 hectare catchment area	Type 2	Permanent inflow and outflow; over 50% agricultural landscape; high proportion of live herbs.	Marsh with <50% coverage of organic soil	Seeps observed	Presence of emergent shoreline species	Riverine feature with predominantly alluvial soil	Riverine marsh on alluvial soils with permanent inflow and outflow. Situated in a predominantly agricultural watershed. Data based on surveys, air photo interpretation, and soil mapping*	Villosa iris (not observed)	None known to be present	Present
25b	5.3	Marsh	Riverine	ne, gc	20m			Type 2	Permanent inflow and outflow; over 50% agricultural landscape; high proportion of live herbs.	Marsh with <50% coverage of organic soil	Seeps observed	Presence of emergent shoreline species	Riverine feature with predominantly alluvial soil	Riverine marsh on alluvial soils with permanent inflow and outflow. Situated in a predominantly agricultural watershed. Data based on surveys, air photo interpretation, and soil mapping*	Villosa iris (not observed)	None known to be present	Present
31	0.5	Marsh	Riverine	gc, ne	350m	34	Headwater; 598 hectare catchment area	Type 1	Permanent inflow and outflow; over 50% agricultural landscape; high proportion of live herbs.	Marsh with <50% coverage of organic soil	No evidence of discharge observed	Presence of emergent shoreline species	Riverine feature with predominantly clay loam soil	Riverine marsh on clay loam soils with permanent inflow and outflow. The presence of the man-made drainage feature is the basis for riverine classification. Situated in a predominantly agricultural watershed. Data based on surveys, air photo interpretation, and soil mapping*	None known to be present	None known to be present	Present

Table 4.2: Assessment of Significance for Woodlands found within 120 m of the St Columban Underground Electrical Interconnection Line Project Location

				Ecological Functions Criteria						
Natural Feature Number	Size (Ha)	ELC Type(s) within 120m of Project Location	Woodland Size Criteria	Woodland Interior	Proximity to other Significant Woodlands or Habitats ¹	Linkages ²	Water Protection ³	Woodland Diversity Representation ⁴	Uncommon Characteristics Criteria ⁵	Woodland is Considered Significant (meets at least 1 criteria)
16	3.2	FOD4	No	No	No	No	No	No	unknown	Yes (conservative estimation)

1- located within 30m of an identified significant feature or fish habitat *and* the woodland is 20 ha or larger

2- located between two other significant features each of which is within 120 m *and* the woodland is 20 ha or larger

3- located within 50m of a sensitive hydrological feature (i.e. fish habitat, groundwater discharge, headwater area) and the woodland is 2 ha or larger

4- has an area dominated by native natural occurring woodland species *and* the woodland is 20 ha or larger

5- has uncommon species composition, cover type, age or structure or are older than 100 years old *and* the woodland is 2 ha or larger

Table 5.1: Summary of Potential Impacts and Mitigation Measures for the St Columban Underground Electrical Interconnection Line Project Location

Feature Type (see Figures 4.1 – 4.5)		Underground electrical interconnection line sited within 120 m	Potential Impacts	Mitigation Measures*
Provincially Significant Wetlands		Distance ranges from >0.1m from the wetland to 44.66 m	No negative impacts are expected (Sections 5.2)	No development in wetland boundary. Construction contractor to ensure no work occurs outside of the limits of construction envelope No pruning woody vegetation; directional boring will occur where heavily vegetated areas occur. Directional boring is recommended at features 12 and 15
			Contamination through accidental spills during construction or operation	No refuelling or maintenance of vehicles in, or adjacent to the wetland. In the event of an accidental spill, the MOE Spills Action Centre should be contacted and emergency spill procedures implemented immediately
Significant Woodlands		Distance ranges from adjacent to the wetland to 94.34 m	No negative impacts are expected (Sections 5.3)	No development in woodland boundary. Construction contractor to ensure no work occurs outside of the limits of construction envelope
			Contamination through accidental spills during construction or operation	No refuelling or maintenance of vehicles in, or adjacent to the woodland. In the event of an accidental spill, the MOE Spills Action Centre should be contacted and emergency spill procedures implemented immediately

Table 5.1: Summary of Potential Impacts and Mitigation Measures for the St Columban Underground Electrical Interconnection Line Project Location

Feature Type (see Figures 4.1 – 4.5)		Underground electrical interconnection line sited within 120 m	Potential Impacts	Mitigation Measures*
Generalized Candidate Significant Wildlife Habitat: Winter Deer Yard		Adjacent to winter deer yard	No negative impacts are expected (Section 5.4)	Anticipated construction window is August to November, avoiding wintering deer season. Construction contractor to ensure no work occurs outside of the limits of construction envelope
			Contamination through accidental spills during construction or operation	No refuelling or maintenance of vehicles in, or adjacent to the feature. In the event of an accidental spill, the MOE Spills Action Centre should be contacted and emergency spill procedures implemented immediately
Generalized Candidate Significant Wildlife Habitat: Eastern Ribbonsnake, Milksnake, Snapping Turtle		n/a	No negative impacts are expected (Section 5.5)	Construction contractor to ensure no work occurs outside of the limits of construction envelope. Silt barriers to be erected along feature edges that occur within 30m of construction work to ensure prevention of wildlife access. Daily inspection of construction vehicles prior to operation. If a snake or turtle species is identified within the work zone, do not handle species prior to contacting MNR.

Table 5.2: Construction Monitoring Plan for the St Columban Underground Electrical Interconnection Line Project Location

Potential Negative Effect	Mitigation Strategy	Performance Objective	Monitoring Plan					Contingency Measures
			Methods	Location	Frequency	Rationale	Reporting	
CONSTRUCTION								
Disturbance to adjacent vegetation	Work to be restricted to construction envelope	No work beyond construction area	Visual inspections to ensure works stay within construction area	Features 8, 10, 11, 12, 13, 14, 15, 16, 17, 19, 20, 21, 22, 23, 24, 25, 27, 28, 29, 31	Weekly	n/a	Monthly	Immediately stop work in off-limit areas
Contamination of natural heritage features through accidental spill	Proper storage of materials off-site in storage containers	Minimize likelihood of spill Contain spill material	Visual inspections to ensure proper storage	Storage areas	Weekly	n/a	Monthly	Follow-up monitoring /inspections in the event of an accidental spill/leak Remedial actions may be required in the event monitoring indicates a negative effect to natural features
	Adherence to Emergency Response Plan							
	Contact MOE Spills Action							

Table 5.2: Construction Monitoring Plan for the St Columban Underground Electrical Interconnection Line Project Location

Potential Negative Effect	Mitigation Strategy	Performance Objective	Monitoring Plan					Contingency Measures
			Methods	Location	Frequency	Rationale	Reporting	
	Centre							

Appendix C

Field Forms

Stantec Consulting Ltd.
1 - 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Roadside ELC, Woodland & Wildlife Habitat Assessment Form

Stantec

Project Number: 160960649

Project Name: St. Columban

Date: Sept. 20-11

Field Personnel: SC, NK

Weather Conditions:

TEMP (°C):

18

WIND:

1

CLOUD:

10%.

PPT:

None

PPT (in last 24 hrs):

None

POLYGON DESCRIPTION

ELC

COMMUNITY DESCRIPTION & CLASSIFICATION

POLYGON:

Feature 8

START TIME:

10:30 am

END TIME:**TOPOGRAPHIC FEATURE**

TOPOGRAPHIC FEATURE		HISTORY
<input type="checkbox"/> LACUSTRINE	<input type="checkbox"/> TALUS	<input type="checkbox"/> NATURAL
<input type="checkbox"/> RIVERINE	<input type="checkbox"/> CREVICE / CAVE	<input checked="" type="checkbox"/> CULTURAL
<input type="checkbox"/> BOTTOMLAND	<input type="checkbox"/> ALVAR	
<input type="checkbox"/> TERRACE	<input type="checkbox"/> ROCKLAND	
<input type="checkbox"/> VALLEY SLOPE	<input type="checkbox"/> BEACH / BAR	
<input checked="" type="checkbox"/> TABLELAND	<input type="checkbox"/> SAND DUNE	
<input type="checkbox"/> ROLL. UPLAND	<input type="checkbox"/> BLUFF	
<input type="checkbox"/> CLIFF		

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY			
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER	5	4	

HT CODES: 1=>25m 2=10<HT≤25m 3=2<HT≤10m 4=1<HT≤2m 5=0.5<HT≤1m 6=0.2<HT≤0.5m 7=HT<0.2m

CVR CODES: 0=NONE 1=0%<CVR≤10% 2=10<CVR≤25% 3=25<CVR≤60% 4=CVR>60% N/O=not observed

STANDING SNAGS:	N	<10	N	10 - 24	N	25 - 50	N	>50
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ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT N/O=Not observed

STAND MATURITY:	PIONEER	YOUNG	MID-AGE	MATURE	OLD GROWTH
------------------------	---------	-------	---------	--------	------------

VEGETATION TYPE:		CODE:
Dry-moist old field meadow		CUMI-1
COMPLEX		CODE:

Evidence of Disturbance / Notes:

LAYERS: 1=CANOPY >10m 2=SUB-CANOPY 3=UNDERSTOREY 4=GROUND (GRD.) LAYER
ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT D=DOMINANT N/O=Not observed

[illegible]

Quality Control: This form is complete ☒ & legible ☒.

Signature:

(Field Personnel)

Signature:

(Project Manager)

ELC Polygon: # _____ Assessment Type: ☒-Visual; no access / ☐-Walk through featureExtent of Physical Investigation of Feature: ☐-Entire / ☐-Partial, walk through polygon (indicate on map)

Reptile / Bat Hibernacula Features: Contains potential reptile hibernacula features?
☐-Y* / ☒-N / ☐-Unknown, no access (*if yes, describe in table below)
 [i.e. features that would provide a route underground, including buried concrete or rock (e.g. foundations, bridge abutments or culverts with cracks/entry points, exposed rock crevices or inactive animal burrows)]

Contains potential bat hibernacula features?
☐-Y* / ☒-N / ☐-Unknown, no access (*if yes, describe in table below)
 [i.e. karst topography, abandoned mines or caves]

POTENTIAL HIBERNACULA FEATURE(S) IDENTIFIED			
UTM	Feature Description	Photo No.	Spp. Observed Using Feature

Bat Roosting Features: Contains potential bat roosting features?
☐-Y* / ☒-N / ☐-Unknown, no access (*if yes, describe in table below)
 [i.e. tall trees with open surroundings, DBH >25cm, side-facing cavities ~10m high in tree]

POTENTIAL BAT ROOSTING FEATURE(S) IDENTIFIED							
UTM	Tree ID	Tree Spp.	DBH	Photo No.	Decay Class (1-5)	No. of Cavities	Height and Type of Cavities

Stick Nests: Contains large stick nests?
☐-Y* / ☒-N / ☐-Unknown, no access (*if yes, describe in table below)

STICK NEST(S) IDENTIFIED					
UTM	Tree ID	Tree Spp.	Nest Size	Photo No.	Spp. Observed Using Feature

Seeps/Springs/Vernal Pools: Contains seeps/springs/vernal pools?
☐-Y* / ☒-N / ☐-Unknown, no access (*if yes, describe in table below)

SEEP / SPRING / VERNAL POOL FEATURE(S) IDENTIFIED						
UTM	Feature No. & Type	Feature Size (Diameter)	Water Depth	Photo No.	Sub/Emergent Veg. Spp. Present?	Shrubs/ Logs at Edge Present?

SPECIES & HABITAT OBSERVATIONS (list species and type of observation & indicate on map)

<div style="border: 1px solid black; width: 100%; height: 100%;"></div>

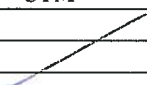
CA=carcass; DP=distinctive parts; FE=feeding evidence; FY=eggs/nest; HO=house/den; OB=observed; SC=seat; SI=other sign; TK=track; VO=vocalization

ELC Polygon: # _____ Assessment Type: ☒ Visual; no access / ☐ Walk through featureExtent of Physical Investigation of Feature: ☐ Entire / ☐ Partial, walk through polygon (indicate on map)

Reptile / Bat Hibernacula Features: Contains potential reptile hibernacula features?
☐ -Y* / ☐ -N / ☒ Unknown, no access (*if yes, describe in table below)
 [i.e. features that would provide a route underground, including buried concrete or rock (e.g. foundations, bridge abutments or culverts with cracks/entry points, exposed rock crevices or inactive animal burrows)]

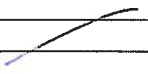
Contains potential bat hibernacula features?
☐ -Y* / ☐ -N / ☒ Unknown, no access (*if yes, describe in table below)
 [i.e. karst topography, abandoned mines or caves]

POTENTIAL HIBERNACULA FEATURE(S) IDENTIFIED

UTM	Feature Description	Photo No.	Spp. Observed Using Feature
			

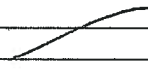
Bat Roosting Features: Contains potential bat roosting features?
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 [i.e. tall trees with open surroundings, DBH >25cm, side-facing cavities ~10m high in tree]

POTENTIAL BAT ROOSTING FEATURE(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	DBH	Photo No.	Decay Class (1-5)	No. of Cavities	Height and Type of Cavities
							

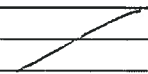
Stick Nests: Contains large stick nests?
☐ -Y* / ☐ -N / ☒ Unknown, no access (*if yes, describe in table below)

STICK NEST(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	Nest Size	Photo No.	Spp. Observed Using Feature
					

Seeps/Springs/Vernal Pools: Contains seeps/springs/vernal pools?
☐ -Y* / ☐ -N / ☒ Unknown, no access (*if yes, describe in table below)

SEEP / SPRING / VERNAL POOL FEATURE(S) IDENTIFIED

UTM	Feature No. & Type	Feature Size (Diameter)	Water Depth	Photo No.	Sub/Emergent Veg. Spp. Present?	Shrubs/ Logs at Edge Present?
						

SPECIES & HABITAT OBSERVATIONS (list species and type of observation & indicate on map)

<p>CA=carcass; DP=distinctive parts; FE=feeding evidence; FY=eggs/nest; HO=house/den; OB=observed; SC=seal; SI=other sign; TK=track; VO=vocalization</p>
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UTM	Tree ID	Tree Spp.	DBH	Photo No.	Decay Class (1-5)	No. of Cavities	Height and Type of Cavities

Stick Nests: Contains large stick nests?
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STICK NEST(S) IDENTIFIED						
UTM	Tree ID	Tree Spp.	Nest Size	Photo No.	Spp. Observed Using Feature	

Seeps/Springs/Vernal Pools: Contains seeps/springs/vernal pools?
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UTM	Feature Description	Photo No.	Spp. Observed Using Feature

Bat Roosting Features:

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UTM	Tree ID	Tree Spp.	DBH	Photo No.	Decay Class (1-5)	No. of Cavities	Height and Type of Cavities

Stick Nests:

Contains large stick nests?

☐ -Y* / ☐ -N / ☒ Unknown, no access (*if yes, describe in table below)**STICK NEST(S) IDENTIFIED**

UTM	Tree ID	Tree Spp.	Nest Size	Photo No.	Spp. Observed Using Feature

Seeps/Springs/Vernal Pools:

Contains seeps/springs/vernal pools?

☐ -Y* / ☐ -N / ☒ Unknown, no access (*if yes, describe in table below)**SEEP / SPRING / VERNAL POOL FEATURE(S) IDENTIFIED**

UTM	Feature No. & Type	Feature Size (Diameter)	Water Depth	Photo No.	Sub/Emergent Veg. Spp. Present?	Shrubs/ Logs at Edge Present?

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UTM	Tree ID	Tree Spp.	Nest Size	Photo No.	Spp. Observed Using Feature	

Seeps/Springs/Vernal Pools: Contains seeps/springs/vernal pools?
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UTM	Feature No. & Type	Feature Size (Diameter)	Water Depth	Photo No.	Sub/Emergent Veg. Spp. Present?	Shrubs/ Logs at Edge Present?

SPECIES & HABITAT OBSERVATIONS (list species and type of observation & indicate on map)

CA=carcass; DP=distinctive parts; FE=feeding evidence; FY=eggs/nest; HO=house/den; OB=observed; SC=seat; SI=other sign; TK=track; VO=vocalization

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1 - 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Roadside ELC, Woodland & Wildlife Habitat Assessment Form

Stantec

Project Number:

Date:

Project Name:

Field Personnel:

Weather Conditions:

TEMP (°C):

WIND:

CLOUD:

PPT:

PPT (in last 24 hrs):

POLYGON DESCRIPTION

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	POLYGON:	14	TOPOGRAPHIC FEATURE		HISTORY
	START TIME:		<input type="checkbox"/> LACUSTRINE	<input type="checkbox"/> TALUS	<input checked="" type="checkbox"/> NATURAL
			<input type="checkbox"/> RIVERINE	<input type="checkbox"/> CREVICE / CAVE	
			<input checked="" type="checkbox"/> BOTTOMLAND	<input type="checkbox"/> ALVAR	<input type="checkbox"/> CULTURAL
			<input type="checkbox"/> TERRACE	<input type="checkbox"/> ROCKLAND	
			<input type="checkbox"/> VALLEY SLOPE	<input type="checkbox"/> BEACH / BAR	
			<input type="checkbox"/> TABLELAND	<input type="checkbox"/> SAND DUNE	
			<input type="checkbox"/> ROLL. UPLAND	<input type="checkbox"/> BLUFF	
		<input type="checkbox"/> CLIFF			

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2	4	
2	SUB-CANOPY		N/O	
3	UNDERSTOREY		N/O	
4	GRD. LAYER		N/O	

HT CODES: 1= $\geq 25\text{m}$ 2= $10 < \text{HT} \leq 25\text{m}$ 3= $2 < \text{HT} \leq 10\text{m}$ 4= $1 < \text{HT} \leq 2\text{m}$ 5= $0.5 < \text{HT} \leq 1\text{m}$ 6= $0.2 < \text{HT} \leq 0.5\text{m}$ 7= $\text{HT} < 0.2\text{m}$

CVR CODES: 0=NONE 1=0%<CVR≤10% 2=10<CVR≤25% 3=25<CVR≤60% 4=CVR>60% N/O=not observed

STANDING SNAGS:	N/A	<10	10 - 24	25 - 50	>50
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ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT N/O=Not observed

STAND MATURITY:	PIONEER	YOUNG	<input checked="" type="checkbox"/> MID-AGE	<input checked="" type="checkbox"/> MATURE	OLD GROWTH
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VEGETATION TYPE:		CODE:
Swamp maple deciduous swamp		SND3-3
COMPLEX	CODE:	

Evidence of Disturbance / Notes:

LAYERS: 1=CANOPY >10m 2=SUB-CANOPY 3=UNDERSTOREY 4=GROUND (GRD.) LAYER
ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT D=DOMINANT N/O=Not observed

[illegible]

Quality Control: This form is complete ☒ & legible ☒.

Signature:

(Field Personnel)

Signature:

(Project Manager)

ELC Polygon: # _____ Assessment Type: ☒ Visual; no access / ☐ Walk through featureExtent of Physical Investigation of Feature: ☐ Entire / ☐ Partial, walk through polygon (indicate on map)

Reptile / Bat Hibernacula Features: Contains potential reptile hibernacula features?
☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)
 [i.e. features that would provide a route underground, including buried concrete or rock (e.g. foundations, bridge abutments or culverts with cracks/entry points, exposed rock crevices or inactive animal burrows)]

Contains potential bat hibernacula features?
☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)
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UTM	Feature Description	Photo No.	Spp. Observed Using Feature

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 [i.e. tall trees with open surroundings, DBH >25cm, side-facing cavities ~10m high in tree]

POTENTIAL BAT ROOSTING FEATURE(S) IDENTIFIED							
UTM	Tree ID	Tree Spp.	DBH	Photo No.	Decay Class (1-5)	No. of Cavities	Height and Type of Cavities

Stick Nests: Contains large stick nests?
☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)

STICK NEST(S) IDENTIFIED						
UTM	Tree ID	Tree Spp.	Nest Size	Photo No.	Spp. Observed Using Feature	

Seeps/Springs/Vernal Pools: Contains seeps/springs/vernal pools?
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SEEP / SPRING / VERNAL POOL FEATURE(S) IDENTIFIED						
UTM	Feature No. & Type	Feature Size (Diameter)	Water Depth	Photo No.	Sub/Emergent Veg. Spp. Present?	Shrubs/ Logs at Edge Present?

SPECIES & HABITAT OBSERVATIONS (list species and type of observation & indicate on map)

<div style="border: 1px solid black; width: 100%; height: 100%;"></div>

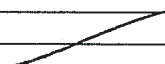
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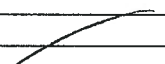
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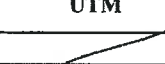
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UTM	Feature No. & Type	Feature Size (Diameter)	Water Depth	Photo No.	Sub/Emergent Veg. Spp. Present?	Shrubs/ Logs at Edge Present?
						

SPECIES & HABITAT OBSERVATIONS (list species and type of observation & indicate on map)

(This area is for listing species and habitat observations, including type of observation and location on map.)

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Roadside ELC, Woodland & Wildlife Habitat Assessment Form

Stantec

Project Number:

Date:

Project Name:

Field Personnel:

Weather Conditions:

TEMP (°C):

WIND:

CLOUD:

PPT:

PPT (in last 24 hrs):

POLYGON DESCRIPTION

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	POLYGON: START TIME: END TIME:	TOPOGRAPHIC FEATURE		HISTORY
		<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input checked="" type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL. UPLAND <input type="checkbox"/> CLIFF	<input type="checkbox"/> TALUS <input type="checkbox"/> CREVICE / CAVE <input type="checkbox"/> ALVAR <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input checked="" type="checkbox"/> NATURAL <input type="checkbox"/> CULTURAL

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STAND MATURITY:	PIONEER	YOUNG	<input checked="" type="checkbox"/> MID-AGE	<input checked="" type="checkbox"/> MATURE	OLD GROWTH
------------------------	---------	-------	---	--	------------

VEGETATION TYPE:		CODE:
Ash deciduous forest		F0D2
COMPLEX	CODE:	

Evidence of Disturbance / Notes:

LAYERS: 1=CANOPY >10m 2=SUB-CANOPY 3=UNDERSTOREY 4=GROUND (GRD.) LAYER
ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT D=DOMINANT N/O=Not observed

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Signature:

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POTENTIAL HIBERNACULA FEATURE(S) IDENTIFIED			
UTM	Feature Description	Photo No.	Spp. Observed Using Feature
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ELC Polygon: # _____ Assessment Type: ☒ Visual; no access / ☐ Walk through featureExtent of Physical Investigation of Feature: ☐ Entire / ☐ Partial, walk through polygon (indicate on map)

Reptile / Bat Hibernacula Features: Contains potential reptile hibernacula features?
☐ -Y* / ☐ -N / ☒ Unknown, no access (*if yes, describe in table below)
 [i.e. features that would provide a route underground, including buried concrete or rock (e.g. foundations, bridge abutments or culverts with cracks/entry points, exposed rock crevices or inactive animal burrows)]

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 [i.e. karst topography, abandoned mines or caves]

POTENTIAL HIBERNACULA FEATURE(S) IDENTIFIED			
UTM	Feature Description	Photo No.	Spp. Observed Using Feature

Bat Roosting Features: Contains potential bat roosting features?
☐ -Y* / ☐ -N / ☒ Unknown, no access (*if yes, describe in table below)
 [i.e. tall trees with open surroundings, DBH >25cm, side-facing cavities ~10m high in tree]

POTENTIAL BAT ROOSTING FEATURE(S) IDENTIFIED							
UTM	Tree ID	Tree Spp.	DBH	Photo No.	Decay Class (1-5)	No. of Cavities	Height and Type of Cavities

Stick Nests: Contains large stick nests?
☐ -Y* / ☐ -N / ☒ Unknown, no access (*if yes, describe in table below)

STICK NEST(S) IDENTIFIED						
UTM	Tree ID	Tree Spp.	Nest Size	Photo No.	Spp. Observed Using Feature	

Seeps/Springs/Vernal Pools: Contains seeps/springs/vernal pools?
☐ -Y* / ☐ -N / ☒ Unknown, no access (*if yes, describe in table below)

SEEP / SPRING / VERNAL POOL FEATURE(S) IDENTIFIED						
UTM	Feature No. & Type	Feature Size (Diameter)	Water Depth	Photo No.	Sub/Emergent Veg. Spp. Present?	Shrubs/ Logs at Edge Present?

SPECIES & HABITAT OBSERVATIONS (list species and type of observation & indicate on map)

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Stantec Consulting Ltd.
1 - 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Roadside ELC, Woodland & Wildlife Habitat Assessment Form

Stantec

Project Number:

Date:

Project Name:

Field Personnel:

Weather Conditions:

TEMP (°C):

WIND:

CLOUD:

PPT:

PPT (in last 24 hrs):

POLYGON DESCRIPTION

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	POLYGON: 20	TOPOGRAPHIC FEATURE		HISTORY
		<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input checked="" type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL. UPLAND <input type="checkbox"/> CLIFF	<input type="checkbox"/> TALUS <input type="checkbox"/> CREVICE / CAVE <input type="checkbox"/> ALVAR <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input checked="" type="checkbox"/> NATURAL <input type="checkbox"/> CULTURAL
	START TIME:			
	END TIME:			

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2	4	
2	SUB-CANOPY		N/O	
3	UNDERSTOREY		N/O	
4	GRD. LAYER		N/O	

HT CODES: 1= $\geq 25\text{m}$ 2= $10 < \text{HT} \leq 25\text{m}$ 3= $2 < \text{HT} \leq 10\text{m}$ 4= $1 < \text{HT} \leq 2\text{m}$ 5= $0.5 < \text{HT} \leq 1\text{m}$ 6= $0.2 < \text{HT} \leq 0.5\text{m}$ 7= $\text{HT} < 0.2\text{m}$

CVR CODES: 0=NONE 1=0%<CVR≤10% 2=10<CVR≤25% 3=25<CVR≤60% 4=CVR>60% N/O=not observed

STANDING SNAGS:	N 10 →	<10	10 - 24	25 - 50	>50
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ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT N/O=Not observed

STAND MATURITY:	PIONEER	YOUNG	✓ MID-AGE	✓ MATURE	OLD GROWTH
------------------------	---------	-------	-----------	----------	------------

VEGETATION TYPE:		CODE:
Swamp maple deciduous swamp		SW03-3
COMPLEX		CODE:

Evidence of Disturbance / Notes:

LAYERS: 1=CANOPY >10m 2=SUB-CANOPY 3=UNDERSTOREY 4=GROUND (GRD.) LAYER
ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT D=DOMINANT N/O=Not observed

[illegible]

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Field Personnel)

Signature:

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POTENTIAL HIBERNACULA FEATURE(S) IDENTIFIED

UTM	Feature Description	Photo No.	Spp. Observed Using Feature
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UTM	Feature No. & Type	Feature Size (Diameter)	Water Depth	Photo No.	Sub/Emergent Veg. Spp. Present?	Shrubs/ Logs at Edge Present?
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SPECIES & HABITAT OBSERVATIONS (list species and type of observation & indicate on map)

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HT CODES: 1=>25m 2=10<HT≤25m 3=2<HT≤10m 4=1<HT≤2m 5=0.5<HT≤1m 6=0.2<HT≤0.5m 7=HT<0.2m

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STANDING SNAGS:	N	<10	N	10 - 24	N	25 - 50	N	>50
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STAND MATURITY:	PIONEER	YOUNG	MID-AGE	MATURE	OLD GROWTH
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VEGETATION TYPE:		CODE:
Dry-moist old field meadow		CUM1-1
COMPLEX	CODE:	

Evidence of Disturbance / Notes:

LAYERS: 1=CANOPY >10m 2=SUB-CANOPY 3=UNDERSTOREY 4=GROUND (GRD.) LAYER
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UTM	Tree ID	Tree Spp.	Nest Size	Photo No.	Spp. Observed Using Feature	
/						

Seeps/Springs/Vernal Pools: Contains seeps/springs/vernal pools?
☐ -Y* / ☐ -N / ☒ Unknown, no access (*if yes, describe in table below)

SEEP / SPRING / VERNAL POOL FEATURE(S) IDENTIFIED						
UTM	Feature No. & Type	Feature Size (Diameter)	Water Depth	Photo No.	Sub/Emergent Veg. Spp. Present?	Shrubs/ Logs at Edge Present?
/						

SPECIES & HABITAT OBSERVATIONS (list species and type of observation & indicate on map)

CA=carcass; DP=distinctive parts; FE=feeding evidence; FY=eggs/nest; HO=house/den; OB=observed; SC=seat; SI=other sign; TK=track; VO=vocalization

Extent of Physical Investigation of Feature: ☐-Entire / ☐-Partial, walk through polygon (*indicate on map*)

Reptile / Bat Hibernacula Features: Contains potential reptile hibernacula features?
☐-Y* / ☒-N / ☐-Unknown, no access (**if yes, describe in table below*)
 [i.e. features that would provide a route underground, including buried concrete or rock (e.g. foundations, bridge abutments or culverts with cracks/entry points, exposed rock crevices or inactive animal burrows)]
 Contains potential bat hibernacula features?
☐-Y* / ☒-N / ☐-Unknown, no access (**if yes, describe in table below*)
 [i.e. karst topography, abandoned mines or caves]

POTENTIAL HIBERNACULA FEATURE(S) IDENTIFIED			
UTM	Feature Description	Photo No.	Spp. Observed Using Feature

Bat Roosting Features: Contains potential bat roosting features?
☐-Y* / ☒-N / ☐-Unknown, no access (**if yes, describe in table below*)
 [i.e. tall trees with open surroundings, DBH >25cm, side-facing cavities ~10m high in tree]

POTENTIAL BAT ROOSTING FEATURE(S) IDENTIFIED							
UTM	Tree ID	Tree Spp.	DBH	Photo No.	Decay Class (1-5)	No. of Cavities	Height and Type of Cavities

Stick Nests: Contains large stick nests?
☐-Y* / ☒-N / ☐-Unknown, no access (*if yes, describe in table below)

STICK NEST(S) IDENTIFIED					
UTM	Tree ID	Tree Spp.	Nest Size	Photo No.	Spp. Observed Using Feature

Seeps/Springs/Vernal Pools: Contains seeps/springs/vernal pools?
☐-Y* / ☒-N / ☐-Unknown, no access (*if yes, describe in table below)

SEEP / SPRING / VERNAL POOL FEATURE(S) IDENTIFIED						
UTM	Feature No. & Type	Feature Size (Diameter)	Water Depth	Photo No.	Sub/Emergent Veg. Spp. Present?	Shrubs/ Logs at Edge Present?

SPECIES & HABITAT OBSERVATIONS (list species and type of observation & indicate on map)

CA=carcass; DP=distinctive parts; FE=feeding evidence; FY=eggs/nest; HO=house/den; OB=observed; SC=seat; SI=other sign; TK=track; VO=vocalization

ELC Polygon: # _____ Assessment Type: ☒ Visual; no access / ☐ Walk through featureExtent of Physical Investigation of Feature: ☐ Entire / ☐ Partial, walk through polygon (indicate on map)

Reptile / Bat Hibernacula Features: Contains potential reptile hibernacula features?
☐ -Y* / ☐ -N / ☒ Unknown, no access (*if yes, describe in table below)
 [i.e. features that would provide a route underground, including buried concrete or rock (e.g. foundations, bridge abutments or culverts with cracks/entry points, exposed rock crevices or inactive animal burrows)]

Contains potential bat hibernacula features?
☐ -Y* / ☐ -N / ☒ Unknown, no access (*if yes, describe in table below)
 [i.e. karst topography, abandoned mines or caves]

POTENTIAL HIBERNACULA FEATURE(S) IDENTIFIED

UTM	Feature Description	Photo No.	Spp. Observed Using Feature

Bat Roosting Features: Contains potential bat roosting features?
☐ -Y* / ☐ -N / ☒ Unknown, no access (*if yes, describe in table below)
 [i.e. tall trees with open surroundings, DBH >25cm, side-facing cavities ~10m high in tree]

POTENTIAL BAT ROOSTING FEATURE(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	DBH	Photo No.	Decay Class (1-5)	No. of Cavities	Height and Type of Cavities

Stick Nests: Contains large stick nests?
☐ -Y* / ☐ -N / ☒ Unknown, no access (*if yes, describe in table below)

STICK NEST(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	Nest Size	Photo No.	Spp. Observed Using Feature

Seeps/Springs/Vernal Pools: Contains seeps/springs/vernal pools?
☐ -Y* / ☐ -N / ☒ Unknown, no access (*if yes, describe in table below)

SEEP / SPRING / VERNAL POOL FEATURE(S) IDENTIFIED

UTM	Feature No. & Type	Feature Size (Diameter)	Water Depth	Photo No.	Sub/Emergent Veg. Spp. Present?	Shrubs/ Logs at Edge Present?

SPECIES & HABITAT OBSERVATIONS (list species and type of observation & indicate on map)

--	--

CA=carcass; DP=distinctive parts; FE=feeding evidence; FY=eggs/nest; HO=house/den; OB=observed; SC=seat; SI=other sign; TK=track; VO=vocalization

ELC Polygon: # 22 Assessment Type: ☒ Visual; no access / ☐ Walk through featureExtent of Physical Investigation of Feature: ☐ Entire / ☐ Partial, walk through polygon (indicate on map)

Reptile / Bat Hibernacula Features: Contains potential reptile hibernacula features?
☐-Y* / ☐-N / ☒ Unknown, no access (*if yes, describe in table below)
 [i.e. features that would provide a route underground, including buried concrete or rock (e.g. foundations, bridge abutments or culverts with cracks/entry points, exposed rock crevices or inactive animal burrows)]
 Contains potential bat hibernacula features?
☐-Y* / ☐-N / ☒ Unknown, no access (*if yes, describe in table below)
 [i.e. karst topography, abandoned mines or caves]

POTENTIAL HIBERNACULA FEATURE(S) IDENTIFIED			
UTM	Feature Description	Photo No.	Spp. Observed Using Feature

Bat Roosting Features: Contains potential bat roosting features?
☐-Y* / ☐-N / ☒ Unknown, no access (*if yes, describe in table below)
 [i.e. tall trees with open surroundings, DBH >25cm, side-facing cavities ~10m high in tree]

POTENTIAL BAT ROOSTING FEATURE(S) IDENTIFIED							
UTM	Tree ID	Tree Spp.	DBH	Photo No.	Decay Class (1-5)	No. of Cavities	Height and Type of Cavities

Stick Nests: Contains large stick nests?
☐-Y* / ☐-N / ☒ Unknown, no access (*if yes, describe in table below)

STICK NEST(S) IDENTIFIED					
UTM	Tree ID	Tree Spp.	Nest Size	Photo No.	Spp. Observed Using Feature

Seeps/Springs/Vernal Pools: Contains seeps/springs/vernal pools?
☐-Y* / ☐-N / ☒ Unknown, no access (*if yes, describe in table below)

SEEP / SPRING / VERNAL POOL FEATURE(S) IDENTIFIED						
UTM	Feature No. & Type	Feature Size (Diameter)	Water Depth	Photo No.	Sub/Emergent Veg. Spp. Present?	Shrubs/ Logs at Edge Present?

SPECIES & HABITAT OBSERVATIONS (list species and type of observation & indicate on map)

Empty space for species and habitat observations
--

CA=carcass; DP=distinctive parts; FE=feeding evidence; FY=eggs/nest; HO=house/den; OB=observed; SC=scat; SI=other sign; TK=track; VO=vocalization



Roadside ELC, Woodland & Wildlife Habitat Assessment Form

Project Name: St Columban
Field Personnel: SC & NK

Weather Conditions:	TEMP (°C): 18	WIND: 1	CLOUD: 10%	PPT: none	PPT (in last 24 hrs): none
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TOPOGRAPHIC FEATURE		HISTORY
<input type="checkbox"/> LACUSTRINE	<input type="checkbox"/> TALUS	<input checked="" type="checkbox"/> NATURAL
<input type="checkbox"/> RIVERINE	<input type="checkbox"/> CREVICE / CAVE	
<input type="checkbox"/> BOTTOMLAND	<input type="checkbox"/> ALVAR	<input type="checkbox"/> CULTURAL
<input type="checkbox"/> TERRACE	<input type="checkbox"/> ROCKLAND	
<input type="checkbox"/> VALLEY SLOPE	<input type="checkbox"/> BEACH / BAR	
<input checked="" type="checkbox"/> TABLELAND	<input type="checkbox"/> SAND DUNE	
<input type="checkbox"/> ROLL. UPLAND	<input type="checkbox"/> BLUFF	
<input type="checkbox"/> CLIFF		

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2	4	ACEFREE
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER			

CVR CODES: 0=NONE 1=0%<CVR≤10% 2=10<CVR≤25% 3=25<CVR≤60% 4=CVR>60% N/O=not observed

STANDING SNAGS:	N	<10	N	10 - 24	N	25 - 50	N	>50
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ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT N/O=Not observed

STAND MATURITY:	PIONEER	YOUNG	MID-AGE	MATURE	OLD GROWTH
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VEGETATION TYPE: Swamp maple mineral deciduous Swamp		CODE: SWD 3-3
COMPLEX		CODE:

Quality Control: This form is complete ☐ & legible ☐.

Signature: SC
(Project Manager)

ELC Polygon: # 23 Assessment Type: ~~Visual~~ / ☐ Walk through featureExtent of Physical Investigation of Feature: ☐ Entire / ☐ Partial, walk through polygon (indicate on map)

Reptile / Bat Hibernacula Features: Contains potential reptile hibernacula features?
☐-Y* / ☐-N / ~~Unknown~~, no access (*if yes, describe in table below)
 [i.e. features that would provide a route underground, including buried concrete or rock (e.g. foundations, bridge abutments or culverts with cracks/entry points, exposed rock crevices or inactive animal burrows)]
 Contains potential bat hibernacula features?
☐-Y* / ☐-N / ~~Unknown~~, no access (*if yes, describe in table below)
 [i.e. karst topography, abandoned mines or caves]

POTENTIAL HIBERNACULA FEATURE(S) IDENTIFIED

UTM	Feature Description	Photo No.	Spp. Observed Using Feature

Bat Roosting Features: Contains potential bat roosting features?
☐-Y* / ☐-N / ~~Unknown~~, no access (*if yes, describe in table below)
 [i.e. tall trees with open surroundings, DBH >25cm, side-facing cavities ~10m high in tree]

POTENTIAL BAT ROOSTING FEATURE(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	DBH	Photo No.	Decay Class (1-5)	No. of Cavities	Height and Type of Cavities

Stick Nests: Contains large stick nests?
☐-Y* / ☐-N / ~~Unknown~~, no access (*if yes, describe in table below)

STICK NEST(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	Nest Size	Photo No.	Spp. Observed Using Feature

Seeps/Springs/Vernal Pools: Contains seeps/springs/vernal pools?
☐-Y* / ☐-N / ~~Unknown~~, no access (*if yes, describe in table below)

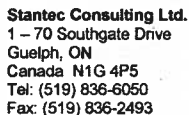
SEEP / SPRING / VERNAL POOL FEATURE(S) IDENTIFIED

UTM	Feature No. & Type	Feature Size (Diameter)	Water Depth	Photo No.	Sub/Emergent Veg. Spp. Present?	Shrubs/ Logs at Edge Present?

SPECIES & HABITAT OBSERVATIONS (list species and type of observation & indicate on map)

<div style="text-align: center; font-size: 2em; opacity: 0.5;"> </div>
--

CA=carcass; DP=distinctive parts; FE=feeding evidence; FY=eggs/nest; HO=house/den; OB=observed; SC=scat; SI=other sign; TK=track; VO=vocalization



Roadside ELC, Woodland & Wildlife Habitat Assessment Form

Stantec

Project Number: 160960249

Project Name: St Columban

Date: Sept 20 - 11

Field Personnel: SC ENK

Weather Conditions:	TEMP (°C): 18	WIND: 1	CLOUD: 10%	PPT: none	PPT (in last 24 hrs): none
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POLYGON DESCRIPTION

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	POLYGON: START TIME: END TIME:	TOPOGRAPHIC FEATURE		HISTORY
		<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input checked="" type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL. UPLAND <input type="checkbox"/> CLIFF	<input type="checkbox"/> TALUS <input type="checkbox"/> CREVICE / CAVE <input type="checkbox"/> ALVAR <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input checked="" type="checkbox"/> NATURAL <input type="checkbox"/> CULTURAL

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2	4	THUDCCI
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER			

HT CODES: 1= $\geq 25m$ 2= $10 < HT \leq 25m$ 3= $2 < HT \leq 10m$ 4= $1 < HT \leq 2m$ 5= $0.5 < HT \leq 1m$ 6= $0.2 < HT \leq 0.5m$ 7= $HT < 0.2m$

CVR CODES: 0=NONE 1=0%<CVR≤10% 2=10<CVR≤25% 3=25<CVR≤60% 4=CVR>60% N/O=not observed

STANDING SNAGS:	 <10	 10 - 24	 25 - 50	 >50
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ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT N/O=Not observed

STAND MATURITY:	PIONEER	YOUNG	MID-AGE	MATURE	OLD GROWTH
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VEGETATION TYPE: White cedar mineral coniferous swamp		CODE: SWC1-1
COMPLEX		CODE:

Evidence of Disturbance / Notes:

LAYERS: 1=CANOPY >10m 2=SUB-CANOPY 3=UNDERSTOREY 4=GROUND (GRD.) LAYER
ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT D=DOMINANT N/O=Not observed

[illegible]

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Field Personnel)

Signature:

(Project M

ELC Polygon: # 24 Assessment Type: ~~Visual~~ / ☐ Walk through featureExtent of Physical Investigation of Feature: ☐ Entire / ☐ Partial, walk through polygon (indicate on map)

Reptile / Bat Hibernacula Features: Contains potential reptile hibernacula features?
☐-Y* / ☐-N / ~~Unknown~~, no access (*if yes, describe in table below)
 [i.e. features that would provide a route underground, including buried concrete or rock (e.g. foundations, bridge abutments or culverts with cracks/entry points, exposed rock crevices or inactive animal burrows)]
 Contains potential bat hibernacula features?
☐-Y* / ☐-N / ~~Unknown~~, no access (*if yes, describe in table below)
 [i.e. karst topography, abandoned mines or caves]

POTENTIAL HIBERNACULA FEATURE(S) IDENTIFIED

UTM	Feature Description	Photo No.	Spp. Observed Using Feature

Bat Roosting Features: Contains potential bat roosting features?
☐-Y* / ☐-N / ~~Unknown~~, no access (*if yes, describe in table below)
 [i.e. tall trees with open surroundings, DBH >25cm, side-facing cavities ~10m high in tree]

POTENTIAL BAT ROOSTING FEATURE(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	DBH	Photo No.	Decay Class (1-5)	No. of Cavities	Height and Type of Cavities

Stick Nests: Contains large stick nests?
☐-Y* / ☐-N / ~~Unknown~~, no access (*if yes, describe in table below)

STICK NEST(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	Nest Size	Photo No.	Spp. Observed Using Feature

Seeps/Springs/Vernal Pools: Contains seeps/springs/vernal pools?
☐-Y* / ☐-N / ~~Unknown~~, no access (*if yes, describe in table below)

SEEP / SPRING / VERNAL POOL FEATURE(S) IDENTIFIED

UTM	Feature No. & Type	Feature Size (Diameter)	Water Depth	Photo No.	Sub/Emergent Veg. Spp. Present?	Shrubs/ Logs at Edge Present?

SPECIES & HABITAT OBSERVATIONS (list species and type of observation & indicate on map)

CA=carcass; DP=distinctive parts; FE=feeding evidence; FY=eggs/nest; HO=house/den; OB=observed; SC=scat; SI=other sign; TK=track; VO=vocalization

Stantec Consulting Ltd.
1 - 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Roadside ELC, Woodland & Wildlife Habitat Assessment Form

Stantec

Project Number: 160960649

Project Name: St Columban

Date: Sept 20-11

Field Personnel: SC & NK

Weather Conditions:	TEMP (°C): 18	WIND: 1	CLOUD: 10%	PPT: none	PPT (in last 24 hrs): none
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POLYGON DESCRIPTION

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	POLYGON:	TOPOGRAPHIC FEATURE		HISTORY
	22	<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input checked="" type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL. UPLAND <input type="checkbox"/> CLIFF	<input type="checkbox"/> TALUS <input type="checkbox"/> CREVICE / CAVE <input type="checkbox"/> ALVAR <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input checked="" type="checkbox"/> NATURAL <input type="checkbox"/> CULTURAL
	START TIME:			
	END TIME:			

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2	4	PINSTED
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER			

HT CODES: 1=>25m 2=10<HT≤25m 3=2<HT≤10m 4=1<HT≤2m 5=0.5<HT≤1m 6=0.2<HT≤0.5m 7=HT<0.2m

CVR CODES: 0=NONE 1=0%<CVR≤10% 2=10<CVR≤25% 3=25<CVR≤60% 4=CVR>60% N/O=not observed

STANDING SNAGS:	N	<10	N	10 - 24	N	25 - 50	N	>50
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ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT N/O=Not observed

STAND MATURITY:	PIONEER	YOUNG	MID-AGE	MATURE	OLD GROWTH
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VEGETATION TYPE: DRY-FRESH White Pine Coniferous Forest		CODE: FOC1-3*
COMPLEX		CODE:

Evidence of Disturbance / Notes:

LAYERS: 1=CANOPY >10m 2=SUB-CANOPY 3=UNDERSTOREY 4=GROUND (GRD.) LAYER
ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT D=DOMINANT N/O=Not observed

[illegible]

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Field Personnel)

Signature:

(Project Manager)

ELC Polygon: # 25 Assessment Type: ☒ Visual; no access / ☐ Walk through featureExtent of Physical Investigation of Feature: ☐ Entire / ☐ Partial, walk through polygon (indicate on map)

Reptile / Bat Hibernacula Features: Contains potential reptile hibernacula features?
☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)
 [i.e. features that would provide a route underground, including buried concrete or rock (e.g. foundations, bridge abutments or culverts with cracks/entry points, exposed rock crevices or inactive animal burrows)]

Contains potential bat hibernacula features?
☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)
 [i.e. karst topography, abandoned mines or caves]

POTENTIAL HIBERNACULA FEATURE(S) IDENTIFIED

UTM	Feature Description	Photo No.	Spp. Observed Using Feature

Bat Roosting Features: Contains potential bat roosting features?
☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)
 [i.e. tall trees with open surroundings, DBH >25cm, side-facing cavities ~10m high in tree]

POTENTIAL BAT ROOSTING FEATURE(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	DBH	Photo No.	Decay Class (1-5)	No. of Cavities	Height and Type of Cavities

Stick Nests: Contains large stick nests?
☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)

STICK NEST(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	Nest Size	Photo No.	Spp. Observed Using Feature

Seeps/Springs/Vernal Pools: Contains seeps/springs/vernal pools?
☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)

SEEP / SPRING / VERNAL POOL FEATURE(S) IDENTIFIED

UTM	Feature No. & Type	Feature Size (Diameter)	Water Depth	Photo No.	Sub/Emergent Veg. Spp. Present?	Shrubs/ Logs at Edge Present?

SPECIES & HABITAT OBSERVATIONS (list species and type of observation & indicate on map)

CA=carcass; DP=distinctive parts; FE=feeding evidence; FY=eggs/nest; HO=house/den; OB=observed; SC=scat; SI=other sign; TK=track; VO=vocalization



Roadside ELC, Woodland & Wildlife Habitat Assessment Form

Stantec

Project Number: 160960649

Project Name: St Columba

Date: Sept 20 11

Field Personnel: SC & NK

Weather Conditions:	TEMP (°C): 18	WIND: 1	CLOUD: 10%	PPT: none	PPT (in last 24 hrs): none
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POLYGON DESCRIPTION

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	POLYGON:	TOPOGRAPHIC FEATURE		HISTORY
	23	<input type="checkbox"/> LACUSTRINE	<input type="checkbox"/> TALUS	<input checked="" type="checkbox"/> NATURAL
	START TIME:	<input type="checkbox"/> RIVERINE	<input type="checkbox"/> CREVICE / CAVE	<input type="checkbox"/> CULTURAL
		<input type="checkbox"/> BOTTOMLAND	<input type="checkbox"/> ALVAR	
		<input type="checkbox"/> TERRACE	<input type="checkbox"/> ROCKLAND	
		<input type="checkbox"/> VALLEY SLOPE	<input type="checkbox"/> BEACH / BAR	
		<input checked="" type="checkbox"/> TABLELAND	<input type="checkbox"/> SAND DUNE	
END TIME:	<input type="checkbox"/> ROLL. UPLAND	<input type="checkbox"/> BLUFF		
		<input type="checkbox"/> CLIFF		

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY			
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER	5-4	4	PHAGARUN

HT CODES: 1= $\geq 25\text{m}$ 2= $10 < \text{HT} \leq 25\text{m}$ 3= $2 < \text{HT} \leq 10\text{m}$ 4= $1 < \text{HT} \leq 2\text{m}$ 5= $0.5 < \text{HT} \leq 1\text{m}$ 6= $0.2 < \text{HT} \leq 0.5\text{m}$ 7= $\text{HT} < 0.2\text{m}$

CVR CODES: 0=NONE 1=0%<CVR≤10% 2=10<CVR≤25% 3=25<CVR≤60% 4=CVR>60% N/O=not observed

STANDING SNAGS:	N	<10	N	10 - 24	N	25 - 50	N	>50
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ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT N/O=Not observed

STAND MATURITY:	PIONEER	<input checked="" type="checkbox"/> YOUNG	MID-AGE	MATURE	OLD GROWTH
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VEGETATION TYPE: Reed-Canary Grass Meadow Marsh		CODE: MAM 2-2
COMPLEX		CODE:

Evidence of Disturbance / Notes:

LAYERS: 1=CANOPY >10m 2=SUB-CANOPY 3=UNDERSTOREY 4=GROUND (GRD.) LAYER
ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT D=DOMINANT N/O=Not observed

[illegible]

Quality Control: This form is complete ☒ & legible ☒.

Signature:

(Field Personnel)

Signature:

(Project Manager)

ELC Polygon: # 26 Assessment Type: ☒-Visual; no access / ☐-Walk through featureExtent of Physical Investigation of Feature: ☐-Entire / ☐-Partial, walk through polygon (indicate on map)

Reptile / Bat Hibernacula Features: Contains potential reptile hibernacula features?
☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)
 [i.e. features that would provide a route underground, including buried concrete or rock (e.g. foundations, bridge abutments or culverts with cracks/entry points, exposed rock crevices or inactive animal burrows)]

Contains potential bat hibernacula features?
☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)
 [i.e. karst topography, abandoned mines or caves]

POTENTIAL HIBERNACULA FEATURE(S) IDENTIFIED

UTM	Feature Description	Photo No.	Spp. Observed Using Feature

Bat Roosting Features: Contains potential bat roosting features?
☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)
 [i.e. tall trees with open surroundings, DBH >25cm, side-facing cavities ~10m high in tree]

POTENTIAL BAT ROOSTING FEATURE(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	DBH	Photo No.	Decay Class (1-5)	No. of Cavities	Height and Type of Cavities

Stick Nests: Contains large stick nests?
☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)

STICK NEST(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	Nest Size	Photo No.	Spp. Observed Using Feature

Seeps/Springs/Vernal Pools: Contains seeps/springs/vernal pools?
☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)

SEEP / SPRING / VERNAL POOL FEATURE(S) IDENTIFIED

UTM	Feature No. & Type	Feature Size (Diameter)	Water Depth	Photo No.	Sub/Emergent Veg. Spp. Present?	Shrubs/ Logs at Edge Present?

SPECIES & HABITAT OBSERVATIONS (list species and type of observation & indicate on map)

--	--

CA=carcass; DP=distinctive parts; FE=feeding evidence; FY=eggs/nest; HO=house/den; OB=observed; SC=scat; SI=other sign; TK=track; VO=vocalization

ELC Polygon: # 27 Assessment Type: ☒ Visual; no access / ☐ Walk through featureExtent of Physical Investigation of Feature: ☐ Entire / ☐ Partial, walk through polygon (indicate on map)**Reptile / Bat Hibernacula Features:**

Contains potential reptile hibernacula features?

☐-Y* / ☐-N / ☒ Unknown, no access (*if yes, describe in table below)

[i.e. features that would provide a route underground, including buried concrete or rock (e.g. foundations, bridge abutments or culverts with cracks/entry points, exposed rock crevices or inactive animal burrows)]

Contains potential bat hibernacula features?

☐-Y* / ☐-N / ☒ Unknown, no access (*if yes, describe in table below)

[i.e. karst topography, abandoned mines or caves]

POTENTIAL HIBERNACULA FEATURE(S) IDENTIFIED

UTM	Feature Description	Photo No.	Spp. Observed Using Feature

Bat Roosting Features:

Contains potential bat roosting features?

☐-Y* / ☐-N / ☒ Unknown, no access (*if yes, describe in table below)

[i.e. tall trees with open surroundings, DBH >25cm, side-facing cavities ~10m high in tree]

POTENTIAL BAT ROOSTING FEATURE(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	DBH	Photo No.	Decay Class (1-5)	No. of Cavities	Height and Type of Cavities

Stick Nests:

Contains large stick nests?

☐-Y* / ☐-N / ☒ Unknown, no access (*if yes, describe in table below)**STICK NEST(S) IDENTIFIED**

UTM	Tree ID	Tree Spp.	Nest Size	Photo No.	Spp. Observed Using Feature

Seeps/Springs/Vernal Pools:

Contains seeps/springs/vernal pools?

☐-Y* / ☐-N / ☒ Unknown, no access (*if yes, describe in table below)**SEEP / SPRING / VERNAL POOL FEATURE(S) IDENTIFIED**

UTM	Feature No. & Type	Feature Size (Diameter)	Water Depth	Photo No.	Sub/Emergent Veg. Spp. Present?	Shrubs/ Logs at Edge Present?

SPECIES & HABITAT OBSERVATIONS (list species and type of observation & indicate on map)

CA=carcass; DP=distinctive parts; FE=feeding evidence; FY=eggs/nest; HO=house/den; OB=observed; SC=scat; SI=other sign; TK=track; VO=vocalization



Roadside ELC, Woodland & Wildlife Habitat Assessment Form

Stantec

Project Number: 160960649

Project Name: St Columban

Date: Sept 20-11

Field Personnel: SC, ENK

Weather Conditions:	TEMP (°C): 18	WIND: 1	CLOUD: 10%	PPT: none	PPT (in last 24 hrs): none
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POLYGON DESCRIPTION

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	POLYGON:	TOPOGRAPHIC FEATURE		HISTORY
	24	<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input checked="" type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL. UPLAND <input type="checkbox"/> CLIFF	<input type="checkbox"/> TALUS <input type="checkbox"/> CREVICE / CAVE <input type="checkbox"/> ALVAR <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input checked="" type="checkbox"/> NATURAL <input type="checkbox"/> CULTURAL
	START TIME:			
	END TIME:			

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2	4	ACESASA
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER			

HT CODES: 1= $\geq 25\text{m}$ 2= $10 < \text{HT} \leq 25\text{m}$ 3= $2 < \text{HT} \leq 10\text{m}$ 4= $1 < \text{HT} \leq 2\text{m}$ 5= $0.5 < \text{HT} \leq 1\text{m}$ 6= $0.2 < \text{HT} \leq 0.5\text{m}$ 7= $\text{HT} < 0.2\text{m}$

CVR CODES: 0=NONE 1=0%<CVR≤10% 2=10%<CVR≤25% 3=25%<CVR≤60% 4=CVR>60% N/O=not observed

STANDING SNAGS:	N	<10	N	10 - 24	N	25 - 50	N	>50
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ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT N/O=Not observed

STAND MATURITY:	PIONEER	YOUNG	MID-AGE	MATURE	OLD GROWTH
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VEGETATION TYPE: DRY-FRESH Sugar Maple Deciduous Forest		CODE: FODS-1
COMPLEX		CODE:

Evidence of Disturbance / Notes:

LAYERS: 1=CANOPY >10m 2=SUB-CANOPY 3=UNDERSTOREY 4=GROUND (GRD.) LAYER
ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT D=DOMINANT N/O=Not observed

[illegible]

Quality Control: This form is complete ☐ & legible ☐.

Signature: _____
(Field Personnel)

Signature: SC
(Project Manager)

ELC Polygon: # 28 Assessment Type: ☒-Visual; no access / ☐-Walk through featureExtent of Physical Investigation of Feature: ☐-Entire / ☐-Partial, walk through polygon (indicate on map)

Reptile / Bat Hibernacula Features: Contains potential reptile hibernacula features?
☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)
 [i.e. features that would provide a route underground, including buried concrete or rock (e.g. foundations, bridge abutments or culverts with cracks/entry points, exposed rock crevices or inactive animal burrows)]

Contains potential bat hibernacula features?
☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)
 [i.e. karst topography, abandoned mines or caves]

POTENTIAL HIBERNACULA FEATURE(S) IDENTIFIED

UTM	Feature Description	Photo No.	Spp. Observed Using Feature

Bat Roosting Features: Contains potential bat roosting features?
☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)
 [i.e. tall trees with open surroundings, DBH >25cm, side-facing cavities ~10m high in tree]

POTENTIAL BAT ROOSTING FEATURE(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	DBH	Photo No.	Decay Class (1-5)	No. of Cavities	Height and Type of Cavities

Stick Nests: Contains large stick nests?
☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)

STICK NEST(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	Nest Size	Photo No.	Spp. Observed Using Feature

Seeps/Springs/Vernal Pools: Contains seeps/springs/vernal pools?
☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)

SEEP / SPRING / VERNAL POOL FEATURE(S) IDENTIFIED

UTM	Feature No. & Type	Feature Size (Diameter)	Water Depth	Photo No.	Sub/Emergent Veg. Spp. Present?	Shrubs/ Logs at Edge Present?

SPECIES & HABITAT OBSERVATIONS (list species and type of observation & indicate on map)

<div style="text-align: center; font-size: 2em; opacity: 0.5;">28</div>

CA=carcass; DP=distinctive parts; FE=feeding evidence; FY=eggs/nest; HO=house/den; OB=observed; SC=scat; SI=other sign; TK=track; VO=vocalization



Roadside ELC, Woodland & Wildlife Habitat Assessment Form

Stantec

Project Number: 160960649
Date: Sept 20-11

Project Name: St Columban
Field Personnel: SC & NK

Weather Conditions:	TEMP (°C): 18	WIND: 1	CLOUD: 10/	PPT: none	PPT (in last 24 hrs): none
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POLYGON DESCRIPTION

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	POLYGON: 24	TOPOGRAPHIC FEATURE		HISTORY
		<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input checked="" type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL UPLAND <input type="checkbox"/> CLIFF	<input type="checkbox"/> TALUS <input type="checkbox"/> CREVICE / CAVE <input type="checkbox"/> ALVAR <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input checked="" type="checkbox"/> NATURAL <input type="checkbox"/> CULTURAL
	START TIME:			
	END TIME:			

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2	4	3ALIX SP
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER			

HT CODES: 1= $\geq 25\text{m}$ 2= $10 < \text{HT} \leq 25\text{m}$ 3= $2 < \text{HT} \leq 10\text{m}$ 4= $1 < \text{HT} \leq 2\text{m}$ 5= $0.5 < \text{HT} \leq 1\text{m}$ 6= $0.2 < \text{HT} \leq 0.5\text{m}$ 7= $\text{HT} < 0.2\text{m}$

CVR CODES: 0=NONE 1=0%<CVR≤10% 2=10<CVR≤25% 3=25<CVR≤60% 4=CVR>60% N/O=not observed

STANDING SNAGS:	N	<10	N	10 - 24	N	25 - 50	N	>50
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ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT N/O=Not observed

STAND MATURITY:	PIONEER	YOUNG	MID-AGE	MATURE	OLD GROWTH
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VEGETATION TYPE: Willow mineral deciduous swamp		CODE: SWD4-1
COMPLEX		CODE:

Evidence of Disturbance / Notes:

LAYERS: 1=CANOPY >10m 2=SUB-CANOPY 3=UNDERSTOREY 4=GROUND (GRD.) LAYER
ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT D=DOMINANT N/O=Not observed

[illegible]

Quality Control: This form is complete ☒ & legible ☒.

Signature: _____
(Field Personnel)

Signature: SC
(Project Manager)

ELC Polygon: # 29 Assessment Type: ☒-Visual; no access / ☐-Walk through featureExtent of Physical Investigation of Feature: ☐-Entire / ☐-Partial, walk through polygon (*indicate on map*)

Reptile / Bat Hibernacula Features: Contains potential reptile hibernacula features?
☐-Y* / ☐-N / ☒-Unknown, no access (**if yes, describe in table below*)
 [i.e. features that would provide a route underground, including buried concrete or rock (e.g. foundations, bridge abutments or culverts with cracks/entry points, exposed rock crevices or inactive animal burrows)]

Contains potential bat hibernacula features?
☐-Y* / ☐-N / ☒-Unknown, no access (**if yes, describe in table below*)
 [i.e. karst topography, abandoned mines or caves]

POTENTIAL HIBERNACULA FEATURE(S) IDENTIFIED

UTM	Feature Description	Photo No.	Spp. Observed Using Feature

Bat Roosting Features: Contains potential bat roosting features?
☐-Y* / ☐-N / ☒-Unknown, no access (**if yes, describe in table below*)
 [i.e. tall trees with open surroundings, DBH >25cm, side-facing cavities ~10m high in tree]

POTENTIAL BAT ROOSTING FEATURE(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	DBH	Photo No.	Decay Class (1-5)	No. of Cavities	Height and Type of Cavities

Stick Nests: Contains large stick nests?
☐-Y* / ☐-N / ☒-Unknown, no access (**if yes, describe in table below*)

STICK NEST(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	Nest Size	Photo No.	Spp. Observed Using Feature

Seeps/Springs/Vernal Pools: Contains seeps/springs/vernal pools?
☐-Y* / ☐-N / ☒-Unknown, no access (**if yes, describe in table below*)

SEEP / SPRING / VERNAL POOL FEATURE(S) IDENTIFIED

UTM	Feature No. & Type	Feature Size (Diameter)	Water Depth	Photo No.	Sub/Emergent Veg. Spp. Present?	Shrubs/ Logs at Edge Present?

SPECIES & HABITAT OBSERVATIONS (list species and type of observation & indicate on map)

CA=carcass; DP=distinctive parts; FE=feeding evidence; FY=eggs/nest; HO=house/den; OB=observed; SC=scat; SI=other sign; TK=track; VO=vocalization

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Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Roadside ELC, Woodland & Wildlife Habitat Assessment Form

Stantec

Project Number: 16096049

Project Name: St. Columban

Date: Sept 20 - 11

Field Personnel: SC NK

Weather Conditions:	TEMP (°C): 18	WIND: 1	CLOUD: 10	PPT: none	PPT (in last 24 hrs): none
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POLYGON DESCRIPTION

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	POLYGON:	TOPOGRAPHIC FEATURE		HISTORY
	25	<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input checked="" type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL UPLAND <input type="checkbox"/> CLIFF	<input type="checkbox"/> TALUS <input type="checkbox"/> CREVICE / CAVE <input type="checkbox"/> ALVAR <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input checked="" type="checkbox"/> NATURAL <input type="checkbox"/> CULTURAL
	START TIME:			
	END TIME:			

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY			
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER	4-5	4	PHADRUN

HT CODES: 1=>25m 2=10<HT≤25m 3=2<HT≤10m 4=1<HT≤2m 5=0.5<HT≤1m 6=0.2<HT≤0.5m 7=HT<0.2m

CVR CODES: 0=NONE 1=0%<CVR≤10% 2=10<CVR≤25% 3=25<CVR≤60% 4=CVR>60% N/O=not observed

STANDING SNAGS:	N	<10	N	10 - 24	N	25 - 50	W	>50
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ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT N/O=Not observed

STAND MATURITY:	PIONEER	<input checked="" type="checkbox"/> YOUNG	MID-AGE	MATURE	OLD GROWTH
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VEGETATION TYPE: 2 3 1 3 1 CODE: 0000 1 0

Reed - Canaly Grass Meadow / Marsh MAY 22

	COMPLEX		CODE:
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Evidence of Disturbance / Notes:

LAYERS: 1=CANOPY >10m 2=SUB-CANOPY 3=UNDERSTOREY 4=GROUND (GRD.) LAYER
ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT D=DOMINANT N/O=Not observed

[illegible]

Quality Control: This form is complete ☒ & legible ☒.

Signature:

(Field Personnel)

Signature:

(Project Manager)

ELC Polygon: # 30 Assessment Type: ~~Visual~~ / ☐-Walk through featureExtent of Physical Investigation of Feature: ☐-Entire / ☐-Partial, walk through polygon (indicate on map)

Reptile / Bat Hibernacula Features: Contains potential reptile hibernacula features?
☐-Y* / ☐-N / ~~Unknown~~ Unknown, no access (*if yes, describe in table below)
 [i.e. features that would provide a route underground, including buried concrete or rock (e.g. foundations, bridge abutments or culverts with cracks/entry points, exposed rock crevices or inactive animal burrows)]
 Contains potential bat hibernacula features?
☐-Y* / ☐-N / ~~Unknown~~ Unknown, no access (*if yes, describe in table below)
 [i.e. karst topography, abandoned mines or caves]

POTENTIAL HIBERNACULA FEATURE(S) IDENTIFIED			
UTM	Feature Description	Photo No.	Spp. Observed Using Feature

Bat Roosting Features: Contains potential bat roosting features?
☐-Y* / ☐-N / ~~Unknown~~ Unknown, no access (*if yes, describe in table below)
 [i.e. tall trees with open surroundings, DBH >25cm, side-facing cavities ~10m high in tree]

POTENTIAL BAT ROOSTING FEATURE(S) IDENTIFIED							
UTM	Tree ID	Tree Spp.	DBH	Photo No.	Decay Class (1-5)	No. of Cavities	Height and Type of Cavities

Stick Nests: Contains large stick nests?
☐-Y* / ☐-N / ~~Unknown~~ Unknown, no access (*if yes, describe in table below)

STICK NEST(S) IDENTIFIED						
UTM	Tree ID	Tree Spp.	Nest Size	Photo No.	Spp. Observed Using Feature	

Seeps/Springs/Vernal Pools: Contains seeps/springs/vernal pools?
☐-Y* / ☐-N / ~~Unknown~~ Unknown, no access (*if yes, describe in table below)

SEEP / SPRING / VERNAL POOL FEATURE(S) IDENTIFIED						
UTM	Feature No. & Type	Feature Size (Diameter)	Water Depth	Photo No.	Sub/Emergent Veg. Spp. Present?	Shrubs/ Logs at Edge Present?

SPECIES & HABITAT OBSERVATIONS (list species and type of observation & indicate on map)

CA=carcass; DP=distinctive parts; FE=feeding evidence; FY=eggs/nest; HO=house/den; OB=observed; SC=scat; SI=other sign; TK=track; VO=vocalization

ELC Polygon: # 31 Assessment Type: ☒-Visual; no access / ☐-Walk through featureExtent of Physical Investigation of Feature: ☐-Entire / ☐-Partial, walk through polygon (*indicate on map*)

Reptile / Bat Hibernacula Features: Contains potential reptile hibernacula features?
☐-Y* / ☐-N / ☒-Unknown, no access (**if yes, describe in table below*)
 [i.e. features that would provide a route underground, including buried concrete or rock (e.g. foundations, bridge abutments or culverts with cracks/entry points, exposed rock crevices or inactive animal burrows)]
 Contains potential bat hibernacula features?
☐-Y* / ☐-N / ☒-Unknown, no access (**if yes, describe in table below*)
 [i.e. karst topography, abandoned mines or caves]

POTENTIAL HIBERNACULA FEATURE(S) IDENTIFIED

UTM	Feature Description	Photo No.	Spp. Observed Using Feature

Bat Roosting Features: Contains potential bat roosting features?
☐-Y* / ☐-N / ☒-Unknown, no access (**if yes, describe in table below*)
 [i.e. tall trees with open surroundings, DBH >25cm, side-facing cavities ~10m high in tree]

POTENTIAL BAT ROOSTING FEATURE(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	DBH	Photo No.	Decay Class (1-5)	No. of Cavities	Height and Type of Cavities

Stick Nests: Contains large stick nests?
☐-Y* / ☐-N / ☒-Unknown, no access (**if yes, describe in table below*)

STICK NEST(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	Nest Size	Photo No.	Spp. Observed Using Feature

Seeps/Springs/Vernal Pools: Contains seeps/springs/vernal pools?
☐-Y* / ☐-N / ☒-Unknown, no access (**if yes, describe in table below*)

SEEP / SPRING / VERNAL POOL FEATURE(S) IDENTIFIED

UTM	Feature No. & Type	Feature Size (Diameter)	Water Depth	Photo No.	Sub/Emergent Veg. Spp. Present?	Shrubs/ Logs at Edge Present?

SPECIES & HABITAT OBSERVATIONS (list species and type of observation & indicate on map)

CA=carcass; DP=distinctive parts; FE=feeding evidence; FY=eggs/nest; HO=house/den; OB=observed; SC=scat; SI=other sign; TK=track; VO=vocalization

ELC Polygon: # 32 Assessment Type: ☒ Visual; no access / ☐ Walk through featureExtent of Physical Investigation of Feature: ☐ Entire / ☐ Partial, walk through polygon (indicate on map)

Reptile / Bat Hibernacula Features: Contains potential reptile hibernacula features?
☐-Y* / ☐-N / ☒ Unknown, no access (*if yes, describe in table below)
 [i.e. features that would provide a route underground, including buried concrete or rock (e.g. foundations, bridge abutments or culverts with cracks/entry points, exposed rock crevices or inactive animal burrows)]
 Contains potential bat hibernacula features?
☐-Y* / ☐-N / ☒ Unknown, no access (*if yes, describe in table below)
 [i.e. karst topography, abandoned mines or caves]

POTENTIAL HIBERNACULA FEATURE(S) IDENTIFIED

UTM	Feature Description	Photo No.	Spp. Observed Using Feature

Bat Roosting Features: Contains potential bat roosting features?
☐-Y* / ☐-N / ☒ Unknown, no access (*if yes, describe in table below)
 [i.e. tall trees with open surroundings, DBH >25cm, side-facing cavities ~10m high in tree]

POTENTIAL BAT ROOSTING FEATURE(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	DBH	Photo No.	Decay Class (1-5)	No. of Cavities	Height and Type of Cavities

Stick Nests: Contains large stick nests?
☐-Y* / ☐-N / ☒ Unknown, no access (*if yes, describe in table below)

STICK NEST(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	Nest Size	Photo No.	Spp. Observed Using Feature

Seeps/Springs/Vernal Pools: Contains seeps/springs/vernal pools?
☐-Y* / ☐-N / ☒ Unknown, no access (*if yes, describe in table below)

SEEP / SPRING / VERNAL POOL FEATURE(S) IDENTIFIED

UTM	Feature No. & Type	Feature Size (Diameter)	Water Depth	Photo No.	Sub/Emergent Veg. Spp. Present?	Shrubs/ Logs at Edge Present?

SPECIES & HABITAT OBSERVATIONS (list species and type of observation & indicate on map)

<div style="text-align: center; font-size: 2em; opacity: 0.5;">8</div>
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CA=carcass; DP=distinctive parts; FE=feeding evidence; FY=eggs/nest; HO=house/den; OB=observed; SC=scat; SI=other sign; TK=track; VO=vocalization

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Guelph, ON
Canada N1G 4P5
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Fax: (519) 836-2493

Roadside ELC, Woodland & Wildlife Habitat Assessment Form

Stantec

Project Number: 160960649

Project Name: St Columban

Date: Sept. 22-11

Field Personnel: SC E MR

Weather Conditions:	TEMP (°C): 19	WIND: 2	CLOUD: 5 %	PPT: none	PPT (in last 24 hrs): none
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POLYGON DESCRIPTION

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	POLYGON:	TOPOGRAPHIC FEATURE		HISTORY
	28	<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input checked="" type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL UPLAND <input type="checkbox"/> CLIFF	<input type="checkbox"/> TALUS <input type="checkbox"/> CREVICE / CAVE <input type="checkbox"/> ALVAR <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input checked="" type="checkbox"/> NATURAL <input type="checkbox"/> CULTURAL
	START TIME:			
	10:30			
	END TIME:			

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2	4	ACESASA = FRAMER > POPTREM
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER			

HT CODES: 1=>25m 2=10<HT≤25m 3=2<HT≤10m 4=1<HT≤2m 5=0.5<HT≤1m 6=0.2<HT≤0.5m 7=HT<0.2m

CVR CODES: 0=NONE 1=0%<CVR≤10% 2=10<CVR≤25% 3=25<CVR≤60% 4=CVR>60% N/O=not observed

STANDING SNAGS:			<10		10 - 24		25 - 50		>50
-----------------	--	---	-----	---	---------	---	---------	---	-----

ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT N/O=Not observed

STAND MATURITY:	PIONEER	YOUNG	MID-AGE	MATURE	OLD GROWTH
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VEGETATION TYPE: DRY-FRESH Sugar Maple-White Ash Dec.Fo.		CODE: F005-8
COMPLEX		CODE:

Evidence of Disturbance / Notes:

LAYERS: 1=CANOPY >10m 2=SUB-CANOPY 3=UNDERSTOREY 4=GROUND (GRD.) LAYER
ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT D=DOMINANT N/O=Not observed

[illegible]

Quality Control: This form is complete ☒ & legible ☒.

Signature: _____
(Field Personnel)

Signature: SC
(Project Manager)

ELC Polygon: # 33-15 Assessment Type: ☒ Visual; no access / ☐ Walk through featureExtent of Physical Investigation of Feature: ☐ Entire / ☐ Partial, walk through polygon (*indicate on map*)

Reptile / Bat Hibernacula Features: Contains potential reptile hibernacula features?
☐-Y* / ☐-N / ☒ Unknown, no access (**if yes, describe in table below*)
 [i.e. features that would provide a route underground, including buried concrete or rock (e.g. foundations, bridge abutments or culverts with cracks/entry points, exposed rock crevices or inactive animal burrows)]

Contains potential bat hibernacula features?
☐-Y* / ☐-N / ☒ Unknown, no access (**if yes, describe in table below*)
 [i.e. karst topography, abandoned mines or caves]

POTENTIAL HIBERNACULA FEATURE(S) IDENTIFIED

UTM	Feature Description	Photo No.	Spp. Observed Using Feature

Bat Roosting Features: Contains potential bat roosting features?
☐-Y* / ☐-N / ☒ Unknown, no access (**if yes, describe in table below*)
 [i.e. tall trees with open surroundings, DBH >25cm, side-facing cavities ~10m high in tree]

POTENTIAL BAT ROOSTING FEATURE(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	DBH	Photo No.	Decay Class (1-5)	No. of Cavities	Height and Type of Cavities

Stick Nests: Contains large stick nests?
☐-Y* / ☐-N / ☒ Unknown, no access (**if yes, describe in table below*)

STICK NEST(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	Nest Size	Photo No.	Spp. Observed Using Feature

Seeps/Springs/Vernal Pools: Contains seeps/springs/vernal pools?
☐-Y* / ☐-N / ☒ Unknown, no access (**if yes, describe in table below*)

SEEP / SPRING / VERNAL POOL FEATURE(S) IDENTIFIED

UTM	Feature No. & Type	Feature Size (Diameter)	Water Depth	Photo No.	Sub/Emergent Veg. Spp. Present?	Shrubs/ Logs at Edge Present?

SPECIES & HABITAT OBSERVATIONS (list species and type of observation & indicate on map)

CA=carcass; DP=distinctive parts; FE=feeding evidence; FY=eggs/nest; HO=house/den; OB=observed; SC=scat; SI=other sign; TK=track; VO=vocalization

ELC Polygon: # 3415 Assessment Type: ☒ Visual; no access / ☐ Walk through featureExtent of Physical Investigation of Feature: ☐ Entire / ☐ Partial, walk through polygon (*indicate on map*)

Reptile / Bat Hibernacula Features: Contains potential reptile hibernacula features?
☐-Y* / ☐-N / ☒-Unknown, no access (**if yes, describe in table below*)
 [i.e. features that would provide a route underground, including buried concrete or rock (e.g. foundations, bridge abutments or culverts with cracks/entry points, exposed rock crevices or inactive animal burrows)]

Contains potential bat hibernacula features?
☐-Y* / ☐-N / ☒-Unknown, no access (**if yes, describe in table below*)
 [i.e. karst topography, abandoned mines or caves]

POTENTIAL HIBERNACULA FEATURE(S) IDENTIFIED

UTM	Feature Description	Photo No.	Spp. Observed Using Feature

Bat Roosting Features: Contains potential bat roosting features?
☐-Y* / ☐-N / ☒-Unknown, no access (**if yes, describe in table below*)
 [i.e. tall trees with open surroundings, DBH >25cm, side-facing cavities ~10m high in tree]

POTENTIAL BAT ROOSTING FEATURE(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	DBH	Photo No.	Decay Class (1-5)	No. of Cavities	Height and Type of Cavities

Stick Nests: Contains large stick nests?
☐-Y* / ☐-N / ☒-Unknown, no access (**if yes, describe in table below*)

STICK NEST(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	Nest Size	Photo No.	Spp. Observed Using Feature

Seeps/Springs/Vernal Pools: Contains seeps/springs/vernal pools?
☐-Y* / ☐-N / ☒-Unknown, no access (**if yes, describe in table below*)

SEEP / SPRING / VERNAL POOL FEATURE(S) IDENTIFIED

UTM	Feature No. & Type	Feature Size (Diameter)	Water Depth	Photo No.	Sub/Emergent Veg. Spp. Present?	Shrubs/ Logs at Edge Present?

SPECIES & HABITAT OBSERVATIONS (list species and type of observation & indicate on map)

<div style="text-align: center; font-size: 2em; margin-top: 50px;">V</div>
--

CA=carcass; DP=distinctive parts; FE=feeding evidence; FY=eggs/nest; HO=house/den; OB=observed; SC=scat; SI=other sign; TK=track; VO=vocalization

Stantec Consulting Ltd.
1 - 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Roadside ELC, Woodland & Wildlife Habitat Assessment Form

Stantec

Project Number: 1609606 49

Project Name: St. Columban

Date: Sept 22-11

Field Personnel: SC E MR

Weather Conditions:	TEMP (°C): 19	WIND: 2	CLOUD: 5	PPT: 0.0	PPT (in last 24 hrs): none
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POLYGON DESCRIPTION

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	POLYGON: START TIME: END TIME:	TOPOGRAPHIC FEATURE		HISTORY
		<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input checked="" type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL. UPLAND <input type="checkbox"/> CLIFF	<input type="checkbox"/> TALUS <input type="checkbox"/> CREVICE / CAVE <input type="checkbox"/> ALVAR <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input checked="" type="checkbox"/> NATURAL <input type="checkbox"/> CULTURAL

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2	4	ULMAMEP > POPTREM > XENEGU = FRAPENN
2	SUB-CANOPY			
3	UNDERSTOREY	4	3	VIBLINT
4	GRD. LAYER			

HT CODES: 1= $\geq 25\text{m}$ 2= $10 < \text{HT} \leq 25\text{m}$ 3= $2 < \text{HT} \leq 10\text{m}$ 4= $1 < \text{HT} \leq 2\text{m}$ 5= $0.5 < \text{HT} \leq 1\text{m}$ 6= $0.2 < \text{HT} \leq 0.5\text{m}$ 7= $\text{HT} < 0.2\text{m}$

CVR CODES: 0=NONE 1=0%<CVR≤10% 2=10<CVR≤25% 3=25<CVR≤60% 4=CVR>60% N/O=not observed

STANDING SNAGS:	N	<10	N	10 - 24	N	25 - 50	N	>50
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ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT N/O=Not observed

STAND MATURITY:	PIONEER	YOUNG	MID-AGE	MATURE	OLD GROWTH
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VEGETATION TYPE: White Elm Mineral Deciduous Swamp		CODE: SWD 4-2
COMPLEX		CODE:

Evidence of Disturbance / Notes:

LAYERS: 1=CANOPY >10m 2=SUB-CANOPY 3=UNDERSTOREY 4=GROUND (GRD.) LAYER
ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT D=DOMINANT N/O=Not observed

[illegible]

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Field Personnel)

Signature:

(Project Manager)

ELC Polygon: # 35 Assessment Type: ☒ Visual; no access / ☐ Walk through featureExtent of Physical Investigation of Feature: ☐ Entire / ☐ Partial, walk through polygon (indicate on map)

Reptile / Bat Hibernacula Features: Contains potential reptile hibernacula features?
☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)
 [i.e. features that would provide a route underground, including buried concrete or rock (e.g. foundations, bridge abutments or culverts with cracks/entry points, exposed rock crevices or inactive animal burrows)]

Contains potential bat hibernacula features?
☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)
 [i.e. karst topography, abandoned mines or caves]

POTENTIAL HIBERNACULA FEATURE(S) IDENTIFIED

UTM	Feature Description	Photo No.	Spp. Observed Using Feature

Bat Roosting Features: Contains potential bat roosting features?
☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)
 [i.e. tall trees with open surroundings, DBH >25cm, side-facing cavities ~10m high in tree]

POTENTIAL BAT ROOSTING FEATURE(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	DBH	Photo No.	Decay Class (1-5)	No. of Cavities	Height and Type of Cavities

Stick Nests: Contains large stick nests?
☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)

STICK NEST(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	Nest Size	Photo No.	Spp. Observed Using Feature

Seeps/Springs/Vernal Pools: Contains seeps/springs/vernal pools?
☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)

SEEP / SPRING / VERNAL POOL FEATURE(S) IDENTIFIED

UTM	Feature No. & Type	Feature Size (Diameter)	Water Depth	Photo No.	Sub/Emergent Veg. Spp. Present?	Shrubs/ Logs at Edge Present?

SPECIES & HABITAT OBSERVATIONS (list species and type of observation & indicate on map)

<div style="text-align: center; font-size: 2em; opacity: 0.5;"> </div>
--

CA=carcass; DP=distinctive parts; FE=feeding evidence; FY=eggs/nest; HO=house/den; OB=observed; SC=scat; SI=other sign; TK=track; VO=vocalization



Roadside ELC, Woodland & Wildlife Habitat Assessment Form

Project Name: St Columban
Field Personnel: SC & MR

POLYGON DESCRIPTION

POLYGON:	28	<input type="checkbox"/> LACUSTRINE	<input type="checkbox"/> TALUS	<input checked="" type="checkbox"/> NATURAL
START TIME:		<input type="checkbox"/> RIVERINE	<input type="checkbox"/> CREVICE / CAVE	<input type="checkbox"/> CULTURAL
		<input type="checkbox"/> BOTTOMLAND	<input type="checkbox"/> ALVAR	
		<input type="checkbox"/> TERRACE	<input type="checkbox"/> ROCKLAND	
		<input type="checkbox"/> VALLEY SLOPE	<input type="checkbox"/> BEACH / BAR	
END TIME:		<input checked="" type="checkbox"/> TABLELAND	<input type="checkbox"/> SAND DUNE	
		<input type="checkbox"/> ROLL. UPLAND	<input type="checkbox"/> BLUFF	
		<input type="checkbox"/> CLIFF		

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2	4	FRAPENN >> ACNEGU = OPTREM = ACEFFE
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER			

VEGETATION TYPE:		CODE:
Green Ash mineral deciduous Submp		SWD2-2
COMPLEX	CODE:	

Quality Control: This form is complete ☐ & legible ☐.

Signature: SC
(Project Manager)

[illegible]

ELC Polygon: # 36 Assessment Type: ☒-Visual; no access / ☐-Walk through featureExtent of Physical Investigation of Feature: ☐-Entire / ☐-Partial, walk through polygon (indicate on map)**Reptile / Bat Hibernacula Features:**

Contains potential reptile hibernacula features?

☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)

[i.e. features that would provide a route underground, including buried concrete or rock (e.g. foundations, bridge abutments or culverts with cracks/entry points, exposed rock crevices or inactive animal burrows)]

Contains potential bat hibernacula features?

☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)

[i.e. kirst topography, abandoned mines or caves]

POTENTIAL HIBERNACULA FEATURE(S) IDENTIFIED

UTM	Feature Description	Photo No.	Spp. Observed Using Feature

Bat Roosting Features:

Contains potential bat roosting features?

☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)

[i.e. tall trees with open surroundings, DBH >25cm, side-facing cavities ~10m high in tree]

POTENTIAL BAT ROOSTING FEATURE(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	DBH	Photo No.	Decay Class (1-5)	No. of Cavities	Height and Type of Cavities

Stick Nests:

Contains large stick nests?

☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)**STICK NEST(S) IDENTIFIED**

UTM	Tree ID	Tree Spp.	Nest Size	Photo No.	Spp. Observed Using Feature

Seeps/Springs/Vernal Pools:

Contains seeps/springs/vernal pools?

☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)**SEEP / SPRING / VERNAL POOL FEATURE(S) IDENTIFIED**

UTM	Feature No. & Type	Feature Size (Diameter)	Water Depth	Photo No.	Sub/Emergent Veg. Spp. Present?	Shrubs/ Logs at Edge Present?

SPECIES & HABITAT OBSERVATIONS (list species and type of observation & indicate on map)

CA=carcass; DP=distinctive parts; FE=feeding evidence; FY=eggs/nest; HO=house/den; OB=observed; SC=scat; SI=other sign; TK=track; VO=vocalization



Roadside ELC, Woodland & Wildlife Habitat Assessment Form

Project Name: St Columban
Field Personnel: SC & MR

Weather Conditions:	TEMP (°C): 19	WIND: 2	CLOUD: 5	PPT: none	PPT (in last 24 hrs): none
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ELC

COMMUNITY DESCRIPTION & CLASSIFICATION

POLYGON: 28

START TIME:

END TIME:

TOPOGRAPHIC FEATURE		HISTORY
<input type="checkbox"/> LACUSTRINE	<input type="checkbox"/> TALUS	<input type="checkbox"/> NATURAL
<input type="checkbox"/> RIVERINE	<input type="checkbox"/> CREVICE / CAVE	<input type="checkbox"/> CULTURAL
<input type="checkbox"/> BOTTOMLAND	<input type="checkbox"/> ALVAR	
<input type="checkbox"/> TERRACE	<input type="checkbox"/> ROCKLAND	
<input type="checkbox"/> VALLEY SLOPE	<input type="checkbox"/> BEACH / BAR	
<input type="checkbox"/> TABLELAND	<input type="checkbox"/> SAND DUNE	
<input type="checkbox"/> ROLL. UPLAND	<input type="checkbox"/> BLUFF	
<input type="checkbox"/> CLIFF		

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2	4	ALCFREE
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER			

CVR CODES: 0=NONE 1=0%<CVR≤10% 2=10<CVR≤25% 3=25<CVR≤60% 4=CVR>60% N/O=not observed

STANDING SNAGS:	N	<10	N	10 - 24	N	25 - 50	N	>50
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ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT N/O=Not observed

STAND MATURITY:	PIONEER	YOUNG	MID-AGE	MATURE	OLD-GROWTH
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VEGETATION TYPE: <i>Swamp Maple Dec. Swamp</i>		CODE: <i>SWD 3-3</i>
COMPLEX		CODE:

Quality Control: This form is complete ☐ & legible ☐.

Signature: _____
(Field Personnel)

Signature: SC
(Project Manager)

ELC Polygon: # 37 Assessment Type: ☒ Visual; no access / ☐ Walk through featureExtent of Physical Investigation of Feature: ☐ Entire / ☐ Partial, walk through polygon (indicate on map)

Reptile / Bat Hibernacula Features: Contains potential reptile hibernacula features?
☐-Y* / ☐-N / ☒ Unknown, no access (*if yes, describe in table below)
 [i.e. features that would provide a route underground, including buried concrete or rock (e.g. foundations, bridge abutments or culverts with cracks/entry points, exposed rock crevices or inactive animal burrows)]

Contains potential bat hibernacula features?
☐-Y* / ☐-N / ☒ Unknown, no access (*if yes, describe in table below)
 [i.e. karst topography, abandoned mines or caves]

POTENTIAL HIBERNACULA FEATURE(S) IDENTIFIED

UTM	Feature Description	Photo No.	Spp. Observed Using Feature

Bat Roosting Features: Contains potential bat roosting features?
☐-Y* / ☐-N / ☒ Unknown, no access (*if yes, describe in table below)
 [i.e. tall trees with open surroundings, DBH >25cm, side-facing cavities ~10m high in tree]

POTENTIAL BAT ROOSTING FEATURE(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	DBH	Photo No.	Decay Class (1-5)	No. of Cavities	Height and Type of Cavities

Stick Nests: Contains large stick nests?
☐-Y* / ☐-N / ☒ Unknown, no access (*if yes, describe in table below)

STICK NEST(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	Nest Size	Photo No.	Spp. Observed Using Feature

Seeps/Springs/Vernal Pools: Contains seeps/springs/vernal pools?
☐-Y* / ☐-N / ☒ Unknown, no access (*if yes, describe in table below)

SEEP / SPRING / VERNAL POOL FEATURE(S) IDENTIFIED

UTM	Feature No. & Type	Feature Size (Diameter)	Water Depth	Photo No.	Sub/Emergent Veg. Spp. Present?	Shrubs/ Logs at Edge Present?

SPECIES & HABITAT OBSERVATIONS (list species and type of observation & indicate on map)

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CA=carcass; DP=distinctive parts; FE=feeding evidence; FY=eggs/nest; HO=house/den; OB=observed; SC=scat; SI=other sign; TK=track; VO=vocalization

Stantec Consulting Ltd.
1 - 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Roadside ELC, Woodland & Wildlife Habitat Assessment Form

Stantec

Project Number: 160960649

Project Name: St. Columban

Date: Oct. 24-1


Field Personnel: SC + NK

Weather Conditions:	TEMP (°C): 14	WIND: 2	CLOUD: 95	PPT: no	PPT (in last 24 hrs): rain
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POLYGON DESCRIPTION

<div style="text-align: center;"> ELC COMMUNITY DESCRIPTION & CLASSIFICATION </div>	POLYGON:	TOPOGRAPHIC FEATURE		HISTORY
	START TIME:	<input type="checkbox"/> LACUSTRINE <input checked="" type="checkbox"/> RIVERINE <input type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL UPLAND <input type="checkbox"/> CLIFF	<input type="checkbox"/> TALUS <input type="checkbox"/> CREVICE / CAVE <input type="checkbox"/> ALVAR <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input checked="" type="checkbox"/> NATURAL <input type="checkbox"/> CULTURAL
	END TIME:			

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY			
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER	4-5	4	800 

HT CODES: 1=>25m 2=10<HT≤25m 3=2<HT≤10m 4=1<HT≤2m 5=0.5<HT≤1m 6=0.2<HT≤0.5m 7=HT<0.2m

CVR CODES: 0=NONE 1=0%<CVR≤10% 2=10<CVR≤25% 3=25<CVR≤60% 4=CVR>60% N/O=not observed

STANDING SNAGS:	<10	10 – 24	25 – 50	>50
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ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT N/O=Not observed

STAND MATURITY:	PIONEER	YOUNG	MID-AGE	MATURE	OLD GROWTH
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VEGETATION TYPE: Meadow marsh		CODE: MAM2-10
COMPLEX		CODE:

Evidence of Disturbance / Notes:

LAYERS: 1=CANOPY >10m 2=SUB-CANOPY 3=UNDERSTOREY 4=GROUND (GRD.) LAYER
ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT D=DOMINANT N/O=Not observed

[illegible]

Quality Control: This form is complete ☒ & legible ☒.

Signature:

(Field Personnel)

Signature:

(Project Manager)

ELC Polygon: # _____ Assessment Type: ☐-Visual; no access / ☐-Walk through featureExtent of Physical Investigation of Feature: ☐-Entire / ☐-Partial, walk through polygon (*indicate on map*)

Reptile / Bat Hibernacula Features: Contains potential reptile hibernacula features?
☐-Y* / ☐-N / ☐-Unknown, no access (**if yes, describe in table below*)
 [i.e. features that would provide a route underground, including buried concrete or rock (e.g. foundations, bridge abutments or culverts with cracks/entry points, exposed rock crevices or inactive animal burrows)]

Contains potential bat hibernacula features?
☐-Y* / ☐-N / ☐-Unknown, no access (**if yes, describe in table below*)
 [i.e. karst topography, abandoned mines or caves]

POTENTIAL HIBERNACULA FEATURE(S) IDENTIFIED

UTM	Feature Description	Photo No.	Spp. Observed Using Feature

Bat Roosting Features: Contains potential bat roosting features?
☐-Y* / ☐-N / ☐-Unknown, no access (**if yes, describe in table below*)
 [i.e. tall trees with open surroundings, DBH >25cm, side-facing cavities ~10m high in tree]

POTENTIAL BAT ROOSTING FEATURE(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	DBH	Photo No.	Decay Class (1-5)	No. of Cavities	Height and Type of Cavities

Stick Nests: Contains large stick nests?
☐-Y* / ☐-N / ☐-Unknown, no access (**if yes, describe in table below*)

STICK NEST(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	Nest Size	Photo No.	Spp. Observed Using Feature

Seeps/Springs/Vernal Pools: Contains seeps/springs/vernal pools?
☐-Y* / ☐-N / ☐-Unknown, no access (**if yes, describe in table below*)

SEEP / SPRING / VERNAL POOL FEATURE(S) IDENTIFIED

UTM	Feature No. & Type	Feature Size (Diameter)	Water Depth	Photo No.	Sub/Emergent Veg. Spp. Present?	Shrubs/ Logs at Edge Present?

SPECIES & HABITAT OBSERVATIONS (list species and type of observation & indicate on map)

<div style="border: 1px solid black; height: 100%;"></div>
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CA=carcass; DP=distinctive parts; FE=feeding evidence; FY=eggs/nest; HO=house/den; OB=observed; SC=scat; SI=other sign; TK=track; VO=vocalization



Roadside ELC, Woodland & Wildlife Habitat Assessment Form

Stantec

Project Number: 110091002649

Project Name: St. Columbian

Date: Oct. 24-11

Field Personnel: SC + NK

Weather Conditions:	TEMP (°C): 14	WIND: 2	CLOUD: 95	PPT: no	PPT (in last 24 hrs): rain
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POLYGON DESCRIPTION

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	POLYGON:	TOPOGRAPHIC FEATURE		HISTORY
	START TIME:	<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input checked="" type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL. UPLAND <input type="checkbox"/> CLIFF	<input type="checkbox"/> TALUS <input type="checkbox"/> CREVICE / CAVE <input type="checkbox"/> ALVAR <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input checked="" type="checkbox"/> NATURAL <input type="checkbox"/> CULTURAL

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2	4	
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER			

HT CODES: 1= $\geq 25\text{m}$ 2= $10 < \text{HT} \leq 25\text{m}$ 3= $2 < \text{HT} \leq 10\text{m}$ 4= $1 < \text{HT} \leq 2\text{m}$ 5= $0.5 < \text{HT} \leq 1\text{m}$ 6= $0.2 < \text{HT} \leq 0.5\text{m}$ 7= $\text{HT} < 0.2\text{m}$

CVR CODES: 0=NONE 1=0%<CVR≤10% 2=10<CVR≤25% 3=25<CVR≤60% 4=CVR>60% N/O=not observed

STANDING SNAGS:	<10	10 – 24	25 – 50	>50
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ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT N/O=Not observed

STAND MATURITY:	PIONEER	YOUNG	MID-AGE	MATURE	OLD GROWTH
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VEGETATION TYPE:		CODE:
Deciduous Swamp		SWD
COMPLEX		CODE:

Evidence of Disturbance / Notes:

LAYERS: 1=CANOPY >10m 2=SUB-CANOPY 3=UNDERSTOREY 4=GROUND (GRD.) LAYER
ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT D=DOMINANT N/O=Not observed

[illegible]

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Field Personnel)

Signature:

(Project Manager)

ELC Polygon: # _____ Assessment Type: ☐-Visual; no access / ☐-Walk through featureExtent of Physical Investigation of Feature: ☐-Entire / ☐-Partial, walk-through polygon (*indicate on map*)

Reptile / Bat Hibernacula Features: Contains potential reptile hibernacula features?
☐-Y* / ☐-N / ☐-Unknown, no access (**if yes, describe in table below*)
 [i.e. features that would provide a route underground, including buried concrete or rock (e.g. foundations, bridge abutments or culverts with cracks/entry points, exposed rock crevices or inactive animal burrows)]
 Contains potential bat hibernacula features?
☐-Y* / ☐-N / ☐-Unknown, no access (**if yes, describe in table below*)
 [i.e. karst topography, abandoned mines or caves]

POTENTIAL HIBERNACULA FEATURE(S) IDENTIFIED

UTM	Feature Description	Photo No.	Spp. Observed Using Feature

Bat Roosting Features: Contains potential bat roosting features?
☐-Y* / ☐-N / ☐-Unknown, no access (**if yes, describe in table below*)
 [i.e. tall trees with open surroundings, DBH >25cm, side-facing cavities ~10m high in tree]

POTENTIAL BAT ROOSTING FEATURE(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	DBH	Photo No.	Decay Class (1-5)	No. of Cavities	Height and Type of Cavities

Stick Nests: Contains large stick nests?
☐-Y* / ☐-N / ☐-Unknown, no access (**if yes, describe in table below*)

STICK NEST(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	Nest Size	Photo No.	Spp. Observed Using Feature

Seeps/Springs/Vernal Pools: Contains seeps/springs/vernal pools?
☐-Y* / ☐-N / ☐-Unknown, no access (**if yes, describe in table below*)

SEEP / SPRING / VERNAL POOL FEATURE(S) IDENTIFIED

UTM	Feature No. & Type	Feature Size (Diameter)	Water Depth	Photo No.	Sub/Emergent Veg. Spp. Present?	Shrubs/ Logs at Edge Present?

SPECIES & HABITAT OBSERVATIONS (list species and type of observation & indicate on map)

Empty space for species and habitat observations
--

CA=carcass; DP=distinctive parts; FE=feeding evidence; FY=eggs/nest; HO=house/den; OB=observed; SC=scat; SI=other sign; TK=track; VO=vocalization

Appendix D

Vascular Plant List

St. Columban Plant List for Underground Transmission Line Addition

LATIN NAME		COMMON NAME	COEFFICIENT OF CONSERVATISM	WETNESS INDEX	WEEDINESS INDEX	PROVINCIAL STATUS	OMNR STATUS	COSEWIC STATUS	GLOBAL STATUS	LOCAL STATUS HURO OLDHAM 1993
<u>GYMNOSPERMS</u>		<u>CONIFERS</u>								
Cupressaceae		Cedar Family								
<i>Thuja</i>	<i>occidentalis</i>	Eastern White Cedar	4	-3		S5			G5	X
Pinaceae		Pine Family								
<i>Abies</i>	<i>balsamea</i>	Balsam Fir	5	-3		S5			G5	
<i>Larix</i>	<i>laricina</i>	Tamarack	7	-3		S5			G5	X
<i>Picea</i>	<i>abies</i>	Norway Spruce		5	-1	SE3			G?	
<i>Pinus</i>	<i>strobus</i>	Eastern White Pine	4	3		S5			G5	X
<i>Pinus</i>	<i>sylvestris</i>	Scotch Pine		5	-3	SE5			G?	I
<u>DICOTYLEDONS</u>		<u>DICOTS</u>								
Aceraceae		Maple Family								
<i>Acer</i>	<i>negundo</i>	Manitoba Maple	0	-2		S5			G5	X
<i>Acer</i>	<i>rubrum</i>	Red Maple	4	0		S5			G5	X
<i>Acer</i>	<i>saccharinum</i>	Silver Maple	5	-3		S5			G5	X
<i>Acer</i>	<i>saccharum</i> ssp. <i>saccharum</i>	Sugar Maple	4	3		S5			G5T?	X
<i>Acer X</i>	<i>freemanii</i>	Freeman's Maple								
Apiaceae		Carrot or Parsley Family								
<i>Daucus</i>	<i>carota</i>	Wild Carrot		5	-2	SE5			G?	I
Asteraceae		Composite or Aster Family								
<i>Aster</i>	<i>lanceolatus</i> ssp. <i>lanceolatus</i>	Tall White Aster	3	-3		S5			G5T?	X
<i>Centaurea</i>	<i>biebersteinii</i>	Spotted Knapweed		5	-3	SE5			G?	
<i>Cirsium</i>	<i>arvense</i>	Canada Thistle		3	-1	SE5			G?	I
<i>Solidago</i>	<i>canadensis</i>	Canada Goldenrod	1	3		S5			G5	X
<i>Solidago</i>	<i>flexicaulis</i>	Zig-zag Goldenrod	6	3		S5			G5	X
<i>Symphotrichum</i>	<i>novae-angliae</i>	New England Aster	2	-3		S5			G5	X
Caprifoliaceae		Honeysuckle Family								
<i>Viburnum</i>	<i>lentago</i>	Nannyberry	4	-1		S5			G5	X
Cornaceae		Dogwood Family								
<i>Cornus</i>	<i>foemina</i> ssp. <i>racemosa</i>	Red Panicked Dogwood	2	-2		S5			G5?	X
<i>Cornus</i>	<i>stolonifera</i>	Red-osier Dogwood	2	-3		S5			G5	X
Dipsacaceae		Teasel Family								
<i>Dipsacus</i>	<i>fullonum</i> ssp. <i>sylvestris</i>	Wild Teasel		5	-1	SE5			G?T?	I

St. Columban Plant List for Underground Transmission Line Addition

LATIN NAME		COMMON NAME	COEFFICIENT OF CONSERVATISM	WETNESS INDEX	WEEDINESS INDEX	PROVINCIAL STATUS	OMNR STATUS	COSEWIC STATUS	GLOBAL STATUS	LOCAL STATUS HURO OLDHAM 1993
Fagaceae		Beech Family								
<i>Quercus</i>	<i>alba</i>	White Oak	6	3		S5			G5	
Oleaceae		Olive Family								
<i>Fraxinus</i>	<i>americana</i>	White Ash	4	3		S5			G5	X
<i>Fraxinus</i>	<i>pennsylvanica</i>	Red Ash	3	-3		S5			G5	X
<i>Fraxinus</i>	<i>species</i>									
Rhamnaceae		Buckthorn Family								
<i>Rhamnus</i>	<i>cathartica</i>	Common Buckthorn		3	-3	SE5			G?	I
<i>Rhamnus</i>	<i>species</i>									
Rosaceae		Rose Family								
<i>Crataegus</i>	<i>species</i>	Hawthorn species								
Salicaceae		Willow Family								
<i>Populus</i>	<i>tremuloides</i>	Trembling Aspen		0		S5			G5	X
<i>Salix</i>	<i>species</i>	Willow species								
Ulmaceae		Elm Family								
<i>Ulmus</i>	<i>americana</i>	White Elm	3	-2		S5			G5?	X
MONOCOTYLEDONS		MONOCOTS								
Poaceae		Grass Family								
<i>Bromus</i>	<i>inermis</i> ssp. <i>inermis</i>	Awnless Brome		5	-3	SE5			G4G5T?	I
<i>Danthonia</i>	<i>spicata</i>	Poverty Oat Grass	5	5		S5			G5	X
<i>Panicum</i>	<i>species</i>									
<i>Phalaris</i>	<i>arundinacea</i>	Reed Canary Grass	0	-4		S5			G5	X
<i>Phleum</i>	<i>pratense</i>	Timothy		3	-1	SE5			G?	I
Typhaceae		Cattail Family								
<i>Typha</i>	<i>species</i>									
FLORISTIC SUMMARY & ASSESSMENT										
Species Diversity										
Total Species:		31								
Native Species:		22	71%							
Exotic Species		9	29%							
Regionally Significant Species		0								
Locally Significant Species		0								

St. Columban Plant List for Underground Transmission Line Addition

LATIN NAME		COMMON NAME	COEFFICIENT OF CONSERVATISM	WETNESS INDEX	WEEDINESS INDEX	PROVINCIAL STATUS	OMNR STATUS	COSEWIC STATUS	GLOBAL STATUS	LOCAL STATUS HURO OLDHAM 1993
<i>S1-S3 Species</i>		0	0%							
<i>S4 Species</i>		0	0%							
<i>S5 Species</i>		22	100%							
Co-efficient of Conservatism and Floristic Quality Index										
<i>Co-efficient of Conservatism (CC) (average)</i>		3.5								
<i>CC 0 to 3</i>	<i>lowest sensitivity</i>	9	43%							
<i>CC 4 to 6</i>	<i>moderate sensitivity</i>	11	52%							
<i>CC 7 to 8</i>	<i>high sensitivity</i>	1	5%							
<i>CC 9 to 10</i>	<i>highest sensitivity</i>	0	0%							
Floristic Quality Index (FQI)		16								
Presence of Weedy & Invasive Species										
<i>mean weediness</i>		-2.0								
<i>weediness = -1</i>	<i>low potential invasiveness</i>	4	44%							
<i>weediness = -2</i>	<i>moderate potential invasiveness</i>	1	11%							
<i>weediness = -3</i>	<i>high potential invasiveness</i>	4	44%							
Presence of Wetland Species										
<i>average wetness value</i>		0.9								
<i>upland</i>		7	23%							
<i>facultative upland</i>		9	29%							
<i>facultative</i>		3	10%							
<i>facultative wetland</i>		12	39%							
<i>obligate wetland</i>		0	0%							

Appendix E

Curricula Vitae

Shannon completed her undergraduate degree with honours in Sociology and Biology and her Masters degree in Botany at the University of Guelph. Her M.Sc. focused on quarry rehabilitation using alvar ecosystems as a restoration target.

Shannon is certified in Ontario Ministry of Natural Resources Ecological Land Classification (ELC) and in Ontario Wetland Evaluation Systems (OWES), adding to her experience in habitat assessments, vegetation surveys, vegetation and soil sampling, vascular plant identification and statistical analysis. Shannon possesses strong skills in public relations with both the public and private sectors: she has presented her research at both national and international conferences; she has been a Teaching Assistant for several University of Guelph courses including Biology, Ecology and Plants in the Ontario Landscape; and she has presented project-related results at various workshops and seminars for governing agencies and local interest groups regarding a large scale environmental assessment.

Shannon also is a published author for various publications including articles in the journal Canadian Reclamation and Applied Vegetation Science.

EDUCATION

M.Sc., University of Guelph / Botany, Guelph, Ontario, 2006

B.A., B.Sc., University of Guelph / Sociology and Biology (Hons), Guelph, Ontario, 2003

Certificate, Ontario Ministry of Natural Resources
Ontario Wetland Evaluation Systems (OWES) Training
Course, North Bay, Ontario, 2008

Certificate, Ontario Ministry of Natural Resources
Ecological Land Classification for Southern Ontario
(ELC), Turkey Point, Ontario, 2006

PROJECT EXPERIENCE

Aggregate Services

Terrestrial Surveys for Various Pit and Quarry
Implementation and Extension Projects, Ontario
(Terrestrial Ecologist)

Terrestrial surveys for the following projects included habitat assessments, floral inventories, tree surveys, American Hart's Tongue Fern surveys (a species at risk), winter wildlife surveys, salamander egg mass surveys and reptile hibernacula surveys.

- Proposed Duntroon Quarry Extension, Duntroon, ON;
- Proposed Hillsburgh Quarry, Hillsburgh, ON;
- Proposed Flamborough Quarry, Hamilton, ON;
- Proposed West Montrose Quarry, West Montrose, ON.

Dufferin Aggregates Acton Quarry Extension, Acton,
Ontario (Terrestrial Ecologist, Project Coordinator)

Terrestrial surveys included salamander migration surveys, salamander egg mass surveys, salamander tissue sampling (in conjunction with OMNR), and amphibian calling surveys. Coordination of project includes proposed additional fieldwork, technical reporting and species at risk permit applications.

Electrical Power Distribution

Coote's Paradise Transmission Reinforcement Project,
Hamilton, Ontario (Terrestrial Lead, Technical Reporting)

Terrestrial surveys included vegetation community assessments, floral inventory and species at risk habitat assessments. Technical reporting and species at risk assessment in conjunction with local Conservation Authority.

Bruce to Milton Transmission Reinforcement Project
Environmental Assessment Report, Southern Ontario
(Lead Terrestrial Ecologist)

Terrestrial surveys included vegetation community assessments, floral inventories, winter wildlife and species at risk habitat assessments. Technical reporting and development of a comprehensive terrestrial monitoring and mitigation report.

Natural Sciences & Heritage Resources

Nature Counts Natural Areas Inventory, Hamilton
Conservation Authority* (Ecological Land Classification
Coordinator)

Provided the Hamilton Conservation Authority and the City of Hamilton with current vegetation inventories and identified and classified Areas of Natural and Scientific Interest (ANSI) using Ecological Land Classification (ELC). Other tasks included habitat mapping, air photo interpretation, orienteering, GPS, ground truthing, mineral and organic soil description and identification and soil moisture regimes and drainage.

* denotes projects completed with other firms

Shannon D. Catton M.Sc.

Terrestrial Ecologist / Project Manager

Oil & Gas

Proposed Bickford to Dawn Pipeline Project, Chatham, Ontario (Terrestrial Lead, Technical Reporting)

Terrestrial surveys included vegetation community assessments, floral inventory and species at risk habitat assessments. Study design and development in conjunction with local OMNR district for Eastern Foxsnake, including a species at risk 17b permit application.

Highway 21 Rehabilitation, Bayfield to St. Joseph, Ontario (Terrestrial Ecologist, Technical Reporting)

Terrestrial surveys included vegetation community assessments, floral inventory, incidental wildlife and nest searches and structure assessments in compliance with the Migratory Bird Act.

Renewable Energy

Melancthon I Wind Plant Project, Shelburne, Ontario (Terrestrial Ecologist)

Terrestrial surveys included winter raptor surveys (pre- and post-construction) and bird and bat mortality monitoring.

Wolfe Island Wind Power Project - 86 Turbines, 197.6 MW, Wolfe Island, Ontario (Terrestrial Ecologist)

Terrestrial surveys included winter raptor surveys (pre- and post-construction) and bird and bat mortality monitoring.

Research / Laboratories

Biophysical Comparisons of Quarry Floors and Alvars of Southern Ontario, University of Guelph* (Researcher and Technician)

Examined the ecological similarities and differences of abandoned limestone quarry floors and alvars to determine whether alvar habitat could be a potential restoration target for abandoned limestone quarry floors. Developed sampling designs, identified lichens, mosses and vascular plants and performed statistical analyses on descriptive and multi-variate data.

Residential Development

Environmental Impact Studies for Various Residential Development Projects, Ontario

Environmental Impact Studies for various residential development projects in the Oak Ridges Moraine (ORM) planning area.

Transportation Planning

Highway 11, Preliminary Design Study, Access Review from Powassan to Callander, Ontario (Technical Reporting)

Highway 3 Rehabilitation, Detail Design, Renton to Jarvis, Ontario (Technical Reporting)

* denotes projects completed with other firms

Shannon D. Catton M.Sc.

Terrestrial Ecologist / Project Manager

PUBLICATIONS

Matthes, U., P.J. Richardson, S. Catton, C.D. Stabler, D.W. Larson. The quarry-to-alvar initiative: Creating new alvar habitat from abandoned limestone quarries. *Canadian Reclamation*, 2010.

Tomlinson, S., U. Matthes, P.J. Richardson, D.W. Larson. The ecological equivalence of quarry floors to alvars. *Applied Vegetation Science* 11:73-82, 2008.

A comparison of the biophysical characteristics and seed banks of abandoned limestone quarry floors in southern Ontario and alvars. *M.Sc. Thesis, Department of Biology, University of Guelph, Ontario, 2006.*

A comparative analysis of the seed bank, vegetation and environmental conditions of abandoned limestone quarry floors of southern Ontario and alvars on the Bruce Peninsula, Canada. *Presentation to the World Conference on Ecological Restoration by the Society of Ecological Restoration (SER), Spain, 2005.*

Biological and physical comparisons of quarry floors and alvars. *Presentation to the Aggregate Producers' Association of Ontario Pit and Quarry Restoration Workshop, Hamilton, Ontario, 2005.*

Using alvars as a reference ecosystem to restore abandoned limestone quarries. *Poster Presentation at the A.D. Latornell Conservation Symposium, Alliston, Ontario, 2004.*

A comparative analysis of the seed bank, vegetation and environmental characteristics of abandoned limestone quarry floors of southern Ontario and alvars on the Bruce Peninsula. *Presentation to the Ontario Ecology and Ethology Colloquium (OEEC), Mississauga, Ontario, 2004.*

The quarry-to-alvar initiative: progress report. *The Ontario Aggregate Resources Corporation (TOARC) Annual Report, Burlington, Ontario, 2004.*

The quarry-to-alvar initiative: progress report. *The Ontario Aggregate Resources Corporation (TOARC) Annual Report, Burlington, Ontario, 2003.*

The quarry-to-alvar initiative: restoring value to abandoned quarries. *The Ontario Aggregate Resources Corporation (TOARC) Annual Report, Burlington, Ontario, 2002.*

Nicole Kopysh is a Terrestrial Ecologist and Project Manager who has been involved in multi-sized projects from various sectors including aggregates, renewable energy and development. Nicole has successfully managed or directed environmental impact assessments, constraints analyses, natural environment technical reports, environmental implementation reports and natural heritage monitoring programs. Her experience involves the implementation of the natural heritage policy of the Ontario Provincial Policy Statement, Greenbelt Plan, Oak Ridges Moraine Act, Migratory Birds Convention Act and municipal policy documents for municipal draft plan applications throughout southern Ontario. Nicole is also a skilled birder and has field experience conducting bird surveys, species at risk surveys, general terrestrial monitoring and assessments, wildlife inventories and habitat assessments.

EDUCATION

BES, University of Waterloo / Bachelor of Environmental Studies, Honours Environment and Resource Studies, Co-op Program, Waterloo, Ontario, 1998

PROFESSIONAL ASSOCIATIONS

Member, Society of Canadian Ornithologists

Member, Ontario Field Ornithologists

PROJECT EXPERIENCE

Aggregate Services

Neubauer Pit, Township of Puslinch, Ontario (Project Assistant, Ecologist)

Natural environment field inventories and Level II Natural Environment Technical Report

Hillsburgh Huxley Pit, Hillsburgh, Ontario (Project Assistant, Ecologist)

Natural environment field inventories, Woodlot Assessment of Significance and Level II Natural Environment Technical Report

Proposed Bromberg Pit, Ayr, Ontario (Project Assistant, Ecologist)

Natural environment field inventories and Level I Natural Environment Technical Report

Commercial / Retail Development

First Capital Holdings Trust, Guelph, Ontario (Project Manager)

Environmental Implementation Report. Vegetation buffers, wildlife corridor, tree conservation plan, planning and design of invasive species removal, design of compliance and performance monitoring program.

Natural Sciences & Heritage Resources

Forest Bird Research - Canadian Wildlife Service* (Field Assistant)

Located Wood Thrush nests, monitored nesting success, banded adult and nestling birds, and conducted vegetation surveys.

Forest Bird Research - Smithsonian Institution* (Field Assistant)

Located and monitored Hooded Warbler nests and conducted insect sweep net sampling. Located Blue-headed Vireo nests and conducted playback experiments.

Ontario Breeding Bird Atlas - Ontario Nature-Federation of Ontario Naturalists* (Assistant Coordinator)

Coordinated and managed various aspects of a province-wide conservation/research project. This involved coordinating coverage to ensure project goals were met; hiring, training and managing contract staff; development of funding proposals; coordination of field work; management of volunteers and working committees; assistance in preparation of Atlas book for publication.

* denotes projects completed with other firms

Colonial Marshbird Census - Bird Studies Canada*
(Project Coordinator)

Developed the project outline, scope, organization and staffing. Scheduled the project timelines and tasks. Performed key field work in marshes throughout southern Ontario.

Ontario Eastern Screech-owl Survey - Ontario Breeding Bird Atlas* (Project Manager)

Developed project proposal, project timeline, schedule and budget. Responsible for communications, data management and handling. Launched survey and coordinated volunteer involvement.

Power

Chinodin Melancthon and Grey Highlands Wind Projects, Ontario (Terrestrial Ecologist)

Coordinating and conducting monitoring of bats and migratory and breeding birds for wind turbine development.

Proton Wind Program, Southgate Township, Ontario (Terrestrial Ecologist)

Coordinating and conducting monitoring of migratory and breeding birds for wind turbine development, preparation of comprehensive technical appendix to the Environmental Screening Report.

Wolfe Island Wind Power Project, Wolfe Island, Ontario (Terrestrial Ecologist)

Study design, coordination and conducting of monitoring for spring migratory birds, fall migrating raptors, staging waterfowl, winter raptors and grassland bird populations. Design and conducting specific studies to target avian Species at Risk. Assessment of amphibian populations, mammal populations, and wildlife corridors. Preparation of technical report appendix to the Environmental Screening Report.

Residential Development

Almas Property, Hamilton, Ontario (Project Manager)

Environmental Impact Statement and Natural Heritage Assessment

Golhar Residence, Hockley Valley, Ontario (Project Manager)

Development of environmental review for a proposed pond located within the Niagara Escarpment Protection Area.

Glaspell Homeowner's Guide, Whitby, Ontario (Project Manager)

Fourteen Mile Creek Long-term Natural Heritage Monitoring Program, Oakville, Ontario (Natural Heritage Monitoring Project Director)

A watershed-based inventory and monitoring program for a study area in the Fourteen Mile Creek watershed was developed in association with the Conservation Authority to assess human induced stress on the greater ecosystem. The program included one year of inventory work and four subsequent years of monitoring and incorporated the following components: streamflow and rainfall monitoring, erosion and creek morphology, groundwater, vegetation and Ecological Land Classification, breeding birds, fish, water quality and benthos.

Sports, Recreation & Leisure

Clublink Wyndance Golf Courses, Uxbridge, Ontario (Project Manager)

Natural heritage assessment and development of environmental report addendum and significant species plan.

* denotes projects completed with other firms

PUBLICATIONS

Eastern Screech-Owl pp. 290-291. *Atlas of the Breeding Birds of Ontario*, 2007.

Kopysh, N. Other Owls!. *Ontario Breeding Bird Atlas Newsletter*. Vol 5, Issue 1., 2005.

Kopysh, N. On the Prowl for Owls. *OFO News* 22(1): 12-13., 2004.

Kopysh, N. Owling for EASO. *Ontario Breeding Bird Atlas Newsletter*. Vol 3, Issue 2., 2003.

Kopysh, N. and C. Weseloh. Reporting Colonial Species. *Ontario Breeding Bird Atlas Newsletter*. Vol 3, Issue 2., 2003.

Buehler, D.M., D.R. Norris, B.J.M. Stuchbury and N.C. Kopysh. Food Supply and Parental Feeding Rates of Hooded Warblers in Forest Fragments. *Wilson Bulletin* 114(1), 122-127., 2002.

Morton, E., J. Howlett, N.C. Kopysh and I. Chiver. Overcoming the cost of male incubation: blue-headed vireos memorize the locations where intruders sing. *In submission to Proc Royal Soc of London, biology letters.*, 2002.

Timmermans, S. and N. Kopysh. What's Happening With Colonial Marshbirds?. *Ontario Breeding Bird Atlas Newsletter*. Vol 1, Issue 2., 2001.

James completed his Bachelor of Environmental Studies at the University of Waterloo, with a focus on applied ecology and environmental policy. He has successfully completed numerous certificate workshops related to ecological assessments and is a designated health assessor of Endangered butternut trees, issued by the Ontario Ministry of Natural Resources.

James has acquired a variety of terrestrial and aquatic field skills, including Ecological Land Classification (ELC), botanical inventories, winter wildlife surveys, herptofauna identification (egg mass / call / specimen), bat monitoring, spawning surveys, and is certified as a Class 2 Electro-fishing Backpack Crew Leader. James specializes in vegetation assessments, particularly plant identification, ELC, wetland delineation, and vegetation monitoring. Additionally, he has gained experience writing natural heritage components of Environmental Impact Studies, Environmental Assessments, and Natural Environment Technical Reports.

James provides expertise in a variety of sectors, including aggregate extraction, energy, urban lands development, and highway infrastructure. He has led or assisted in project tasks pertaining to forest restoration, ecological monitoring, and field research of rare species, among others.

EDUCATION

Certificate, Ontario Wetland Evaluation System, North Bay, Ontario, 2009

Certificate, Ecological Monitoring and Assessment Network, Turkey Point, Ontario, 2008

Certificate, Ecological Land Classification for Southern Ontario, Kingston, Ontario, 2007

Certificate, Butternut Health Assessment, Burlington, Ontario, 2009

B.E.S., University of Waterloo / Environmental Studies / Geography, Waterloo, Ontario, 2006

PROFESSIONAL ASSOCIATIONS

Member, Botanical Society of America

Member, Field Botanists of Ontario

PROJECT EXPERIENCE

Aggregate Services

Proposed Quarry, Flamborough, Ontario (Ecologist)

Aquatic surveys included stream flow discharge and uploading of data loggers. Terrestrial surveys included winter wildlife surveys and health assessments of over 100 butternut trees using current OMNR guidelines.

Acton Quarry Environmental Review, Acton, Ontario (Terrestrial Ecologist)

Assist with extensive amphibian surveys to identify significant wildlife habitat, species composition, and presence or absence of pure Jefferson salamander specimens. Surveys included call-counts, egg mass surveys, pit and aquatic trapping, and tail clippings of potential Jefferson species (in conjunction with the OMNR). Surveys were conducted over a two year period.

Environmental Mitigation and Monitoring

Various Urban Lands Projects, Waterloo and Oakville, Ontario (Terrestrial Ecologist)

Assist with monitoring vegetation communities using guidelines outlined in the Ecological Monitoring and Assessment Network and the local Conservation Authority. Field surveys consisted of identifying vascular plants growing within pre-determined plots and determining their respective cover. Data analysis included assessment of frequency, dominance, and importance value.

Environmental Site Remediation

Georgia Pacific PCB Remediation, Thorold, Ontario
(Terrestrial Ecologist)

Ecological Land Classification; mapping and evaluation of species at risk (Butternut); develop vegetation monitoring plots to determine density, frequency, dominance, and importance value; data synthesis, and technical memorandum.

Linear Infrastructure

Victoria Road North Class EA, Guelph, Ontario
(Terrestrial Ecologist)

Assist with Project Management of a proposed road widening, including background data review of applicable legislation and guidelines; conduct or delegate appropriate field surveys; agency consultation; prepare a draft Natural Environment Technical Report.

Various Road and Highway Improvement Projects, Ontario (Terrestrial Ecologist)

Produced Natural Sciences reports related to highway improvement works. Potential impacts to terrestrial vegetation, wetlands and wildlife were described for the following studies, among others:

- Highway 11 (Huntsville): Preliminary Design Study;*
- Highway 3 (Jarvis): Detailed Design Study;*
- Highway 401 (Kitchener): Preliminary and Detailed Design Study;*
- Highway 11 (Powassan): Preliminary Design Study*

Oil & Gas

Union Gas Lobo Compressor Station Expansion, Strathroy, Ontario (Terrestrial Ecologist)

Assist with Project Management of a proposed compressor station expansion, including proposal and budget; conduct/delegate appropriate field surveys; background data review of Official Plan, Significant Wildlife Habitat Technical Guide, Ontario Provincial Policy Statement, etc.; agency consultation; prepare draft and final EIS report.

Power Transmission & Distribution

Bruce to Milton Transmission Project, Milton, Ontario
(Terrestrial Ecologist)

180 km linear study area of proposed hydro transmission lines from Bruce Nuclear to Milton, Ontario. Assisted with ELC, butternut health assessments, flora inventories, and winter wildlife surveys.

Renewable Energy

Island Falls Energy Project, Smooth Rock Falls, Ontario
(Terrestrial Ecologist)

Field work component of a proposed hydroelectric dam in Northern Ontario. Assist with ELC, botanical inventory, and soils surveys in remote areas.

Kingsbridge II, Melancthon, Ostrander, Parkhill and Plateau Wind Energy Project, various municipalities, Ontario (Terrestrial Ecologist)

Assist with installation, troubleshooting, and data retrieval of Anabat SD1 monitoring devices from various study areas. Received training for data interpretation and isolation of bat calls based on digital graph patterns. Additionally, post-construction surveys of avian mortality under active wind turbines were completed at Kingsbridge II and Melancthon sites.

Research / Laboratories

Duntroon License Expansion, Duntroon, Ontario
(Terrestrial Ecologist)

Design and conduct a multiple year research program to assess the habitat characteristics of American hart's-tongue fern, a federal and provincial Special Concern species. Research examined soil (temperature, moisture, nutrient composition), ambient air (temperature, humidity, and dewpoint temperature), tree canopy cover, associate species, and snow depth. The purpose was to create a model to determine suitability of habitat to support populations of hart's-tongue fern. A preliminary transplant of 500 ferns was conducted where post-transplant monitoring studies are ongoing.

James Leslie B.E.S.
Terrestrial Ecologist

Terrestrial Assessments

Master Service Plan, Cayuga and Jarvis, Ontario
(Terrestrial Ecologist)

Develop ELC mapping of the towns of Jarvis and Cayuga. The purpose was to collect background data for Master Service Plan revisions. Data interpretation included ecological constraints analyses and authoring a technical memorandum.