

Ministry of Natural Resources  
Confirmation Letter  
April 11, 2013

April 11, 2013

Suncor Energy Products Inc.  
150 6<sup>th</sup> Avenue SW  
Calgary AB T2P 3E3

**RE: NHA Confirmation for Cedar Point Wind Energy Project**

Dear Christopher Scott:

In accordance with the Ministry of the Environment's (MOE's) Renewable Energy Approvals (REA) Regulation (O.Reg.359/09), the Ministry of Natural Resources (MNR) has reviewed the Natural Heritage Assessment and Environmental Impact Study Report for the Cedar Point Wind Energy Project located in the Town of Plympton-Wyoming, Township of Warwick and the Municipality of Lambton Shores, and submitted by Suncor Energy Products Inc. on April 11, 2013.

In accordance with Section 28(2) and 38(2)(b) of the REA regulation, MNR provides the following confirmations following review of the natural heritage assessment:

1. The MNR confirms that the determination of the existence of natural features and the boundaries of natural features was made using applicable evaluation criteria or procedures established or accepted by MNR.
2. The MNR confirms that the site investigation and records review were conducted using applicable evaluation criteria or procedures established or accepted by MNR, if no natural features were identified.
3. The MNR confirms that the evaluation of the significance or provincial significance of the natural features was conducted using applicable evaluation criteria or procedures established or accepted by MNR.
4. The MNR confirms that the project location is not in a provincial park or conservation reserve.
5. The MNR confirms that the environmental impact study report has been prepared in accordance with procedures established by the MNR.

In accordance with Section 28(3)(c) and 38(2)(c), MNR also offers the following comments in respect of the project.

Preconstruction Monitoring

In accordance with Appendix D of MNR's NHA Guide, a commitment has been made to complete pre-construction assessment(s) of habitat use for the following candidate significant wildlife habitats, the results of which will be submitted to MNR:

- Amphibian Woodland Breeding Habitat (Features 6, 7, 25, 26, 29, 37, 47, 56 and 57);
- Hooded Warbler Habitat (Features 45, 48, 55, 56 and 62);
- Plant Species of Conservation Concern (Features 3, 6, 7, 10, 18, 19, 20, 23 and 24).
- Wood Thrush Habitat (Features 3, 6, 10, 18, 19, 23, 26, 28, 30, 32, 45, 48, 52, 55, 56, 58, and 62)

MNR has reviewed and confirmed the assessment methods and the range of mitigation options. Pending completion of the assessments and determination of significance, the appropriate mitigation is expected to be implemented, as committed to in the environmental impact study.

A commitment has been made in the Natural Heritage Assessment and Environmental Impact Study dated April 2013 to conduct the following pre-construction monitoring:

- i. Botanical inventory of areas of significant woodland to be removed (Features 3, 6, 7, 10, 18, 19, 20, 23 and 24) for the purpose of preparing a Replanting and Restoration Plan as part of the Natural Areas Management Strategy

#### Post-Construction Monitoring

In addition to the NHA and EIS, an Environmental Effects Monitoring Plan (EEMP) that address post-construction mortality monitoring and mitigation for birds and bats must be prepared and implemented. Environmental Effects Monitoring Plans for birds and bats must be prepared in accordance with MNR Guidelines and should be reviewed by MNR in advance of submitting a REA application to MOE in order to minimize potential delays in determining if the application is complete. Comments provided by the MNR with respect to the EEMP must be submitted as part of the application for a REA.

A commitment has been made in the Environmental Effects Monitoring Plan, part of the Design and Operations Report, to conduct post-construction monitoring and if determined necessary, implement mitigation measures. For the Cedar Point Wind Energy Project this includes;

- Amphibian Woodland Breeding Habitat (Features 6, 7, 25, 26, 29, 37, 47, 56 and 57);
- Hooded Warbler Habitat (Features 45, 48, 55, 56 and 62);
- Plant Species of Conservation Concern (Features 3, 6, 7, 10, 18, 19, 20, 23 and 24).
- Wood Thrush Habitat (Features 3, 6, 10, 18, 19, 23, 26, 28, 30, 32, 45, 48, 52, 55, 56, 58, and 62)

A commitment has been made in the Natural Heritage Assessment and Environmental Impact Study dated April 2013 to conduct the following additional post-construction monitoring:

- i. Botanical inventory of the planting(s) conducted as a result of significant woodland removal, to assess the success of the Replanting and Restoration Plan as part of the Natural Areas Management Strategy

This confirmation letter is valid for the project as proposed in the natural heritage assessment and environmental impact study, including those sections describing the

Environmental Effects Monitoring Plan and Construction Plan Report. Should any changes be made to the proposed project that would alter the NHA, MNR may need to undertake additional review of the NHA.


Where specific commitments have been made by the applicant in the NHA/EIS with respect to project design, construction, rehabilitation, operation, mitigation, or monitoring, MNR expects that these commitments will be considered in MOE's Renewable Energy Approval decision and, if approved, be implemented by the applicant.

In accordance with S.12 (1) of the Renewable Energy Approvals Regulation, this letter must be included as part of your application submitted to the MOE for a Renewable Energy Approval.

Please 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 letter, please contact Joe Halloran at [joe.halloran@ontario.ca](mailto:joe.halloran@ontario.ca) or 705-755-3225

Sincerely,



Kazia Milian  
Supervisor, Resource Management Planning  
Southern Region MNR

cc Mitch Wilson, District Manager, Aylmer District, MNR  
Narren Santos, Environmental Approvals Access & Service Integration Branch, MOE  
Zeljko Romic, Environmental Approvals Access & Service Integration Branch, MOE  
Katherine St. James, Terrestrial Ecologist, Stantec Consulting Ltd.

# Natural Heritage Assessment & Environmental Impact Study



**Stantec**

**SUNCOR ENERGY CEDAR POINT  
WIND ENERGY PROJECT  
NATURAL HERITAGE ASSESSMENT &  
ENVIRONMENTAL IMPACT STUDY**

File No.: 160960709  
April 2013

Prepared for:

**Suncor Energy Products Inc.**  
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Calgary AB T2P 3E3

Prepared by:

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## **Executive Summary**

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Suncor Energy Products Inc. (“Suncor”) is proposing to develop the Suncor Energy Cedar Point Wind Power Project (the Project) within the Town of Plympton-Wyoming, Township of Warwick and the Municipality of Lambton Shores, all within Lambton County, Ontario.

It is envisioned that the proposed Project will include up to 46 wind turbines. The proposed Project would also include access roads, meteorological towers (met towers), electrical collector lines, substation, and a 115 kV transmission line. Suncor has elected to assess and seek approval for some alternative Project configurations. The Renewable Energy Approval (REA) application process will consider up to nine (9) alternative turbine locations. Final selection of the turbine sites will be determined prior to Project construction and will be based on consultation activities, potential effects assessments, and detailed design / engineering work. Commercial operation is currently planned for July 2014.

Suncor has retained Stantec Consulting Ltd. (Stantec) to prepare a Renewable Energy Approval (REA) application, as required 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). This Natural Heritage Assessment and Environmental Impact Study report has been prepared in accordance with O. Reg. 359/09 and *Natural Heritage Assessment Guide for Renewable Energy Projects* (MNR, 2011b). The Natural Heritage Assessment (NHA) report is provided to the Ministry of Natural Resources (MNR) for confirmation in advance of submission as part of the Renewable Energy Approval (REA) application to the Ministry of Environment (MOE).

**SUNCOR ENERGY CEDAR POINT WIND POWER PROJECT  
NATURAL HERITAGE ASSESSMENT & ENVIRONMENTAL IMPACT STUDY**

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## **1.0 Introduction**

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### **1.1 PROJECT OVERVIEW**

Suncor Energy Products Inc. (“Suncor”) is proposing to develop the Cedar Point Wind Power Project (the ‘Project’) within the Town of Plympton-Wyoming, Township of Warwick, and the Municipality of Lambton Shores, all within Lambton County, Ontario. The Project was awarded a Feed-In-Tariff (FIT) contract with the Ontario Power Authority (OPA) in July, 2011 for up to 100 MW (FIT Contract F-002175-WIN-130-601).

It is envisioned that the proposed Project will include up to 46 wind turbines. The proposed Project would also include access roads, meteorological towers (met towers), electrical collector lines, substation, and a 115 kV transmission line. Suncor has elected to assess and seek approval for some alternative Project configurations. The Renewable Energy Approval (REA) application process will consider up to nine (9) alternative turbine locations. Final selection of the turbine sites will be determined prior to Project construction and will be based on consultation activities, potential effects assessments, and detailed design / engineering work.

The Project Location includes all land and buildings/structures associated with the Project and any air space in which the Project will occupy. This includes structures such as turbines, access roads and power lines that will be utilized throughout the life of the Project. A “Zone of Investigation” has been identified based on the requirements of O. Reg. 359/09. The zone of investigation encompasses the Project Location and an additional 120 m surrounding the Project Location (50 m surrounding collector lines and the transmission line) (**Figure 1, Appendix A**).

The proposed Project would also include access roads, up to three meteorological towers (met tower), electrical collector lines, a substation and a transmission line. The project will connect to the provincial high voltage transmission system via a transmission line system and transformer station constructed owned and operated by subsidiaries of NextEra Energy Canada (NextEra). Temporary components during construction may include storage and staging areas at the turbine locations, crane pads or mats, staging areas along access roads, delivery truck turnaround areas, and a central laydown area (located at the substation). Project development activities will continue and if successful, construction is scheduled to commence in early 2014. Commercial operation is currently planned for December 2014.

### **1.2 REPORT REQUIREMENTS**

This Natural Heritage Assessment and Environmental Impact Study report has been prepared in accordance with Ontario Regulation 359/09 (O. Reg. 359/09) and *Natural Heritage Assessment Guide for Renewable Energy Projects* (MNR, 2011a). The Natural Heritage Assessment (NHA) report is provided to the Ministry of Natural Resources (MNR) for confirmation in advance of

submission as part of the Renewable Energy Approval (REA) application to the Ministry of Environment (MOE).

This NHA utilizes the definition of Project Location as provided in Section 2.3 of the *Natural Heritage Assessment Guide for Renewable Energy Projects* (MNR, 2011a). As per the definition in O. Reg. 359/09, a renewable energy Project Location includes: “...a part of land and all or part of any building or structure in, on or over which a person is engaging in or proposes to engage in the project and any airspace in which a person is engaging in or proposes to engage in the project”.

A renewable energy project includes all activities associated with the construction, installation, use, operation, maintenance, changing or retiring of the renewable energy generation facility. Therefore, for the purposes of measuring the distance from the Project Location to a natural feature, a Project Location boundary is considered to be the outer limit where site preparation and construction activities will occur and where infrastructure will be located (e.g. temporary structures, lay down areas, storage facilities, generation equipment, access roads, etc.).

In addition, for consultation purposes a “Project Boundary” has also been defined (**Figure 1, Appendix A**). The Project Boundary is an area that encompasses the Project Location and uses existing roadways to define the spatial limit of the boundary. The Project Boundary is also used in the records review component of this NHA report in order to identify natural features in the vicinity, within, or partially within, 120 m of the Project Location.

An NHA is required to determine whether any of the following natural heritage features exist in and/or within 120 m of the Project Location:

- Wetlands and Coastal Wetlands
- Woodlands;
- Wildlife habitat;
- Life Science Areas of Natural and Scientific Interest (ANSIs), or within 50 m of an Earth Science ANSI;
- Natural features in specified provincial plan areas; and,
- Provincial parks and conservation reserves.

This report identifies the presence and boundaries of all natural features in and within 120 m of the Project Location based on a review of background records (**Section 2**) and on-site field investigations (**Section 3**). An evaluation of significance was then completed 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 (**Section 4**). Where the Project Location is within 120 m of a significant or provincially significant natural feature based on the evaluations of significance, an environmental impact study was completed which identifies and

addresses, through future mitigation, any potential negative environmental effects of the Project (**Section 5**).

The Zone of Investigation is the area within which site-specific field investigations were completed to:

- Verify whether the analysis of the Project Location undertaken through the records review is accurate, and make any necessary corrections to the determinations in the records review report;
- Determine whether any additional natural features exist in or within 120 m of the Project Location, other than those identified in the records review report;
- Determine the boundaries of any natural feature located in or within 120 m of the Project Location (identified through the records review report or during site investigation); and,
- Determine the distance from the Project Location to the boundaries of any natural features.

This ensures that any negative environmental effects that may result from construction and operation of the Project will be assessed within this report as per the requirements of O. Reg. 359/09.

The results of the NHA/EIS are consolidated into this report, which is being submitted to MNR for confirmation in advance of submission of the REA application to the MOE. Written confirmation from the MNR, as well as any written comments received from the MNR, must be submitted along with the NHA/EIS to the MOE as part of the REA application.

### **1.3 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, 2011a)
- Bats and Bat Habitats Guidelines for Wind Power Projects (MNR, 2011b)
- Birds and Bird Habitats Guidelines for Wind Power Projects (MNR, 2011c)
- Significant Wildlife Habitat Technical Guide (SWHTG) and Appendices (MNR, 2000)
- Ontario Wetland Evaluation System, Southern Manual (MNR, 2002)
- Draft Significant Wildlife Habitat Ecoregion 7E Criterion Schedule (MNR, 2012)<sup>1</sup>

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<sup>1</sup> As per direction received from MNR on June 2, 2012, the Draft Significant Wildlife Habitat Ecoregion 7E Criterion Schedule will be the current standard used in the review of this NHA.

## **2.0 Records Review**

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### **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 metres of the Project Location (i.e., the Zone of Investigation). Documents reviewed and agencies contacted as part of the records review included but were not limited to:

#### **Provincial**

- Ministry of Natural Resources, Aylmer District. District NHA Records Review Template for Renewable Energy Projects, Suncor Energy – Cedar Point Wind dated July 28, 2011 received from Aylmer District on September 9, 2011.
- Consultation with the MNR Renewable Energy Coordinator on August 11, 2011.
- Ministry of Natural Resources. Renewable Energy Assistant Planner and Management Biologist, August 20 and September 7, 2011.
- Natural Heritage Information Centre (NHIC) database. 2010. Natural Areas and Species records search. Biodiversity explorer, <http://nhic.mnr.gov.on.ca>. OMNR, Peterborough. Accessed February, 2012.
- Ontario Ministry of Natural Resources Land Information Ontario (LIO) digital mapping of natural heritage features (2011).
- Renewable Energy Atlas: Bat hibernacula mapping (LIO 2009).
- Ontario Parks Planning and Management Information (<http://www.ontarioparks.com/english/plan-res.html>).

#### **Conservation Authority**

- St. Clair Region Conservation Authority (SCRCA). Correspondence with Patricia Hayman, Director of Planning and Research, Brian McDougall, General Manager/ Secretary Treasurer and Chris Durand, GIS/IT Technologist (January 26 and February 13, 2012).
- Ausable Bayfield Conservation Authority (ABCA). Correspondence with Tom Prout, General Manager, Secretary-Treasurer and Tracey Boitson (February 13, 2012).

#### **Local Municipal Government**

- County of Lambton Official Plan (1997) and associated schedules
- Municipality of Lambton Shores Official Plan (2001)
- Town of Plympton-Wyoming Official Plan (2001)

**Other data sources**

- Important Bird Areas (IBA) database (Bird Studies Canada and BirdLife International, undated)
- Ontbirds Archives
- Wildlife atlases [Atlas of the Mammals of Ontario (Dobbyn, 1994), the Ontario Herpetofaunal Summary Atlas (Oldham and Weller, 2000) and the Ontario Breeding Bird Atlas (Cadman et al., 2007)].

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), as presented in **Section 2.2**.

**2.2 RESULTS**

A review of available background information has indicated the presence of known natural features occurring within the Project Boundary. The results of the records review search 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 1.2**). The locations of these features, including the boundaries of all natural features relative to the Project Location, are provided in **Figure 1, Appendix A**, and described in the following sections.

**2.2.1 Wetlands****2.2.1.1 Provincially Significant, Locally Significant and Coastal Wetlands**

A review of the NHIC database, LIO mapping, SCRCA and ABCA mapping identified one locally-significant wetland complex in or within 120 m of the Project Boundary or Location: the Uttoxeter Swamp. This swamp is palustrine and deciduous-tree dominated feature with good winter cover for wildlife (NHIC, 2010).

No provincially-significant or coastal wetlands were identified within the Project Boundary during the records review.

**2.2.1.2 Unevaluated Wetlands**

No unevaluated wetlands were identified in or within 120 m of the Project Boundary through the record review. The presence of additional unidentified wetlands within 120 m of the Project Location will be assessed during site investigations.



### **2.2.1.3 Wetlands Summary**

One locally-significant wetland (the Uttoxeter Swamp) was identified through background review. This will be carried forward to the site investigation. Site investigations will be undertaken to also identify any previously unknown wetland features in or within 120 m of the Project Location.

### **2.2.2 Woodlands**

The Project Boundary is located in the Niagara section of the Deciduous Forest Region (Rowe, 1972). This area is also known as the Carolinian Forest. The extreme southern tip of Ontario represents the maximum northern limit of the Carolinian Forest. Forests in this region are dominated by broadleaved trees, including sugar maple, American beech, basswood, red maple, red oak, white oak, bur oak, butternut, bitternut hickory, rock elm, silver maple and blue beech. Species such as black cherry, black walnut, sycamore, swamp white oak and shagbark hickory, tulip-tree, chinquapin oak, pin oak, black oak, black gum, blue ash, cucumber-tree, pawpaw, Kentucky coffee-tree, white pine, tamarack, eastern white cedar, eastern red cedar and black spruce may be found in isolated patches where soil conditions are favourable.

The Project Boundary is situated within four subwatersheds in the Sydenham River and Ausable River drainage basins. Forest cover for these subwatersheds varies from 10.9% to 23.7%. All infrastructure is located within the St Clair Region CA boundary. The total forest cover for St Clair CA is 11.5% (SCRCA, 2008).

In Lambton County, any woodland that is located within a Primary Corridor or Significant Natural Area, or any contiguous forested area that is equal to or greater than 4 ha in size, is considered significant (Lambton County, 1997). This is consistent with criteria provided in the NHA Guide (MNR, 2011a). In addition, it is recommended by the MNR that all woodlands within 120 m of the Project Location be investigated thoroughly to determine if they contain wetland communities. LIO mapping indicates that there are 97 woodlands in the Project Boundary, and that up to 57 of these are located within 120 m of the Project Location. Site investigations are required to confirm the presence and boundaries of woodlands within 120 m of the Project Location.

### **2.2.3 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. The Draft Significant Wildlife Habitat Ecoregion 7E Criterion Schedule groups wildlife habitat into four categories:

- Seasonal concentration areas of animals;
- Rare vegetation communities or specialized habitat for wildlife;



- Habitat for species of conservation concern; and,
- Animal movement corridors.

A compilation of background information on known wildlife use within the Project Boundary was undertaken. Using this information, a preliminary assessment was conducted to identify wildlife habitat features that may be present in, or within, 120 m of the Project Location to determine whether the area contains confirmed significant wildlife habitat (SWH) or involves a trigger for candidate SWH.

Air photo interpretation indicates that the Project Location is situated within a primarily agricultural landscape in southwestern Ontario. Numerous woodlands and possible unevaluated wetlands, exist in or within 120 m of the Project Location; these features may provide wildlife habitat.

Two Important Bird Areas (IBAs) have been identified outside of, but in proximity to, the Project Boundary: the Port Franks Forested Dunes IBA and the Thedford Flats IBA. The nearest IBA is the Port Franks Forested Dunes IBA, which is located adjacent to the northwest corner of the Project Boundary, and along the southeastern shore of Lake Huron. This IBA is classified as nationally significant for its support of an exceptional concentration of threatened bird species (Wilson and Cheskey, 2001). The Thedford Flats IBA is located approximately 5 km northeast of the Project Boundary, and adjacent to the Port Franks Forested Dunes IBA. This area is ranked globally and nationally significant for congregatory and waterfowl species respectively, specifically for the concentration of Tundra Swan during spring migration.

Secondary source data were used to determine potential wildlife use of the Project Boundary. Inventories of wildlife that have been recorded as occurring within the range of the Project Boundary were compiled from available literature and resources including the Atlas of the Mammals of Ontario (Dobbyn, 1994), the Ontario Herpetofaunal Summary (Oldham and Weller, 2000) and the Ontario Breeding Bird Atlas (Cadman et al., 2007). Based on a review of background information, 100 species of birds, 20 species of mammals, 11 species of amphibians, 2 species of butterfly and 7 species of reptiles are known to occur within the range of the Project Boundary. These species are listed in **Table 2.2, Appendix B**. It is important to note that the exact location of species occurrences are not available from these atlases and, instead, are recorded within 10 x 10 km squares. The potential for species to be present will be limited by habitat suitability and availability, and therefore the identified species recorded from these databases may not occur within the Project Boundary.

### **2.2.3.1 Seasonal Concentration Areas of Animals**

Seasonal concentration areas are those sites where large numbers of a species gather together at one time of the year, or where several species congregate. The Draft SWH Ecoregion 7E Criterion Schedule identifies 15 potential types of seasonal concentration areas:

- Waterfowl stopover and staging areas (terrestrial);

- Waterfowl stopover and staging areas (aquatic);
- Shorebird migratory stopover areas;
- Raptor wintering areas;
- Bat hibernacula;
- Bat maternity colonies;
- Bat migratory stopover areas;
- Turtle wintering areas;
- Snake hibernaculum;
- Colonial bird nesting sites (bank and cliff);
- Colonial bird nesting sites (tree/shrubs);
- Colonial bird nesting sites (ground);
- Migratory butterfly stopover areas;
- Landbird migratory stopover areas; and,
- Deer winter congregation areas.

The Project is situated in southern Ontario. A review of background information to assess the potential for seasonal concentration areas associated with this region of Ontario to be supported within the Project Boundary is provided in the following sections.

#### **Waterfowl Stopover and Staging Areas (terrestrial and aquatic)**

Areas generally considered candidate significant wildlife habitat for waterfowl staging areas are very large wetlands, associated with lakes that generally have a diversity of vegetation communities interspersed with open water (MNR, 2000). Marshes along Great Lakes shorelines are considered particularly valuable.

The Project Boundary is within 5 km of the Lake Huron shoreline and there is potential for waterfowl stopover and staging areas to occur within it. The Thedford Flats IBA is located approximately 5 km from the Project Boundary and is known to support congregations of Tundra Swan; however, there are no known waterfowl stopover and staging areas within the Project Boundary. Site investigations will determine whether these types of seasonal concentration areas are supported in or within 120 m of the Project Location.

#### **Shorebird Migratory Stopover Areas**

Relatively undisturbed shorelines along the Great Lakes that produce abundant food (clams, insects, snails and worms) are used by shorebirds during migration (MNR, 2000). The Project Boundary is within 5 km of the Lake Huron shoreline and is considered to be located in an area that could potentially support migratory shorebird stopover areas. There are no known shorebird migratory stopover areas within the Project Boundary. Site investigations will determine

whether this type of seasonal concentration area is supported within 120 m of the Project Location.

### **Raptor Wintering Areas**

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).

The Project Boundary is not located in a known concentration area for winter raptors. However, the site contains numerous woodlots of varying sizes interspersed among large open areas and agricultural fields, and winter raptor species have been recorded in the vicinity (National Audubon Society, 2010). Site investigations will determine whether this type of seasonal concentration area is supported within 1120 m of the Project Location.

### **Bat Hibernacula, Maternity Colonies and Migratory Stopover Areas**

#### *Hibernacula*

Bats require specific environmental conditions for hibernating. These conditions are provided by features such as caves or abandoned mines (MNR, 2000). Karst topography and areas of exposed bedrock can be indicators of potentially suitable hibernacula habitat for bats, none of which are known to occur within the Project Boundary. Additionally, no known bat hibernacula have been identified within the Project Boundary (LIO, 2009). Site investigations will determine whether this type of seasonal concentration area is supported in or within 120 m of the Project Location.

#### *Maternity Colonies*

Depending on the species, maternity roosts for bats can include tree foliage, tree cavities and crevices under loose bark, or buildings. Known locations of forested bat maternity colonies is extremely rare in all Ontario landscapes (MNR, 2012)

Candidate significant wildlife habitat for bat maternity roosts may be found in mixed wood or deciduous forests that contain a high density (ten per hectare or more) of large diameter (25 cm diameter at breast height (dbh) or more) snags or cavity trees (MNR, 2011a). The best candidate trees or snags for bat maternity roosts within these habitats are considered according to the following criteria (in order of importance): those that are the tallest; have cavities or crevices; have a large dbh; are within the highest density of snags/cavity trees; have a large amount of loose, peeling bark; have a cavity or crevice more than 10 m high; are tree species that provides good cavity habitat (i.e. aspen, maple, ash, oak or white pine), are within an open canopy; and exhibit early stages of decay.

No known maternity roosts occur within the Project Boundary. Site investigations will be conducted to determine whether candidate significant wildlife habitat for bat maternity roosts exist in or within 120 m of the Project Location.

#### *Migratory Stopover Areas*

Stopover areas for long distance migrant bats, including Hoary Bat, Eastern Red Bat and Silver-haired Bat, are important during fall migration. Long distance migratory bats typically migrate during late summer and early fall from summer breeding habitats throughout Ontario to southern wintering areas. Their annual fall migrations concentrate these species of bats at stopover areas. The location and characteristics of stopover habitats are generally unknown, although Long Point has been identified as a significant stopover habitat for Silver-haired Bats (MNR, 2012).

Criteria for confirming bat migration corridors and bat movement corridors are not currently defined in the *Significant Wildlife Habitat Guide* or *SWH Ecoregion 7E Criterion Schedule* meaning that the evaluation and confirmation of significant wildlife habitat is not possible for this category (MNR, 2012). Also, the *Bats and Bat Habitats: Guidelines for Wind Power Projects* states that in the absence of criteria, bat migratory stopover areas cannot currently be evaluated (MNR, 2011). As a result, it is not possible to identify candidate significant wildlife habitat for this group of species during migration, and as such will not be carried forward into the site investigation.

#### **Turtle Wintering Areas**

Wintering areas for turtles are generally the same general area as their core habitat: water that is deep enough not to freeze, with soft mud substrate (MNR, 2012). Candidate turtle overwintering habitat is defined as permanent water bodies, large wetlands, and bogs or fens with adequate dissolved oxygen (MNR, 2012).

No known turtle wintering areas occur within the Project Boundary. Site investigations will be conducted to determine whether candidate significant wildlife habitat for turtle wintering areas exist in or within 120 m of the Project Location.

#### **Snake Hibernacula**

Potential hibernacula are overwintering areas that include features such as animal burrows, rock crevices, fractured rocks at the base of cliffs or karst areas that provide an access for reptiles to hibernate below the frost line (MNR, 2000). These areas are often associated with water to prevent desiccation of the species.

The Project Boundary is located within the ranges of various common species of snakes (Oldham and Weller, 2000). There are no known reptile hibernacula within the Project Boundary. A review of aerial photography indicates there are hedgerows and woodlands within 120 m of the Project Location that could potentially contain rock piles or debris that provide

hibernacula sites. Site investigations will determine whether this type of seasonal concentration area is supported in or within 120 m of the Project Location.

### **Colonial Nesting Bird Breeding Habitat (bank/cliff, tree/shrub, and ground)**

Colonial bird nesting sites can be located in swamps and along large bodies of water for herons, islands for gulls and cliffs, and banks and artificial structures for swallows (MNR, 2000).

There are no known colonial nesting bird habitats within the Project Boundary. A review of NHIC and Ontario Breeding Bird Atlas information indicates that there is potential for colonial bird nesting sites within the Project Boundary. Site investigations will determine whether colonial bird nesting sites are found in or within 120 m of the Project Location.

### **Migratory Butterfly Stopover Areas**

During fall migration, Monarchs tend to move along the north shore of the Great Lakes (Calvert, 2001). Fields and other open areas with varied habitat types that are found within 5 km of the Lake Erie or Lake Ontario shoreline are considered candidate significant wildlife habitat for migratory butterfly stopover areas (MNR, 2000).

Monarchs can be observed throughout southern Ontario during migration; however, these areas do not host the significant thousands that regularly occur at main staging areas. The Project Boundary is not located within 5 km of Lake Erie or Ontario and so is not considered to be in an area that could potentially serve as a significant migratory butterfly stopover area according to the Draft SWH Ecoregion 7E Criterion Schedule. Therefore this feature will not be carried forward into the site investigation.

### **Landbird Migratory Stopover Areas**

Migratory passerines are known to use forested landscapes along Great Lakes shorelines as stopover sites during spring and fall migration (Ewert et al., 2006; MNR, 2000). Landbirds tend to concentrate at tips of peninsulas, congregating in significant numbers at known significant stopover sites including Point Pelee and Long Point, while raptors and shorebirds concentrate along the Great Lakes during migration. Areas that provide a diversity of habitat types ranging from open grasslands to large woodlands within 5 km of the Lake Erie or Lake Ontario shorelines are considered potential candidate significant wildlife habitat for migrating landbird stopover areas (MNR, 2000).

The Project Boundary is not located within 5 km of Lake Erie or Ontario and so is not considered to be in an area that could potentially serve as a significant landbird migratory stopover area according to the Draft SWH Ecoregion 7E Criterion Schedule. Therefore this feature will not be carried forward into the site investigation.

### **Deer Winter Congregation Areas**

Deeryards are areas of key winter habitat for White-tailed Deer. 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 within the Project Boundary (Dobbyn, 1994). Deer management is an MNR responsibility, deer winter congregation areas considered significant will be mapped by MNR. One deer wintering area as mapped by the MNR (LIO, 2009) is located within the Project Boundary. This feature will therefore be carried forward to the site investigation.

### **2.2.3.2 Rare Vegetation Communities or Specialized Habitat for Wildlife**

#### **Rare Vegetation Communities**

The SWH Ecoregion 7E Criterion Schedule identifies the following features as rare vegetation communities:

- Cliffs and talus slopes;
- Sand barrens;
- Alvars;
- Old growth forests;
- Savannahs;
- Tallgrass prairies; and
- Other rare vegetation communities listed in Appendix M of the SWHTG.

A search of the NHIC database did not identify any records of known rare vegetation communities in or within 120 m of the Project Location. However, the Port Franks Forested Dunes IBA, located adjacent to the northwest corner of the Project Boundary, is known to contain oak savannah, an S1 community (Critically Imperilled in the province). Site investigations will determine the presence or absence of the seven rare vegetation communities listed above in or within 120 m of the Project Location.

#### **Specialized Habitats**

Specialized habitats are microhabitats that are critical to some wildlife species. The SWH Ecoregion 7E Criterion Schedule identifies the following potential specialized habitats:

- Waterfowl nesting area;
- Bald Eagle and Osprey nesting, foraging, and perching habitat;
- Woodland raptor nesting habitat;
- Turtle nesting areas;
- Seeps and springs;

- Amphibian breeding habitat (woodland); and
- Amphibian breeding habitat (wetland).

A review of background information to assess the potential for specialized habitats that are associated with southern Ontario and may be supported in the Project Boundary is provided in the following sections.

### **Waterfowl Nesting Areas**

Waterfowl nesting habitat typically includes upland habitat that is located near marshes, ponds or lakes. Sites considered candidate significant wildlife habitat for waterfowl nesting typically contain a high density of small and medium sized ponds, or are single wetlands that are large and diverse (MNR, 2000). No known waterfowl nesting sites occur within the Project Boundary, although the Ontario Breeding Bird Atlas reveals known waterfowl breeding activity in atlas squares encompassing the Project Boundary and immediate vicinity (Cadman et al., 2007).

Site investigations will determine whether this type of seasonal concentration area is supported in or within 120 m of the Project Location.

### **Bald Eagle and Osprey Nesting, Foraging, and Perching Habitat**

Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands or on structures over water. Osprey nests are usually at the top a tree whereas Bald Eagle nests are typically in super canopy trees in a notch within the tree's canopy (MNR 2012).

The SWHTG indicates that some raptors require somewhat specialized habitats. Under the criteria and guidelines outlined in Appendix Q, critical habitat features that would support specialized Bald Eagle and Osprey nesting habitat are identified as waterbodies with fish populations and trees with good visibility and flight lines.

There are no known Osprey or Bald Eagle nests within the Project Boundary (LIO, 2009; Cadman et al., 2007). Bald Eagle nests are found primarily along the Great Lakes shorelines in southern Ontario. The Project Boundary is within 5 km of the Lake Huron shoreline, and a review of the Ontario Breeding Bird Atlas indicates that Bald Eagles have been recorded in some of the atlas squares intersecting the Project Boundary (Cadman et al., 2007).

Site investigations will determine the presence of these two specialized wildlife habitat features in or within 120 m of the Project Location.

### **Woodland Raptor Nesting Habitat**

For woodland nesting raptors, the presence of stick nests within forested ecosites would be an indicator of candidate significant wildlife habitat for raptor nesting. Stick nests are found in a variety of intermediate-aged to mature natural or plantations of conifer, deciduous or mixed forests >30 ha with >4 ha of interior habitat, within tops or crotches of trees (MNR, 2000).



There are no known woodland raptor nests within the Project Boundary. Red-shouldered Hawk is recorded from the Port Franks Forested Dunes IBA which is located adjacent to the northwest corner of the Project Boundary of the Project Boundary. Site investigations will be conducted to determine the presence of candidate significant wildlife habitat for woodland raptor nesting habitat in or within 120 m of the Project Location.

### **Turtle Nesting Habitat**

Sandy or fine gravel soils are a requirement for turtle nesting (MNR, 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).

No known turtle nesting habitat is known within the Project Boundary, although there is potential for turtle nesting habitat along the shorelines of watercourses within the Project Boundary. Site investigations will determine the presence of turtle nesting habitat within 120 m of the Project Location.

### **Seeps and Springs**

Seepage areas and springs provide habitat for numerous uncommon species and may support a high diversity of plant species (MNR, 2000). In winter, these areas provide foraging opportunities for Wild Turkey and White-tailed Deer. Those that occur within forested areas where the canopy maintains cool, shaded conditions are most important. No known seeps or springs occur within the Project Boundary. The presence of seeps and springs in and within 120 m of the Project Location will be identified during site investigations.

### **Amphibian Breeding Habitat (woodland)**

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).

There are no known amphibian breeding habitats (woodland) within the Project Boundary. The Ontario Herpetofaunal Summary (Oldham and Weller, 2000) indicates the Project Boundary falls within the range of a number of common amphibian species. Woodlands are present within the Project Boundary and may provide amphibian habitat. Site investigations will determine the presence of candidate significant wildlife habitat for amphibian woodland breeding to be present in or within 120 m of the Project Location.



**Amphibian Breeding Habitat (wetland)**

Wetlands supporting breeding for these amphibian species are extremely important and are fairly rare in southern Ontario landscapes (MNR, 2000).

There are no known amphibian breeding habitats (wetland) within the Project Boundary. Wetland amphibian species including Bullfrogs are known to occur within the Project Boundary (Oldham and Weller, 2000). Site investigations will determine whether this type of specialized habitat is supported in or within 120 m of the Project Location.

**2.2.3.3 Habitat for Species of Conservation Concern**

Habitat for species of conservation concern includes wildlife species that are listed as Special Concern or rare, that are declining, or are featured species. Habitats for Species Conservation Concern do not include habitats of Endangered or Threatened Species as identified by the Endangered Species Act 2007. Habitats for Species Conservation Concern, as defined in the Draft SWH Ecoregion 7E Criterion Schedule, include:

- Marsh Bird Breeding Habitat;
- Bird Breeding Habitat (woodland area-sensitive, open country, and shrub/early successional);
- Terrestrial Crayfish; and,
- Special Concern and Rare Wildlife Species.

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. Information required as part of these requirements is being submitted to MNR as part of the Cedar Point APRD Report under separate cover. Where this information indicates that approvals or permits are required, these will be addressed separately through the applicable permitting process.

A review of background information to assess the potential for habitat for species of conservation concern that are associated with southern Ontario and may be supported in the Project Boundary is provided in the following sections.

**Marsh Bird Breeding Habitat**

Wetland habitats are to be considered where there is shallow water with emergent aquatic vegetation present (MNR, 2012). There are no known marsh breeding habitats within the Project Boundary. Site investigations will determine whether this type of habitat is supported in or within 120 m of the Project Location.

**Bird Breeding Habitat (woodland area-sensitive, open country, and shrub/early successional)**

Woodlands and areas of open country of at least 30 ha with a minimum of 4 ha of interior forest habitat (>200 m from the edge for this wildlife habitat type) are considered to have the potential to host populations of area-sensitive bird species (MNR, 2012). Ontario Breeding Bird Atlas information indicates that the 10x10 km atlas squares that encompass the Project Boundary contain records of woodland and open country sensitive breeding birds. The Ontario Breeding Bird Atlas (Cadman et al., 2007) indicates that six area-sensitive forest bird species (i.e., Pileated Woodpecker, Red-breasted Nuthatch, Winter Wren, Veery, Ovenbird, and Scarlet Tanager) and three open country species (i.e., Northern Harrier, Vesper Sparrow and Savannah Sparrow) identified in the Draft SWH Ecoregion 7E Criterion Schedule have been known to breed in the Project Boundary (see **Table 2.2, Appendix B**). A review of woodland mapping indicates that there are woodlots >30 ha or greater in size located within 120 m of the Project Location.

Agricultural habitat is found in the Project Boundary that could support open country breeding bird species. Areas that are actively managed for agricultural activities are not considered candidates for significant open country breeding bird habitat (MNR, 2012). Open country habitat contained in and within 120 m of the Project Location is largely restricted to actively hayed fields and grazed pasture. The farming practice of hay field cutting before the end of the breeding cycle for grassland birds can reduce breeding success for these species up to 94% and hayfields are not considered to support viable populations of grassland breeding bird species (COSSARO, 2010). Actively managed agricultural fields in and within 120 m of the Project Location are not considered candidate significant wildlife habitat for open country breeding bird species. Natural grassland areas may be present in or within 120 m of the Project Location that may support significant habitat for open country breeding bird species.

Shrub thicket habitats greater than 10 ha are most likely to support and sustain a diversity of shrub /early successional bird breeding species. **Table 2.2, Appendix B** contains 5 bird species that are listed as common shrub /early successional birds (i.e., Black-billed Cuckoo, Willow Flycatcher, Brown Thrasher, Eastern Towhee and Field Sparrow) as per the Draft SWH Ecoregion 7E Criterion Schedule (MNR, 2012).

Site investigations will determine whether woodland area sensitive, open country or shrub/early successional bird breeding habitat is present in or within 120 m of the Project Location.

**Terrestrial Crayfish**

These species prefer meadow and edges of shallow marshes (no minimum size) (MNR, 2012). There are no known terrestrial crayfish habitats within the Project Boundary. Site investigations will determine whether terrestrial crayfish are present in or within 120 m of the Project Location.

### **Special Concern and Rare Wildlife Species**

Rare species are considered at five levels: globally rare, nationally rare (with designations by the Committee on the Status of Endangered Wildlife in Canada, or COSEWIC), provincially rare, regionally rare (at the Site Region level), and locally rare (in the municipality or Site District). This is also the order of priority that should be assigned to the importance of maintaining species. Some species have been identified as being susceptible to certain practices, and their presence may result in an area being designated significant wildlife habitat. Examples include species vulnerable to habitat loss and species such as woodland raptors that may be vulnerable to forest management or human disturbance. The final group of species of conservation concern includes species that have a high proportion of their global population in Ontario. Although they may be common in Ontario, they are found in low numbers in other jurisdictions.

NHIC and wildlife atlases were used to identify historic records of special concern and rare wildlife species that occur in the Project Boundary. Special concern and rare wildlife species are those that are listed as special concern and provincially rare (S1-S3, SH) plant and animal species. Endangered and threatened species listed as federally endangered or threatened with no provincial ESA protection are also listed in this category. Within the Project Boundary, this includes 37 species of plants, 2 species of Lepidoptera, 3 reptile species and 3 bird species (see **Table 2.3, Appendix B**). Site investigations will include habitat suitability assessments for each these species and will be used to determine the potential for candidate significant wildlife habitat for rare species.

The nearest Important Bird Area (IBA) is the Port Franks Forested Dunes IBA, which is adjacent to the northwest corner of the Project Boundary and along the southeastern shore of Lake Huron. This IBA is classified as nationally significant for its support of an exceptional concentration of rare bird species, as well as other rare flora and fauna. Species known from the site include the Acadian Flycatcher, Hooded Warbler, Red-Headed Woodpecker, Louisiana Waterthrush, and Red-shouldered Hawk. Species that formerly nested in the forest complex include Prairie Warbler (Wilson and Cheskey, 2001).

#### **2.2.3.4 Animal Movement Corridors**

Animal movement corridors are elongated, naturally vegetated parts of the landscape used by animals to move from breeding habitat to summer habitat. Amphibian Movement Corridors are the only Animal Movement Corridors that must be considered as per the Draft SWH Ecoregion 7E Criterion Schedule (MNR, 2012), when amphibian breeding habitat (wetland) is confirmed as significant wildlife habitat. Amphibian Movement Corridors which consist of native vegetation, roadless area, no gaps such as fields, waterways or bodies, and undeveloped areas are most significant. Corridors should be at least 200 m wide with gaps less than 20 m and if following riparian area with at least 15 m of vegetation on both sides of the waterway (MNR, 2000).

The County of Lambton Official Plan identifies Primary Corridors and Linkages. However, these features do not correspond to the Animal Movement Corridors as defined in Draft SWH Ecoregion 7E Criterion Schedule. Site investigations will be conducted to assess the suitability of features as potential amphibian movement corridors.

**2.2.4 Areas of Natural and Scientific Interest (ANSIs)**

MNR identifies two types of ANSIs: Life Science and Earth Science (MNR, 2011a). 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 bedrock, fossils and landforms in Ontario.

Based on a review of LIO mapping (LIO, 2009), no Life Science ANSIs were located in or within 120 m of the Project Location and no Earth Science ANSIs were located in or within 50 m of the Project Location; however, there are ANSIs located outside of the Zone of Investigation, such as the Ausable River Valley Life Science ANSI (> 5km) and the Port Franks Wetlands and Forested Dunes Life Science ANSI (>2km). Because these areas are outside of the Zone of Investigation, they will not be carried forward through to site investigation.

**2.2.5 Natural Features in Specified Provincial Plan Areas**

The Project is not located within the Niagara Escarpment Plan Area, the Oak Ridges Moraine Conservation Plan Area or the Protected Countryside of the Greenbelt Plan. These areas will not be carried forward through to site investigation.

**2.2.6 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). These areas will not be carried forward through to site investigation.

**2.3 SUMMARY OF NATURAL FEATURES AND BOUNDARIES IDENTIFIED**

**Table 2.1** provides a summary of the natural features that will be carried forward to site investigation.

**Table 2.1: Natural Features Carried Forward to Site Investigation**

Feature	Carried Forward to Site Investigation (Y/N)	Known Recorded Information
Wetlands	Y	One locally significant wetland: the Uttoxeter Swamp. Site investigations are required to identify any previously unknown wetland features in or within 120 m of the Project Location.
Woodlands	Y	57 woodlands are located in or within 120 m of the Project

**Table 2.1: Natural Features Carried Forward to Site Investigation**

Feature	Carried Forward to Site Investigation (Y/N)	Known Recorded Information
		Location. Site investigations are required to confirm the presence and boundaries of these woodlands.
<b>Wildlife Habitat</b>		
<b>Seasonal Concentration Area</b>		
<ul style="list-style-type: none"> <li>• Waterfowl stopover and staging areas (terrestrial)</li> </ul>	Y	No known records
<ul style="list-style-type: none"> <li>• Waterfowl stopover and staging areas (aquatic)</li> </ul>	Y	No known records
<ul style="list-style-type: none"> <li>• Shorebird migratory stopover areas</li> </ul>	Y	No known records
<ul style="list-style-type: none"> <li>• Raptor wintering areas</li> </ul>	Y	No known records
<ul style="list-style-type: none"> <li>• Bat hibernacula</li> </ul>	Y	No known records
<ul style="list-style-type: none"> <li>• Bat maternity colonies</li> </ul>	Y	No known records
<ul style="list-style-type: none"> <li>• Bat migratory stopover areas</li> </ul>	N	N/A
<ul style="list-style-type: none"> <li>• Turtle wintering areas</li> </ul>	Y	No known records
<ul style="list-style-type: none"> <li>• Snake hibernaculum</li> </ul>	Y	No known records
<ul style="list-style-type: none"> <li>• Colonial bird nesting sites (bank and cliff)</li> </ul>	Y	No known records
<ul style="list-style-type: none"> <li>• Colonial bird nesting sites (tree/shrub)</li> </ul>	Y	No known records
<ul style="list-style-type: none"> <li>• Colonial bird nesting sites (ground)</li> </ul>	Y	No known records
<ul style="list-style-type: none"> <li>• Migratory butterfly stopover areas</li> </ul>	N	The Project Boundary is not located within 5 km of Lake Erie or Lake Ontario
<ul style="list-style-type: none"> <li>• Landbird migratory stopover areas</li> </ul>	N	The Project Boundary is not located within 5 km of Lake Erie or Lake Ontario
<ul style="list-style-type: none"> <li>• Deer winter congregation areas</li> </ul>	Y	
<b>Rare Vegetation Communities or Specialized Habitat for Wildlife</b>		
<b>Rare Vegetation Communities</b>		
<ul style="list-style-type: none"> <li>• Cliffs and talus slopes</li> <li>• Sand barren</li> <li>• Alvar</li> <li>• Old growth forests</li> <li>• Savannah</li> <li>• Tallgrass prairie</li> <li>• Other rare vegetation communities listed in Appendix M of the SWHTG</li> </ul>	Y	No known records
<b>Specialized Habitat for Wildlife</b>		
<ul style="list-style-type: none"> <li>• Waterfowl nesting area</li> </ul>	Y	No known records
<ul style="list-style-type: none"> <li>• Bald Eagle and Osprey nesting, foraging, and perching habitat</li> </ul>	Y	No known records
<ul style="list-style-type: none"> <li>• Woodland raptor nesting habitat</li> </ul>	Y	No known records
<ul style="list-style-type: none"> <li>• Turtle nesting habitat</li> </ul>	Y	No known records
<ul style="list-style-type: none"> <li>• Seeps and springs</li> </ul>	Y	No known records
<ul style="list-style-type: none"> <li>• Amphibian breeding habitat (woodland)</li> </ul>	Y	No known records
<ul style="list-style-type: none"> <li>• Amphibian breeding habitat (wetland)</li> </ul>	Y	No known records
<b>Habitat for Species of Conservation Concern</b>		
<ul style="list-style-type: none"> <li>• Marsh Bird Breeding Habitat</li> </ul>	Y	No known records
<ul style="list-style-type: none"> <li>• Bird Breeding Habitat (woodland area-sensitive)</li> </ul>	Y	No known records

**Table 2.1: Natural Features Carried Forward to Site Investigation**

<b>Feature</b>	<b>Carried Forward to Site Investigation (Y/N)</b>	<b>Known Recorded Information</b>
• Bird Breeding Habitat (open country)	Y	No known records
• Bird Breeding Habitat (shrub/early successional)	Y	No known records
• Terrestrial Crayfish	Y	No known records
• Special Concern and Rare Wildlife Species	Y	Listed in <b>Table 2.3, Appendix B</b>
Animal Movement Corridors		
• Amphibian Movement	Y	No known records
Areas of Natural and Scientific Interest (ANSI)		
• Life Science ANSI	N	None present in the Project Boundary
• Earth Science ANSI		
Specified Provincial Plan Areas	N	None present in the Project Boundary
Provincial Parks and Conservation Reserves	N	None present in the Project Boundary

### 3.0 Site Investigation

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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, 2011a).

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 and triggers for significant wildlife habitat that are identified within the Project Boundary. The Project is primarily sited within actively farmed agricultural fields and has been sited more than 120 m from the majority of natural features in the Project Boundary.

Natural features that have the potential to occur in or within 120 m of the Project Location, as identified through the records review, are listed in **Table 2.1** in **Section 2.3**. Site investigations are required to confirm the presence and delineate the boundaries of candidate significant wildlife habitat features in and within 120 m of the Project Location.

#### 3.1 METHODS

The site investigations undertaken detailed the current conditions in and within 120 m of the Project Location, and were based on the information about the Project Location. Survey dates, times, duration, field personnel and weather conditions are presented in **Table 3.1**, **Appendix B**. All surveys conducted within the Project Boundary were completed by qualified personnel. *Curricula vitae* for personnel involved in conducting the site investigations are provided in **Appendix D**. Land access was available for all land parcels where Project components are proposed, and areas within 120 m of the Project Location were traversed on foot during site investigations where land access was available.

All site investigations were carried out in accordance with O. Reg. 359/09 and the Natural Heritage Assessment Guide for Renewable Energy Projects (MNR, 2011b), using guidance provided in the SWHTG and the Draft SWH Ecoregion 7E Criterion Schedule (MNR, 2012).

##### 3.1.1 Alternative Site Investigation Methods

In some cases, it was necessary to conduct an Alternative Site Investigation, as described in Part IV, Section 26 of O.Reg. 359/09. Alternative Site Investigations were completed when access to private property was not granted and on-site investigations could not be conducted. Alternative Site Investigations were completed using aerial photograph interpretation as well as



field observations including observations made from the nearest property where access was available or from the nearest road. Through aerial photography and visual field observations, vegetation communities in these natural areas were identified to the lowest level possible using the Ecological Land Classification for Southern Ontario.

Following preliminary natural area delineation using aerial imagery, Stantec submitted requests to Suncor's land agent consultant team, which was responsible for contacting landowners to request access to private property, in order to complete site investigation field studies. Attempts were made to reach landowners at least twice or until the landowner denied or granted access to the property. Land access instructions for field teams were also gathered at this time. The majority of roadside surveys were conducted for agricultural fields where the entire ELC polygon could be scanned from adjacent property or roadside.

### **3.1.2 Vegetation Community and Vascular Plants Assessment**

Ecological Land Classification (ELC) and preliminary botanical inventories of the vegetation communities in and within 120 m of the Project Location were conducted by Stantec on November 14-17 and 22-23, December 15-16, 2011, May 28, 30, and 31, July 4, 9, and 10, October 2 and 3, November 29, and December 3, 2012.

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). Specific emphasis was placed on searching for plant species of conservation concern identified through the records review with historical occurrences within the Lambton County Region.

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.

### **3.1.3 Wetland Confirmation and Delineation**

Previously unidentified wetlands within 120 m of the Project Location identified during the course of the site investigations were delineated during the vegetation community assessment and vascular plant surveys described in **Section 3.1**. The wetland boundaries were mapped through reconciling aerial photographs and observations made during the site investigations in accordance with the methods outlined in the Ontario Wetland Evaluation System (OWES) Southern Manual (MNR, 2002). Wetland delineation was overseen by Melissa Straus.



### **3.1.4 Woodlands**

The limits of all woodlands that occur, or partially occur, in or within 120 m of the Project Location were delineated through aerial photo interpretation and confirmed during site investigations. Woodlands were delineated using the driplines of the trees. Information regarding woodland size, ecological function and uncommon characteristics was collected during ELC surveys and through 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.

### **3.1.5 Wildlife and Wildlife Habitat**

Site investigations to determine the presence of candidate significant wildlife habitat were conducted by Stantec on November 14-17 and 22-23, December 15-16, 2011, May 28, 30, and 31, July 4, 9, and 10, October 2 and 3, November 29, and December 3, 2012. Survey information (i.e., survey times, weather conditions and field personnel) is summarized in **Table 3.1, Appendix B**.

Site investigations focused on determining whether candidate significant wildlife habitats, as identified during the records review, have the potential to occur in or within 120 m of the Project Location. Criteria used to identify candidate significant wildlife habitat were derived from the Significant Wildlife Habitat Technical Guide (MNR, 2000) and the Draft SWH Ecoregion 7E Criterion Schedule (MNR, 2012). Specific emphasis was placed on determining whether the critical habitat features required to support significant wildlife habitat were present in natural features in or within 120 m of the Project Location.

#### **3.1.5.1 Seasonal Concentration Areas of Animals**

Seasonal Concentration Areas are areas where wildlife species occur in aggregations at certain times of the year, on an annual basis. Such areas are sometimes highly concentrated with members of a given species, or several species, within relatively small areas. In spring and autumn, migratory wildlife species will concentrate where they can rest and feed. Other wildlife species require habitats where they can survive winter. Seasonal concentration area habitats have been identified by using the habitat criteria found in the SWHTG (MNR, 2000) and Draft Significant Wildlife Habitat: Ecoregion 7E Criteria Schedules (MNR, 2012). The habitat criteria for each potential seasonal concentration area, and methods employed to identify them in and within 120 m of the Project Location, have been summarized in **Table 3.1**.

**Table 3.1: Characteristics Used to Identify Candidate Seasonal Concentration Areas**

Candidate Seasonal Concentration Area	Criteria	Methods
Waterfowl Stopover and Staging Area (Terrestrial)	<ul style="list-style-type: none"> <li>• ELC Ecosite Codes: CUM1, CUT1</li> <li>• Fields with sheet water during Spring (mid-March to May) or annual spring melt water flooding found in any of the following Community Types: Meadow (ME), Thicket (TH).</li> <li>• A 100-300 m radius buffer around habitat has been considered the candidate SWH.</li> <li>• Agricultural fields with waste grains are commonly used by waterfowl, these are not considered SWH unless used by Tundra Swans in the Long Point, Rondeau, Lk. St. Clair, Grand Bend and Pt. Pelee areas.</li> </ul>	<ul style="list-style-type: none"> <li>• Vegetation community classifications were utilized to assess features in or within 120 m of the Project Location that would support seasonal concentration habitats.</li> <li>• ELC surveys and GIS analysis of the landscape were used to identify large wetlands or marshes with a diversity of vegetation communities interspersed with cultural meadows that flood each spring (terrestrial staging areas)</li> <li>• Because this project is located in the vicinity of Grand Bend, there is a potential for Tundra Swans, a Tundra Swan driving transect was conducted on March 6, 2013 in order to determine if there were fields with flooding or congregations of Tundra Swans.</li> </ul>
Waterfowl Stopover and Staging Area (Aquatic)	<ul style="list-style-type: none"> <li>• The following Community Types: Meadow Marsh (MAM), Shallow Marsh (MAS), Shallow Aquatic (SA), Deciduous Swamp (SWD).</li> <li>• Ponds, marshes, lakes, bays, coastal inlets, and watercourses used during migration</li> <li>• These habitats have an abundant food supply (mostly aquatic invertebrates and vegetation in shallow water)</li> <li>• The combined area of the ELC ecosites and a 100 m radius area is the SWH.</li> <li>• Sewage treatment ponds and storm water ponds do not qualify as a SWH, however a reservoir managed as a large wetland or pond/lake does qualify.</li> </ul>	<ul style="list-style-type: none"> <li>• Vegetation community classifications were utilized to assess features in or within 120 m of the Project Location that would support seasonal concentration habitats.</li> <li>• ELC surveys and GIS analysis of the landscape were used to identify large wetlands or marshes with a diversity of vegetation communities interspersed with open water (aquatic staging areas).</li> </ul>
Shorebird Migratory Stopover Area	<ul style="list-style-type: none"> <li>• Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats.</li> <li>• ELC Ecosite Codes: BBO1, BBO2, BBS1, BBS2, BBT1, BBT2, SDO1, SDS2, SDT1, MAM1, MAM2, MAM3, MAM4, MAM5</li> <li>• Great Lakes coastal shorelines, including groynes and other forms of amour rock lakeshores, are extremely important for migratory shorebirds in May to mid-June and early July to October.</li> <li>• Sewage treatment ponds and storm water ponds do not qualify as a significant wildlife habitat.</li> </ul>	<ul style="list-style-type: none"> <li>• Vegetation community classifications were utilized to assess features in or within 120 m of the Project Location that would support seasonal concentration habitats.</li> <li>• The presence of potential shorebird migratory stopover habitat within suitable ELC communities was assessed.</li> </ul>

**Table 3.1: Characteristics Used to Identify Candidate Seasonal Concentration Areas**

Candidate Seasonal Concentration Area	Criteria	Methods
Raptor Wintering Area	<ul style="list-style-type: none"> <li>• Presence of fields and woodlands. i.e. at least one of the following Community Types: Deciduous Forest (FOD), Mixed Forest (FOM) or Coniferous Forest (FOC), in addition to one of the following Upland Community Types: Meadow (CUM), Thicket (CUT), Savannah (CUS), Woodland (CUW) (&lt;60% cover) that are &gt;20 ha and provide roosting, foraging and resting habitats for wintering raptors.</li> <li>• Least disturbed sites, idle/fallow or lightly grazed field/meadow (&gt;15 ha) with adjacent woodlands.</li> </ul>	<ul style="list-style-type: none"> <li>• Vegetation community classifications were utilized to assess features in and within 120 m of the Project Location that met the criteria for candidate Raptor Wintering Areas.</li> </ul>
Bat Hibernacula	<ul style="list-style-type: none"> <li>• Hibernacula may be found in caves, mine shafts, underground foundations and karsts.</li> <li>• May be found in these Community Types: Crevice (CCR), Cave (CCA).</li> </ul>	<ul style="list-style-type: none"> <li>• Vegetation community classifications were utilized to assess features in and within 120 m of the Project Location that would support seasonal concentration habitats.</li> <li>• Specialized site investigations were conducted to identify potential bat hibernacula, which included area searches for karst topography and caves were conducted concurrently with ELC surveys.</li> <li>• A search of karst features and abandoned mines found in and within 1120 m of the Project Location was conducted with data obtained through Ministry of Northern Development and Mines.</li> </ul>
Bat Maternity Colonies	<ul style="list-style-type: none"> <li>• Maternity colonies considered significant wildlife habitat are found in forested ecosites.</li> <li>• Any of the following Community Types: Deciduous Forest (FOD), Mixed Forest (FOM), that have &gt;10/ha wildlife trees &gt;25cm diameter at breast height (dbh).</li> <li>• Maternity colonies can be found in tree cavities, vegetation and often in buildings (buildings are not considered to be SWH).</li> <li>• Maternity roosts are not found in caves and mines in Ontario.</li> <li>• Female Bats prefer wildlife tree (snags) in early stages of decay, class 1-3 or class 1 or 2.</li> <li>• Northern Myotis prefer contiguous tracts of older forest cover for foraging and roosting in snags and trees</li> <li>• Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest areas with at least</li> </ul>	<ul style="list-style-type: none"> <li>• Vegetation community classifications were utilized to assess features in and within 120 m of the Project Location that would support seasonal concentration habitats.</li> <li>• Candidate bat maternity habitat will be determined by determining the density of snags/cavity tree in each FOD and FOM community. This will be done by using randomly selected plots, with a 12.6 m radius, as described in <i>Bats and Bat Habitats</i> (MNR 2011a), throughout the applicable habitat. A minimum of 10 plots for woodlands 10 ha or less in size is required. An additional plot is required in larger woodlands for each hectare over 10 ha, up to a maximum of 35 plots. FOD and FOM communities with greater than 10 snags/ha will be considered candidate bat maternity roost habitats.</li> </ul>

**Table 3.1: Characteristics Used to Identify Candidate Seasonal Concentration Areas**

Candidate Seasonal Concentration Area	Criteria	Methods
	21 snags/ha are preferred.	
Turtle Wintering Areas	<ul style="list-style-type: none"> <li>• Snapping and Midland Painted turtles utilize ELC community classes: Swamp (SW), Marsh (MA) and Open Water (OA). Shallow water (SA), Open Fen (FEO) and Open Bog (BOO).</li> <li>• Northern Map turtle- open water areas such as deeper rivers or streams and lakes can also be used as over-wintering habitat.</li> <li>• For most turtles, wintering areas area in the same general area as their core habitat.</li> <li>• Water has to be deep enough not to freeze and have soft mud substrate.</li> <li>• Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate dissolved oxygen.</li> </ul>	<ul style="list-style-type: none"> <li>• Vegetation community classifications were utilized to assess features in and within 120 m of the Project Location that would support seasonal concentration habitats.</li> <li>• Specialized site investigations were conducted to identify potential turtle wintering areas, which included noting wetland characteristics such as permanent water depth and substrate where potential turtle habitat was found.</li> </ul>
Snake Hibernacula	<ul style="list-style-type: none"> <li>• Hibernation occurs in sites located below frost lines in burrows, rock crevices, broken and fissured rock and other natural features.</li> <li>• Wetlands such as conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover can be important over-wintering habitat.</li> <li>• Any ecosite in southern Ontario other than very wet ones may provide habitat. The following Community Types may be directly related to snake hibernacula: Talus (TA), Rock Barren (RB), Crevice (CCR), Cave (CCA), and Alvar (RBOA1, RBSA1, RBTA1).</li> </ul>	<ul style="list-style-type: none"> <li>• Vegetation community classifications were utilized to assess features in and within 120 m of the Project Location that would support seasonal concentration habitats.</li> <li>• Specialized site investigations were conducted to identify potential snake hibernacula. Surveys for snakes and associated hibernacula features were conducted throughout the Study Area, searching for habitat features that would provide an underground route, act as a potential hibernacula including exposed rock crevices or inactive animal borrows were recorded. Access to the subterranean level below the frost line is necessary for these habitats to be considered potential snake hibernacula.</li> </ul>
Colonial-Nesting Bird Breeding Habitat (Bank and Cliff)	<ul style="list-style-type: none"> <li>• Eroding banks, sandy hills, borrow pits, steep slopes, sand piles, cliff faces, bridge abutments, silos, or barns found in any of the following Community Types: Cultural Meadow (CUM), Cultural Thicket (CUT), Cultural Savannah (CUS), Bluff (BL), Cliff (CL).</li> <li>• A colony identified as SWH will include a 50 m radius habitat area from the peripheral nests.</li> <li>• Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles.</li> <li>• Does not include a licensed/permitted</li> </ul>	<ul style="list-style-type: none"> <li>• Vegetation community classifications were utilized to assess features in and within 120 m of the Project Location that would support seasonal concentration habitats.</li> <li>• Open habitats near bodies of water were scanned for large cavity trees (&gt;25 cm DBH) suitable for and with evidence of previous use by nesting swallows. Hills with exposed substrate, including river banks, were also scanned for holes indicative of a Bank Swallow nesting colony.</li> </ul>

**Table 3.1: Characteristics Used to Identify Candidate Seasonal Concentration Areas**

Candidate Seasonal Concentration Area	Criteria	Methods
Colonial-Nesting Bird Breeding Habitat (Tree/Shrubs)	<p>Mineral Aggregate Operation</p> <ul style="list-style-type: none"> <li>Any of the following Community Types: Mixed Swamp (SWM), Deciduous Swamp (SWD), Treed Fen (FET1).</li> <li>The edge of the colony and a minimum 300 m area of habitat or extent of the Forest Ecosite containing the colony or any island &lt;15.0 ha with a colony is the SWH.</li> <li>Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used.</li> <li>Most nests in trees are 11 to 15 m from ground, near the top of the tree.</li> </ul>	<ul style="list-style-type: none"> <li>Vegetation community classifications were utilized to assess features in and within 120 m of the Project Location that would support seasonal concentration habitats.</li> <li>Large areas of marsh or swamp habitat with live or an abundance of dead trees, in and within 120 m of the Project Location were searched for the presence of large stick nests to assess the presence of colonially-nesting bird species within suitable ELC communities.</li> </ul>
Colonial-Nesting Bird Breeding Habitat (Ground)	<ul style="list-style-type: none"> <li>Any rocky island or peninsula within a lake or large river, close proximity to watercourses in open fields or pastures with scattered trees or shrubs found in any of the following Community Types: Meadow Marsh (MAM), Shallow Marsh (MAS), Cultural Meadow (CUM), Cultural Thicket (CUT), Cultural Savannah (CUS).</li> <li>Nesting colonies of gulls and terns on islands or peninsulas associated with open water or in marshy areas</li> <li>Brewers Blackbird colonies are found loosely on the ground or in low bushes in close proximity to streams and irrigation ditches within farmlands.</li> <li>The edge of the colony and a minimum 150 m area of habitat, or the extent of the ELC ecosites containing the colony or any island &lt;3.0 ha with a colony is the SWH.</li> </ul>	<ul style="list-style-type: none"> <li>Vegetation community classifications were utilized to assess features in and within 120 m of the Project Location that would support seasonal concentration habitats.</li> <li>The presence of potential habitat for colonially-nesting bird species was assessed based on ELC and suitable geography (e.g. island).</li> </ul>
Deer Wintering Area	<ul style="list-style-type: none"> <li>Woodlots &gt;100 ha in size or in large woodlots are rare in a planning area, woodlots &gt;50 ha.</li> <li>Woodlots with high densities of deer due to artificial feeding are not significant.</li> <li>Large woodlots &gt;100 ha and up to 1500 ha are known to be used annually by densities of deer that range from 0.1-1.5 deer/ha.</li> </ul>	<ul style="list-style-type: none"> <li>Deer wintering areas considered significant are mapped by the MNR.</li> </ul>

**3.1.5.2 Rare Vegetation Communities or Specialized Habitats**

Rare vegetation communities often contain rare species, particularly plants and small invertebrates, which depend on such habitats for their survival and cannot readily move to or find alternative habitats. Some wildlife species require large areas of suitable habitat for their long-term survival. Many wildlife species require substantial areas of suitable habitat for successful breeding. Their populations decline when habitat becomes fragmented and reduced in size. Specialized habitat for wildlife is a community or diversity-based category, therefore, the more wildlife species a habitat contains, the more significant the habitat becomes to the planning area. The largest and least fragmented habitats within a planning area will support the most significant populations of wildlife.

Rare Vegetation Communities and Candidate Specialized Wildlife Habitat have been identified by using the habitat criteria found in the SWHTG (MNR, 2000) and Draft Significant Wildlife Habitat: Ecoregion 7E Criteria Schedules (MNR, 2012). The habitat criteria for each potential rare vegetation community and candidate specialized wildlife habitat, and methods employed to identify them in and within 120 m of the Project Location, has been summarized in **Table 3.2** below.

**Table 3.2: Characteristics Used to Identify Rare Vegetation Communities and Candidate Specialized Wildlife Habitat**

Candidate Specialized Wildlife Habitat	Criteria	Methods
Cliffs and Talus Slopes	<ul style="list-style-type: none"> <li>• A Cliff is vertical to near vertical bedrock &gt;3m in height.</li> <li>• A Talus Slope is rock rubble at the base of a cliff made up of coarse rocky debris</li> <li>• Any ELC Ecosite within Community Series: TAO, TAS, TAT, CLO, CLS, CLT</li> <li>• Most cliff and talus slopes occur along the Niagara Escarpment</li> </ul>	<ul style="list-style-type: none"> <li>• As discussed in Section 2.2.3.2 of the records review, there are no known rare vegetation communities in or within 120 m of the Project Location.</li> <li>• ELC and preliminary botanical inventories conducted by Stantec in 2011 and 2012 were used to assess the presence of rare vegetation communities.</li> </ul>
Sand Barrens	<ul style="list-style-type: none"> <li>• Sand barrens typically are exposed sand, generally sparsely vegetated and cause by lack of moisture, periodic fires and erosion.</li> <li>• They have little or no soil and the underlying rock protrudes through the surface.</li> <li>• Usually located within other types of natural habitat such as forest or savannah.</li> <li>• Vegetation can vary from patchy and barren to tree covered but less than 60%.</li> <li>• Any of the following Community Types: SBO1 (Open Sand Barren Ecosite), SBS1 (Shrub Sand Barren Ecosite),</li> </ul>	<ul style="list-style-type: none"> <li>• As discussed in Section 2.2.3.2 of the records review, there are no known rare vegetation communities in or within 120 m of the Project Location.</li> <li>• ELC and preliminary botanical inventories conducted by Stantec in 2011 and 2012 were used to assess the presence of rare vegetation communities.</li> </ul>



**Table 3.2: Characteristics Used to Identify Rare Vegetation Communities and Candidate Specialized Wildlife Habitat**

Candidate Specialized Wildlife Habitat	Criteria	Methods
	<p>SBT1 (Treed Sand Barren Ecosite).</p> <ul style="list-style-type: none"> <li>Vegetation cover varies from patchy and barren to continuous meadow (SBO1), thicket-like (SBS1), or more closed and treed (SBT1). Tree cover always &lt; 60%.</li> <li>No minimum size for sand barren area.</li> <li>Sand Barrens support rare species such as provincially Endangered Forked Three-awned Grass and American Badger. By extension, sand barren sites that could support these rare species (close proximity to other populations), historically or currently should be considered for higher priority conservation.</li> </ul>	
Alvars	<ul style="list-style-type: none"> <li>An alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil.</li> <li>The hydrology of alvars is complex, with alternating periods of inundation and drought.</li> <li>Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plant.</li> <li>Undisturbed alvars can be phyto- and zoogeographically diverse, supporting many uncommon or are relict plant and animals species.</li> <li>Vegetation cover varies from patchy to barren with a less than 60% tree cover.</li> <li>Any of the following Community Types: ALO1(Open Alvar Rock Barren Ecosite), ALS1 (Alvar Shrub Rock Barren Ecosite), ALT1 (Treed Alvar Rock Barren Ecosite)</li> <li>An Alvar site &gt; 0.5 ha in size</li> <li>Alvar is particularly rare in ecoregion 7E where the only known sites are found in the western islands of Lake Erie</li> </ul>	<ul style="list-style-type: none"> <li>As discussed in Section 2.2.3.2 of the records review, there are no known rare vegetation communities in or within 120 m of the Project Location.</li> <li>ELC and preliminary botanical inventories conducted by Stantec in 2011 and 2012 were used to assess the presence of rare vegetation communities.</li> </ul>
Old-growth Forest	<ul style="list-style-type: none"> <li>Old-growth forests tend to be relatively undisturbed, structurally complex, and contain a wide variety of trees and shrubs in various age classes. These habitats usually support a high diversity of wildlife species.</li> <li>No minimum size criteria t in any of the</li> </ul>	<ul style="list-style-type: none"> <li>As discussed in Section 2.2.3.2 of the records review, there are no known rare vegetation communities in or within 120 m of the Project Location.</li> <li>ELC and preliminary botanical inventories conducted in 2011 and 2012 were used to assess the</li> </ul>

**Table 3.2: Characteristics Used to Identify Rare Vegetation Communities and Candidate Specialized Wildlife Habitat**

Candidate Specialized Wildlife Habitat	Criteria	Methods
	following Community Types: FOD (Deciduous Forest), FOM (Mixed Forest), FOC (Coniferous Forest)	presence of rare vegetation communities. <ul style="list-style-type: none"> <li>• Forests greater than 140 years old and with no historical forestry management was the main criteria when surveying for old-growth forests.</li> </ul>
Savannahs	<ul style="list-style-type: none"> <li>• A Savannah is a tallgrass prairie habitat that has tree cover between 25 – 60%.</li> <li>• Tallgrass Prairie (TGP) and savannah were historically common in the near-shore areas of the Great Lakes.</li> <li>• In ecoregion 7E, known Tallgrass Prairie and savannah remnants are scattered between Lake Huron and Lake Erie, near Lake St. Clair, north of and along the Lake Erie shoreline, in Brantford and in the Toronto area (north of Lake Ontario).</li> <li>• Any of the following Community Types: TPS1 (Dry-Fresh Tallgrass Mixed Savanna Ecosite), TPS2 (Fresh-Moist Tallgrass Deciduous Savanna Ecosite), TPW1 (Dry-Fresh Black Oak Tallgrass Deciduous Woodland Ecosite), TPW2 (Fresh-Moist Tallgrass Deciduous Woodland Ecosite), CUS2 (Bedrock Cultural Savannah Ecosite).</li> <li>• No minimum size to site</li> <li>• Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH</li> </ul>	<ul style="list-style-type: none"> <li>• As discussed in Section 2.2.3.2 of the records review, there are no known rare vegetation communities within 120 m of the Project Location.</li> <li>• ELC and preliminary botanical inventories conducted by Stantec in 2011 and 2012 were used to assess the presence of rare vegetation communities.</li> </ul>
Tall-grass Prairies	<ul style="list-style-type: none"> <li>• A Tallgrass Prairie has ground cover dominated by prairie grasses. An open Tallgrass Prairie habitat has &lt; 25% tree cover.</li> <li>• Tallgrass Prairie (TGP) and savannah were historically common in the near-shore areas of the Great Lakes</li> <li>• In ecoregion 7E, known Tallgrass Prairie and savannah remnants are scattered between Lake Huron and Lake Erie, near Lake St. Clair, north of and along the Lake Erie shoreline, in Brantford and in the Toronto area (north of Lake Ontario).</li> <li>• Any of the following Community Types: TPO1 (Dry Tallgrass Prairie Ecosite), TPO2 (Fresh-Moist Tallgrass Prairie Ecosite).</li> <li>• No minimum size to site</li> <li>• Site must be restored or a natural site.</li> </ul>	<ul style="list-style-type: none"> <li>• As discussed in Section 2.2.3.2 of the records review, there are no known rare vegetation communities within 120 m of the Project Location.</li> <li>• ELC and preliminary botanical inventories conducted by Stantec in 2011 and 2012 were used to assess the presence of rare vegetation communities.</li> </ul>



**Table 3.2: Characteristics Used to Identify Rare Vegetation Communities and Candidate Specialized Wildlife Habitat**

Candidate Specialized Wildlife Habitat	Criteria	Methods
	Remnant sites such as railway right of ways are not considered to be SWH	
Other Rare Vegetation Communities	<ul style="list-style-type: none"> <li>Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.</li> <li>Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of the SWHTG</li> <li>Any ELC Ecosite Code that has a possible ELC Vegetation Type that is Provincially Rare is Candidate SWH.</li> <li>ELC Ecosite codes that have the potential to be a rare ELC Vegetation Type as outlined in Appendix M</li> <li>The OMNR/NHIC will have up to date listing for rare vegetation communities.</li> </ul>	<ul style="list-style-type: none"> <li>As discussed in Section 2.2.3.2 of the records review, there are no known rare vegetation communities within 120 m of the Project Location.</li> <li>ELC and preliminary botanical inventories conducted by Stantec in 2011 and 2012 were used to assess the presence of rare vegetation communities.</li> </ul>
Waterfowl Nesting Area	<ul style="list-style-type: none"> <li>All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH:</li> <li>MAS1, MAS2, MAS3, SAS1, SAM1, SAF1, MAM1, MAM2, MAM3, MAM4, MAM5, MAM6, SWT1, SWT2, SWD1, SWD2, SWD3, SWD4</li> <li>Note: includes adjacency to Provincially Significant Wetlands</li> <li>A waterfowl nesting area extends 120 m from a wetland (&gt; 0.5 ha) or a wetland (&gt;0.5 ha) with small wetlands (&lt;0.5ha) within 120m or a cluster of 3 or more small (&lt;0.5 ha) wetlands within 120 m of each individual wetland where waterfowl nesting is known to occur</li> </ul>	<ul style="list-style-type: none"> <li>The results of ELC surveys and GIS analysis of the landscape were used to identify large cavity trees suitable for cavity nesting waterfowl (e.g., Wood Duck); areas of open water &gt;0.5 ha adjacent to upland communities (including clusters of three or more small wetlands &lt;0.5ha); and upland areas at least 120m wide.</li> </ul>
Bald Eagle and Osprey nesting, Foraging, and Perching Habitat	<ul style="list-style-type: none"> <li>Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water.</li> <li>Osprey nests are usually at the top a tree whereas Bald Eagle nests are typically in super canopy trees in a notch within the tree's canopy.</li> <li>Nests located on man-made objects are not to be included as SWH (e.g. telephone poles and constructed nesting platforms).</li> <li>ELC Forest Community Series: FOD, FOM, FOC, SWD, SWM and SWC directly adjacent to riparian areas – rivers, lakes, ponds and wetlands</li> </ul>	<ul style="list-style-type: none"> <li>Searches for stick nests (active or not) as well as a general habitat assessment were conducted during vegetation wildlife habitat assessment surveys in 2011 and 2012 and spring of 2012 in and within 120 m of the Project Location.</li> </ul>
Woodland Raptor Nesting Habitat	<ul style="list-style-type: none"> <li>All natural or conifer plantation woodland/forest stands combined &gt;30 ha or with &gt;4 ha of interior habitat.</li> </ul>	<ul style="list-style-type: none"> <li>Searches for stick nests (active or not) as well as a general habitat assessment were conducted during</li> </ul>

**Table 3.2: Characteristics Used to Identify Rare Vegetation Communities and Candidate Specialized Wildlife Habitat**

Candidate Specialized Wildlife Habitat	Criteria	Methods
	<p>Interior habitat determined with a 200 m buffer.</p> <ul style="list-style-type: none"> <li>• Stick nests found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within tops or crotches of trees. Species such as Coopers hawk nest along forest edges sometimes on peninsulas or small off-shore islands.</li> <li>• In disturbed sites, nests may be used again, or a new nest will be in close proximity to old nest.</li> <li>• May be found in all forested ELC Ecosites.</li> <li>• May also be found in SWC, SWM, SWD and CUP3</li> </ul>	<p>vegetation wildlife habitat assessment surveys in 2011 and 2012 and spring of 2012 in and within 120 m of the Project Location.</p>
Turtle Nesting Areas	<ul style="list-style-type: none"> <li>• Exposed mineral soil (sand or gravel) areas adjacent (&lt;100 m) cxlviii or within the following ELC Ecosites: MAM1</li> <li>• MAM2, MAM3, MAM4, MAM5, MAM6, SAS1, SAM1, SAF1, BOO1, FEO1</li> <li>• Best nesting habitat for turtles are close to water and away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals.</li> <li>• For an area to function as a turtle-nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas. Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH.</li> <li>• Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used.</li> </ul>	<ul style="list-style-type: none"> <li>• As lands within the Project Boundary consisted primarily of cultivated agricultural cropland, the search for turtle nesting habitat focused on watercourses and any marshy wetlands with areas of exposed sand or gravel in and within 120 m of the Project Location.</li> </ul>
Seeps and Springs	<ul style="list-style-type: none"> <li>• Seeps/Springs are areas where ground water comes to the surface. Often they are found within headwater areas within forested habitats. Any forested Ecosite within the headwater areas of a stream could have seeps/springs.</li> <li>• Any forested area (with &lt;25% meadow/field/pasture) within the headwaters of a stream or river system</li> <li>• Seeps and springs are important feeding and drinking areas especially in the winter will typically support a variety of plant and animal species</li> </ul>	<ul style="list-style-type: none"> <li>• As the Project Boundary consisted primarily of cultivated agricultural cropland, the search for seeps or springs focused on the woodlands in and within 120 m of the Project Location.</li> </ul>

**Table 3.2: Characteristics Used to Identify Rare Vegetation Communities and Candidate Specialized Wildlife Habitat**

Candidate Specialized Wildlife Habitat	Criteria	Methods
Amphibian Breeding Habitat (Woodland)	<ul style="list-style-type: none"> <li>All Ecosites associated with these ELC Community Series; FOC, FOM, FOD, SWC, SWM, SWD</li> <li>Breeding pools within the woodland or the shortest distance from forest habitat are more significant because they are more likely to be used due to reduced risk to migrating amphibians</li> <li>Presence of a wetland, lake, or pond within or adjacent (within 120 m) to a woodland (no minimum size). Some small wetlands may not be mapped and may be important breeding pools for amphibians.</li> <li>Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat</li> </ul>	<ul style="list-style-type: none"> <li>Natural vegetation communities with the potential to support amphibian breeding habitat in and within 120 m of the Project Location (woodland) were assessed by Stantec during vegetation assessment surveys. Each feature was visited, and areas of standing water or areas which showed evidence of holding water through the spring (based on topography and vegetation) were identified. Size of pools, presence and depth of standing water, surrounding vegetation community, emergent and submergent vegetation and canopy cover were recorded.</li> </ul>
Amphibian Breeding Habitat (Wetland)	<ul style="list-style-type: none"> <li>ELC Community Classes SW, MA, FE, BO, OA and SA.</li> <li>Wetland areas &gt;120 m from woodland habitats.</li> <li>Wetlands and pools (including vernal pools) &gt;500 m<sup>2</sup> (about 25 m diameter) supporting high species diversity are significant; some small or ephemeral habitats may not be identified on MNR mapping and could be important amphibian breeding habitats.</li> <li>Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators.</li> <li>Bullfrogs require permanent water bodies with abundant emergent vegetation.</li> </ul>	<ul style="list-style-type: none"> <li>Vegetation community classification surveys were used to identify habitat features in and within 120 m of the Project Location including those that may support bullfrogs (i.e., natural open aquatic and marsh habitats).</li> </ul>

**3.1.5.3 Species of Conservation Concern**

Habitats in and within 120 m of the Project Location were assessed for their suitability to support historic species of conservation concern that are known to occur or have the potential to occur within the vicinity of the Project Boundary (**Table 2.3, Appendix B**).

Site investigations were carried out through a combination of vegetation surveys for plant species of conservation concern, and ELC-based habitat assessments for both plant and wildlife species of conservation concern as described in the Draft SWH Ecoregion 7E Criterion Schedule. Additional survey information for specific categories is discussed in **Table 3.3** below.

**Table 3.3: Characteristics Used to Identify Candidate Habitat for Species of Conservation Concern**

Candidate Habitat for Species of Conservation Concern	Criteria	Methods
Marsh Bird Breeding Habitat	<ul style="list-style-type: none"> <li>Nesting occurs in wetlands. For Green Heron, habitat is at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Less frequently it may be found in upland shrubs or forest at a considerable distance from water.</li> <li>All wetland habitats with shallow water and emergent aquatic vegetation.</li> <li>May include any of the following Community Types: Meadow Marsh (MAM), Shallow Aquatic (SA), Open Bog (BOO), Open Fen (FEO), or for Green Heron: SW (Swamp), MA (Marsh) and Meadow (ME) Community Types.</li> </ul>	<ul style="list-style-type: none"> <li>Site investigations were conducted to identify potential habitat using ELC to delineate previously unidentified wetland communities in and within 120 m of the Project Location.</li> </ul>
Woodland Area-sensitive Bird Breeding Habitat	<ul style="list-style-type: none"> <li>Habitats where interior forest (at least 200 m from the forest edge) breeding birds are breeding.</li> <li>These include any of the following Community Types: Forest (FO), Treed Swamp (SW) that are mature (&gt;60 years old) and &gt;30 ha with a minimum interior area of 4 ha.</li> </ul>	<ul style="list-style-type: none"> <li>Site investigations were conducted to identify potential woodlots to support area-sensitive bird species, through the delineation and verification of forest communities by ELC.</li> </ul>
Open Country Bird Breeding Habitat	<ul style="list-style-type: none"> <li>Grassland areas &gt;30 ha, not Class 1 or Class 2 agricultural lands, with no row-cropping or intensive hay or livestock pasturing in the last 5 years, in the following Community Type: Cultural Meadow (CUM).</li> <li>Condition of existing habitat at site (level of disturbance) is an important consideration. For example, fields with intensive agriculture are not considered candidate habitat. Fields with light grazing are considered candidate habitat)</li> </ul>	<ul style="list-style-type: none"> <li>Site investigations were conducted to identify potential grassland communities in and within 120 m of the Project Location to support area-sensitive bird species, through the delineation and verification of grassland communities by ELC.</li> </ul>
Shrub/Early Successional Bird Breeding Habitat	<ul style="list-style-type: none"> <li>Oldfield areas succeeding to shrub and thicket habitats &gt;10 ha, not Class 1 or Class 2 agricultural lands, with no row-cropping or intensive hay or livestock pasturing in the last 5 years, in the following Community Types: Cultural Thickets (CUT), Cultural Savannahs (CUS), and Cultural Woodlands (CUW).</li> </ul>	<ul style="list-style-type: none"> <li>Site investigations were conducted to identify potential shrub/early successional habitat using ELC to delineate thicket, savannah, and cultural woodland type communities.</li> </ul>
Terrestrial Crayfish	<ul style="list-style-type: none"> <li>Area of ELC Ecosite polygon is the SWH.</li> <li>MAM1, MAM2, MAM3, MAM4, MAM5, MAM6, MAS1, MAS2, MAS3.</li> <li>Meadow and edges of shallow marshes (no minimum size) identified should be surveyed for terrestrial crayfish.</li> </ul>	<ul style="list-style-type: none"> <li>Area searches occurred within suitable habitats (MAM and MAS) to look for terrestrial crayfish and chimneys.</li> <li>These surveys were conducted during ELC mapping.</li> </ul>

**Table 3.3: Characteristics Used to Identify Candidate Habitat for Species of Conservation Concern**

Candidate Habitat for Species of Conservation Concern	Criteria	Methods
S1-S3, Special Concern and SH Species and Communities	<ul style="list-style-type: none"> <li>All Special Concern or provincial rare plant and animal species element occurrences within a 1 or 10 km grid.</li> </ul>	<ul style="list-style-type: none"> <li>Site investigations were carried out through a combination of vegetation surveys for plant species of conservation concern, and ELC-based habitat assessments for both plant and wildlife species of conservation concern in and within 120 m of the Project Location as described in the Draft SWH Ecoregion 7E Criterion Schedule (MNR, 2012).</li> </ul>
Caughuawaga Hawthorn (S1)	<ul style="list-style-type: none"> <li>Occurring on abandoned farmland, along streams, and in forest openings, especially on soils high in calcium. Moderately shade-tolerant. Often forming thickets of several different species (Farrar, 1995).</li> <li>Suitable ELC communities include CUW. See Figures 2.1-2.10 for the ELC communities that are suitable habitat for this species.</li> </ul>	<ul style="list-style-type: none"> <li>Site investigations and fall botanical inventories were conducted to assess the potential for this species during ELC to identify any habitat which may be considered suitable based on the aforementioned criteria.</li> </ul>
Narrow-leaved puccoon (S1)	<ul style="list-style-type: none"> <li>Dry plains, dunes, barrens and dry disturbed ground (Reznicek et al., 2011; Gleason and Cronquist, 1991)</li> <li>Suitable ELC communities include SD and RB. See Figures 2.1-2.10 for the ELC communities that are suitable habitat for this species.</li> </ul>	<ul style="list-style-type: none"> <li>Site investigations and fall botanical inventories were conducted to assess the potential for this species during ELC to identify any habitat which may be considered suitable based on the aforementioned criteria.</li> </ul>
Giant Ironweed (S1)	<ul style="list-style-type: none"> <li>Occurs in wet woods, thickets, and meadows, and tends to be weedy in pastures (Reznicek et al., 2011; Gleason and Cronquist, 1991).</li> <li>Suitable ELC communities include SWD, SWT, and CUM. See Figures 2.1-2.10 for the ELC communities that are suitable habitat for this species.</li> </ul>	<ul style="list-style-type: none"> <li>Site investigations and fall botanical inventories were conducted to assess the potential for this species during ELC to identify any habitat which may be considered suitable based on the aforementioned criteria.</li> </ul>
Moss Phlox (S1?)	<ul style="list-style-type: none"> <li>Often a garden escapee; occurs in sandy and gravelly soil or rock-ledges in clearings, shores, banks, and roadsides (Reznicek et al., 2011; Gleason and Cronquist, 1991).</li> <li>Suitable ELC communities include RB and CUM. See Figures 2.1-2.10 for the ELC communities that are suitable habitat for this species.</li> </ul>	<ul style="list-style-type: none"> <li>Site investigations and fall botanical inventories were conducted to assess the potential for this species during ELC to identify any habitat which may be considered suitable based on the aforementioned criteria.</li> </ul>
Puttyroot (S2)	<ul style="list-style-type: none"> <li>Occurs in moist to swampy deciduous forests; flowers in late spring (Sheviak and Catling, 2002).</li> <li>Suitable ELC communities include SWD. See Figures 2.1-2.10 for the ELC communities that are suitable habitat for this species.</li> </ul>	<ul style="list-style-type: none"> <li>Site investigations and fall botanical inventories were conducted to assess the potential for this species during ELC to identify any habitat which may be considered suitable based on the aforementioned criteria.</li> </ul>
Pawpaw (S3)	<ul style="list-style-type: none"> <li>Occurs on the rich moist soils of floodplains and wet woods; in colonies as an</li> </ul>	<ul style="list-style-type: none"> <li>Site investigations and fall botanical inventories were conducted to assess</li> </ul>

**Table 3.3: Characteristics Used to Identify Candidate Habitat for Species of Conservation Concern**

Candidate Habitat for Species of Conservation Concern	Criteria	Methods
	<ul style="list-style-type: none"> <li>understory tree; shade-tolerant (Farrar, 1995).</li> <li>Suitable ELC communities include SWD. See Figures 2.1-2.10 for the ELC communities that are suitable habitat for this species.</li> </ul>	<ul style="list-style-type: none"> <li>the potential for this species during ELC to identify any habitat which may be considered suitable based on the aforementioned criteria.</li> </ul>
Crowned Beggar-ticks (S2)	<ul style="list-style-type: none"> <li>Wet meadows and swamps; flowers late summer and fall (Newcomb, 1977).</li> <li>Suitable ELC communities include SWD and MAM. See Figures 2.1-2.10 for the ELC communities that are suitable habitat for this species.</li> </ul>	<ul style="list-style-type: none"> <li>Site investigations and fall botanical inventories were conducted to assess the potential for this species during ELC to identify any habitat which may be considered suitable based on the aforementioned criteria.</li> </ul>
Shellbark Hickory (S3)	<ul style="list-style-type: none"> <li>Occurs on moist to wet sites, in valleys and along stream banks; mixed with other broadleaf trees (Farrar, 1995).</li> <li>Suitable ELC communities include SWD. See Figures 2.1-2.10 for the ELC communities that are suitable habitat for this species.</li> </ul>	<ul style="list-style-type: none"> <li>Site investigations and fall botanical inventories were conducted to assess the potential for this species during ELC to identify any habitat which may be considered suitable based on the aforementioned criteria.</li> </ul>
Chinese Hemlock-parsley (S2)	<ul style="list-style-type: none"> <li>Occurs in wet meadows, bogs, and swamps (Gleason and Cronquist 1991).</li> <li>Suitable ELC communities include MAM, BO, and SW. See Figures 2.1-2.10 for the ELC communities that are suitable habitat for this species.</li> </ul>	<ul style="list-style-type: none"> <li>Site investigations and fall botanical inventories were conducted to assess the potential for this species during ELC to identify any habitat which may be considered suitable based on the aforementioned criteria.</li> </ul>
Ram's Head Lady-slipper (S3)	<ul style="list-style-type: none"> <li>Usually on acidic soils in coniferous and mixed forests, coniferous fens, and beach thickets (Gleason and Cronquist, 1991; Sheviak and Catling, 2002).</li> <li>Suitable ELC communities include FOC, FOM, FET, and SWT. See Figures 2.1-2.10 for the ELC communities that are suitable habitat for this species.</li> </ul>	<ul style="list-style-type: none"> <li>Site investigations and fall botanical inventories were conducted to assess the potential for this species during ELC to identify any habitat which may be considered suitable based on the aforementioned criteria.</li> </ul>
Prostrate Tick-trefoil (S2)	<ul style="list-style-type: none"> <li>Barrens and dry forests (Gleason and Cronquist, 1991).</li> <li>Suitable ELC communities include RB and FO. See Figures 2.1-2.10 for the ELC communities that are suitable habitat for this species.</li> </ul>	<ul style="list-style-type: none"> <li>Site investigations and fall botanical inventories were conducted to assess the potential for this species during ELC to identify any habitat which may be considered suitable based on the aforementioned criteria.</li> </ul>
Burning Bush (S3)	<ul style="list-style-type: none"> <li>Moist woods (Gleason and Cronquist, 1991)</li> <li>Suitable ELC communities include SWD. See Figures 2.1-2.10 for the ELC communities that are suitable habitat for this species.</li> </ul>	<ul style="list-style-type: none"> <li>Site investigations and fall botanical inventories were conducted to assess the potential for this species during ELC to identify any habitat which may be considered suitable based on the aforementioned criteria.</li> </ul>
Pumpkin Ash (S2)	<ul style="list-style-type: none"> <li>Wet forests and swamps (Gleason and Cronquist, 1991).</li> <li>Suitable ELC communities include SWD.</li> </ul>	<ul style="list-style-type: none"> <li>Site investigations and fall botanical inventories were conducted to assess the potential for this species during ELC</li> </ul>



**Table 3.3: Characteristics Used to Identify Candidate Habitat for Species of Conservation Concern**

<b>Candidate Habitat for Species of Conservation Concern</b>	<b>Criteria</b>	<b>Methods</b>
	See Figures 2.1-2.10 for the ELC communities that are suitable habitat for this species.	to identify any habitat which may be considered suitable based on the aforementioned criteria.
Hairy Bedstraw (S3?)	<ul style="list-style-type: none"> <li>• Dry woods and thickets; fields and grasslands (Gleason and Cronquist, 1991; Newcomb, 1977; Reznicek et al., 2011).</li> <li>• Suitable ELC communities include FO and CUT. See Figures 2.1-2.10 for the ELC communities that are suitable habitat for this species.</li> </ul>	<ul style="list-style-type: none"> <li>• Site investigations and fall botanical inventories were conducted to assess the potential for this species during ELC to identify any habitat which may be considered suitable based on the aforementioned criteria.</li> </ul>
Stiff Gentian (S2)	<ul style="list-style-type: none"> <li>• Woods and moist to wet open areas (Gleason and Cronquist, 1991).</li> <li>• Suitable ELC communities include FO and MAM. See Figures 2.1-2.10 for the ELC communities that are suitable habitat for this species.</li> </ul>	<ul style="list-style-type: none"> <li>• Site investigations and fall botanical inventories were conducted to assess the potential for this species during ELC to identify any habitat which may be considered suitable based on the aforementioned criteria.</li> </ul>
Rattlesnake Hawkweed (S2)	<ul style="list-style-type: none"> <li>• Dry open woods and sandy banks (Gleason and Cronquist, 1991; Reznicek et al., 2011)</li> <li>• Suitable ELC communities include FO. See Figures 2.1-2.10 for the ELC communities that are suitable habitat for this species.</li> </ul>	<ul style="list-style-type: none"> <li>• Site investigations and fall botanical inventories were conducted to assess the potential for this species during ELC to identify any habitat which may be considered suitable based on the aforementioned criteria.</li> </ul>
Green Violet (S2)	<ul style="list-style-type: none"> <li>• Rich forests, swamp, and ravines (Gleason and Cronquist, 1991; Reznicek et al., 2011)</li> <li>• Suitable ELC communities include FO and SWD. See Figures 2.1-2.10 for the ELC communities that are suitable habitat for this species.</li> </ul>	<ul style="list-style-type: none"> <li>• Site investigations and fall botanical inventories were conducted to assess the potential for this species during ELC to identify any habitat which may be considered suitable based on the aforementioned criteria.</li> </ul>
Yellow Star-grass (S3)	<ul style="list-style-type: none"> <li>• Sandy open ground and forests, as well as fens and mesic meadows (Reznicek et al., 2011)</li> <li>• Suitable ELC communities include FE and MAM. See Figures 2.1-2.10 for the ELC communities that are suitable habitat for this species.</li> </ul>	<ul style="list-style-type: none"> <li>• Site investigations and fall botanical inventories were conducted to assess the potential for this species during ELC to identify any habitat which may be considered suitable based on the aforementioned criteria.</li> </ul>
Sharp-fruited Rush (S3)	<ul style="list-style-type: none"> <li>• Wet soil in lowland forests, meadows, and shorelines (Gleason and Cronquist, 1991)</li> <li>• Suitable ELC communities include FOD7 and CUM. See Figures 2.1-2.10 for the ELC communities that are suitable habitat for this species.</li> </ul>	<ul style="list-style-type: none"> <li>• Site investigations and fall botanical inventories were conducted to assess the potential for this species during ELC to identify any habitat which may be considered suitable based on the aforementioned criteria.</li> </ul>
Tall Blazing Star (S2)	<ul style="list-style-type: none"> <li>• In sandy soil in dry, open areas and forests (Gleason and Cronquist, 1991).</li> <li>• Suitable ELC communities include SB and FO. See Figures 2.1-2.10 for the ELC communities that are suitable habitat for this species.</li> </ul>	<ul style="list-style-type: none"> <li>• Site investigations and fall botanical inventories were conducted to assess the potential for this species during ELC to identify any habitat which may be considered suitable based on the aforementioned criteria.</li> </ul>

**Table 3.3: Characteristics Used to Identify Candidate Habitat for Species of Conservation Concern**

<b>Candidate Habitat for Species of Conservation Concern</b>	<b>Criteria</b>	<b>Methods</b>
Slender Blazing Star (S3)	<ul style="list-style-type: none"> <li>• Dry, open areas (Gleason and Cronquist, 1991).</li> <li>• Suitable ELC communities include SB. See Figures 2.1-2.10 for the ELC communities that are suitable habitat for this species.</li> </ul>	<ul style="list-style-type: none"> <li>• Site investigations and fall botanical inventories were conducted to assess the potential for this species during ELC to identify any habitat which may be considered suitable based on the aforementioned criteria.</li> </ul>
Woodland Flax (S2)	<ul style="list-style-type: none"> <li>• Upland forests, hillsides, and banks (Reznicek et al., 2011).</li> <li>• Suitable ELC communities include FO. See Figures 2.1-2.10 for the ELC communities that are suitable habitat for this species.</li> </ul>	<ul style="list-style-type: none"> <li>• Site investigations and fall botanical inventories were conducted to assess the potential for this species during ELC to identify any habitat which may be considered suitable based on the aforementioned criteria.</li> </ul>
Sundial Lupine (S3)	<ul style="list-style-type: none"> <li>• Dry, open forests and clearings (Gleason and Cronquist, 1991).</li> <li>• Suitable ELC communities include FO. See Figures 2.1-2.10 for the ELC communities that are suitable habitat for this species.</li> </ul>	<ul style="list-style-type: none"> <li>• Site investigations and fall botanical inventories were conducted to assess the potential for this species during ELC to identify any habitat which may be considered suitable based on the aforementioned criteria.</li> </ul>
Scarlet Beebalm (S3)	<ul style="list-style-type: none"> <li>• Mesic thickets and woods (Gleason and Cronquist, 1991).</li> <li>• Suitable ELC communities include FO and CUT. See Figures 2.1-2.10 for the ELC communities that are suitable habitat for this species.</li> </ul>	<ul style="list-style-type: none"> <li>• Site investigations and fall botanical inventories were conducted to assess the potential for this species during ELC to identify any habitat which may be considered suitable based on the aforementioned criteria.</li> </ul>
Pillose Evening Primrose (S2)	<ul style="list-style-type: none"> <li>• Moist fields, meadows, and open woods (Gleason and Cronquist, 1991).</li> <li>• Suitable ELC communities include CUM and FO. See Figures 2.1-2.10 for the ELC communities that are suitable habitat for this species.</li> </ul>	<ul style="list-style-type: none"> <li>• Site investigations and fall botanical inventories were conducted to assess the potential for this species during ELC to identify any habitat which may be considered suitable based on the aforementioned criteria.</li> </ul>
Soft-hairy False Gromwell (S2)	<ul style="list-style-type: none"> <li>• Moderately dry, open places (Gleason and Cronquist, 1991).</li> <li>• Suitable ELC communities include SB. See Figures 2.1-2.10 for the ELC communities that are suitable habitat for this species.</li> </ul>	<ul style="list-style-type: none"> <li>• Site investigations and fall botanical inventories were conducted to assess the potential for this species during ELC to identify any habitat which may be considered suitable based on the aforementioned criteria.</li> </ul>
Shumard oak (S3)	<ul style="list-style-type: none"> <li>• Moist slopes, banksides, bottomland, and poorly-drained upland (Nixon, 1997).</li> <li>• Suitable ELC communities include FOD7. See Figures 2.1-2.10 for the ELC communities that are suitable habitat for this species.</li> </ul>	<ul style="list-style-type: none"> <li>• Site investigations and fall botanical inventories were conducted to assess the potential for this species during ELC to identify any habitat which may be considered suitable based on the aforementioned criteria.</li> </ul>
Riddell's Goldenrod (S3)	<ul style="list-style-type: none"> <li>• Wet prairie-like and marshy sites (Semple and Cook, 2006).</li> <li>• Suitable ELC communities include TPO2, TPS2 and TPW2. See Figures 2.1-2.10 for the ELC communities that are suitable habitat for this species.</li> </ul>	<ul style="list-style-type: none"> <li>• Site investigations and fall botanical inventories were conducted to assess the potential for this species during ELC to identify any habitat which may be considered suitable based on the aforementioned criteria.</li> </ul>



**Table 3.3: Characteristics Used to Identify Candidate Habitat for Species of Conservation Concern**

Candidate Habitat for Species of Conservation Concern	Criteria	Methods
Great Plains Ladies'-tresses (S3?)	<ul style="list-style-type: none"> <li>Fens and prairies (Sheviak and Brown, 2002).</li> <li>Suitable ELC communities include FE and TP. See Figures 2.1-2.10 for the ELC communities that are suitable habitat for this species.</li> </ul>	<ul style="list-style-type: none"> <li>Site investigations and fall botanical inventories were conducted to assess the potential for this species during ELC to identify any habitat which may be considered suitable based on the aforementioned criteria.</li> </ul>
Culver's root (S2)	<ul style="list-style-type: none"> <li>Dry to moist upland forests and prairies (Gleason and Cronquist, 1991).</li> <li>Suitable ELC communities include FO and TP. See Figures 2.1-2.10 for the ELC communities that are suitable habitat for this species.</li> </ul>	<ul style="list-style-type: none"> <li>Site investigations and fall botanical inventories were conducted to assess the potential for this species during ELC to identify any habitat which may be considered suitable based on the aforementioned criteria.</li> </ul>
American Gromwell (S3)	<ul style="list-style-type: none"> <li>Occurs along shaded riverbanks and floodplains and at forest edges (Reznicek et al. 2011).</li> <li>Suitable ELC communities include FO. See Figures 2.1-2.10 for the ELC communities that are suitable habitat for this species.</li> </ul>	<ul style="list-style-type: none"> <li>Site investigations and fall botanical inventories were conducted to assess the potential for this species during ELC to identify any habitat which may be considered suitable based on the aforementioned criteria.</li> </ul>
Brainerd's Hawthorn (S2)	<ul style="list-style-type: none"> <li>Usually found in dry, sandy places such as savannas, roadsides, fields and pastures (Reznicek et al. 2011).</li> <li>Suitable ELC communities include CUM and CUS. See Figures 2.1-2.10 for the ELC communities that are suitable habitat for this species.</li> </ul>	<ul style="list-style-type: none"> <li>Site investigations and fall botanical inventories were conducted to assess the potential for this species during ELC to identify any habitat which may be considered suitable based on the aforementioned criteria.</li> </ul>
Round-leaved Hawthorn (S3?)	<ul style="list-style-type: none"> <li>Like other hawthorns, typically occurs in disturbed or successional sites such as forest edges, pastures, and stream sides (Gleason and Cronquist, 1991).</li> <li>Suitable ELC communities include CUW. See Figures 2.1-2.10 for the ELC communities that are suitable habitat for this species.</li> </ul>	<ul style="list-style-type: none"> <li>Site investigations and fall botanical inventories were conducted to assess the potential for this species during ELC to identify any habitat which may be considered suitable based on the aforementioned criteria.</li> </ul>
Middlsex Frosted Hawthorn (S1?)	<ul style="list-style-type: none"> <li>Like other hawthorns, typically occurs in disturbed or successional sites such as forest edges, pastures, and stream sides (Gleason and Cronquist, 1991).</li> <li>Suitable ELC communities include CUW. See Figures 2.1-2.10 for the ELC communities that are suitable habitat for this species.</li> </ul>	<ul style="list-style-type: none"> <li>Site investigations and fall botanical inventories were conducted to assess the potential for this species during ELC to identify any habitat which may be considered suitable based on the aforementioned criteria.</li> </ul>
A Moss, <i>Astomum muhlenbergia</i> (S2)	<ul style="list-style-type: none"> <li>Occurs along roadsides and in soil, fields, lawns and grassy areas (Zander, 2007).</li> <li>Suitable ELC communities include RES. See Figures 2.1-2.10 for the ELC communities that are suitable habitat for this species.</li> </ul>	<ul style="list-style-type: none"> <li>Site investigations and fall botanical inventories were conducted to assess the potential for this species during ELC to identify any habitat which may be considered suitable based on the aforementioned criteria.</li> </ul>

**Table 3.3: Characteristics Used to Identify Candidate Habitat for Species of Conservation Concern**

Candidate Habitat for Species of Conservation Concern	Criteria	Methods
Green Dragon (S3)	<ul style="list-style-type: none"> <li>Flowering late spring; mesic to wet deciduous woods, thickets, and bottomlands (Thompson, 2000)</li> <li>Suitable ELC communities include FO, CUT, and SWD. See Figures 2.1-2.10 for the ELC communities that are suitable habitat for this species.</li> </ul>	<ul style="list-style-type: none"> <li>Site investigations and fall botanical inventories were conducted to assess the potential for this species during ELC to identify any habitat which may be considered suitable based on the aforementioned criteria.</li> </ul>
Sleepy Duskywing (S1)	<ul style="list-style-type: none"> <li>Larvae can be found in leaf-nests in species of oak; adults occur in oak woods and can be seen on flowers or in mud puddles (Layberry et al., 1998).</li> </ul>	<ul style="list-style-type: none"> <li>Site investigations were conducted to identify potential habitat for this species based on the aforementioned criteria.</li> </ul>
Dusted Skipper (S1)	<ul style="list-style-type: none"> <li>The larval diet consists of Little bluestem (<i>Schizachyrium scoparium</i>) and big bluestem (<i>Andropogon gerardii</i>) grasses. The species is apparently restricted to sandy, very dry sites in Lambton county and has been reported nectaring on Incised puccoon (<i>Lithospermum incisum</i>) (Layberry et al., 1998).</li> </ul>	<ul style="list-style-type: none"> <li>Site investigations were conducted to identify potential habitat for this species based on the aforementioned criteria.</li> </ul>
Snapping Turtle (SC)	<ul style="list-style-type: none"> <li>Snapping Turtles inhabit ponds, sloughs, streams, rivers, and shallow bays that are characterized by slow moving water, aquatic vegetation, and soft bottoms. Females show strong nest site fidelity and nest in sand or gravel banks at waterway edges in late May or early June (COSEWIC, 2008).</li> <li>Habitat for this species can be determined through the consideration of Turtle Nesting and Turtle Wintering Areas</li> </ul>	<ul style="list-style-type: none"> <li>Site investigations were conducted to identify potential habitat for this species based on the aforementioned criteria.</li> </ul>
Northern Map Turtle (SC)	<ul style="list-style-type: none"> <li>Map turtles are highly aquatic and inhabit slow moving, large rivers and lakes with soft bottoms and abundant aquatic vegetation. Basking sites include rocks and deadheads adjacent to deep water (COSEWIC, 2002) Nesting occurs in soft sand or soil and at a distance from the water, hibernation is communal and occurs at the bottoms of lakes (MacCulloch, 2002). Females leave the water in June to nest (MacCulloch, 2002).</li> <li>Habitat for this species can be determined through the consideration of Turtle Nesting and Turtle Wintering Areas</li> </ul>	<ul style="list-style-type: none"> <li>Site investigations were conducted to identify potential habitat for this species based on the aforementioned criteria.</li> </ul>
Eastern Ribbonsnake (SC)	<ul style="list-style-type: none"> <li>The Eastern Ribbonsnake is restricted to southern Ontario, where it is quite local, and is usually found close to water (Lamond, 1994). They often frequent the edge of shallow ponds, streams, marshes, swamps, or bogs with dense vegetation</li> </ul>	<ul style="list-style-type: none"> <li>Site investigations were conducted to identify potential habitat for this species based on the aforementioned criteria.</li> </ul>

**Table 3.3: Characteristics Used to Identify Candidate Habitat for Species of Conservation Concern**

Candidate Habitat for Species of Conservation Concern	Criteria	Methods
	<p>nearby that provides cover, with abundant exposure to sunlight and upland areas for nesting (COSEWIC, 2002). Ontario ribbonsnakes have been found to hibernate in animal burrows or rock crevices (Lamond, 1994).</p> <ul style="list-style-type: none"> <li>Habitat for this species can be determined through the consideration of Snake Hibernacula</li> </ul>	
Bald Eagle (SC)	<ul style="list-style-type: none"> <li>Almost always nests near water, usually on large lakes. Large stick nests are placed in trees located within mature woodlots. They usually require 250 ha of mature forest for breeding, however, along Lake Erie, where the lake provides a valuable food source; the eagles will nest in smaller woodlots or even single trees (Sandilands, 2005). This species has experienced a relatively recent and substantial increase in population as well as an expansion in range following a decline during the mid-20<sup>th</sup> century (Cadman et al, 2007).</li> <li>The Lake Erie shoreline is the predominant area for breeding Bald Eagles in southwestern Ontario (Ontario Breeding Bird Atlas, 2005).</li> <li>Habitat for this species can be determined through the consideration of Bald Eagle and Osprey Nesting, Foraging and Perching Habitat</li> </ul>	<ul style="list-style-type: none"> <li>Site investigations were conducted to identify potential habitat for this species based on the aforementioned criteria.</li> </ul>
Louisiana Waterthrush (SC)	<ul style="list-style-type: none"> <li>In Ontario, the species prefers deciduous and mixed forests with a strong Eastern Hemlock component, in deeply incised ravines (Cadman et al. 2007). It will also inhabit large flooded tracts of mature deciduous swamp forest. It shows a preference for nesting along pristine headwater streams and associated wetlands occurring in large expanses of mature forest and less frequently inhabits wooded swamps (COSEWIC, 2006). The primary limiting factor for this species appears to be its natural breeding range limits, with secondary factors including urbanization, loss of forest cover and associated increase of parasitism by the Brown-headed Cowbird; activities that affect the quality of streams in potential habitat, such as logging, off-road vehicles, agricultural drains, and pollution associated with nearby development could potentially</li> </ul>	<ul style="list-style-type: none"> <li>Site investigations were conducted to identify potential habitat for this species based on the aforementioned criteria.</li> </ul>

**Table 3.3: Characteristics Used to Identify Candidate Habitat for Species of Conservation Concern**

Candidate Habitat for Species of Conservation Concern	Criteria	Methods
	impact the supply of aquatic insects (COSEWIC, 2006).	
Hooded Warbler (S3B)	<ul style="list-style-type: none"> <li>The Hooded Warbler can be found in mature, upland deciduous or mixed forest, with an area of more than 15 hectares, where clearings have been created naturally or by logging (Evans Ogden and Stutchbury, 1994). It prefers clearings with low, dense, shrubby vegetation less than two meters in height. Large tracts of relatively undisturbed forest interior are preferred due to its area sensitive nature and the higher potential for predation and parasitism closer to forest edges (COSEWIC, 2000). The 2001-2005 Ontario Breeding Bird Atlas indicated a significant increase in probability of observation from the first atlas and although it is most common in the Carolinian region, it has expanded its range north, west and east. These changes may be owing to more targeted surveys, an increase in available habitat due to forest maturation as well as climate change (Cadman et al, 2007).</li> </ul>	<ul style="list-style-type: none"> <li>Site investigations were conducted to identify potential habitat for this species based on the aforementioned criteria.</li> </ul>
Wood Thrush (federally THR)	<ul style="list-style-type: none"> <li>The Wood Thrush can be found in Carolinian and Great Lakes-St. Lawrence forest zones; undisturbed moist mature deciduous or mixed forest with deciduous sapling growth; near pond or swamp; hardwood forest edges; must have some trees higher than 12 m (OMNR, 2000).</li> </ul>	<ul style="list-style-type: none"> <li>Site investigations were conducted to identify potential habitat for this species based on the aforementioned criteria.</li> </ul>

**3.1.5.4 Animal Movement Corridors**

**Amphibian Movement Corridors**

Movement corridors should be considered when amphibian breeding habitat is confirmed as SWH from Amphibian Breeding Habitat (Wetland). Amphibian movement corridors should consist of native vegetation, with no road crossings, no gaps such as fields, waterways or bodies, and undeveloped areas are most significant (MNR, 2011a). Corridors should be at least 200 m wide with gaps <20 m and if following riparian area with at least 15 m of vegetation on both sides of waterway.

ELC mapping and aerial photography were used to identify potential corridor features adjacent to candidate amphibian breeding habitat.

## **3.2 RESULTS**

The Project Location, and areas within 120 m of it, was comprised primarily of actively cultivated cropland. Crops consisted largely of soybeans and corn, with occasional fields of clover, wheat, and hay. Natural vegetation consisted of deciduous forest, swamp, cultural woodland, and hedgerows and is described in **Section 3.2.1**.

Field notes for the site investigations are provided in **Appendix C**.

A summary of the corrections to the features identified through the records review, including new features or functions identified as a result of site investigations, is provided in **Table 3.2 (Appendix B)** and discussed in the following sections. A summary of all natural features in and within 120 m of the Project Location is provided in **Table 3.3 (Appendix B)**.

### **3.2.1 Vegetation Community and Vascular Plants Assessment**

Site investigations identified 50 discrete naturally-vegetated features in or within 120 m of the Project Location. Each feature was delineated and assigned a unique identification number (**Figures 2.10-2.10, Appendix A**) and an appropriate ELC vegetation community code (as per Lee et al., 1998) and is summarized in **Table 3.3 (Appendix B)**, which serves as a point of reference. This table describes the type, attributes, composition, function, and significance (if known) of each natural feature. Full details of each ELC community is described in the ELC memo provided in **Appendix C**. Delineated ELC communities are shown on **Figures 2.0-2.10, Appendix A**.

### **3.2.2 Wetlands**

Wetlands within the Project Boundary are typically swamp maple or green ash mineral swamps with scattered meadow marshes and swamp thickets. Descriptions of these features can be found in **Table 3.3, Appendix B** and boundaries shown on **Figures 2.0-2.10, Appendix A**.

#### **3.2.2.1 Provincially Significant Wetlands**

No PSW communities were identified during field investigations. No corrections are required to the records review.

#### **3.2.2.2 Locally Significant Wetlands**

No locally significant wetland communities, with the exception of Uttoxeter Swamp (associated with Feature 57) as noted in the background review, were identified within 120 m of the Project Location during field investigations. No corrections are required to the records review.

### **3.2.2.3 Additional/Unevaluated Wetlands**

Twenty-four additional wetlands, not previously identified by MNR, were identified in and within 120 m of the Project Location and are associated with Features 6, 7, 9, 10, 16, 25, 26, 27, 29, 31, 35, 37, 38, 39, 40, 41, 47, 50, 52, 53, 56, 58, 62 and 74. These wetlands consisted primarily of swamp maple and green ash deciduous swamps with scattered meadow marshes.

Potential wetland communities that were beyond 120 m of the Project Location and were not contiguous with identified features, as determined through air photo interpretation, were not included as part of the feature. Several drains contained small pockets of meadow marsh vegetation and are shown on the ELC mapping as containing MAM communities. These communities themselves are very small and provide limited to no wetland function, and so are not included as wetland features.

Corrections made to the records review for wetlands as a result of the site investigations are summarized in **Table 3.2 (Appendix B)**. An evaluation of significance is required for previously unidentified wetlands.

### **3.2.3 Woodlands**

Forty-six woodlands (including all swamps discussed in **Section 3.2.2.3**) were identified within 120 m of the Project Location during the site investigation and 10 woodlands were identified as overlapping with the Project Location. 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 these features. **Table 3.3 (Appendix B)** lists all woodlands identified and describes their attributes, composition, and function.

Potential woodland communities that were beyond 120 m of the Project Location and were not contiguous with identified features, as determined through air photo interpretation, were not included as part of the feature.

### **3.2.4 Wildlife and Wildlife Habitat**

Results of the site investigations for wildlife habitat are summarized in the following sections. The results are considered within the context of criteria for significant wildlife habitat as outlined within the Draft Significant Wildlife Habitat Ecoregion 7E Criterion Schedule and SWHTG (MNR, 2000) in order to determine whether natural communities in and within 120 m of the Project Location support candidate or confirmed significant wildlife habitat. Features associated with candidate significant wildlife are identified in the following sections, and illustrated in **Figures 3.0-3.10, Appendix A. Table 3.4 (Appendix B)** lists all candidate significant wildlife habitats identified and describes their attributes, composition, and function.

**3.2.4.1 Seasonal Concentration Areas of Animals**

Site investigation involved a thorough assessment of natural areas for seasonal concentration areas for wildlife habitat. Potential habitat for seasonal concentration areas was examined during the site investigation phase, and is discussed in **Table 3.4** below.

**Table 3.4: Summary of Site Investigation Results for Seasonal Concentration Areas**

Candidate Seasonal Concentration Areas	Present in or within 120 m of Project Location	Rationale	Carried Forward to Summary and EOS (Y/N)
Waterfowl Stopover and Staging Area (Terrestrial)	No	<p>Areas in or within 120 m of the Project Location were comprised of actively cultivated cropland (e.g. corn, soybean and winter wheat), with scattered woodlands.</p> <p>A tundra swan driving transect was conducted on March 6, 2013 in order to determine if there were fields with flooding or congregations of Tundra Swans. There were no CUM1, CUT1 and fields with waste grains with evidence of spring flooding found in or within 120 m of the Project Location. The only location found within the Project Boundary is the sewage lagoons west of the Town of Forest, ON. These sewage lagoons are located outside of the Project Zone of Investigation and are not considered significant wildlife habitat.</p> <p>The Thedford Flats IBA is located 5 km from the Project Location and is a known waterfowl stopover area. Additionally, the Provincially-Significant South Kettle Point Lakeshore Marshes are located 2 km north of the Project Boundary. These sites provide the best significant habitat near the project for marsh breeding birds in the vicinity of the Project.</p>	No
Waterfowl Stopover and Staging Area (Aquatic)	No	<p>Large wetlands or marshes, ponds, or bays with a diversity of vegetation communities were absent within 120 m of the Project Location. None of the smaller marshes and swamps located in the Study Area had an abundant food supply consisting of aquatic vegetation or invertebrates in shallow water.</p> <p>A tundra swan driving transect was conducted on March 6, 2013 in order to determine if there were potential aquatic waterfowl staging areas or congregations of Tundra Swans. The only location found within the Project Boundary is the sewage lagoons west of the Town of Forest, ON. These sewage lagoons are located west of the town of Forest which may provide a stopover area; however, sewage lagoons are not considered significant wildlife habitat. These sewage lagoons are located outside of the Project Zone of Investigation.</p> <p>The relative importance of the site to local waterfowl populations, presence of species of conservation concern, species diversity, abundance of species, quality of habitat</p>	No



**Table 3.4: Summary of Site Investigation Results for Seasonal Concentration Areas**

Candidate Seasonal Concentration Areas	Present in or within 120 m of Project Location	Rationale	Carried Forward to Summary and EOS (Y/N)
		and size of the size must be considered when identifying the most significant sites (MNR, 2000). Sites identified are usually only one of a few in the eco-district. The Thedford Flats IBA is located 5 km from the Project Location and is a known waterfowl stopover area. Additionally, the Provincially-Significant South Kettle Point Lakeshore Marshes are located 0.75 km north of the Project Boundary. These sites provide the best significant habitat near the project for marsh breeding birds in the vicinity of the Project.	
Shorebird Migratory Stopover Area	No	No known shorebird migratory stopover areas are confirmed within the Project Boundary. Site investigations determined that large wetland features with shorelines were absent in or within 120 m of the Project Location.	No
Raptor Wintering Area	Yes	Grasslands are predominantly small, fragmented and under active agriculture – there are no CUM, CUS, or CUT communities >15 ha.	No
Bat Hibernacula	No	There are no caves, abandoned mine shafts, underground foundations, or karsts or crevice/cave communities within 1120 m of the Project Location.	No
Bat Maternity Colonies	Unknown	<p>There are 23 woodlots containing FOD or FOM communities located within 120 m of wind turbines or in the Project Location which have the potential to be candidate bat maternity colonies. There are an additional 15 woodlots with FOD and FOM communities that are located within 120 m of project components that will not have an operational impact or do not have accessible areas in order to conduct these surveys and will be considered generalized bat maternity colonies.</p> <p>None of the 23 woodlots evaluated for candidate bat maternity colonies contained greater than 10 cavity trees per hectare, and therefore did not contain candidate bat maternity colonies.</p> <p>The following woodlands had partial access when undertaking the site investigations (Woodland 7, 19, 29, 30, 31, 33, 34, 37, 45, 48, 55, 58 and 62). As such Turbine 14 needs to be included in post construction mortality monitoring and the following turbines need to be considered for inclusion (Turbines 5, 6, 9, 11, 21, 24, 25, 27, 30, 36, 37, 47, 50 and 54).</p>	Yes: Generalized
Turtle Wintering Areas	Yes	<p>Results of the vegetation classification surveys determined that large bodies of water (for Northern Map Turtle) were absent within 120 m of the Project Location.</p> <p>Vegetation classification surveys identified the presence of wetland areas within 120 m of the Project Location consisting primarily of swamp maple and green ash deciduous swamps with scattered meadow marshes and swamp thickets. These features lacked the standing water</p>	No



**Table 3.4: Summary of Site Investigation Results for Seasonal Concentration Areas**

Candidate Seasonal Concentration Areas	Present in or within 120 m of Project Location	Rationale	Carried Forward to Summary and EOS (Y/N)
		required (ie. depth) to support overwintering Snapping Turtle or Midland Painted Turtle.	
Snake Hibernacula	No	A single potential snake hibernacula feature was found within 120 m of the Project Location. In Woodland 56 there is a pile of cement and clay pots along the woodland edge; however there is was no access below ground observed at this pile. Without access to the subterranean level , this feature cannot provide the function of hibernacula, and it is therefore not considered candidate significant snake hibernacula.	No
Colonial-Nesting Bird Breeding Habitat (bank/cliff)	No	Results of the site investigations determined that there no eroding banks, sandy hills, borrow pits, steep slopes and sand piles present in or within 120 m of the Project Location.	No
Colonial-Nesting Bird Breeding Habitat (tree/shrub)	No	The Ontario Breeding Bird Atlas identified nesting colonial birds within the Project Boundary (e.g. Great Blue Heron) but the results of the site investigation did not find any heronries, or other colonial birds nesting in or within 120 m of the Project Location. Woodlands containing deciduous treed swamp inclusions are present in and within 120 m of the Project Location; however, none of these sites had nests to demonstrate this habitat is used by colonial-nesting birds.	No
Colonial-Nesting Bird Breeding Habitat (ground)	No	There are no lakes or large rivers providing shoreline habitat or containing rocky island or peninsula features in or within 120 m of the Project Location. Brewer's Blackbird has only been recorded from two locations in the extreme southwestern corner of Ecoregion 7E and is not known to occur within the Project Boundary (Cadman et al., 2007).	No
Deer Wintering Area	Yes	There is a deer wintering area as mapped by the MNR in the Project Location.	Yes

**3.2.4.2 Rare Vegetation Communities or Specialized Habitats for Wildlife**

Site investigation results pertaining to rare vegetation communities and specialized habitats in and within 120 m of the Project Location are summarized in **Table 3.5** below. Rare vegetation community types or specialized habitats for wildlife that did not have any candidate significant wildlife habitat will not be carried forward to the evaluation of significance phase.

**Table 3.5: Summary of Site Investigation Results for Rare Vegetation Communities and Specialized Wildlife Habitat**

Candidate Rare Vegetation Community/Specialized Wildlife Habitat	Present in or within 120 m of Project Location	Rationale	Carried Forward to Summary and EOS (Y/N)
Cliffs and Talus Slopes	No	Rare vegetation communities (cliffs and talus slopes) were not observed during ELC and vegetation surveys in and within 120 m of the Project Location.	No
Sand Barrens	No	Rare vegetation communities (sand barrens) were not	No

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**Table 3.5: Summary of Site Investigation Results for Rare Vegetation Communities and Specialized Wildlife Habitat**

Candidate Rare Vegetation Community/Specialized Wildlife Habitat	Present in or within 120 m of Project Location	Rationale	Carried Forward to Summary and EOS (Y/N)
		observed during ELC and vegetation surveys in and within 120 m of the Project Location.	
Alvars	No	Rare vegetation communities (alvars) were not observed during ELC and vegetation surveys in and within 120 m of the Project Location.	No
Old-growth Forest	No	Old growth forest communities were not observed during vegetation surveys and woodland assessment of all woodlands in and within 120 m of the Project Location.  ELC surveys and woodland assessments of all woodlands within 120 m of the Project Location did not contain suitable habitat to old-growth forests. All mature woodlands within 120 m of the Project Location contained evidence of historical forestry management.	No
Savannahs	No	Rare vegetation communities (savannahs) were not observed during ELC and vegetation surveys in and within 120 m of the Project Location.	No
Tall-grass Prairies	No	Rare vegetation communities (tall-grass prairie) were not observed during ELC and vegetation surveys in and within 120 m of the Project Location.	No
Other Rare Vegetation Communities	Yes	One rare vegetation community type (FOD6-2 Sugar Maple – Black Maple Deciduous Forest) which has an S-Rank of S3? was observed in the Study Area. Because it is located within 120 m of underground cabling, but no vegetation removal is proposed, this habitat will be considered generalized candidate significant wildlife habitat.	Yes: Generalized
Waterfowl Nesting Area	Yes	Site investigations indicated that wetlands in and within 120 m of the Project Location were comprised primarily of young deciduous swamps, lacking large cavity trees suitable for cavity nesting waterfowl (e.g., Wood Duck). No open water >0.5 ha adjacent to upland was identified in or within 120 m of the Project Location (including clusters of three or more small wetlands <0.5ha) and upland areas at least 120m wide.	No
Bald Eagle and Osprey Nesting, Foraging, and Perching Habitat	No	ELC and habitat assessments of all woodlands and vegetated watercourses in and within 120 m of the Project Location did not detect any specialized nesting habitat for or nests of Osprey or Bald Eagle.  No candidate significant wildlife habitat was present within 120 m of the Project Location for Bald Eagle and Osprey nesting, foraging and perching habitat.	No
Woodland Raptor Nesting Habitat	No	ELC and habitat assessments of all woodlands in and within 120 m of the Project Location did not detect any specialized nesting habitat for woodland raptors (e.g. Cooper's or Red-shouldered Hawk).  There are woodlands >30 ha but none with >4 ha of interior habitat based on a 200 m buffer in or within 120 m of the Project Location.	No

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**Table 3.5: Summary of Site Investigation Results for Rare Vegetation Communities and Specialized Wildlife Habitat**

Candidate Rare Vegetation Community/Specialized Wildlife Habitat	Present in or within 120 m of Project Location	Rationale	Carried Forward to Summary and EOS (Y/N)
Turtle Nesting Areas	No	<p>ELC and habitat assessment surveys undertaken in all woodlands and watercourses in and within 120 m of the Project Location did not locate any exposed mineral soil (sand or gravel) or contain suitable habitat to support turtle nesting habitat.</p> <p>No candidate significant wildlife habitat was present in or within 120 m of the Project Location for turtle nesting habitat.</p>	No
Seeps and Springs	No	<p>ELC and woodland habitat assessment surveys of all woodlands in and within 120 m of the Project Location did not identify seeps or springs.</p>	No
Amphibian Breeding Habitat (Woodland)	Yes	<p>During site investigations to identify potential amphibian woodland breeding ponds in 2011 and 2012, areas of standing water or areas which showed evidence of holding water through the spring (based on topography and vegetation) were assessed. Size of pools, presence and depth of standing water, surrounding vegetation community, emergent and submergent vegetation and canopy cover were recorded. Note that only woodlands/wetlands with evidence of ponds or vernal pooling were included as candidate habitats, as listed below.</p> <p>Descriptions of these features are as follows:</p> <p>Feature 6: Upland forest and SWD2-2 swamp within 120 m of Turbine 4. Vernal pooling found in swamp in July 2012. As per the Draft SWH Ecoregion 7E Criterion, this feature is considered candidate significant wildlife habitat and an evaluation of significance is required.</p> <p>Feature 7: Upland forest and SWD3-2 deciduous swamp adjacent to access roads to Turbines 6 and 8. Vernal pooling found in swamp in May 2012. As per the Draft SWH Ecoregion 7E Criterion, this feature is considered candidate significant wildlife habitat and an evaluation of significance is required.</p> <p>Feature 25: Upland forest and SWD2-2 deciduous swamp adjacent to access roads and Turbines 15 and 16. As per the Draft SWH Ecoregion 7E Criterion, this feature is considered candidate significant wildlife habitat and an evaluation of significance is required.</p> <p>Feature 26: Upland forest and SWD2-3 deciduous swamp adjacent to access roads to Turbine 20. Vernal pooling found in swamp in late May 2012. As per the Draft SWH Ecoregion 7E Criterion, this feature is considered candidate significant wildlife habitat and an evaluation of significance is required.</p>	Yes

**Table 3.5: Summary of Site Investigation Results for Rare Vegetation Communities and Specialized Wildlife Habitat**

Candidate Rare Vegetation Community/Specialized Wildlife Habitat	Present in or within 120 m of Project Location	Rationale	Carried Forward to Summary and EOS (Y/N)
		<p>Feature 29: Upland forest and SWD3-4 deciduous swamp adjacent to access roads to Turbine 20. Vernal pooling found in swamp in late May 2012. As per the Draft SWH Ecoregion 7E Criterion, this feature is considered candidate significant wildlife habitat and an evaluation of significance is required.</p> <p>Feature 37: Upland forest and SWD3-2 deciduous swamp within 120 m of Turbine 27. As per the Draft SWH Ecoregion 7E Criterion, this feature is considered candidate significant wildlife habitat and an evaluation of significance is required.</p> <p>Feature 47: Upland forest and SWD2-2 deciduous swamp within 120 m of the access road to Turbine 39. As per the Draft SWH Ecoregion 7E Criterion, this feature is considered candidate significant wildlife habitat and an evaluation of significance is required.</p> <p>Features 56 and 57: SWD3-3 deciduous swamp adjacent to an access road to Turbine 46. Vernal pooling found throughout swamp in May 2012. As per the Draft SWH Ecoregion 7E Criterion, these features are considered candidate significant wildlife habitat and an evaluation of significance is required.</p>	
Amphibian Breeding Habitat (Wetland)	No	No wetlands or open water located > 120 m from woodlands was found in or within 120 m of the Project Location.	No

**3.2.4.3 Species of Conservation Concern**

Site investigation results pertaining habitats for species of conservation concern within 120 m of the Project Location are summarized in **Table 3.6** below. Species of wildlife concern that did not have any candidate significant wildlife habitat will not be carried forward to the evaluation of significance phase.

**Table 3.6: Summary of Site Investigation Results for Habitat for Species of Conservation Concern**

Candidate Habitat for Species of Conservation Concern	Present in or within 120 m of Project Location	Rationale	Carried Forward to EOS (Y/N)
Marsh Bird Breeding Habitat	No	Marsh habitats identified in the site investigation within 120m of the Project Location were along small agricultural drains. These drains carry surface water but do not have shallow standing water or emergent aquatic vegetation, and so do not provide potential nesting habitat for marsh breeding birds. These drains do not tend to hold water into the breeding bird season, and do not have sufficient shrub or tree cover to support Green Heron nesting. No nests were identified for Green Heron during site investigations, which included streams, ponds, swamps, and marshes.  Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes. The South Kettle Point Lakeshore Marshes are approximately 2 km north of the Project Boundary and provide the best significant habitat near the project for marsh breeding birds.	No
Open Country Breeding Bird Habitat	No	Grassland habitat not associated with agriculture (e.g., hayfields, cattle pastures) in and within 120 m of the Project Location, and generally within the Project Boundary, is limited and does not exceed 30 ha in size.	No
Woodland Area-sensitive Bird Breeding Habitat	No	ELC and habitat assessments of all woodlands in and within 120 m of the Project Location did not detect any specialized nesting habitat for woodland area-sensitive breeding birds. There are woodlands >30 ha in size, but none with >4 ha of interior habitat in or within 120 m of the Project Location.	No
Shrub/Early Successional Bird Breeding Habitat	No	No large natural field areas succeeding to shrub and ticket habitats > 10 ha in size located within 120 m of Project Location.	No
Terrestrial Crayfish	No	No evidence of terrestrial crayfish or their chimneys were observed in the Study Area.	No

**S1-S3, Special Concern and SH Species and Communities**

Sleepy Duskywing	No	Some moister oak dominated forests were identified within 120m of the Project Location. However, the dry oak woodlands typical of Sleepy Duskywing habitat were not identified. The Project Location is greater than 10 kilometer from the known records of this species in the Pinery Provincial Park.	No
Dusted Skipper	No	No tallgrass prairie, the preferred habitat of the Dusted Skipper, was observed within 120m of the Project Location.	No

**Table 3.6: Summary of Site Investigation Results for Habitat for Species of Conservation Concern**

Candidate Habitat for Species of Conservation Concern	Present in or within 120 m of Project Location	Rationale	Carried Forward to EOS (Y/N)
Eastern Ribbonsnake	No	Eastern Ribbonsnake is semi-aquatic requiring large wetland with open, preferable quite, shallow water. Suitable habitat for this species did not occur within 120m of the Project Location.	No
Northern Map Turtle	No	Habitat for this species has been determined through the consideration of Turtle Overwintering Habitat ( <b>Section 3.2.4.1</b> ) and Nesting Habitat ( <b>Section 3.2.4.2</b> ).	No (Turtle Overwintering and Nesting Habitat)
Snapping Turtle	No	Habitat for this species has been determined through the consideration of Turtle Overwintering Habitat ( <b>Section 3.2.4.1</b> ) and Nesting Habitat ( <b>Section 3.2.4.2</b> ).	No (Turtle Overwintering and Nesting Habitat)
Bald Eagle	No	Habitat for this species has been determined through the consideration of Bald Eagle and Osprey Nesting, Foraging and Perching Habitat ( <b>Section 3.2.4.1</b> ).	No (Bald Eagle and Osprey Nesting, Foraging, and Perching Habitat)
Louisiana Waterthrush	No	This species prefers mature, deciduous forest with a strong Eastern Hemlock component along deeply incised ravines or deciduous swamps. There were no mature, deciduous forests containing Eastern Hemlock and ravines found in the Study Area.	No
Hooded Warbler	Yes	This species prefers mature, deciduous forest with clearings and interior habitat. There are several mature deciduous forests with interior habitat and drains running through them: 45, 48, 55, 56 and 62. However, the following features are not located within 120 m of a wind turbine and will therefore be considered generalized candidate significant wildlife habitat: 47, 51 and 53 and will not require an evaluation of significance. Mitigation for generalized candidate significant wildlife habitats is provided in <b>Section 5.2.4</b> .  As per the Draft SWH Ecoregion 7E Criterion, the remaining features are considered candidate significant wildlife habitat and an evaluation of significance is required.	Yes
Wood Thrush	Yes	This species prefers moist, mature, deciduous forest >4 ha with a strong sapling or shrub understory. The following features were found to meet these criteria: 3, 6, 10, 18, 19, 23, 26, 27, 28, 30, 32, 45, 47, 48, 51, 52, 53, 55, 56, 57, 58, 62 and 75. However, the following features are not located within 120 m of a wind turbine and will therefore be considered generalized candidate significant wildlife habitat: 27, 47, 51, 53, 57 and 75 and will not require an evaluation of significance. Mitigation for generalized candidate significant wildlife habitats is provided in <b>Section 5.2.4</b> .  As per the Draft SWH Ecoregion 7E Criterion, the remaining features (3, 6, 10, 18, 19, 23, 26, 28, 30, 32, 45, 48, 52, 55, 56, 58 and 62) are considered candidate	Yes

**Table 3.6: Summary of Site Investigation Results for Habitat for Species of Conservation Concern**

Candidate Habitat for Species of Conservation Concern	Present in or within 120 m of Project Location	Rationale	Carried Forward to EOS (Y/N)
		significant wildlife habitat and an evaluation of significance is required.	
Caughuawaga Hawthorn (S1)	Yes	These plant species may occur along the forest edges where vegetation removal is proposed. As per the Draft SWH Ecoregion 7E Criterion, the following features are considered candidate significant wildlife habitat and an evaluation of significance is required: 3, 6, 7, 10, 18, 19, 20, 23, and 24. The area of vegetation removal plus a 30 m buffer will be evaluated for significance.  Other ELC communities in the Study Area may contain these plant species; however, they are not overlapped with the Project Location and therefore will not be impacted. These communities are considered generalized candidate significant wildlife habitat and an evaluation of significance is not required. Mitigation for generalized candidate significant wildlife habitats is provided in <b>Section 5.2.4</b> .	Yes
Giant Ironweed (S1)	Yes		Yes
Puttyroot (S2)	Yes		Yes
Pawpaw (S3)	Yes		Yes
Crowned Beggar-ticks (S2)	Yes		Yes
Burning Bush (S3)	Yes		Yes
Pumpkin Ash (S2)	Yes		Yes
Hairy Bedstraw (S3?)	Yes		Yes
Stiff Gentian (S2)	Yes		Yes
Shellbark Hickory (S3)	Yes		Yes
Chinese Hemlock-parsley (S2)	Yes		Yes
Green Violet (S2)	Yes		Yes
Sharp-fruited Rush (S3)	Yes		Yes
Woodland Flax (S2)	Yes		Yes
Scarlet Beebalm (S3)	Yes		Yes
Pillose Evening Primrose (S2)	Yes		Yes
Culver's root (S2)	Yes		Yes
American Gromwell (S3)	Yes		Yes
Brainerd's Hawthorn (S2)	Yes		Yes
Round-leaved Hawthorn (S3?)	Yes		Yes
Middlesex Frosted Hawthorn (S1?)	Yes	Yes	
Green Dragon (S3)	Yes	Yes	
Narrow-leaved puccoon (S1)	No	Habitat for these plant species was not found in or within 120 m of the Project Location.	No
Moss Phlox (S1?)	No		No



**Table 3.6: Summary of Site Investigation Results for Habitat for Species of Conservation Concern**

Candidate Habitat for Species of Conservation Concern	Present in or within 120 m of Project Location	Rationale	Carried Forward to EOS (Y/N)
Ram's Head Lady-slipper (S3)	No		No
Prostrate Tick-trefoil (S2)	No		No
Rattlesnake Hawkweed (S2)	No		No
Yellow Star-grass (S3)	No		No
Tall Blazing Star (S2)	No		No
Slender Blazing Star (S3)	No		No
Sundial Lupine (S3)	No		No
Soft-hairy False Gromwell (S2)	No		No
Shumard oak (S3)	No		No
Riddell's Goldenrod (S3)	No		No
Great Plains Ladies'-tresses (S3?)	No		No
A Moss, <i>Astomum muhlenbergia</i> (S2)	No		No

**3.2.4.4 Animal Movement Corridors**

Movement corridors were considered where candidate wetland amphibian breeding habitat (wetland) occurred. Results of ELC and site investigation found that there was no amphibian breeding habitat (wetland) in the Study Area. Therefore, this habitat type will not be carried forward to the Evaluation of Significance.

**3.3 SITE INVESTIGATION RESULTS SUMMARY**

**Table 3.7** below provides a summary of the natural features that will be carried forward to the evaluation of significance.



**Table 3.7: Natural Features Carried Forward to Evaluation of Significance**

Feature ID	Feature Type	Distance to Project Infrastructure Within 120 m (m)	Identified in Records Review	Evaluation of Significance Required
<b>Woodlands and Wetlands</b>				
3	Woodland	OL – overlapping	No	Yes
5	Woodland	OL – 11	No	Yes
6	Woodland	WT – 29 UL – 3 AR – 3 OL – overlapping BO – 5	No	Yes
6a	Wetland	WT – 104 UL – 8 BO – 106	No	Yes
6b	Wetland	BO – 116	No	Yes
7	Woodland	WT – 79 UL – 12 AR – 2 OL – overlapping BO – 62	No	Yes
7a	Wetland	WT – 92 UL – 17 AR – 7 BO – 71	No	Yes
9	Woodland	AR – 100 UL – 1 OL – 1 BO – 64	No	Yes
9a	Wetland	UL – 1 OL – 1	No	Yes
10	Woodland	OL – overlapping UL – overlapping	No	Yes
10a	Wetland	UL – 1	No	Yes
16	Woodland	UL – 72 AR – 69 OL - 70	No	Yes
16a	Wetland	UL – 72 AR – 69 OL - 70	No	Yes
17	Woodland	UL – 2 AR – 1 OL - 3	No	Yes
18	Woodland	WT – 72 UL – 3 AR – 9 OL – overlapping BO – 36	No	Yes
19	Woodland	UL – overlapping OL – overlapping BO – 110	No	Yes
20	Woodland	UL – overlapping OL – overlapping	No	Yes
23	Woodland	WT – 69	No	Yes

**Table 3.7: Natural Features Carried Forward to Evaluation of Significance**

Feature ID	Feature Type	Distance to Project Infrastructure Within 120 m (m)	Identified in Records Review	Evaluation of Significance Required
		UL – 1 AR – 106 OL – overlapping BO – 31		
24	Woodland	OL – overlapping	No	Yes
25	Woodland	WT – 24 UL – 1 AR – 1 BO – 1	No	Yes
25a	Wetland	WT – 24 UL – 3 AR – 1	No	Yes
25b	Wetland	WT – 100 UL – 11 BO – 58	No	Yes
26	Woodland	WT – 87 UL – underneath BO – 57	No	Yes
26a	Wetland	WT – 87 UL – underneath BO – 57	No	Yes
27	Woodland	UL – 1 AR – 1	No	Yes
27a	Wetland	UL – 1 AR – 2	No	Yes
28	Woodland	WT – 79 UL – 14 AR – 5 BO – 58	No	Yes
29	Woodland	WT – 86 UL – 1 AR – 1 BO – 58	No	Yes
29a	Wetland	UL – 22 AR – 27	No	Yes
30	Woodland	WT – 34 UL – 5 AR – 1 BO – 26	No	Yes
31	Woodland Wetland	WT – 18 UL – 1 AR – 1 BO – 5	No	Yes
32	Woodland	WT – 93 UL – 9 OL – 25 AR – 1 BO – 52	No	Yes
33	Woodland	WT – 37 UL – 1 AR – 68 OL – 115	No	Yes

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**Table 3.7: Natural Features Carried Forward to Evaluation of Significance**

Feature ID	Feature Type	Distance to Project Infrastructure Within 120 m (m)	Identified in Records Review	Evaluation of Significance Required
		BO – 13		
34	Woodland	WT – 77 AR – 117 BO – 40	No	Yes
35	Woodland	UL – 1	No	Yes
35a	Wetland	UL – 1	No	Yes
36	Woodland	UL – 1	No	Yes
37	Woodland	WT – 67 UL – 113 AR – 103 BO – 51	No	Yes
37a	Wetland	BO – 117	No	Yes
38	Woodland	UL – 8 AR – 1 BO – 116	No	Yes
38a	Wetland	UL – 8 AR – 1 BO – 116	No	Yes
39	Woodland	WT – 81 UL – 8 AR – 83 BO – 44	No	Yes
39a	Wetland	WT – 81 UL – 8 AR – 83 BO – 44	No	Yes
40	Woodland	UL – underneath	No	Yes
40a	Wetland	UL – underneath	No	Yes
41	Woodland	WT – 46 UL – underneath AR – 81 BO – 13	No	Yes
41a	Wetland	WT – 46 UL – underneath AR – 81 BO – 13	No	Yes
45	Woodland	WT – 106 UL – 1 BO – 92	No	Yes
47	Woodland	UL – 1 AR – 116	No	Yes
47a	Wetland	UL – 1 AR – 116	No	Yes
48	Woodland	WT – 89 UL – 8 AR – 1 BO – 51	No	Yes
50	Woodland Wetland	UL – 78 AR – 73	No	Yes
51	Woodland	UL – 1 AR – 111	No	Yes

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**Table 3.7: Natural Features Carried Forward to Evaluation of Significance**

Feature ID	Feature Type	Distance to Project Infrastructure Within 120 m (m)	Identified in Records Review	Evaluation of Significance Required
52	Woodland	WT – 38 UL – 1 AR – 72 BO – 9	No	Yes
52a	Wetland	WT – 38 UL – 1 AR – 72 BO – 9	No	Yes
53	Woodland (Arberader Creek Woodlot – Significant Woodland in Lambton County) Wetland	UL - underneath	Yes	No: Carried forward directly to EIS
55	Woodland	WT – 40 UL – 1 AR – 1 BO – 11	No	Yes
56	Woodland	WT – 102 UL – 5 AR – 3 BO – 73	No	Yes
56a	Wetland	WT – 102 UL – 5 AR – 1 BO – 73	No	Yes
57	Woodland	UL – 1 AR – 1 BO – 105	No	Yes
57a	Wetland (Uttoxeter Swamp Locally-Significant Wetland)	UL – 1 AR – 1 BO – 105	Yes	Yes
58	Woodland Wetland	WT – 12 UL – 6 AR – 1 BO – 1	No	Yes
62	Woodland	WT – 54 UL – underneath AR – 60 BO – 43	No	Yes
62a	Wetland	WT – 54 UL – 24 AR – 60 BO – 47	No	Yes
74	Woodland	WT – 17 AR – 1 UL – 1 BO – 1	No	Yes
74a	Wetland	WT – 17 AR – 1 UL – 1	No	Yes
75	Woodland	UL – 5	No	Yes
76	Woodland	UL – 1	No	Yes
77	Woodland	UL – 102	No	Yes

**Table 3.7: Natural Features Carried Forward to Evaluation of Significance**

Feature ID	Feature Type	Distance to Project Infrastructure Within 120 m (m)	Identified in Records Review	Evaluation of Significance Required
		BO – 117		
<b>Seasonal Concentration Areas</b>				
62	Deer Wintering Area	AR – overlapping UL – overlapping OL – overlapping WT – overlapping BO – overlapping	Yes	No: Carried forward directly to EIS
<b>Rare Vegetation Communities and Specialized Habitat for Wildlife</b>				
6	Amphibian Breeding (Woodland)	WT – 29 UL – 3 AR – 3 OL – overlapping BO – 5	No	Yes
7	Amphibian Breeding (Woodland)	WT – 79 UL – 12 AR – 2 OL – 1 BO – 62	No	Yes
25	Amphibian Breeding (Woodland)	WT – 24 UL – 1 AR – 1 BO – 1	No	Yes
26	Amphibian Breeding (Woodland)	WT – 87 UL – underneath BO – 57	No	Yes
29	Amphibian Breeding (Woodland)	WT - 86 UL – 1 AR – 1 BO – 1	No	Yes
37	Amphibian Breeding (Woodland)	WT – 67 UL – 113 AR – 103 BO – 51	No	Yes
47	Amphibian Breeding (Woodland)	UL – 1 AR – 116	No	Yes
56	Amphibian Breeding (Woodland)	WT – 102 UL – 5 AR – 3 BO – 73	No	Yes
57	Amphibian Breeding (Woodland)	UL – 1 AR – 1 BO – 105	No	Yes
<b>Habitat for Species of Conservation Concern</b>				
45	Hooded Warbler	WT – 106 UL - 1 BO – 92	No	Yes
48	Hooded Warbler	WT – 89 UL – 8 AR – 1 BO – 51	No	Yes
55	Hooded Warbler	WT – 40 UL – 1	No	Yes

**Table 3.7: Natural Features Carried Forward to Evaluation of Significance**

Feature ID	Feature Type	Distance to Project Infrastructure Within 120 m (m)	Identified in Records Review	Evaluation of Significance Required
		AR – 1 BO – 11		
56	Hooded Warbler	WT – 102 UL – 5 AR – 3 BO – 73	No	Yes
62	Hooded Warbler	WT – 54 UL – underneath AR – 60 BO – 43	No	Yes
3	Wood Thrush	OL – overlapping	No	Yes
6	Wood Thrush	WT – 29 UL – 3 AR – 3 OL – overlapping BO – 5	No	Yes
10	Wood Thrush	OL – overlapping UL – overlapping	No	Yes
18	Wood Thrush	WT – 72 UL – 3 AR – 9 OL – overlapping BO – 36	No	Yes
19	Wood Thrush	UL – overlapping OL – overlapping BO – 110	No	Yes
23	Wood Thrush	WT – 69 UL – 73 AR – 106 OL – overlapping BO – 31	No	Yes
26	Wood Thrush	WT – 87 UL – underneath BO – 57	No	Yes
28	Wood Thrush	WT – 79 UL – 14 AR – 5 BO – 58	No	Yes
30	Wood Thrush	WT – 34 UL – 5 AR – 1 BO – 26	No	Yes
32	Wood Thrush	WT – 93 UL – 9 OL - 25 AR – 1 BO – 25	No	Yes
45	Wood Thrush	WT – 106 UL - 1 BO – 92	No	Yes
48	Wood Thrush	WT – 89 UL – 8	No	Yes

**Table 3.7: Natural Features Carried Forward to Evaluation of Significance**

Feature ID	Feature Type	Distance to Project Infrastructure Within 120 m (m)	Identified in Records Review	Evaluation of Significance Required
		AR – 1 BO – 51		
52	Wood Thrush	WT – 38 UL – 1 AR – 72 BO – 9	No	Yes
55	Wood Thrush	WT – 40 UL – 1 AR – 1 BO – 11	No	Yes
56	Wood Thrush	WT – 102 UL – 5 AR – 3 BO – 73	No	Yes
58	Wood Thrush	WT – 12 UL – 6 AR – 1 BO – 1	No	Yes
62	Wood Thrush	WT – 54 UL – underneath AR – 60 BO – 43	No	Yes
Plant Species of Conservation Concern (communities with Project component overlap)  Associated with features: 3, 6, 7, 10, 18, 19, 20, 23, and 24	Special Concern and Rare Plant species: Caughuawaga Hawthorn, Giant Ironweed, Puttyroot, Pawpaw, Crowned Beggar-ticks, Shellbark Hickory, Chinese Hemlock-parsley, Burning Bush, Pumpkin Ash, Hairy Bedstraw, Stiff Gentian, Green Violet, Sharp-fruited Rush, Woodland Flax, Scarlet Beebalm, Pillose Evening Primrose, Culver's Root, American Gromwell, Dodge's Hawthorn, Round-leaved Hawthorn, Middlesex Frosted Hawthorn, and Green Dragon	UL/OL – overlapping	No	Yes
<b>Generalized Candidate Significant Wildlife Habitats</b>				
53	Rare Vegetation Community	Not within 120 m of infrastructure identified in Appendix D of the Natural Heritage Assessment guide that will have an operational impact on the habitats. Therefore these habitats will be carried forward to the Environmental Impact Study where they will be treated as significant and general construction mitigation will be applied.	No	Generalized
5, 9, 17, 24, 27, 35, 36, 47, 50, 51, 53, 75, 76 and 77	Bat Maternity Colonies			
47, 51, 53	Hooded Warbler Habitat			
27, 47, 51, 53, 57 and 75	Wood Thrush Habitat			
Plant Species of Conservation Concern (communities with no Project	Special Concern and Rare Plant species: Caughuawaga Hawthorn, Giant Ironweed, Puttyroot, Pawpaw, Crowned Beggar-ticks, Shellbark Hickory,			

**Table 3.7: Natural Features Carried Forward to Evaluation of Significance**

Feature ID	Feature Type	Distance to Project Infrastructure Within 120 m (m)	Identified in Records Review	Evaluation of Significance Required
component overlap)	Chinese Hemlock-parsley, Burning Bush, Pumpkin Ash, Hairy Bedstraw, Stiff Gentian, Green Violet, Sharp-fruited Rush, Woodland Flax, Scarlet Beebalm, Pillose Evening Primrose, Culver's Root, American Gromwell, Dodge's Hawthorn, Round-leaved Hawthorn, Middlesex Frosted Hawthorn, and Green Dragon			

Legend: WT: Wind Turbine; UL: Underground Transmission Line; AR: Access Road, OL: Overhead Transmission Line, BO: Balance of Operations, BU: Building/Substation

Natural features identified in the records review were confirmed through the site investigation program. Corrections made to the records review are provided in **Table 3.2, Appendix B.**

**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 D.**



## 4.0 Evaluation of Significance

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Natural heritage information collected from the records review, the site investigation and consultations were analyzed to determine the significance and sensitivity of existing natural heritage features and their ecological 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.

Natural features present in and within 120 m of the Project Location requiring an Evaluation of Significance are identified in **Table 3.7** in **Section 3.3**.

### 4.1 METHODS

Wetlands were determined to be provincially significant if they had been identified as such by MNR. This information was obtained from NHIC and through correspondence with the local MNR District. Locally significant wetlands are those that have been evaluated but did not receive sufficient points to be considered provincially significant. Wetlands that have yet to be examined are termed unevaluated and were assessed during the site investigations using evaluation criteria or procedures established or accepted by MNR. Wetland evaluations were overseen by Melissa Straus (qualifications described in **Appendix D**).

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. The evaluation of significance for wildlife habitat and woodlands were overseen by Katherine St. James (qualifications described in **Appendix D**).

Sources used in the evaluation of significance for the natural features within 120 m of the Project Location included:

- Ontario Wetland Evaluation System (MNR, 2002)
- Natural Heritage Assessment Guide for Renewable Energy Projects (MNR, 2011a)
- Significant Wildlife Habitat Technical Guide (MNR, 2000)
- Draft Significant Wildlife Habitat Ecoregion 7E Criterion Schedule (MNR, 2012)

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 *Approval and Permitting Requirements Document for Renewable Energy Projects* (APRD) requirements and are therefore not included as part of this NHA. Information required with regards to endangered and threatened species is being submitted to MNR under separate cover as part of the Cedar Point Wind Power Project APRD Report. Where this information indicates that approvals or permits are required, these will be addressed separately through the applicable statute and its permitting process.

These features are shown on **Figures 2.0-2.10**. Specific methods used in the evaluation of significance for each type of natural feature are detailed in the following sections.

#### **4.1.1 Wetlands**

For the purposes of this evaluation, wetlands previously identified and confirmed by MNR as provincially significant or locally significant are considered to meet the requirements for a determination of significance. Unless field investigations provided evidence to contradict the existing MNR assessment of significance the designation as assigned by MNR is used. Wetland boundaries as delineated by MNR were confirmed during site investigations by an OWES trained evaluator. Boundaries as delineated during field investigations were considered accurate for the purposes of this report.

During site investigations additional wetland communities were identified in and within 120 m of the Project Location. Any Project components located in a wetland feature will be directionally-drilled under the wetland and are therefore considered not located in the feature. Data were collected through desktop procedures (e.g. aerial photograph interpretation) to supplement on-site field investigations. The Wetland Characteristics and Ecological Functions Assessment for Renewable Energy Projects approach provided in Appendix C of the Natural Heritage Assessment Guide for Renewable Energy Projects (MNR, 2011a) was used to assess previously-unevaluated wetlands. Although this procedure does not evaluate the significance of these wetlands with the same level of rigour as the OWES, 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. As described in **Section 3.2.2.3**, 26 unevaluated wetlands were located in and within 120 m of the Project Location, and required an evaluation of significance.

#### **4.1.2 Woodlands**

Guidance provided in Section 6.2.2 of the Natural Heritage Assessment Guide for Renewable Energy Projects (MNR, 2011a) was used to evaluate woodlands. The local planning authority has a responsibility for designating significant woodlands. The Project Boundary falls within the Town of Plympton-Wyoming, Warwick Township, and the Municipality of Lambton Shores, all within Lambton County. All infrastructure is located within the St Clair Region CA boundary. The total forest cover for St Clair CA is 11.5% (SCRCA, 2008). In Lambton County, any woodland that is located within a Primary Corridor or Significant Natural Area, or any contiguous forested

area that is equal to or greater than 4 ha in size, is considered significant (Lambton County, 1997). This approach is consistent with the NHA Guide criterion for woodlands in municipalities where forest cover is 5-15%. As described in **Section 3.2.3**, 46 woodlands were located in or within 120 m of the Project Location, and required an evaluation of significance.

**4.1.3 Wildlife and Wildlife Habitat**

**4.1.3.1 Seasonal Concentration Areas of Animals**

The criteria and methods used to evaluate the significance of candidate significant wildlife habitat for seasonal concentration areas of animals in or within 120 m of the Project Location are presented in **Table 4.1** below. Survey dates and times are provided in **Table 3.1, Appendix A**.

**Table 4.1: Criteria and Methods Used to Evaluate Rare Vegetation Communities or Specialized Habitat for Wildlife**

Candidate Seasonal Concentration Area	Criteria	Methods
Deer Wintering Area	<ul style="list-style-type: none"> <li>Deer management is an MNR responsibility and deer wintering areas considered significant will be mapped by the MNR</li> </ul>	<ul style="list-style-type: none"> <li>Deer Wintering Areas identified by MNR were assumed to be significant.</li> </ul>

**4.1.3.2 Rare Vegetation Communities or Specialized Habitat for Wildlife**

The criteria and methods used to evaluate the significance of candidate significant wildlife habitat for rare vegetation communities or specialized habitat for wildlife in or within 120 m of the Project Location are presented in **Table 4.2** below. Survey dates and times are provided in **Table 3.1, Appendix A**.

**Table 4.2: Criteria and Methods Used to Evaluate Rare Vegetation Communities or Specialized Habitat for Wildlife**

Candidate Rare Vegetation Community of Specialized Habitat for Wildlife	Criteria	Methods
Amphibian breeding habitat (woodland)	<ul style="list-style-type: none"> <li>• Presence of breeding population of 1 or more of the listed salamander species (i.e., Eastern Newt, Blue-spotted Salamander or Spotted Salamander) or 2 or more of the listed frog species (i.e., Gray Treefrog, Spring Peeper, Western Chorus Frog or Wood Frog) with at least 20 individuals (adults, juveniles, eggs/larval masses).</li> <li>• The habitat is the woodland (ELC polygons) and wetland (ELC polygons) combined. A travel corridor connecting the woodland and wetland polygons is to be included in the habitat.</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluation methods to follow the 'Marsh Monitoring Protocol' (BSC, 2003).</li> <li>• Amphibian call surveys in each of April, May, and June were performed in some of the identified habitats (7, 56, and 57).</li> <li>• Habitats not surveyed will be surveyed in spring 2013.</li> <li>• Monitoring stations were established a minimum of 500 m apart and 3 minute surveys were performed at each station, listening for all amphibian calls within a semi-circular sampling area.</li> <li>• Survey dates, timing and weather conditions are detailed in <b>Table 3.1</b> in Appendix B.</li> <li>• Salamander egg searches in March and April are required at all habitats.</li> <li>• The survey protocol (amphibian call surveys and salamander egg mass searches) is detailed in the EIS.</li> </ul>

**4.1.3.3 Habitat for Species of Conservation Concern**

The criteria and methods used to evaluate the significance of candidate significant wildlife habitat for species of conservation concern for wildlife in or within 120 m of the Project Location are presented in **Table 4.3** below.

**Table 4.3: Criteria and Methods Used to Evaluate Habitat for Species of Conservation Concern**

Candidate Habitat for Species of Conservation Concern	Criteria	Methods
Special Concern and Rare Wildlife Species	<ul style="list-style-type: none"> <li>• Presence of Wood Thrush</li> </ul>	<ul style="list-style-type: none"> <li>• Significance assumed. EOS surveys will be completed as part of the pre-construction.</li> <li>• Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"</li> <li>• The survey protocol is detailed in the EIS.</li> </ul>
	<ul style="list-style-type: none"> <li>• Presence of Hooded Warbler</li> </ul>	<ul style="list-style-type: none"> <li>• Significance assumed. EOS surveys will be completed as part of the pre-construction.</li> <li>• Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"</li> <li>• The survey protocol is detailed in the</li> </ul>

**Table 4.3: Criteria and Methods Used to Evaluate Habitat for Species of Conservation Concern**

Candidate Habitat for Species of Conservation Concern	Criteria	Methods
	<ul style="list-style-type: none"> <li>Presence of rare or Special Concern plant species</li> </ul>	EIS. <ul style="list-style-type: none"> <li>Significance assumed. EOS surveys will be completed as part of the pre-construction.</li> <li>Conduct field investigations in the identified habitats in spring and/or summer when target plant species are growing.</li> <li>Evaluation methods include area searches within identified habitats during appropriate seasons.</li> <li>The survey protocol is detailed in the EIS.</li> </ul>

**4.2 RESULTS**

Results of the evaluation of significance for wetlands and woodlands are shown in **Figure 4.1-4.10, Appendix A** and outlined in **Tables 4.1 and 4.2, Appendix B**. The locations of individual features relative to the Project Location are shown in **Figures 2.1-2.10, Appendix A**. The following sections summarize the results of the evaluation of significance for natural features within 120 m of the Project Location.

**4.2.1 Wetlands**

One wetland assessed by MNR as locally significant occurred within 120 m of the Project Location: the Uttoxeter Swamp (associated with Feature 57). There were no provincially significant wetlands identified in or within 120 m of the Project Location.

Twenty-six additional wetlands, not previously identified by MNR, were identified within 120 m of the Project Location during site investigation. These communities were evaluated using the *Wetland Characteristics and Ecological Functions Assessment for Renewable Energy Projects* described in **Section 4.1.1**. All wetlands assessed under this protocol are being treated as provincially significant for the purposes of the NHA and project siting. **Table 4.1, Appendix B** provides the evaluations of these wetland communities.

No project components are proposed in, on, or over a wetland. Some wetlands will have underground cabling directionally-drilled underneath the feature.

#### **4.2.2 Woodlands**

Criteria for woodland significance were applied to each of the woodland features located within 120 m of the Project Location. Results of the evaluation are provided in **Table 4.2, Appendix B**. Forty-one (41) of the woodlands met the criteria for significance based on criteria standards within the Natural Heritage Assessment Guide for Renewable Energy Projects.

The 41 significant woodlands located in or within 120 m of the Project Location are shown on **Figures 2.0 to 2.10, Appendix A**. Significant woodlands in or within 120 m of the Project Location will be included in the EIS. The Project Location is proposed to occur within nine significant woodlands associated with Features 3, 6, 7, 10, 18, 19, 20 and 23.

- Feature 3 is proposed to have an overhead line cut through the southern edge of northern section of this significant woodland, and through the northern edge of the southern section. 0.72 ha of woodland would be removed permanently or 8% of the woodland feature.
- Feature 6 is proposed to have an overhead line cut through the southern edge of this significant woodland. 0.05 ha of woodland would be removed permanently or less than 1% of the woodland feature.
- Feature 7 is proposed to have an overhead line cut through the northern edge of this significant woodland. 0.12 ha of woodland would be removed permanently or 0.8% of the woodland feature.
- Feature 10 is proposed to have an overhead line cut through the southern edge of this significant woodland. 0.31 ha of woodland would be removed permanently or 4% of the woodland feature.
- Feature 18 is proposed to have an overhead line cut through the western edge of this significant woodland. 1.6 ha of woodland would be removed permanently or 15% of the woodland feature.
- Feature 19 is proposed to have an overhead line cut through the southern edge of this significant woodland. 0.20 ha of woodland would be removed permanently or less than 1% of the woodland feature.
- Feature 20 is proposed to have an overhead line cut through the northern edge of this significant woodland. 0.32 ha of woodland would be removed permanently or 10% of the woodland feature.
- Feature 23 is proposed to have an overhead line cut through the southern edge of this significant woodland. 0.26 ha of woodland would be removed permanently or 3% of the woodland feature.

**4.2.3 Wildlife and Wildlife Habitat**

**4.2.3.1 Seasonal Concentration Areas**

Evaluations of significance for candidate SWH for seasonal concentration areas in and within 120 m of the Project Location are presented in **Table 4.4** below.

**Table 4.4: Summary of Evaluation of Significance Results for Seasonal Concentration Areas**

Candidate Rare Vegetation Communities or Specialized Habitat for Wildlife	Present in or within 120 m of Project Location	Rationale	Carried Forward to Summary and EIS (Y/N)
Deer Wintering Area	Yes	Evaluation of significance surveys are carried out by the MNR, and this habitat is considered significant.	Yes

**4.2.3.2 Rare Vegetation Communities or Specialized Habitat for Wildlife**

Evaluations of significance for candidate SWH for rare vegetation communities or specialized habitat for wildlife in and within 120 m of the Project Location are presented in **Table 4.5** below.

**Table 4.5: Summary of Evaluation of Significance Results for Rare Vegetation Communities or Specialized Habitat for Wildlife**

Candidate Rare Vegetation Communities or Specialized Habitat for Wildlife	Present in or within 120 m of Project Location	Rationale	Carried Forward to Summary and EIS (Y/N)
Amphibian breeding habitat (woodland)	Yes	<p>Feature 7: Three rounds of anuran calling surveys were completed in this habitat in April, May and June 2012. Gray treefrog, spring peeper, and green frog were heard calling; however, the numbers were fewer than 20 individuals total.</p> <p>Features 56 and 57: These adjacent habitats were assessed from the same point: facing west and facing east. During the first round one spring peeper was heard calling from the west. During the second round, four green frogs were heard calling from the west. And during the third round, five gray treefrogs and four green frogs were heard calling. A total of 14 frogs representing three species were documented. Since green frogs are not listed as a significant/sensitive species and since there were fewer than 20 individuals counted throughout the survey period this feature is not considered significant breeding habitat. There were no calls heard from the east during the survey period (April to June).</p> <p>Field notes showing the locations and results of these surveys described above are provided in Appendix C: Field Notes.</p> <p>Features 6, 25, 26, 29, 37 and 47: No evaluation of</p>	Yes



**Table 4.5: Summary of Evaluation of Significance Results for Rare Vegetation Communities or Specialized Habitat for Wildlife**

Candidate Rare Vegetation Communities or Specialized Habitat for Wildlife	Present in or within 120 m of Project Location	Rationale	Carried Forward to Summary and EIS (Y/N)
		<p>significance surveys have been completed yet in these habitats.</p> <p>Egg mass surveys to determine salamander use is required at all candidate habitats (6, 7, 25, 26, 29, 37, 47, 56 and 57). Pre-construction surveys will be carried out using the protocol described in the EIS.</p> <p>All features will be treated as significant in this report and evaluated prior to construction (salamander egg mass surveys at all features listed above and anuran call surveys at features 6, 25, 26, 29, 37 and 47).</p>	

**4.2.3.3 Habitat for Species of Conservation Concern**

Evaluations of significance for candidate SWH for rare vegetation communities or specialized habitat for wildlife in and within 120 m of the Project Location are presented in **Table 4.6** below.

**Table 4.6: Summary of Evaluation of Significance Results for Habitat for Species of Conservation Concern**

Candidate Habitat for Species of Conservation Concern	Present in or within 120 m of Project Location	Rationale	Carried Forward to Summary and EIS (Y/N)
Special Concern and Rare Wildlife Species (Hooded Warbler)	Unknown	Features 45, 48, 55, 56 and 62: Evaluation of significance surveys have not yet been completed but will be prior to construction; these habitats will be treated as significant in this report.	Yes
Special Concern and Rare Wildlife Species (Wood Thrush)	Unknown	Features 3, 6, 10, 18, 19, 23, 26, 28, 30, 32, 45, 48, 52, 55, 56, 58 and 62: Evaluation of significance surveys have not yet been completed but will be prior to construction; these habitats will be treated as significant in this report.	Yes
Special Concern and Rare Plant Species	Unknown	Features 3, 6, 7, 10, 18, 19, 20, 23, and 24: Evaluation of significance surveys have not yet been completed but will be prior to construction; these habitats will be treated as significant in this report.	Yes

**4.3 SUMMARY**

This Natural Heritage Assessment was undertaken to identify natural features found in or within 120 m of the Project Location and evaluate their significance. This report has been prepared in accordance with O. Reg. 359/09 and the NHA Guide.

Based on an evaluation of significance, significant natural features identified within 120 m of the Project Location are presented in **Table 4.7** below.

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**Table 4.7: Natural Features Carried Forward to Environmental Impact Study**

Feature ID	Feature Type	Distance to Project Infrastructure Within 120 m (m)	Significant? (Y/N)	Carried Forward to EIS (Y/N)
<b>Woodlands and Wetlands</b>				
3	Woodland	OL – overlapping	Yes	Yes
5	Woodland	OL – 11	Yes	Yes
6	Woodland	WT – 29 UL – 3 AR – 3 OL – overlapping BO – 5	Yes	Yes
6a	Wetland	WT – 104 UL – 8 BO – 106	Yes	Yes
6b	Wetland	BO – 116	Yes	Yes
7	Woodland	WT – 79 UL – 12 AR – 2 OL – overlapping BO – 62	Yes	Yes
7a	Wetland	WT – 92 UL – 17 AR – 7 BO – 71	Yes	Yes
9	Woodland	AR – 100 UL – 1 OL – 1 BO – 64	No	No
9a	Wetland	UL – 1 OL – 1	Yes	Yes
10	Woodland	OL – overlapping UL – overlapping	Yes	Yes
10a	Wetland	UL – 1	Yes	Yes
16	Woodland	UL – 72 AR – 69 OL – 70	No	No
16a	Wetland	UL – 72 AR – 69 OL – 70	Yes	Yes
17	Woodland	UL – 2 AR – 1 OL – 3	Yes	Yes
18	Woodland	WT – 72 UL – 3 AR – 9 OL – overlapping BO – 36	Yes	Yes
19	Woodland	UL – overlapping OL – overlapping BO – 110	Yes	Yes
20	Woodland	UL – overlapping OL – overlapping	Yes	Yes
23	Woodland	WT – 69 UL – 1 AR – 106	Yes	Yes

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**Table 4.7: Natural Features Carried Forward to Environmental Impact Study**

Feature ID	Feature Type	Distance to Project Infrastructure Within 120 m (m)	Significant? (Y/N)	Carried Forward to EIS (Y/N)
		OL – overlapping BO – 31		
24	Woodland	OL – overlapping	No	No
25	Woodland	WT – 24 UL – 1 AR – 1 BO – 1	Yes	Yes
25a	Wetland	WT – 24 UL – 3 AR – 1	Yes	Yes
25b	Wetland	WT – 100 UL – 11 BO – 58	Yes	Yes
26	Woodland	WT – 87 UL – underneath BO – 57	Yes	Yes
26a	Wetland	WT – 87 UL – underneath BO – 57	Yes	Yes
27	Woodland	UL – 1 AR – 1	Yes	Yes
27a	Wetland	UL – 1 AR – 2	Yes	Yes
28	Woodland	WT – 79 UL – 14 AR – 5 BO – 58	Yes	Yes
29	Woodland	WT – 86 UL – 1 AR – 1 BO – 58	Yes	Yes
29a	Wetland	UL – 22 AR – 27	Yes	Yes
30	Woodland	WT – 34 UL – 5 AR – 1 BO – 26	Yes	Yes
31	Woodland Wetland	WT – 18 UL – 1 AR – 1 BO – 5	Yes	Yes
32	Woodland	WT – 93 UL – 9 OL – 25 AR – 1 BO – 52	Yes	Yes
33	Woodland	WT – 37 UL – 1 AR – 68 OL – 115 BO – 13	Yes	Yes
34	Woodland	WT – 77	Yes	Yes

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**Table 4.7: Natural Features Carried Forward to Environmental Impact Study**

Feature ID	Feature Type	Distance to Project Infrastructure Within 120 m (m)	Significant? (Y/N)	Carried Forward to EIS (Y/N)
		AR – 117 BO – 40		
35	Woodland	UL – 1	Yes	Yes
35a	Wetland	UL – 1	Yes	Yes
36	Woodland	UL – 1	Yes	Yes
37	Woodland	WT – 67 UL – 113 AR – 103 BO – 51	Yes	Yes
37a	Wetland	BO – 117	Yes	Yes
38	Woodland	UL – 8 AR – 1 BO – 116	No	No
38a	Wetland	UL – 8 AR – 1 BO – 116	Yes	Yes
39	Woodland	WT – 81 UL – 8 AR – 83 BO – 44	Yes	Yes
39a	Wetland	WT – 81 UL – 8 AR – 83 BO – 44	Yes	Yes
40	Woodland	UL – underneath	Yes	Yes
40a	Wetland	UL – underneath	Yes	Yes
41	Woodland	WT – 46 UL – underneath AR – 81 BO – 13	Yes	Yes
41a	Wetland	WT – 46 UL – underneath AR – 81 BO – 13	Yes	Yes
45	Woodland	WT – 106 UL – 1 BO – 92	Yes	Yes
47	Woodland	UL – 1 AR – 116	Yes	Yes
47a	Wetland	UL – 1 AR – 116	Yes	Yes
48	Woodland	WT – 89 UL – 8 AR – 1 BO – 51	Yes	Yes
50	Woodland Wetland	UL – 78 AR – 73	Yes	Yes
51	Woodland	UL – 1 AR – 111	Yes	Yes
52	Woodland	WT – 38 UL – 1 AR – 72	Yes	Yes

**Table 4.7: Natural Features Carried Forward to Environmental Impact Study**

Feature ID	Feature Type	Distance to Project Infrastructure Within 120 m (m)	Significant? (Y/N)	Carried Forward to EIS (Y/N)
		BO – 9		
52a	Wetland	WT – 38 UL – 1 AR – 72 BO – 9	Yes	Yes
53	Woodland (Arberader Creek Woodlot – Significant Woodland in Lambton County) Wetland	UL - underneath	Yes	Yes
55	Woodland	WT – 40 UL – 1 AR – 1 BO – 11	Yes	Yes
56	Woodland	WT – 102 UL – 5 AR – 3 BO – 73	Yes	Yes
56a	Wetland	WT – 102 UL – 5 AR – 1 BO – 73	Yes	Yes
57	Woodland	UL – 1 AR – 1 BO – 105	Yes	Yes
57a	Wetland (Uttoxeter Swamp Locally-Significant Wetland)	UL – 1 AR – 1 BO – 105	No	No
58	Woodland Wetland	WT – 12 UL – 6 AR – 1 BO – 1	Yes	Yes
62	Woodland	WT – 54 UL – underneath AR – 60 BO – 43	Yes	Yes
62a	Wetland	WT – 54 UL – 24 AR – 60 BO – 47	Yes	Yes
74	Woodland	WT – 17 AR – 1 UL – 1 BO – 1	Yes	Yes
74a	Wetland	WT – 17 AR – 1 UL – 1	Yes	Yes
75	Woodland	UL – 5	Yes	Yes
76	Woodland	UL – 1	No	No
77	Woodland	UL – 102 BO – 117	Yes	Yes

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**Table 4.7: Natural Features Carried Forward to Environmental Impact Study**

Feature ID	Feature Type	Distance to Project Infrastructure Within 120 m (m)	Significant? (Y/N)	Carried Forward to EIS (Y/N)
<b>Seasonal Concentration Areas</b>				
62	Deer Wintering Area	AR – overlapping UL – overlapping OL – overlapping WT – overlapping BO – overlapping	Significant	Yes
<b>Wildlife Habitat – Specialized Habitat for Wildlife</b>				
6	Amphibian Breeding (Woodland)	WT – 29 UL – 3 AR – 3 OL – overlapping BO – 5	Treated as Significant	Yes
7	Amphibian Breeding (Woodland)	WT – 79 UL – 12 AR – 2 OL – 1 BO – 62	Treated as Significant	Yes
25	Amphibian Breeding (Woodland)	WT – 24 UL – 1 AR – 1 BO – 1	Treated as Significant	Yes
26	Amphibian Breeding (Woodland)	WT – 87 UL – underneath BO – 57	Treated as Significant	Yes
29	Amphibian Breeding (Woodland)	WT - 86 UL – 1 AR – 1 BO – 1	Treated as Significant	Yes
37	Amphibian Breeding (Woodland)	WT – 67 UL – 113 AR – 103 BO – 51	Treated as Significant	Yes
47	Amphibian Breeding (Woodland)	UL – 1 AR – 116	Treated as Significant	Yes
56	Amphibian Breeding (Woodland)	WT – 102 UL – 5 AR – 3 BO – 73	Treated as Significant	Yes
57	Amphibian Breeding (Woodland)	UL – 1 AR – 1 BO – 105	Treated as Significant	Yes
<b>Wildlife Habitat – Habitat for Species of Special Concern</b>				
45	Hooded Warbler	WT – 106 UL - 1 BO – 92	Treated as Significant	Yes
48	Hooded Warbler	WT – 89 UL – 8 AR – 1 BO – 51	Treated as Significant	Yes
55	Hooded Warbler	WT – 40 UL – 1 AR – 1	Treated as Significant	Yes

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**Table 4.7: Natural Features Carried Forward to Environmental Impact Study**

Feature ID	Feature Type	Distance to Project Infrastructure Within 120 m (m)	Significant? (Y/N)	Carried Forward to EIS (Y/N)
		BO – 11		
56	Hooded Warbler	WT – 102 UL – 5 AR – 3 BO – 73	Treated as Significant	Yes
62	Hooded Warbler	WT – 54 UL – underneath AR – 60 BO – 43	Treated as Significant	Yes
3	Wood Thrush	OL – overlapping	Treated as Significant	Yes
6	Wood Thrush	WT – 29 UL – 3 AR – 3 OL – overlapping BO – 5	Treated as Significant	Yes
10	Wood Thrush	OL – overlapping UL – overlapping	Treated as Significant	Yes
18	Wood Thrush	WT – 72 UL – 3 AR – 9 OL – overlapping BO – 36	Treated as Significant	Yes
19	Wood Thrush	UL – overlapping OL – overlapping BO – 110	Treated as Significant	Yes
23	Wood Thrush	WT – 69 UL – 73 AR – 106 OL – overlapping BO – 31	Treated as Significant	Yes
26	Wood Thrush	WT – 87 UL – underneath BO – 57	Treated as Significant	Yes
28	Wood Thrush	WT – 79 UL – 14 AR – 5 BO – 58	Treated as Significant	Yes
30	Wood Thrush	WT – 34 UL – 5 AR – 1 BO – 26	Treated as Significant	Yes
32	Wood Thrush	WT – 93 UL – 9 OL – 25 AR – 1 BO – 25	Treated as Significant	Yes
45	Wood Thrush	WT – 106 UL – 1 BO – 92	Treated as Significant	Yes
48	Wood Thrush	WT – 89 UL – 8	Treated as Significant	Yes



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**Table 4.7: Natural Features Carried Forward to Environmental Impact Study**

Feature ID	Feature Type	Distance to Project Infrastructure Within 120 m (m)	Significant? (Y/N)	Carried Forward to EIS (Y/N)
		AR – 1 BO – 51		
52	Wood Thrush	WT – 38 UL – 1 AR – 72 BO – 9	Treated as Significant	Yes
55	Wood Thrush	WT – 40 UL – 1 AR – 1 BO – 11	Treated as Significant	Yes
56	Wood Thrush	WT – 102 UL – 5 AR – 3 BO – 73	Treated as Significant	Yes
58	Wood Thrush	WT – 12 UL – 6 AR – 1 BO – 1	Treated as Significant	Yes
62	Wood Thrush	WT – 54 UL – underneath AR – 60 BO – 43	Treated as Significant	Yes
Plant Species of Conservation Concern (communities with Project component overlap)  Associated with features: 3, 6, 7, 10, 18, 19, 20, 23, and 24	Special Concern and Rare Plant species: Caughuawaga Hawthorn, Giant Ironweed, Puttyroot, Pawpaw, Crowned Beggar-ticks, Shellbark Hickory, Chinese Hemlock-parsley, Burning Bush, Pumpkin Ash, Hairy Bedstraw, Stiff Gentian, Green Violet, Sharp-fruited Rush, Woodland Flax, Scarlet Beebalm, Pillose Evening Primrose, Culver's Root, American Gromwell, Dodge's Hawthorn, Round-leaved Hawthorn, Middlsex Frosted Hawthorn, and Green Dragon	UL/OL – overlapping	Treated as Significant	Yes
<b>Generalized Significant Wildlife Habitats</b>				
53	Rare Vegetation Community	Not within 120 m of infrastructure identified in Appendix D of the Natural Heritage Assessment guide that will have an operational impact on the habitats. Therefore these habitats will be carried forward to the Environmental Impact Study where they will be treated as significant and general construction mitigation will be applied.	Treated as Significant: Generalized	Yes
5, 9, 17, 24, 27, 35, 36, 47, 50, 51, 53, 75, 76 and 77	Bat Maternity Colonies			
47, 51, 53	Hooded Warbler Habitat			
27, 47, 51, 53, 57 and 75	Wood Thrush Habitat			
Plant Species of Conservation Concern (communities with no Project	Special Concern and Rare Plant species: Caughuawaga Hawthorn, Giant Ironweed, Puttyroot, Pawpaw, Crowned Beggar-ticks, Shellbark Hickory,			

**Table 4.7: Natural Features Carried Forward to Environmental Impact Study**

Feature ID	Feature Type	Distance to Project Infrastructure Within 120 m (m)	Significant? (Y/N)	Carried Forward to EIS (Y/N)
component overlap)	Chinese Hemlock-parsley, Burning Bush, Pumpkin Ash, Hairy Bedstraw, Stiff Gentian, Green Violet, Sharp-fruited Rush, Woodland Flax, Scarlet Beebalm, Pillose Evening Primrose, Culver's Root, American Gromwell, Dodge's Hawthorn, Round-leaved Hawthorn, Middlesex Frosted Hawthorn, and Green Dragon			

Legend: WT: Wind Turbine; UL: Underground Transmission Line; AR: Access Road, OL: Overhead Transmission Line, BO: Balance of Operations, BU: Building/Substation

The locations of the significant features are presented in **Figures 4.0-4.10, Appendix A.**

An Environmental Impact Study Report will be prepared to identify and assess any negative environmental effects and develop mitigation measures to avoid adverse effects on these features.

## **5.0 Environmental Impact Study**

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The primary mitigation measure employed to reduce impacts to natural features and functions was avoidance of natural features; however, project components are proposed to go through or over features 3, 6, 7, 10, 18, 19, 20, 23, and 24 (see **Section 5.2** for more information regarding these features). Micro-siting decisions were made during the development of the Project layout and considered minimizing impacts to natural features, wildlife and wildlife habitat. The Project is sited predominately within actively cultivated agricultural land.

Parts of the Project fall within the 120 m Zone of Investigation of significant wetlands, woodlands and wildlife habitat. Significant natural features that occur within 120 m of the Project Location are identified in **Table 4.7** in **Section 4.3**.

As such, an EIS is required to assess potential negative environmental effects and identify mitigation measures designed to prevent or minimize potential negative effects.

As per O. Reg. 359/09 Project components are not permitted in a provincially significant southern wetland. However, projects may be sited within 120 m of a provincially significant southern wetland and in or within 120 m of a significant woodland, significant wildlife habitat or significant ANSI (life science) if an Environmental Impact Study (EIS) is prepared that identifies and assesses any negative environmental effects on the feature, identifies mitigation measures and describes how the environmental effects monitoring plan addresses any negative environmental effects.

Given the diversity of natural heritage features, some of the features qualify as significant under multiple designations. For example, significant woodland often exhibits criteria for significant wildlife habitat. Where a feature is considered significant for multiple natural heritage designations, the impacts and mitigation as they relate to each function are discussed within the analysis of impacts to the feature in **Section 5.2**.

### **5.1 PROJECT FOOTPRINT OVERVIEW**

The proposed Project Location is located within the Town of Plympton-Wyoming and the Municipality of Lambton Shores, County of Lambton.

Within the Project Location a “constructible area” has been defined and includes the Project Location as well as additional land around the Project Location that allows for movement and workspace for construction purposes. The 120 m Zone of Investigation was applied to the Project Location that included the constructible area. As well, the assessment of potential effects included the constructible area in the Project Location. All construction activities including construction of temporary components will occur within the constructible area but the entire constructible area may not be used at each Project Location. The constructible areas

have been reduced in size in areas where constraints exist (e.g. natural features) and construction will be limited to the smaller area.

The Project will consist of up to 46 Siemens SWT – 2.3 – 113 wind turbines. Specifications of this wind turbine are:

- Tower height: 99.5 m
- Blade length: 55 m
- Rotor diameter: 113 m
- Tip height: 154.5 m

The constructible area at each turbine location is 100 m x 100 m and will be used as a construction staging area.

Gravel access roads will be approximately 15 m wide. The constructible area for the access roads is approximately 40 m wide; this includes additional area for access road movement and workspace for construction purposes. The access roads are wider at turning areas.

Crane pads will be constructed at the same time as the access roads and will be adjacent to turbine locations (within the constructible area around each turbine). Crane paths for turbine erection will follow access roads and municipal roads; in the event that a crane path crosses fields, cranes will follow collector line corridors and with a constructible area of 20 m wide.

Temporary components during construction may include storage and staging areas at the turbine locations, crane pads, staging areas along access roads, delivery truck turnaround areas, and a central laydown area. It is anticipated that the substation location may be used as a central laydown area prior to construction if needed.

Electrical components of the Project include a transformer substation located near Fuller Road and Cedar Point Line, a collector system and a transmission line. The 34.5 kV collector lines will be buried underground on private property from the turbines to the municipal roads right-of-way (RoW) at which time the lines may be switched to overhead lines or remain underground, generally depending upon other utilities within the RoW. The collector system will connect to the Project's substation. The substation will consist of a prepared area of approximately 23,600 m<sup>2</sup> in size and may also include an operations and maintenance building. A 115 kV overhead and/or underground transmission line will be installed between the Project's transformer substation (near Fuller Road and Cedar Point Line) and a substation to be built by NextEra as part of the Jericho Wind Energy Centre (located near Jericho Road and Thomson Line). The transmission line will connect to the NextEra substation via a circuit breaker directly within the substation. The transmission line would be approximately 14 km in length. The Project Location

(including constructible area), and the associated 120 m Zone of Investigation, in relation to significant natural features are shown on **Figures 4.1-4.10, Appendix A.**

## **5.2 NEGATIVE ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES ASSOCIATED WITH THE CONSTRUCTION AND DECOMMISSIONING PHASES OF THE PROJECT**

The construction plan report (Stantec, 2013) has been prepared which, combined with the following sections, demonstrates how any negative environmental effects of construction or installation activities will be mitigated.

### **5.2.1 Significant Woodlands**

Forty-one of the woodlands met the criteria for significance based on criteria standards within the Natural Heritage Assessment Guide for Renewable Energy Projects. Potential negative impacts to woodlands within 120 m of the Project Location and proposed mitigation measures during the construction and decommissioning phases of the project are detailed in **Table 5.1, Appendix B.**

The primary mitigation strategy was avoidance of the significant woodlands. The 41 significant woodlands located within 120 m of the Project Location are shown on **Figures 2.1 to 2.10, Appendix A.** The Project Location; however, is proposed to occur within eight significant woodlands associated with significant woodlands 3, 4, 6, 7, 10, 18, 19, 20 and 23.

- Woodland Feature 3 is a 8.2 ha woodland that was determined to be significant based on three of the seven criteria: woodland size, proximity to other significant habitats and water protection. It is composed of one habitat type: Fresh – Moist Shagbark Hickory Deciduous Forest. It contains candidate Wood Thrush habitat and candidate plant species of conservation concern habitat, all of which are being treated as significant in the EIS with a commitment to undertake pre-construction surveys. This woodland is proposed to have an overhead transmission line pass through the southern edge of the northern section of this significant woodland. Only tree trimming is required on the northern edge of the southern section of this significant woodland. This disturbance would require the removal of 0.72 ha of this feature permanently, which is 8.8% of the woodland features. This vegetation would consist mainly of shagbark hickory and other deciduous trees.
- Woodland Feature 6 is a 38.1 ha woodland that was determined to be significant based on five of the seven criteria: woodland size, interior habitat, proximity to other significant habitats, water protection and woodland diversity. This woodland/wetland contains: Green Ash Mineral Deciduous Swamp, Fresh – Moist Oak – Maple Deciduous Forest, Fresh – Moist Sugar Maple – Hardwood Deciduous Forest, Dry – Fresh Sugar Maple – Beech Deciduous Forest, Dry-Fresh White Ash Deciduous Forest, and Dry-Fresh Sugar Maple – Basswood Deciduous Forest. It contains candidate amphibian breeding (woodland) habitat, candidate Wood Thrush habitat and candidate plant species of conservation concern

habitat, all of which are being treated as significant in the EIS with a commitment to undertake pre-construction surveys. This woodland is proposed to have an overhead transmission line pass through the southern edge within the ELC community FOD4-2 . This disturbance would require the removal of 0.05 ha of this feature permanently, which is less than 1% of the woodland feature. This vegetation would consist mainly of white ash.

- Woodland Feature 7 is a 15.5 ha woodland and wetland that was determined to be significant based on five of the seven criteria: woodland size, interior habitat, proximity to other significant habitats, water protection, and woodland diversity. This woodland/wetland is composed of three vegetation communities: Dry – Fresh Sugar Maple – Beech Deciduous Forest, Silver Maple Mineral Deciduous Swamp, and Dry-Fresh Deciduous Forest. It contains candidate amphibian breeding (woodland) habitat and candidate plant species of conservation concern habitat, all of which are being treated as significant in the EIS with a commitment to undertake pre-construction surveys. This woodland is proposed to have an overhead transmission line pass through the northern edge within the ELC community FOD. This disturbance would require the removal of 0.12 ha of this feature permanently, which is 0.8% of the woodland feature and will be limited only to tree trimming at the property line. This vegetation would consist mainly of white and green ash.
- Woodland Feature 10 is a 7.7 ha woodland that was determined to be significant based on two of the seven criteria: woodland size and water protection. It is composed of one habitat type: Dry – Fresh Oak – Hardwood Deciduous Forest. It contains candidate Wood Thrush habitat and candidate plant species of conservation concern habitat, all of which are being treated as significant in the EIS with a commitment to undertake pre-construction surveys. This woodland is proposed to have an overhead transmission line pass through the southern edge. This disturbance would require the removal of 0.31 ha of this feature permanently, which is 4% of the woodland feature. This vegetation would consist mainly of oak and other deciduous trees.
- Woodland Feature 18 is a 10.6 ha woodland that was determined to be significant based on three of the seven criteria: woodland size, interior habitat and woodland diversity. It is composed of one habitat type: Fresh – Moist Bur Oak Deciduous Forest. It contains candidate Wood Thrush habitat and candidate plant species of conservation concern habitat, all of which are being treated as significant in the EIS with a commitment to undertake pre-construction surveys. This woodland is proposed to have an overhead transmission line pass through the western edge. This disturbance would require the removal of 1.6 ha of this feature permanently, which is 15% of the woodland feature. This vegetation would consist mainly of bur oak and other deciduous trees.
- Woodland Feature 19 is a 24.7 ha woodland that was determined to be significant based on three of the seven criteria: woodland size, interior habitat and woodland diversity. It is composed of one habitat type: Dry – Fresh Sugar Maple – Beech Deciduous Forest. It contains candidate Wood Thrush habitat and candidate plant species of conservation concern habitat, all of which are being treated as significant in the EIS with a commitment to undertake pre-construction surveys. This woodland is proposed to have an overhead

transmission line pass through the southern edge. This disturbance would require the removal of 0.20 ha of this feature permanently, which is less than 1% of the woodland feature and will be limited only to tree trimming at the property line. This vegetation would consist mainly of sugar maple, beech and other deciduous trees.

- Woodland Feature 20 is a 3.2 ha woodland that was determined to be significant based on three of the seven criteria: proximity to other significant habitats, linkages and water protection. It is composed of one habitat type: Fresh – Moist Lowland Deciduous Forest. It contains candidate plant species of conservation concern habitat, all of which are being treated as significant in the EIS with a commitment to undertake pre-construction surveys. This woodland is proposed to have an overhead transmission line pass through the northern edge. This disturbance would require the removal of 0.32 ha of this feature permanently, which is 10% of the woodland feature. This vegetation would consist mainly of deciduous trees.
- Woodland Feature 23 is an 8.9 ha woodland that was determined to be significant based on four of the seven criteria: woodland size, interior habitat, proximity to other significant habitats and water protection. It is composed of one habitat type: Dry – Fresh Poplar – White Birch Deciduous Forest. It contains candidate Wood Thrush habitat and candidate plant species of conservation concern habitat, all of which are being treated as significant in the EIS with a commitment to undertake pre-construction surveys. This woodland is proposed to have an overhead transmission line pass through the southern edge. This disturbance would require the removal of 0.26 ha of this feature permanently, which is 3% of the woodland feature. This vegetation would consist mainly of poplar, white birch and other deciduous trees.

An assessment of the potential impacts and recommended mitigation measures specific to each natural feature is provided in Section 5.2.2.

#### **5.2.1.1 Impacts and Mitigation to Woodland Removal**

Clearing of trees will be required to facilitate the installation of overhead transmission lines, including alternative routes, if required. Siting constraints for these lines were primarily due to access restrictions.

Clearing activities during construction will result in the removal of vascular plants and portions of plant communities. No rare vegetation communities are located in the areas proposed for removal, and botanical surveys will be conducted prior to construction. Significant wildlife habitat is located in some of these woodland features as described in Section 5.2.1. Potential impacts and mitigation to these habitats are described in **Table 5.1, Appendix B** and Section 5.2.3.

Alteration or removal of vegetation for construction of Project components could have the potential to affect both flora and fauna through loss of species diversity, by reducing or fragmenting available habitat (especially for species with low mobility), from the introduction or



spread of invasive species, and from the temporary disruption to movement of wildlife. Impacts such as soil erosion and compaction during construction are expected to be minimal given the shallow soil layer and bedrock present.

Indirect impacts to the remaining woodland 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 operation there is the potential for spills and contamination to the woodland. Storage of fuel, and activities with the potential to cause contamination will occur in properly protected and sealed areas. Improper disposal of wastes (fluids, containers, cleaning materials) could also have a negative impact on the feature.

A Natural Areas Management Strategy will be created and implemented for the Project as described in Section 5.2.1.2. The strategy will include:

- A Replanting and Restoration Plan. Replanting of vegetation removed in significant woodlands. Transplanting plant species of conservation concern (if required). All disturbed areas of the construction site will be restored to preconstruction grades as soon as conditions allow.
- An Invasive Species Management Plan will be created for the Project in consultation with MNR with the goal of managing spread of the invasive species in areas of construction related disturbance.
- A Vegetation Monitoring Plan will be created for the project to survey pre-construction to assist in the development of the Replanting and Restoration Plan and the Invasive Species Management Plan and to monitor post construction the success of such Plans.

Indirect effects can be controlled through the use of standard mitigation measures as discussed above. The total vegetation removal required would remove a small proportion of the woodland habitat evaluated as significant for the purposes of this Project that occurred within the landscape. More than 99% of the current woodland cover would be maintained within the landscape. The creation of a Replanting and Restoration plan, an Invasive Species Plan and an associated Monitoring Plan will enhance and preserve the natural heritage qualities of the woodland habitats currently found within the Project Location and Zone of Investigation.

Potential impacts and mitigation requirements to significant woodlands are described in **Table 5.1, Appendix B** as well as in the general construction mitigation recommendations in **Table 5.2, Appendix B**.

### 5.2.1.2 Natural Areas Management Strategy

Given the complexity of vegetation community types, the anthropogenic influence on the development of the natural heritage features, and the overlap of the delineation of natural features found within the Project Location, habitat to be removed is often classified under more than one natural feature type (i.e. some woodland is also significant wildlife habitat, if found to be significant).

In order to mitigate for habitat lost temporarily for construction of the Project as well as habitat loss resulting from the installation of long-term infrastructure (i.e. turbine foundations and access roads) a Natural Areas Management Strategy will be developed for lands within the Project Location and 120 m Zone of Investigation. The strategy will be designed to restore as well as enhance and preserve the natural heritage qualities of the natural habitats currently found within the Project Location and Zone of Investigation, and will include consideration of all natural areas, such as woodland and significant wildlife habitats, if found to be significant. Restoration and enhancement efforts will include efforts to promote native biodiversity throughout the study area, and may include restoration of woodland communities as appropriate. Using this approach, mitigation for all terrestrial heritage features and functions including woodlands will be coordinated to create healthy, self-sustaining ecosystems.

The Natural Areas Management Strategy will include the following aspects:

- A Replanting and Restoration Plan will be developed for the Project. This plan will ensure that:
  - The area of significant woodland removed is replaced at a ratio of at least 1:1.
  - The woodland replanting is to occur within the project location, municipality or in location identified by a conservation authority or other tree planting organization (i.e. Trees Ontario).
  - The woodland planting is to consider impacts to candidate significant wildlife habitats (if found to be significant) including Hooded Warbler, Wood Thrush and Amphibian Breeding Habitat, utilizing criteria for significance detailed within the Site Investigation and Evaluation of Significance reports.
  - The transplanting of plant species of conservation concern (if required, based on pre-construction surveys) is conducted using appropriate techniques and is located in suitable areas.
  - Pre and post construction monitoring as detailed in the Vegetation Monitoring Plan (below)

- All disturbed areas of the construction site will be restored to preconstruction grades as soon as conditions allow.
  - Temporary construction areas will be treated with preserved topsoil/seedbanks and allowed to regenerate.
  - A cover crop will be applied as determined by a qualified professional to prevent establishment of undesirable non-native species while the native seedbank germinates.
  - Areas will be seeded with suitable native seed from local sources to the extent possible.
  - Plant material may be salvaged from areas where long-term infrastructure is proposed and floristic composition is suitable.
- An Invasive Species Management Plan will be developed for the Project with the goal of managing spread of the invasive species in areas of construction related disturbance. This Plan will incorporate removal of controllable occurrences of problematic species, such as scots pine, silver poplar, multiflora rose, common lilac and young populations of swallow-wort. Invasive species will be removed mechanically or by other appropriate means, under the direction of a qualified professional. Some species such as common buckthorn and Tartarian honeysuckle are well established on the landscape and eradication may be an unrealistic objective. The Invasive Species Management Plan will include a site assessment phase to establish achievable targets for invasive species management. Areas within 120 m of project components will be priority management areas.
  - A Vegetation Monitoring Plan will be prepared to assist in the development of and to monitor the success of the Replanting and Restoration Plan and the Invasive Species Management Plan. The monitoring program will track the success of restoration and invasive species management efforts and provide adaptive management contingencies where targets are not met. This plan will include:
    - A commitment to conduct a pre-construction botanical inventory twice between May and September of the significant woodlands that are being removed. This data will assist in the development of the Replanting and Restoration Plan and the Invasive Species Management Plan, as well the post construction monitoring and reporting commitments.
    - Annual post construction botanical inventory of the planting/s conducted as a result of significant woodland removal, until the tenth year post management, or until an agreement is reached between the proponent and MNR that management efforts have been deemed sufficient. The inventory is to occur twice

between May and September for the first two years following planting. And is to occur at least once between May and September for the remaining years.

- A post construction monitoring report of the botanical inventories assessing planting survival and woodlot function is to be submitted annually to MNR for review.
- Annual monitoring of transplanted plant species of conservation concern (if required, based on pre-construction surveys) until the fifth year post management, or until an agreement is reached between the proponent and MNR that management efforts have been deemed sufficient..
- The Plans will be developed in consultation with MNR and must be finalized within one year after construction.
- Records of the restoration and invasive species control work will be kept so that successes or failures can be communicated to interested groups to contribute to the management of woodland habitats in Ontario.

### **5.2.2 Significant Wetlands**

Twenty-two additional wetlands, not previously identified by MNR, were identified within 120 m of the Project Location. They were identified within 120 m of the Project Location and are treated as provincially-significant. Potential negative impacts to wetlands within 120 m of the Project Location and proposed mitigation measures during the construction and decommissioning phases of the project are detailed in **Table 5.1, Appendix B**. The Uttoxeter Swamp, previously identified as locally-significant by the MNR, was identified in Feature 57. This wetland will not be considered significant based on the MNR's evaluation. No changes are proposed to this evaluation.

The primary mitigation strategy was avoidance of wetlands. The 20 significant wetlands located within 120 m of the Project Location are shown on **Figures 4.1 to 4.10, Appendix A**. Where underground cabling must pass where a wetland occurs, horizontal direction drilling will be employed to avoid the wetland and remove potential impacts to wetland vegetation and habitat.

### **5.2.3 Significant Wildlife Habitats**

The following significant wildlife habitats were identified in or within 120 m of Project components with an operational impact (**Figures 4.0-4.10, Appendix A**):

- Deer Wintering Area (Features 55, 56 and 62);
- Amphibian breeding habitat (woodland) (Features 6, 7, 25, 26, 29, 37, 47, 56 and 57);
- Hooded Warbler habitat (associated with Features 45, 48, 55, 56 and 62);

- Wood Thrush habitat (Features 3, 6, 10, 18, 19, 23, 26, 28, 30, 32, 45, 48, 52, 55, 56, 58 and 62); and
- Plant Species of Conservation Concern habitat (Features 3, 6, 7, 10, 18, 19, 20, 23 and 24).

Negative environmental effects caused by construction and decommissioning activities along with mitigation measures used to address impacts are detailed in **Table 5.1, Appendix B**. Aside from Deer Winter Area, it is unknown if these wildlife habitats are significant; therefore, habitat use studies/pre-construction surveys will be conducted to determine significance of each feature. If the feature is deemed significant the mitigation proposed in **Table 5.1, Appendix B** will be applied. However, if the feature is deemed not significant no mitigation will be applied for the feature.

The primary mitigation strategy was avoidance of wildlife habitat and using directional drilling where possible to avoid impacts to the habitat. Some significant wildlife habitats treated as significant, however, have overhead or underground transmission lines passing through the feature, and vegetation will be removed as a result. These are described in detail below.

- Amphibian Breeding Habitat (Woodland) Feature 6 is a 38.1 ha woodland with two swamp communities within it. This woodland/wetland contains: Green Ash Mineral Deciduous Swamp, Fresh – Moist Oak – Maple Deciduous Forest, Fresh – Moist Sugar Maple – Hardwood Deciduous Forest, Dry – Fresh Sugar Maple – Beech Deciduous Forest, Dry-Fresh White Ash Deciduous Forest, and Dry-Fresh Sugar Maple – Basswood Deciduous Forest. This woodland is proposed to have an overhead transmission line pass through the section of upland forest edge adjacent to the southern property boundary. This disturbance would be permanent, and vegetation removal would involve the removal of 0.05 ha of upland wooded habitat, which is less than 1% of the feature. This vegetation would consist of mainly deciduous trees along the edge of the forest. No amphibian breeding pools within the swamp communities would be impacted.
- Amphibian Breeding Habitat (Woodland) Feature 7 is a 15.5 ha woodland with one swamp community within it. This woodland/wetland contains: Dry – Fresh Sugar Maple – Beech Deciduous Forest, Silver Maple Mineral Deciduous Swamp, and Dry-Fresh Deciduous Forest. This woodland is proposed to have an overhead transmission line pass through the northern edge. This disturbance would require the removal of 0.12 ha of this feature permanently, which is 0.8% of the woodland feature and will be limited only to tree trimming at the property line. This vegetation would consist mainly of white and green ash.. No amphibian breeding pools within the swamp communities would be impacted.
- Wood Thrush Habitat Feature 3 is an 8.2 ha woodland. It is composed of one habitat type: Fresh – Moist Shagbark Hickory Deciduous Forest. This woodland is proposed to have an overhead transmission line pass through the section of upland forest edge adjacent to the southern property boundary. This disturbance will require the removal of 0.72 ha of Wood Thrush habitat permanently, which is 8.8% of the woodland features. Disturbance to this habitat is not anticipated to have a direct impact on this species as the habitat will remain >4ha and breeding bird timing windows will be used during construction (May 1 to July 31).

- Wood Thrush Habitat Feature 6 is a 38.1 ha woodland. This woodland/wetland contains: Green Ash Mineral Deciduous Swamp, Fresh – Moist Oak – Maple Deciduous Forest, Fresh – Moist Sugar Maple – Hardwood Deciduous Forest, Dry – Fresh Sugar Maple – Beech Deciduous Forest, Dry-Fresh White Ash Deciduous Forest, and Dry-Fresh Sugar Maple – Basswood Deciduous Forest. This woodland is proposed to have an overhead transmission line pass through the southern edge. This disturbance would require the removal of 0.05 ha of this feature permanently, which is less than 1% of the feature. Disturbance to this habitat is not anticipated to have a direct impact on this species as the habitat will remain >4ha and breeding bird timing windows will be used during construction (May 1 to July 31).
- Wood Thrush Habitat Feature 10 is a 7.7 ha woodland. It is composed of one habitat type: Dry – Fresh Oak – Hardwood Deciduous Forest. This woodland is proposed to have an overhead transmission line pass through the southern edge. This disturbance would require the removal of 0.31 ha of this feature permanently, which is 4% of the feature. Disturbance to this habitat is not anticipated to have a direct impact on this species as the habitat will remain >4ha and breeding bird timing windows will be used during construction (May 1 to July 31).
- Wood Thrush Habitat Feature 18 is a 10.6 ha woodland. It is composed of one habitat type: Fresh – Moist Bur Oak Deciduous Forest. This woodland is proposed to have an overhead transmission line pass through the western edge. This disturbance would require the removal of 0.74 ha of this feature permanently, which is less than 1% of the feature. Disturbance to this habitat is not anticipated to have a direct impact on this species as the habitat will remain >4ha and breeding bird timing windows will be used during construction (May 1 to July 31).
- Wood Thrush Habitat Feature 19 is a 24.7 ha woodland. It is composed of one habitat type: Dry – Fresh Sugar Maple – Beech Deciduous Forest. This woodland is proposed to have an overhead transmission line pass through the southern edge. This disturbance would require the removal of 0.20 ha of this feature permanently, which is less than 1% of the feature. Disturbance to this habitat is not anticipated to have a direct impact on this species as the habitat will remain >4ha and breeding bird timing windows will be used during construction (May 1 to July 31).
- Wood Thrush Habitat Feature 23 is an 8.9 ha woodland. It is composed of one habitat type: Dry – Fresh Poplar – White Birch Deciduous Forest. This woodland is proposed to have an overhead transmission line pass through the southern edge. This disturbance would require the removal of 0.26 ha of this feature permanently, which is 3% of the feature. Disturbance to this habitat is not anticipated to have a direct impact on this species as the habitat will remain >4ha and breeding bird timing windows will be used during construction (May 1 to July 31).
- Plant Species of Conservation of Concern (Features 3, 6, 7, 10, 18, 19, 20, 23, and 24) are areas of deciduous forest that will be removed for overhead or underground lines. Details regarding these features are provided in **Table 3.4, Appendix B**. Woodland vegetation removal will be permanent. No plant species of conservation concern were identified during



ELC surveys in the site investigation for this Project; however, prior to construction, additional detailed botanical inventories will occur in these features. Should plant species of conservation concern be found in these features, the individual plants would be transplanted to suitable nearby habitats at species-appropriate times by qualified botanists. Prior to this transplantation, the MNR will be consulted for approval. See Section 5.2.1.2 for details on the Natural Areas Management Strategy that will be created and implemented for the Project.

No vegetation will be removed from the other habitats, and no direct impacts are anticipated to these features. None of these features have been evaluated for significance yet and are treated as significant for the purposes of this report. These features will be evaluated prior to construction. Should the features be deemed not significant after evaluation, the mitigation proposed in **Table 5.1, Appendix B** will not be required.

#### **5.2.4 Generalized Candidate Significant Wildlife Habitats**

In addition to the series of wildlife habitats identified above, a number of wildlife habitat types have also identified that may be present within the Project Boundary, but are located within 120 m of project components that are not expected to have an operational impact on these habitats. In accordance with the Natural Heritage Assessment Guide (MNR, 2011a), potential impacts to these habitats are typically associated with the temporary disturbance of construction activity and can be grouped together as generalized impacts and mitigation measures.

The full suite of wildlife habitats that require generalized consideration have been reviewed, and have compiled a comprehensive list of general construction mitigation measures that will be implemented during the construction and decommissioning phases (**Table 5.2, Appendix B**) of the Project.

### **5.3 OTHER GENERAL CONSTRUCTION MITIGATION**

To fully identify all mitigation measures that are recommended for this development, the following section provides best management practices and other measures intended to minimize or mitigate potential adverse impacts on adjacent significant natural features. These measures will be implemented, where required and reasonable, during the construction and decommissioning of the various turbines, access roads and collector lines.

#### **5.3.1 Vegetation Removal**

Natural features where habitat will be removed include woodlands only. Other vegetation removal that will occur is in agricultural fields and hedgerows. Where vegetation removal is proposed, the following mitigation measures will be applied:

- As appropriate, and prior to construction, the limits of vegetation clearing will be staked in the field. The Construction Contractor will ensure that no construction disturbance occurs beyond the staked limits and that edges of sensitive areas adjacent to the work areas are



not disturbed. Regular monitoring of the limits of clearing will be implemented to ensure the objective of minimal disturbance. Should monitoring reveal that clearing occurred beyond defined limits, mitigation action will be taken that could include rehabilitation of the disturbed area to pre-disturbance conditions at the direction of a qualified ecologist (with enhancement of any disturbed areas).

- To the extent practical, tree and/or brush clearing and grassland removal will be completed prior to, or after, the core nesting season for breeding birds (May 1 to July 31). Should clearing be required during the breeding bird season, prior to construction, surveys will be undertaken by a qualified biologist to identify the presence/absence of nesting birds or breeding habitat. If a nest is located, a designated buffer will be marked off within which no construction activity will be allowed while the nest is active. The radius of the buffer will range from 5-60 m, depending on the species (included in **Appendix E**). Buffer widths are based on the species' sensitivity and on buffer width recommendations that have been prepared in consultation with Environment Canada.
- Prior to the start of construction activity, the topsoil/seedbank will be stripped and preserved; material will be reapplied in suitable rehabilitation areas post construction.
- Excavated soil from crane pads will be re-used on site, as feasible. If not feasible, the soil will be disposed of at an approved off-site facility. Temporary laydown areas will be returned to pre-construction conditions.
- Following construction, topsoil in areas of temporary disturbance will be replaced/restored. Disturbed areas in agricultural fields will be reseeded with a hay mix. Reseeded areas will be monitored for one year to ensure regeneration success.

### **5.3.2 Sediment and Erosion Control Measures**

In order to minimize erosion and the introduction of sediment into significant natural features during grading and construction activities, erosion and sediment (E&S) control measures will be implemented prior to the initiation of any construction.

The proximity of adjacent significant natural features increases the risk of sedimentation within a construction area. As such, all significant natural features identified within 30 m of any proposed construction area are at higher risk of sediment transfer and erosion from grading and topsoil removal.

E&S control measures will be installed to minimize erosion impacts adjacent to significant natural features, as appropriate. The following measures/guidelines will be implemented, as required, during the construction of the Project components:

- Sediment control measures, which may include perimeter silt fencing, mud mats (access roads), check dams (rock or straw bales), and sediment bags (dewatering);
- Silt barriers (e.g., fencing) will be erected along wetland and woodland community edges located within 30 m of construction areas (including staging areas and laydown areas) to

minimize potential sediment transport to the significant natural features. These barriers will be regularly monitored and properly maintained during and following construction until soils in the construction area are re-stabilized with vegetation; and

- Where culverts are proposed within 30 m of a significant natural feature, enhanced sediment and erosion control measure (i.e. straw bales, double rows of sediment fencing, check dams) will be installed as added protection to filter runoff and further minimize potential sedimentation within the downstream features (wetland, woodland). This added protection is proposed to reduce environmental risk.

Specific E&S control measures will be selected, located and sized by an engineer during the detailed design stage to ensure proper functioning of these measures. All E&S controls will be installed prior to construction and will be maintained during and following construction to ensure their effectiveness at protecting the adjacent significant natural features.

### **5.3.3 Dewatering**

Site specific geotechnical investigations to be completed prior to construction activities will provide further details related to geologic conditions. Dewatering requirements will be re-assessed as part of the geotechnical investigations.

If groundwater is encountered during excavations, good construction practices will be used, such as minimizing the length of time that the excavation is open and monitoring seepage into the excavation. Should pumping be required to dewater excavated areas, water will be directed into the nearest drain or spread across the buildable area and appropriate energy dissipation techniques will be used to reduce the potential for erosion and scouring. Discharge piping will be free of leaks and will be properly anchored to prevent bouncing and snaking during surging. The rate of discharge will be monitored to ensure no erosion or flooding occurs. If energy dissipation measures are found to be inadequate, the rate of dewatering will be reduced or ceased until satisfactory mitigation measures are in place.

In order to mitigate any impacts to significant natural features during dewatering activities, the following measures will be implemented, as required and necessary:

- The area to be used for dewatering will be clearly marked with flagging and/or snow-fencing prior to work commencing;
- During site preparation, silt fencing will be included to retain sediments on site so they do not enter any significant natural feature. All sediment control structures will be inspected regularly, and repaired/maintained as necessary;
- All water pumped during dewatering activities will be directed away from significant natural features and not directly into wetlands;
- Set back groundwater discharge locations at least 30 m from significant natural features. All groundwater discharge will undergo appropriate water quality and temperature controls, as required, and will be directed through a sediment filter (i.e., filter bag), sediment basin or

other appropriate device capable of handling the anticipated volumes of water, before being discharged to the environment. The specific locations for directing treated groundwater discharge will be selected in the field at the time of construction, but will generally be limited to grassed areas, existing drainage ditching or agricultural fields;

- The use of sediments bags (or filter rings) will be used as appropriate to filter out suspended sediment prior to discharge. Any sediment bags or filter rings will be monitored during pumping to ensure their efficacy, with any clogging or failures to be rectified immediately; and
- After the staging area and dewatering work area is no longer required, any remaining disturbed soils will be returned to pre-disturbance conditions and/or reseeded.

Further dewatering recommendations will be reviewed upon the completion of the detailed engineering design. Additional detail is provided in the Cedar Point Wind Project Construction Plan Report (separate cover, Stantec 2013).

**5.3.4 Summary of Mitigation Measures**

To fully identifying all mitigation measures that are recommended for this development, a summary table of construction related mitigation measures has been provided in **Table 5.1** below, including the mitigation objective and specific location where each mitigation measure will be applied.

<b>Mitigation Measure</b>	<b>Objective(s)</b>	<b>Location(s)</b>
No vegetation removal outside of that detailed in Section 5.2.1.	Minimize veg vegetation removal and impacts on wildlife habitats and significant woodlands	Significant Woodlands
Any vegetation removal required along roadside collector/transmission lines outside of those located in significant woodlands, as described in Section 5.2.1, will be minimized, and occur entirely within the road right-of-way.	Minimize vegetation removal and impacts on wildlife habitats	Collector Lines Transmission Line
Any accidentally damaged trees will be pruned through the implementation of proper arboricultural techniques	Protect tree species from permanent damage	Entire Project
Develop and implement an erosion and sedimentation control plan.	Protect natural features and wildlife habitats, where appropriate	Entire Project
Clearly delineate work area using silt fencing, erosion blankets, or similar barrier	Minimize erosion impacts on features when construction activities are proposed within 30 m of significant natural features	Within 30 m of any significant feature or wildlife habitat*
Maintain erosion control measures for the duration of construction or decommissioning activities.	Minimize erosion impacts on features when construction activities are proposed within 30 m of significant natural features	Within 30 m of any significant feature or wildlife habitat*
Suspend work if high runoff volume is noted or excessive sediment discharge occurs	Minimize erosion impacts on features when construction activities are proposed within 30 m of significant natural features	Within 30 m of any significant feature or wildlife habitat*

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**Table 5.1: Summary of Construction Phase Mitigation Measures Recommended**

<b>Mitigation Measure</b>	<b>Objective(s)</b>	<b>Location(s)</b>
Minimize vehicle traffic on exposed soils, and no heavy machinery traffic on sensitive slopes	Limit unnecessary risk of increased erosion, turbidity or sedimentation	Entire Project
Re-vegetate temporary areas to pre-construction conditions as soon as possible.	Limit the potential for erosion or sedimentation due to exposed soil conditions	Entire Project
Maintain vegetation buffers around water bodies	Minimize the potential for erosion, and protect wildlife habitat, within riparian areas	Entire Project
Minimize vegetation removal during the breeding bird season (May 1 <sup>st</sup> -July 31 <sup>st</sup> ), or hire a biologist to confirm no nests are present in areas proposed for vegetation removal.	Avoid impacts to locally breeding bird species or nesting success	Significant wildlife habitat*
Construction activities will occur during daylight hours.	Avoid noise/light disturbance of local wildlife in areas where construction activity will occur within 30 m of a significance feature or specific wildlife habitat type. Increase ability to observe and avoid any incidental species individuals	Within 30 m of any significant feature or wildlife habitat*
Any stockpiled material will be stored more than 30 m from a wetland, woodland, or water body	Limit the potential for increased erosion within 30 m of significance natural features	Entire Project
All maintenance activities, vehicle refueling or washing, and chemical storage will be located more than 30 m from any significant feature.	Minimize the risk of contamination of chemical spill around significant natural features	Entire Project
Develop a spill response plan, train staff on appropriate procedures, and keep emergency spill kits on site.	Minimize potential long-term effects or significance contaminations in the event an accidental spill occurs	Entire Project
Dispose of waste material by authorized and approved offsite vendors	Limit the potential for contamination of significant natural features	Entire Project
Implement infiltration techniques to the maximum extent possible.	Minimize potential impacts to soil moisture regime and groundwater stores	Entire Project
Design roads to promote infiltration.	Minimize potential impacts to soil moisture regime and groundwater stores	Entire Project
No herbicides will be used within significant features or wildlife habitats.	Avoid impacts to natural vegetation species, significant features, and wildlife habitats	Significant woodlands, wetlands, and wildlife habitats*
Minimize grading activities to maintain existing drainage patterns, to the fullest extent possible.	Maintain existing surface water drainage patterns	Entire Project
Control rate and timing of water pumping, and restrict taking of water during periods of extreme low flow.	Limit potential impacts on water temperature, surface water storage, and wildlife habitat	Entire Project
Pump from deep wells to infiltration galleries adjacent to water bodies or wetlands when construction is located <30 m from water bodies and wetlands.	Minimize impacts to ground water stores, wetlands, or water bodies	Entire Project
Control quantity and quality of stormwater discharge using best management practices.	Maintain water flow patterns similar to pre-construction conditions and avoid potential contamination of water sources	Entire Project
Horizontal directional drill entry/exit pits will be located at least 30 m from any significant natural feature, and frac-out plan in place prior to performing directional drilling	Minimize impacts on significant natural features, water bodies, and wildlife habitat	Horizontal Directional Drilling

**Table 5.1: Summary of Construction Phase Mitigation Measures Recommended**

Mitigation Measure	Objective(s)	Location(s)
Collect drill cuttings as they are generated and placed in a soil bin or bag for off-site disposal	Limit the potential for soil or water contamination	Horizontal Directional Drilling
Restore and re-vegetate entry/exit pits to pre-construction conditions as soon as possible after construction	Minimize the presence of exposed soil to reduce the potential for erosion	Horizontal Directional Drilling

\* Only if these habitats are determined to be significant through pre-construction surveys described in **Section 5.4.3.1**

## **5.4 NEGATIVE ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES ASSOCIATED WITH THE OPERATIONAL PHASE OF THE PROJECT**

### **5.4.1 Significant Woodlands**

Operation of the Project is anticipated to have very limited impacts to significant woodlands. During operation, infrequent day to day use of access roads and maintenance activities associated with the road may result in impacts to woodlands, due to dust, but such impacts are expected to be minimal, such as reduced speed limits. If required, dust suppression during operation of the Project could be considered.

There may be occasional impacts during maintenance of access roads or collector/transmission lines. If major maintenance activities are required in proximity to significant woodlands, mitigation measure for construction (**Tables 5.1 and 5.2, Appendix B**) should be implemented.

Other potential impacts that might occur during operation include spills and contamination to the woodland. Improper disposal of wastes (fluids, containers, cleaning materials) could also have a negative impact on the feature. Storage of fuel and activities with the potential to cause contamination will occur in properly protected and sealed areas. In the event of an accidental spill, the MOE Spills Action Centre will be contacted and emergency spill procedures implemented immediately.

### **5.4.2 Significant Wetlands**

As with significant woodlands, operation of the Project is anticipated to have very limited impacts to significant wetlands. There are no Project components located in significant wetlands.

During operation, infrequent day to day use of access roads and maintenance activities associated with the road may result in impacts to wetlands, due to dust, but such impacts are expected to be very minimal. If required, dust suppression during operation of the Project could be considered, such as reduced speed limits.

There may be occasional impacts during maintenance of access roads or collector/transmission lines. If major maintenance activities are required in proximity to significant wetlands, mitigation measure for construction (**Table 5.1, Appendix B**) should be implemented.

Other potential impacts that might occur during operation include spills and contamination to the wetlands. Improper disposal of wastes (fluids, containers, cleaning materials) could also have a negative impact on the feature. Storage of fuel and activities with the potential to cause contamination will occur in properly protected and sealed areas. In the event of an accidental spill, the MOE Spills Action Centre will be contacted and emergency spill procedures implemented immediately.

### **5.4.3 Significant Wildlife Habitat**

As with significant woodlands, operation of the Project is anticipated to have very limited impacts to significant wildlife habitat. However, there is the potential for indirect impacts to significant wildlife habitat. These are detailed below.

#### **Deer Wintering Area**

Potential impacts to the significant deer wintering area (associated with Features 53, 55 and 62) during operation of the Project are anticipated to be minimal.

Access roads, wind turbines, and underground collector lines overlap with this habitat; however, no woodland vegetation removal in this habitat is proposed. These Project components do not impede movement between woodlands or other habitat features.

Maintenance of Project components could result in indirect impacts to deer use of this habitat area; however, there are fewer disturbances in the winter (no maintenance of underground collector lines or access roads) when deer are using this habitat. Any access road or collector line maintenance activities in the winter will be required to follow mitigation measures used during construction (**Table 5.1, Appendix B**). Lowered posted speed limits on this access road will be used to avoid collisions with deer on access roads.

During operation of the facility, some materials such as lubricating oils and other fluids associated with turbine maintenance have the potential for discharge on the environment through accidental spills, resulting in a potential impact to deer habitat through ground or surface water contamination. In the event of an accidental spill, the MOE Spills Action Centre will be contacted and emergency spill procedures implemented immediately.

#### **Amphibian Breeding (Woodland)**

Potential impacts to significant amphibian breeding habitat (associated with features 6, 7, 25, 26, 29, 37, 47, 56, and 57) during operation of the Project are anticipated to be minimal.

No access roads occur within amphibian breeding habitat; however, some access roads are located adjacent to this habitat. Infrequent day to day uses of the access roads and maintenance activities are unlikely to result in habitat impacts. If required, dust suppression during operation of the Project could be considered, such as reduced speed limits. Any access road maintenance activities will be required to follow mitigation measures used during construction (**Table 5.1, Appendix B**).



There may be occasional impacts during maintenance of collector lines. Maintenance of the collector line adjacent to most amphibian breeding habitats could result in wetland degradation by dust, siltation, erosion or accidental spill. If collector line maintenance activities are required in proximity to these habitats, mitigation measure used during construction (**Table 5.1, Appendix B**) will be implemented.

Effects of turbine noise on amphibian populations are relatively unknown and not-well understood; however, individual reproductive success has been directly related to calling effort in frogs (Sun and Narins 2004). Therefore, noise may be a concern because it can interfere with calling rates, which could in turn impact fitness (Sun and Narins 2004, Penna et al. 2005). As well, noise may not allow breeding frogs to properly hear and move toward breeding aggregations (Maxell and Hokit 1999).

Masking of auditory environmental signals may be significant immediately underneath the turbine (Rabin et al. 2006), but the effects rapidly decline with distance from the turbine. A study of low frequency noise and vibration at a modern wind farm determined that vibration is 1/5<sup>th</sup> to 1/100<sup>th</sup> of the limit of human perception within 25 m of the turbine base (Legerton et al. 1996).

In the Project Location, the closest wind turbine to amphibian breeding habitat is 24 m (123 m from turbine base). Considering the setbacks from turbines, masking of auditory signals is not anticipated to have a significant impact on this feature.

During operation of the facility, some materials such as lubricating oils and other fluids associated with turbine maintenance have the potential for discharge on the environment through accidental spills, resulting in a potential impact to amphibian habitat through ground or surface water contamination. In the event of an accidental spill, the MOE Spills Action Centre will be contacted and emergency spill procedures implemented immediately.

### **Breeding Birds: Hooded Warbler and Wood Thrush**

Potential threats to woodland breeding birds as a result of wind energy projects include fragmentation and disturbance of habitat (Kingsley and Whittam, 2007).

At other wind power developments in Ontario, post-construction monitoring studies report no significant negative effects on woodland breeding birds, although in each case turbines were located away from wooded areas. James (2008) found no indication of disturbance or displacement of woodland birds by operating wind turbines at the Erie Shores Wind Farm. Both number of species and number of individual birds increased from 2006 surveys to 2007. Area-sensitive species, including Yellow-bellied Sapsucker and Hairy Woodpecker were noted on several occasions foraging within 50 m of operating turbine towers (James 2008). At the Melancthon I Wind Plant, in central Ontario, post-construction monitoring results revealed no significant difference in woodland bird species densities between points located within 150 m of a turbine and points located further away (Stantec, 2007).

Post-construction monitoring of the Wolfe Island Wind Plant included disturbance studies to breeding birds in woodland habitat adjacent to operating wind turbines. The post-construction surveys recorded 51 species, six of which were woodland species, which was slightly higher species diversity from pre-construction surveys. During pre-construction 45 species were recorded in the same woodlands using the same survey methods (Stantec, 2012).

During operation, potential disturbance impacts of Project-related traffic are expected to be minimal. There may be occasional impacts during maintenance of access roads or collector lines. Maintenance of the access road and/or collector line adjacent to woodland breeding bird habitat could result in woodland degradation by dust, siltation, erosion or accidental spill. If maintenance activities are required in proximity to these habitats, mitigation measures used during construction (**Table 5.1, Appendix B**) should be implemented.

#### **5.4.3.1 Pre-construction Survey Commitments**

A number of wildlife habitats were treated as significant for the purposes of this report and will be evaluated prior to construction. If these habitats are deemed significant as a result of habitat use studies, the mitigation proposed in **Table 5.1, Appendix B** will be applied, which includes post-construction monitoring, detailed in **Table 5.3, Appendix B**. However, if a feature is deemed not significant, no mitigation will be applied for this feature. The methods to evaluate the significance of these features are detailed below.

#### **Plant Species of Conservation Concern (Features 3, 6, 7, 10, 18, 19, 20, 23 and 24)**

Where vegetation removal is proposed, the proponent must commit to additional botanical surveys in these locations pre-construction in order to ensure that no plant species of conservation concern will be removed through this process.

Spring and summer botanical surveys will be conducted in these features, which will consist of thorough area searches in spring (May/June) and summer (July/August). There are no required weather conditions within which to conduct these surveys, as long as the plant species are visible. Observers will record:

- Weather conditions (temperature, wind speed (on a Beaufort scale), % cloud cover, and presence of any precipitation should be recorded).
- Date and time of day.
- Duration of area search.
- GPS coordinates of any plant species of conservation concern, including marking the location with flagging tape on a nearby tree.
- Name of the observer doing field work.

If any of the habitats is deemed significant as a result of these area searches, the mitigation proposed in **Table 5.3, Appendix B** will be applied, which includes post-construction



monitoring. However, if the feature is deemed not significant no mitigation will be applied. If any plant species of conservation concern are found in these habitats, transplantation will occur in consultation with the MNR in the appropriate season. See Sections 5.2.1.1, 5.2.1.2, and 5.3.1 for more information on vegetation removal mitigation measures.

### **Hooded Warbler Habitat (Features 45, 48, 55, 56 and 62) and Wood Thrush Habitat (Features 3, 6, 10, 18, 19, 23, 26, 28, 30, 32, 45, 48, 52, 55, 56, 58 and 62)**

The primary mitigation strategy applied to this feature was avoidance. Appendix D of the Natural Heritage Assessment Guide identifies that an operational impact may occur when a wind turbine is located within 120 m of a significant bird habitat. As per the requirements of Appendix D of the *Natural Heritage Assessment Guide for Renewable Energy Projects* (MNR, 2011a), due to the location of proposed turbines within 120 m of Features 45, 48, 55, 56 and 62 (for Hooded Warbler) and Features 3, 6, 10, 18, 19, 23, 26, 28, 30, 32, 45, 48, 52, 55, 56, 58, 59 and 62 (for Wood Thrush) the proponent must commit to undertaking studies to determine the actual use of the habitat by these two species prior to any construction activities occurring within 120 m of the habitat. Habitat use studies will be conducted according to “*Bird and Bird Habitats: Guidelines for Wind Power Projects*” (MNR, 2011c). Point count stations will be located approximately 250 m apart throughout each candidate habitat. The approximate locations of these surveys are shown on **Figures 5.1-5.10, Appendix A**, but these locations may be refined in the field. Each of the surveys will include a ten-minute point count at each location, conducted during the breeding season (May 1 to July 31). Each station will be surveyed a minimum of 3 times: once early in the season (May); once in mid-season (June); and, once later in the season (July) with at least 10 days between surveys at a particular station. Point counts must be performed in the early morning, between dawn (one half hour before sunrise) and about 4 hours after sunrise. Surveys in late June and early July will be completed within 3 hours of sunrise. Surveys will be performed when the wind speed is 3 or less on the Beaufort scale and when there is no precipitation.

At each station, the surveyor will observe for ten minutes, recording all species seen or heard (including Hooded Warbler and Wood Thrush), along with an estimate of the number of individuals of each species and the highest level of breeding evidence observed. Surveyors will estimate the distance to each bird using a scale of 0–50 m, 50–100 m and further than 100 m. Birds that move during the survey will be recorded in the closest distance category that they entered during the survey. Data that will be reported are the number of birds of each species detected in each distance band. Birds that fly over without stopping should be recorded separately as ‘fly-overs’. Additional information that will be recorded on the appropriate data forms include:

- Weather conditions (temperature, wind speed (on a Beaufort scale), % cloud cover, and presence of any precipitation should be recorded).
- Date and time of day.
- GPS coordinates of each point location (same location is to be used for each survey).

- Name of the observer doing field work.

If any of the habitats is deemed significant as a result of habitat use studies, the mitigation proposed in **Table 5.3, Appendix B** will be applied, which includes post-construction monitoring. However, if the feature is deemed not significant no mitigation will be applied.

**Amphibian Breeding Habitat (Woodland): Egg Mass Surveys (Features 6, 7, 25, 26, 29, 37, 47, 56 and 57) and Anuran Call Surveys (Features 6, 25, 26, 29, 37 and 47)**

The primary mitigation strategy applied to this feature was avoidance. Appendix D of the Natural Heritage Assessment Guide identifies that an operational impact may occur when an access road is located within 120 m of a significant amphibian habitat. As per the requirements of Appendix D of the *Natural Heritage Assessment Guide for Renewable Energy Projects* (MNR, 2011a), due to the location of proposed turbines within 120 m of the features listed above, the proponent must commit to undertaking studies to determine the actual use of the habitat by these species prior to any construction activities occurring within 120 m of the habitat.

Area searches will be conducted at all vernal pools within Features 6, 7, 25, 26, 29, 37, 47, 56 and 57, once in April. Egg masses found will be identified to species where possible. The location of any vernal pools identified will be recorded and mapped at the first survey in order to conduct further site visits at the same locations.

Anuran call surveys will be conducted within Features 6, 25, 26, 29, 37 and 47. Evaluation methods to follow the 'Marsh Monitoring Protocol' (BSC, 2003). Amphibian call surveys will be conducted three times in 2013 between April, May, June. In some areas of the province, primarily southern Ontario, surveys may need to begin in March, with at least 15 days between each survey. Monitoring stations will be established a minimum of 500 m apart and 3 minute surveys were performed at each station, listening for all amphibian calls within a semi-circular sampling area. The locations of these surveys will be determined in the field where vernal pooling is present at the first survey. The surveys will be conducted in the same locations for all three surveys. Surveying will begin one half-hour after sunset and end by midnight during evenings with little wind and minimum night air temperatures of 5°C, 10°C and 17°C for each of the three respective survey periods. These temperature requirements are in place because amphibian calling intensity is strongly associated with season, time of day, and weather conditions.

Additional information that will be recorded on the appropriate data forms include:

- Weather conditions (temperature, wind speed (on a Beaufort scale), % cloud cover, and presence of any precipitation should be recorded).
- Date, time of day, and duration.
- Description of habitats or areas scanned during the surveys
- GPS transects of the area searches.

- Name of the observer(s) doing field work.
- Complete list of all amphibian species observed
- Call abundance codes for each amphibian species detected as outlined below:
  - Code 1: individual calls do not overlap and calling individuals can be discretely counted; *NOTE: individual frogs need to be counted if Code 1 is assigned.*
  - Code 2: calls of individuals sometimes overlap, but numbers of individuals can still be estimated; *NOTE: individual frogs need to be counted if Code 2 is assigned.*
  - Code 3: overlap among calls seems continuous (full chorus), and a count estimate is impossible; *NOTE: individual frogs cannot be counted if Code 3 is assigned.*

If any of the habitats is deemed significant as a result of habitat use studies, the mitigation proposed in **Table 5.3, Appendix B** will be applied, which includes post-construction monitoring. However, if the feature is deemed not significant, no mitigation will be applied.

## **5.5 ENVIRONMENTAL EFFECTS MONITORING PLAN**

The REA Regulation requires that applicants prepare an Environmental Effects Monitoring Plan (EEMP) as part of the Design and Operations Report to demonstrate how any negative environmental effects of the project will be mitigated, and to set out a program for ongoing monitoring of the effectiveness of mitigation measures. The EEMP includes a description of:

- Performance objectives in respect of each negative environmental effect,
- All mitigation measures planned to achieve performance objectives,
- Bird and bat mortality monitoring protocol,
- Post-construction monitoring of significant wildlife habitat,
- How the project will be monitored to ensure that mitigation strategies are meeting performance objectives, and
- A contingency plan to be implemented should monitoring reveal that mitigation measures have failed.

**Table 5.3, Appendix B** provides information pertaining to this requirement, including the methods to be used, locations of monitoring, frequency of sample collection, how the results of the monitoring plan will be reported, and contingency measures that will be undertaken.

## **5.6 SUMMARY OF IMPACTS AND MITIGATION**

The Project will result in the erection of up to 46 wind turbines as well as the installation of supporting infrastructure, such as access roads, electrical cabling, and substation. Through a comprehensive review of background material in conjunction with site-specific investigations and evaluation of significance surveys, several significant, or presumed significant, natural features and wildlife habitats have been identified in and within 120 m of the Project Location.

As part of this Environmental Impact Study, a series of monitoring commitments and mitigation measures have been recommended to be implemented as part of the development of this project. These recommendations have been developed in association with the specific natural features and wildlife habitats that have been identified within the Project Boundary.

Once the recommended protective, mitigation and compensation measures are applied, the construction, operation and decommissioning of the Project is expected to have acceptable net negative effects on the natural heritage features in the Project Boundary and their associated ecological functions.

## 6.0 Closure

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This Natural Heritage Assessment and Environmental Impact Study for the Suncor Energy Cedar Point Wind Power Project has been prepared in accordance with O. Reg. 359/09, s. 24-28 and 37-38.

The application of these protective, mitigation, and compensation measures are expected to address any negative environmental effects of construction, operation and decommissioning of the Project on the natural heritage features in the Project Boundary and their associated ecological functions. An environmental effects monitoring plan that includes a post-construction monitoring program will be carried out to confirm the accuracy of predicted effects as well as to monitor the effects to other natural elements.

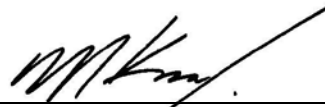
Stantec Consulting Ltd. prepared this Natural Heritage Assessment and Environmental Impact Study for Suncor Energy for the Cedar Point Wind Power Project. Suncor Energy is committed to implementing the appropriate protection and mitigation measures as they apply to the construction and operation of the proposed Project.

### STANTEC CONSULTING LTD



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## **7.0 Literature Cited**

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Arnett, E. B., D. B. Inkley, D. H. Johnson, R. P. Larkin, S. Manes, A. M. Manville, R. Mason, M. Morrison, M. D. Strickland and R. Thresher. 2007. Impacts of Wind Energy Facilities on Wildlife and Wildlife Habitat. Wildlife Society Technical Review 07-2. The Wildlife Society, Bethesda, Maryland, USA

Ausable Bayfield Conservation Authority (ABCA). 2007. Ausable Bayfield Watershed Report Card. ABCA website, [http://www.abca.on.ca/reportcard\\_map.php](http://www.abca.on.ca/reportcard_map.php), accessed February 2012.

Bird Studies Canada (BSC). 2003. The Marsh Monitoring Program – Training Kit and Instructions for Surveying Marsh Birds, Amphibians and Their Habitats. 2003 Edition. 40 pages. Published by Bird Studies Canada in cooperation with Environment Canada and the U.S. Environmental Protection Agency. March 2003.

Cadman, M.D., D.A. Sutherland, G.G. Beck, D. Lepage, A.R. Couturier. 2007. Atlas of the Breeding Birds of Ontario, 2001-2005. (eds) Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of natural resources, and Ontario Nature, Toronto, xxii + 706pp

Calvert, W. H. 2001. Monarch butterfly (*Danaus plexippus* L., *Nymphalidae*) fall migration: Flight behavior and direction in relation to celestial and physiographic cues. J. Lepid. Soc. 55: 162-168.

COSSARO. 2010. Species Classified by COSSARO and the Reasons for their Classification.

COSEWIC. 2008. COSEWIC assessment and status report on the Snapping Turtle *Chelydra serpentina* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 47 pp.

COSEWIC 2006. COSEWIC assessment and update status report on the Louisiana Waterthrush *Seiurus motacilla* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 26 pp

COSEWIC 2002. COSEWIC assessment and status report on the Northern Map Turtle *Graptemys geographica* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 34 pp.

COSEWIC 2002. COSEWIC assessment and status report on the Eastern Ribbonsnake *Thamnophis sauritus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 24

- COSEWIC 2000. COSEWIC assessment and update status report on the Hooded Warbler *Wilsonia citrina* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 11 pp.
- Dobbyn, J. 1994. Atlas of the Mammals of Ontario. Federation of Ontario Naturalists.
- Environment Canada. 2007. Recommended Protocols for Monitoring Impacts of Wind Turbines on Birds. Prepared by the Canadian Wildlife Service. Final Report, February 2007
- Evans Ogden, L. J. and B. J. Stutchbury. 1994. Hooded Warbler (*Wilsonia citrina*). In The Birds of North America, No. 110 (A. Poole and F. Gill, Eds.). Philadelphia: The Academy of Natural Sciences; Washington, D.C.: The American Ornithologists' Union.
- Ewert, D.N., G.J. Soulliere, R.D. Macleod, M.C. Shieldcastle, P.G. Rodewald, E. Fujimura, J. Shieldcastle, and R.J. Gates. 2006. Migratory Bird Stopover Site Attributes in the Western Lake Erie Basin. Final report to The George Gund Foundation.
- Farrar, J.L. 1995. Trees in Canada. Fitzhenry & Whiteside Limited and the Canadian Forest Service. Canada. 402-03 pp.
- Friesen, L.E. 2011. No evidence of large-scale fatality events at Ontario wind power Projects. *Ontario Nature*. Vol 29, No 3. Pg 149.
- Gleason, H.A and A. Cronquist. 1991. Manual of Vascular Plants of Northeastern United States and Adjacent Canada. 2<sup>nd</sup> Ed. New York Botanical Garden: Bronx, NY. pp.993
- IBA Canada. Undated. Important Bird Areas of Canada database;  
<http://www.ibacanada.com/site.jsp?siteID=ON026&lang=EN>
- James, R.D. 2008. Erie Shores Wind Farm, Port Burwell, Ontario, Fieldwork Report for 2006 and 2007. Report to Environment Canada, Ontario Ministry of Natural Resources, Erie Shores Wind Farm LP – McQuarrie North American, and AIM PowerGen Corporation. 62pp.
- Kerlinger, P., Gehring, J, and Curry, R. 2011. Understanding Bird Collisions at Communication Towers and Wind Turbines: Status of Impacts and Research. *Birding*. January 2011. Pg 44.
- Kingsley, A. and B. Whittam. 2007. Wind Turbines and Birds: A Background Review for Environmental Assessment. Prepared for the Canadian Wildlife Service. Draft April 2, 2007.
- Lambton County. 1997. County of Lambton Official Plan. Available online:  
<http://www.lambtononline.ca/home/residents/planninganddevelopment/Documents/Official%20Plan%20County%20of%20Lambton.pdf>. Accessed November 29, 2012.



- Lamond, William G. 1994. The Reptiles and Amphibians of the Hamilton Area, An Historical Summary and the Results of the Hamilton Herpetofaunal Atlas. Hamilton Naturalists' Club. 174 pp.
- Land Information Ontario (LIO). 2009. Ontario Ministry of Natural Resources. Information Access Section, February 2012.
- Layberry, R.A., P.W. Hall and J.D. Lafontaine. 1998. The butterflies of Canada. University of Toronto Press, Toronto. 280pp
- Lee, H.T., W.D. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig and S. McMurray. 1998. Ecological land classification for Southwestern Ontario: first approximation and its application. Ontario Ministry of Natural Resources, South Central Region, Science Development and Transfer Branch. Technical Manual ELC-005.
- Legerton, M.L., D.M.J.P. Manley, J.W. Sargent, D.J. Snow, and P. Styles. 1996. Low frequency noise and vibration levels at a modern wind farm. *Proceedings of Inter-Noise*. 96:459-462.
- MacCulloch, R.D. 2002. The ROM field guide to Amphibians and Reptiles of Ontario. McClelland & Steward Ltd. Toronto, Ontario. 168pp.
- Maxell, B. and G. Hokit. 1999. Amphibians and Reptiles, Effects of Recreation on Rocky Mountain Wildlife: A Review for Montana. Montana Chapter of the Wildlife Society, September 1999. [www.montanatws.org/chapters/mt/PDF%20Files/2hp1.pdf](http://www.montanatws.org/chapters/mt/PDF%20Files/2hp1.pdf).
- Municipality of Lambton Shores. 2001. Official Plan. Available online: [http://www.lambtonshores.ca/living/municipalservices/planning\\_officialplan.htm](http://www.lambtonshores.ca/living/municipalservices/planning_officialplan.htm). Accessed October 16, 2012.
- National Academy of Sciences (NAS). 2007. Environmental Impacts of Wind-Energy Projects. Committee on Environmental Impacts of Wind-Energy Projects, Board on Environmental Studies and Toxicology, Division on Earth and Life Studies, National Research Council of the National Academies. The National Academies Press, Washington, D.C., USA.
- National Audubon Society. 2010. The Christmas Bird Count Historical Results Available online: <http://www.christmasbirdcount.org>.
- Natural Heritage Information Centre (NHIC). 2010. Provincial status of plants, wildlife and vegetation communities database. <http://www.mnr.gov.on.ca/MNR/nhic/nhic.html>. OMNR, Peterborough. Accessed November 2012. Available: <http://nhic.mnr.gov.on.ca/MNR/nhic/queries/geographic.cfm>.
- Newcomb, L., 1977. Wildflower Guide. Little Brown and Company, New York, NY. 394 pp.



- Newmaster, S.G., A. Lehela, P.W.C Uhlig, S. McMurray and M.J. Oldham. 1998. Ontario plant list. Ontario Ministry of Natural Resources, Ontario Forest Research Institute, Sault Ste. Marie, ON, Forest Research Information Paper No. 123. 550 pp. + appendices.
- Nixon, K.C. 1997. *Quercus*. In *Flora of North America North of Mexico* (Flora of North America Editorial Committee, eds.). New York and Oxford. Vol. 3; Retrieved from the Flora of North America Online:  
[http://www.efloras.org/florataxon.aspx?flora\\_id=1&taxon\\_id=233501082](http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=233501082)
- NWCC (National Wind Coordinating Committee). 2002. Permitting of Wind Energy Facilities.
- Oldham, M., W. Bakowsky, and D. Sutherland. 1995. Floristic quality assessment for southern Ontario. Natural Heritage Information Centre, Ontario Ministry of Natural Resources, Peterborough, Ontario.
- Oldham, M.J. and W.F. Weller. 2000. Ontario Herpetofaunal Atlas internet database. Natural Heritage Information Centre, Ministry of Natural Resources. Accessed February 7, 2007.  
<http://www.mnr.gov.on.ca/MNR/nhic/herps/ohs.html>
- Ontario Breeding Bird Atlas. 2005. Online results from 2001-2005 Ontario Breeding Bird Atlas program. <http://www.birdsontario.org/atlas/atlasmain.html>
- Ontario Ministry of Natural Resources (MNR). 2000. Significant Wildlife Habitat Technical Guide. 151 pp.
- Ontario Ministry of Natural Resources (MNR). 2002. Ontario Wetland Evaluation System (OWES). Southern Manual. 3rd Edition. Published 1993, revised December, 2002.
- Ontario Ministry of Natural Resources (MNR). 2007. Guideline to Assist in the Review of Wind Power Proposals. Potential Impacts to Birds and Bird Habitat. Developmental Working Draft. August, 2007.
- Ontario Ministry of Natural Resources (MNR). 2011a. Natural Heritage Assessment Guide for Renewable Energy Projects. 99 pp. First Edition. July, 2011.
- Ontario Ministry of Natural Resources (MNR). 2011b. Bats and Bat Habitats. Guidelines for Wind Power Projects. 24 pp. July, 2011.
- Ontario Ministry of Natural Resources (MNR). 2011c. Birds and Bird Habitats. Guidelines for Wind Power Projects. 32 pp. December, 2011.
- Ontario Ministry of Natural Resources (MNR). 2012. Draft Significant Wildlife Habitat Ecoregion 7E Criterion schedule (Online). Available: <http://www.ebr.gov.on.ca/ERS-WEB-External/displaynoticecontent.do?noticeId=MTE1ODc5&statusId=MTczNDgy&language=en>

- Ontario Partners in Flight (PIF). 2008. Ontario Landbird Conservation Plan: Lower Great Lakes/St. Lawrence Plain (North American Bird Conservation Region 13), Priorities, Objectives and Recommended Actions. Environment Canada (Ontario Region) and Ontario Ministry of Natural Resources. Final Draft, February 15, 2006.
- Rabin, L.A., R.G. Coss, and D.H. Owings. 2006. The effects of wind turbines on antipredator behavior in California ground squirrels (*Spermophilus beecheyi*). *Biological Conservation*. 131. Pp 410-420.
- Reznicek, A. A., Voss, E.G., and B. S. Walters. February 2011. Michigan Flora Online. University of Michigan. Web. December 14, 2011  
<http://michiganflora.net/species.aspx?id=579>.
- Rowe, J.S. 1972. Forest Regions of Canada. Ottawa, Canadian Forest Service. Pub. No. 1300. 172pp.
- Sandilands. A. 2005. Birds of Ontario. Habitat Requirements, Limiting Factors and Status. UBC Press.
- Semple, J.C. and R.E. Cook. 2006. Solidago. *In* Flora of North America North of Mexico (Flora of North America Editorial Committee, eds.). New York and Oxford. Vols. 19-21; Retrieved from the Flora of North America Online:  
[http://www.efloras.org/florataxon.aspx?flora\\_id=1&taxon\\_id=242417296](http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=242417296)
- Sheviak C.J., and P.M. Catling. 2002. Aplectrum. *In* Flora of North America North of Mexico (Flora of North America Editorial Committee, eds.). New York and Oxford. Vol. 26; Retrieved from the Flora of North America Online:  
[http://www.efloras.org/florataxon.aspx?flora\\_id=1&taxon\\_id=220000960](http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=220000960)
- Sheviak, C.J. and P.M. Brown. 2002. Spiranthes. *In* Flora of North America North of Mexico (Flora of North America Editorial Committee, eds.). New York and Oxford. Vol. 26; Retrieved from the Flora of North America Online:  
[http://www.efloras.org/florataxon.aspx?flora\\_id=1&taxon\\_id=242101958](http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=242101958)
- St. Clair Region Conservation Authority (SCRCA). 2008. St Clair Region Watershed Report Card. SCRCA website, <http://www.scrca.on.ca/Reportcards.htm>, accessed February 2012.
- Stantec Consulting Ltd. 2007. Melancthon Ecopower Centre. Post-construction Bird and Bat Monitoring.
- Stantec Consulting Ltd. 2010a. Wolfe Island Ecopower® Centre; Post-Construction Follow-Up Plan Bird and Bat Resources: Monitoring Report No. 1.

- Stantec Consulting Ltd. 2010b. Wolfe Island Ecopower® Centre; Post-Construction Follow-Up Plan Bird and Bat Resources: Monitoring Report No. 2.
- Stantec Consulting Ltd. 2011a. Wolfe Island Ecopower® Centre; Post-Construction Follow-Up Plan Bird and Bat Resources: Monitoring Report No. 3.
- Stantec Consulting Ltd. 2011b. Wolfe Island Ecopower® Centre; Post-Construction Follow-Up Plan Bird and Bat Resources: Monitoring Report No. 4.
- Stantec Consulting Ltd. 2011c. Wolfe Island Ecopower® Centre; Post-Construction Follow-Up Plan Bird and Bat Resources: Monitoring Report No. 5.
- Stantec Consulting Ltd. 2012. Wolfe Island Wind Plant, Post-construction Follow-up Plan: Bird and Bat Resources, Monitoring Report no. 5, January - June 2011.
- Stantec Consulting Ltd. 2013. Construction Plan Report for Cedar Point Wind Power Project. August 2012.
- Sun, W.C. and P.M. Narins. 2004. Anthropogenic sounds differentially affect amphibian call rate. *Biological Conservation* 121:419-427.
- Thompson, S.A. 2000. Araceae. *In* Flora of North America North of Mexico (Flora of North America Editorial Committee, eds.). New York and Oxford. Vol. 22; Retrieved from the Flora of North America Online:
- Town of Plympton-Wyoming. 2001. Official Plan. Available online: [http://plympton-wyoming.com/town-hall/departments-services/article/planning-development#Official\\_Plan](http://plympton-wyoming.com/town-hall/departments-services/article/planning-development#Official_Plan). Accessed October 16, 2012.
- Wilson, W.G. and E.D. Cheskey. 2001. Port Franks Forested Dunes Important Bird Area Conservation Action Plan. Prepared for the Port Franks Forested Dunes IBA Stakeholders. Available online: <http://www.ibacanada.com/conservationplans/onportfranksdunes.pdf>. Accessed November 28, 2012.
- Zander, R.H.2007. Weissia. Flora of North America Online (Flora of North America Editorial Committee, eds.). New York and Oxford; Retrieved from the Flora of North America Online: [http://www.efloras.org/florataxon.aspx?flora\\_id=1&taxon\\_id=250061786](http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=250061786)