



# ***Belle River Wind Project*** **Natural Heritage Records Review** **Report**

Prepared for:

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**NATURAL RESOURCE SOLUTIONS INC.**

Aquatic, Terrestrial and Wetland Biologists

***Belle River Wind Project***  
**Natural Heritage Records Review Report**

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Report submitted on May 25, 2015



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## 1.0 Project Description

Natural Resource Solutions Inc. (NRSI) was retained in April 2014 by AECOM, on behalf of SP Belle River Wind, LP, by its general partner, SP Belle River Wind, GP Inc. (Belle River Wind), to conduct a Natural Heritage Assessment in accordance with the Renewable Energy Approval (REA) Regulation, Ontario Regulation 359/09. This assessment includes a records review, site investigation, evaluation of significance, and impact assessment of any potentially significant natural features or wildlife habitats at a proposed wind energy generating facility, of up to 50 operational wind turbines totaling 100 megawatts (MW). The Belle River Wind Project ('the Project' or 'Belle River') is being proposed by SP Belle River Wind, LP, by its general partner, SP Belle River Wind, GP Inc. (Belle River Wind). Belle River Wind is a joint venture limited partnership owned by affiliates of Pattern Renewable Holdings Canada, ULC (Pattern Development) and Samsung Renewable Energy, Inc. (Samsung Renewable Energy). Belle River Wind is proposing to develop a wind project in the Town of Lakeshore in the County of Essex, Ontario. The Project will be located south of the community of Belle River, and is generally bounded by County Road 42 and the Canadian Pacific Railway line to the north, Lakeshore Road 111 to the west, Highway 401 and South Middle Road to the south, and Comber Sideroad to the east. The Project will be located primarily on privately owned land with some components (e.g., electrical collector lines) being placed along public right-of-ways, none of which are proposed on provincial Crown land.

According to Ontario Regulation (O. Reg.) 359/09, and per the Natural Heritage Assessment Guide for Renewable Energy Projects (MNR 2012a), the project location is defined as “...*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 air space in which a person is engaging in or proposes to engage in the project*”. As described therein, the project location boundary is the outer limit of where site preparation and construction activities will occur (i.e., disturbance areas described below) and where permanent infrastructure will be located, including the air space occupied by turbine blades.

In accordance with Section 25 of the REA Regulation, NRSI has conducted a records review of available background resources to identify any potentially significant natural

features within 120m of the project location. This includes areas within 120m of proposed turbines, measured from blade tip, as well as within 120m of any areas that may be used as temporary lay-down areas, crane pads, access roads, and collection, distribution, and transmission lines. For the purposes of this report, NRSI will refer to the areas within 120m of the project location as the 'project area'.

Land use within the project area is dominated by active agriculture, with soybeans, corn, wheat and hay representing the most prevalent crops on the landscape. Natural features are generally small and isolated from other features within the project area. Habitats within the project area are expected to include woodlands, swamps, meadows, thickets, drainage ditches, ponds, creeks and hedgerows. See Map 1 for an illustration of the project area and natural features.

## 2.0 REA Requirements

Ontario Regulation (O. Reg.) 359/09 – *Renewable Energy Approvals* under *Part V.0.1 of the Act*, (herein referred to as the REA Regulation) made under the *Environmental Protection Act* identifies the requirements for the development of renewable energy projects in Ontario. In accordance with the REA Regulation, the Belle River Wind Project, classified as a Class 4 wind facility, is required to complete a REA.

Section 25 of the REA Regulation requires proponents of Class 4 wind projects to undertake a natural heritage records review to identify whether the project location is:

1. in a provincial park or conservation reserve
2. within 120m of a provincial park or conservation reserve
3. in a natural feature
4. within 50m of an area of natural and scientific interest (earth science), or
5. within 120m of a natural feature that is not an area of natural and scientific interest (earth science)

Natural Features are defined in Section 1.1 of the REA Regulation to be all or part of

- an area of natural and scientific interest (ANSI) (life science or earth science)
- a coastal, northern, or southern wetland
- a wildlife habitat, or
- a woodland

Subsection 3 of Section 25 of the REA Regulation requires the proponent to prepare a report “setting out a summary of the records searched and the results of the analysis” (O. Reg. 359/09). This Natural Heritage Records Review Report has been prepared to meet these requirements.

As part of this project, NRSI has considered all aspects relating to provincially Threatened and Endangered species. However, since these species are addressed through a separate permitting process under the *Endangered Species Act* (2007), they have not been discussed within any of the Natural Heritage Assessment (NHA) reports. These species will be address in full detail, including a description and results of field assessments, potential impacts, and recommended mitigation measures, as part of a separate *Approval and Permitting Requirements Document (APRD)* to be submitted to the Ministry of Natural Resources and Forestry (MNRF) under a separate cover, if required.

### 3.0 Records Review Methods

In accordance with the REA Regulation, NRSI biologists consulted several information sources and agencies for the purposes of assessing natural features and wildlife habitat within 120m of the project location. The results of this consultation process have been documented throughout the following report, and have been summarized in Table 1 below.

**Table 1. Summary of Records Consulted for the Belle River Wind Project**

Information Source	Consultation Date(s)	Consultation Type	Type of Records Reviewed/Received
Ministry of Natural Resources and Forestry (MNRF)	September 12, 2014	Email Request	Provincial Parks Conservation Reserves Areas of Natural and Scientific Interest (Life Science) Areas of Natural and Scientific Interest (Earth Science) Wetlands Woodlands Significant Wildlife Habitat
Canadian Wildlife Service (CWS)	September 12, 2014	Email Request	Report on Migrant Use of Ontario Shorelines of the southern Great Lakes (1968-2011) Data tables extracted from eBird for all bird observations associated with the Belle River area, and Essex County (2013-2014) Ontario Shorebird Survey data table Black-bellied plover data table (2014)
Bird Studies Canada (BSC)	September 12, 2014	Email Request	No records received as of the date of this report
Essex Region Conservation Authority (ERCA)	September 12, 2014	Email Request	No records received as of the date of this report
Essex County Official Plan	September 12, 2014	Document Review	Woodlands Provincially Significant Wetlands Significant Terrestrial Features Regulated Areas under the Conservation Authorities Act Inland Flood Prone Areas Lake St. Clair Flood Prone Areas
Municipality of Lakeshore Official Plan	September 19, 2014	Document Review	Woodlands Wetlands Environmentally Significant Areas Regulated Areas Floodprone Areas
Ministry of Natural Resources and Forestry, Natural Heritage Information Centre (NHIC) and Biodiversity Explorer	September 11, 2014	Online Database Review	Areas of Natural and Scientific Interest (Life Science) Areas of Natural and Scientific Interest (Earth Science) Wetlands Significant Wildlife Habitat



Information Source	Consultation Date(s)	Consultation Type	Type of Records Reviewed/Received
Ministry of Natural Resources, Land Information Ontario (LIO)	September 2014	GIS Mapping Layer Review	Provincial Parks Conservation Reserves Areas of Natural and Scientific Interest (LS) Areas of Natural and Scientific Interest (ES) Woodlands Wetlands Significant Wildlife Habitat
Ministry of Northern Development and Mines (MNDM)	September 19, 2014	GIS Mapping Layer Review	Significant Wildlife Habitat
Atlas of the Mammals of Ontario	September 22, 2014	Document Review	Significant Wildlife Habitat
Ontario Reptile and Amphibian Atlas	September 22, 2014	Document Review	Significant Wildlife Habitat
Ontario Breeding Bird Atlas (OBBA)	September 22, 2014	Online Database Review	Significant Wildlife Habitat
Christmas Bird Count (CBC), Lakeshore Count Circle	September 22, 2014	Online Database Review	Significant Wildlife Habitat
Bird Studies Canada, Important Bird Areas Canada	September 22, 2014	Map Review	Significant Wildlife Habitat
Ontario Butterfly Atlas	September 22, 2014	Online Database Review	Significant Wildlife Habitat

## **4.0 Natural Areas**

For the purposes of the Natural Heritage Assessment reporting, NRSI has used the term natural area to identify features that have already been given a provincial or federal designation, including provincial parks, conservation reserves, and ANSIs. Information obtained on each of these natural areas has been outlined below.

### **4.1 Provincial Parks and Conservation Reserves**

There are no provincial parks or conservation reserves located within 120m of the project location (MNRF 2013a).

### **4.2 Areas of Natural and Scientific Interest – Life Science**

There are no provincially significant Life Science ANSIs located within 120m of the project location (MNRF 2013a). However, the background information provided by the MNRF has identified the Emeryville Clay Plain Woods, a regionally significant Life Science ANSI, within the project area (MNRF Staff pers. comm. 2014; Appendix I). With the exception of specified provincial plan areas, which do not apply to the Belle River Wind Project, only ANSIs confirmed by the MNRF as provincially significant are afforded protection through the REA Regulation (MNR 2012a). Although the Emeryville Clay Plain Woods is not a provincially significant feature, this ANSI will be considered and assessed through other applicable criteria for woodland, wetland and wildlife habitats during the site investigation phase of this Natural Heritage Assessment.

### **4.3 Areas of Natural and Scientific Interest – Earth Science**

There are no Earth Science ANSIs located within 120m of the project location (MNRF 2013a).

## 5.0 Woodlands

Information collected from available background resources indicates that Essex County contains approximately 5.4% woodland cover (ERCA 2013), while the MNRF has indicated a woodland cover of less than 5% for this planning area (MNRF Staff pers. comm. 2014; Appendix I). There are no large woodland complexes in the project area. Continuous wooded habitat is, however, found along portions of the Ruscom River and Belle River watercourses. Both watercourses are located in the vicinity of the proposed development and are found overlapping within portions of the central and western project area, respectively.

There are 3 wooded habitats, as identified through this records review, which overlap the proposed project location (MNRF 2013a). These habitats are expected to be dominated by mid-aged to mature deciduous tree species; however, young woodlands, treed plantations, or occasional coniferous woodlands may also be present. Species associations and distances of these woodlands to the project location will be confirmed during the site investigation phase of this project. The intention of the proposed project layout is to avoid overlap with natural features, including woodlands, wherever possible.

NRSI has also identified an additional 34 wooded habitats that are within 120m of the project location (MNRF 2013a). Available basemapping indicates that these wooded areas range in size from 0.2 hectares (ha) to 62.3ha in size. These habitats are scattered throughout the project area, and are found within 120m of all types of project components, including turbines, access roads, and cabling (see Map 1). Species associations and distances of these woodlands to the project location will be confirmed during the site investigation phase of this Natural Heritage Assessment.

## 6.0 Wetlands

Information collected from the sources identified above suggests that neither the project location nor the larger project area overlap with any known wetlands.

Available mapping indicates the closest known wetland is the Ruscom Shore Marsh Provincially Significant Wetland (PSW), which is located along the shore of Lake St. Clair, and approximately 2.5km north of the nearest portion of the project area (MNRF 2013a). This habitat is considered a Provincially Significant Wetland, but is located well beyond 120m from the project location (Map 1).

Background information from the MNRF has also identified Dunn's Woodlot Provincially Significant Wetland as being located within the general vicinity of the project area (MNRF Staff pers. comm. 2014). However, this wetland is found approximately 1.5km west of the nearest portion of the project area (MNRF 2013a).

As discussed in Section 5.0 above, a number of woodlands have been identified within the Belle River project area. Each of these woodlands has the potential to contain wetland habitat. The background information provided by the MNRF has also identified the areas along the Belle River watercourse as containing potential unevaluated wetland habitat (MNRF Staff pers. comm. 2014). All of the potential wetland habitats within 120m of the project location will be examined in more detail during the site investigation phase of this Natural Heritage Assessment to delineate any existing wetland boundaries as they relate to the project area.

## 7.0 Wildlife Habitat

As part of the REA process, NRSI biologists have examined available records associated with the presence of wildlife habitat within the project area. For the purposes of this series of Natural Heritage Assessment reports, NRSI has separated the discussion on wildlife habitat into 4 categories, following the Significant Wildlife Habitat Technical Guide (MNR 2000). These 4 categories include:

- seasonal concentration areas,
- rare vegetation communities and specialized wildlife habitat,
- habitats of species of conservation concern, and
- animal movement corridors.

Each of these wildlife habitat categories are described in the following sections.

### 7.1 Seasonal Concentration Areas

The records review process did not reveal any known seasonal concentration areas within 120m of the project location. Information received from the Canadian Wildlife Service (CWS) indicates that areas associated with Lake St. Clair have the potential to act as seasonal concentration areas, largely relating to waterfowl stopover habitat (CWS Staff pers. comm. 2014). The presence of potential seasonal concentration areas within the project area will be confirmed during the site investigation phase of this Natural Heritage Assessment.

Although no confirmed seasonal concentration areas have been identified, background information has indicated that several concentration areas have the potential to be present within the project area. Each of these habitats is discussed in

Table 2 below, including information on whether further consideration is required during the site investigation phase of this project.

**Table 2. Summary of Seasonal Concentration Areas Identified Near the Belle River Project Area**

Seasonal Concentration Areas	Present Within 120m of Project Location	Details	Site Investigation Required (Y/N)
Waterfowl Stopover and Staging Areas (Terrestrial)	Possible	Information from CWS indicates possible concentrations of waterfowl in the areas surrounding Lake St. Clair	<b>Yes</b>
Waterfowl Stopover and Staging Areas (Aquatic)	Unknown	Unknown	<b>Yes</b>
Shorebird Migratory Stopover Area	Unknown	Unknown	<b>Yes</b>
Raptor Wintering Area	Unknown	Unknown	<b>Yes</b>
Bat Hibernacula	Unknown	Unknown	<b>Yes</b>
Bat Maternity Colonies	Unknown	There are 37 wooded habitats within the project area that will be further examined during the site investigation	<b>Yes</b>
Bat Migratory Stopover Area	Unknown	<p>The location and characteristics of bat migratory stopover habitats are currently unknown.</p> <p>The confirmation criteria and habitat areas for bat migratory stopover areas are still being determined by the MNRF.</p>	<b>No</b>
Turtle Wintering Areas	Unknown	Unknown	<b>Yes</b>
Snake Hibernaculum	Unknown	Unknown	<b>Yes</b>
Colonially – Nesting Bird Breeding Habitat (Bank and Cliff)	Unknown	Unknown	<b>Yes</b>
Colonially – Nesting Bird Breeding Habitat (Tree/Shrubs)	Unknown	Unknown	<b>Yes</b>

Seasonal Concentration Areas	Present Within 120m of Project Location	Details	Site Investigation Required (Y/N)
Colonially – Nesting Bird Breeding Habitat (Ground)	Possible	Information from the MNRF indicates there was a historical Forster's tern ( <i>Sterna forsteri</i> ) colony at Ruscom Shores Conservation Area, which is located more than 3km from the nearest portion of the project area.	<b>Yes</b>
Migratory Butterfly Stopover Areas	N/A	Project area is not located within 5km of Lake Ontario or Lake Erie.	<b>N/A</b>
Landbird Migratory Stopover Areas	N/A	Wooded habitats within the project area are not located within 5km of Lake Ontario or Lake Erie	<b>N/A</b>
Deer Winter Congregation Areas	No	No deer winter congregation areas have been identified within the project area by the MNRF.	<b>No</b>

## 7.2 Rare Vegetation Communities and Specialized Wildlife Habitat

The records review process did not reveal any known rare vegetation communities and/or specialized wildlife habitat; however, their presence within 120m of the project location will be confirmed during the site investigation phase of the project.

Although it is unknown whether any rare vegetation communities or specialized wildlife habitats are present within 120m of the project location, background information has indicated that many of these natural features have the potential to be present. Each of these rare vegetation communities and specialized wildlife habitats is discussed in Table 3 below, including information on whether further consideration is required during the site investigation phase of this project.



**Table 3. Summary of Rare Vegetation Communities and Specialized Wildlife Habitat Identified Near the Belle River Project Area**

Rare Vegetation Communities and Specialized Wildlife Habitats	Present Within 120m of Project Location	Details	Site Investigation Required (Y/N)
<b>Rare Vegetation Communities</b>			
Cliffs and Talus Slopes	Unknown	Unknown	<b>Yes</b>
Sand Barrens	Unknown	Unknown	<b>Yes</b>
Alvar	Unknown	Unknown	<b>Yes</b>
Old Growth Forest	Unknown	There are 37 wooded habitats within the project area that will be further examined during the site investigation.	<b>Yes</b>
Savannah	Unknown	Unknown	<b>Yes</b>
Tallgrass Prairie	Unknown	Unknown	<b>Yes</b>
Other Rare Vegetation Communities	Unknown	Unknown	<b>Yes</b>
<b>Specialized Wildlife Habitats</b>			
Waterfowl Nesting Area	Unknown	Unknown	<b>Yes</b>
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	Unknown	Unknown	<b>Yes</b>
Woodland Raptor Nesting Habitat	Unknown	There are 37 wooded habitats within the project area that will be further examined during the site investigation.	<b>Yes</b>
Turtle Nesting Areas	Unknown	Unknown	<b>Yes</b>
Seeps and Springs	Unknown	Unknown	<b>Yes</b>
Amphibian Breeding Habitat (Woodland)	Unknown	There are 37 wooded habitats within the project area that will be further examined for suitable habitat during site investigation.	<b>Yes</b>
Amphibian Breeding Habitat (Wetlands)	Unknown	Unknown	<b>Yes</b>

### 7.3 Habitats of Species of Conservation Concern

Species of conservation concern include all species that have been designated as a species of Special Concern according to the Species at Risk in Ontario (SARO) list or have been given a provincial S-Rank of S1-S3, but have not been designated as either Endangered or Threatened within Ontario. Species at Risk (provincially Threatened or Endangered) will be addressed separately in an *Approval and Permitting Requirements*

*Document* to address permitting requirements under the *Endangered Species Act* (2007).

A summary of habitats of species of conservation concern that are located near the Belle River Wind Project can be found below in Table 4.

**Table 4. Summary of Habitats of Species of Conservation Concern Identified Near the Belle River Project Area**

Habitats of Species of Conservation Concern	Present Within 120m of Project Location	Details	Site Investigation Required (Y/N)
Marsh Bird Breeding Habitat	Unknown	Unknown	Yes
Woodland Area-Sensitive Bird Breeding Habitat	Unknown	There are 37 wooded habitats within the project area that will be further examined during the site investigation.	Yes
Open Country Bird Breeding Habitat	Unknown	Unknown	Yes
Shrub/Early Successional Bird Breeding Habitat	Unknown	Unknown	Yes
Terrestrial Crayfish	Unknown	Unknown	Yes
Special Concern and Rare Wildlife Species	Unknown	Several special concern and rare wildlife species could be found within the project area. These are discussed later in this report.	Yes

A query of the above information sources has identified a total of 59 species of conservation concern that have been identified within the vicinity of the project area. These records include 9 historical sightings, prior to 1980, which are expected to represent historical populations that are unlikely to be present within 120m of the project location. The remaining 50 current (1980-2013) species records represent a variety of species groups, including 16 birds, 2 herpetofauna, 19 vegetation species, and 13 insect species, including 1 dragonfly and 12 butterfly species. Each of these species is discussed in more detail in the following sections.

### 7.3.1 Birds

NRSI has identified a total of 16 bird species of conservation concern that have the potential to occur within the vicinity of the project area. Each of these 16 species is identified below in

Table 5. Bird Species of Conservation Concern Identified Near the

**Table 5. Bird Species of Conservation Concern Identified Near the Belle River Project Area**

Scientific Name	Common Name	S-Rank	SARO Status	COSEWIC Status
<i>Aythya americana</i>	Redhead <sup>2</sup>	S2B, S4N		
<i>Aythya valisneria</i>	Canvasback <sup>2</sup>	S1B, S4N		
<i>Buteo lagopus</i>	Rough-legged Hawk <sup>2</sup>	S1B, S4N	NAR	NAR
<i>Calcarius lapponicus</i>	Lapland Longspur <sup>2</sup>	S3B		
<i>Chlidonias niger</i>	Black Tern <sup>1</sup>	S3B	SC	NAR
<i>Chordeiles minor</i>	Common Nighthawk <sup>1</sup>	S4B	SC	T
<i>Clangula hyemalis</i>	Long-tailed Duck <sup>2</sup>	S3B		
<i>Contopus virens</i>	Eastern Wood-Pewee <sup>1</sup>	S4B	SC	SC
<i>Falco peregrinus anatum/tundrius</i>	Peregrine Falcon <sup>2</sup>	S3B	SC	SC
<i>Haliaeetus leucocephalus</i>	Bald Eagle <sup>1,2</sup>	S2N, S4B	SC	NAR
<i>Hylocichla mustelina</i>	Wood Thrush <sup>1</sup>	S4B	SC	T
<i>Larus marinus</i>	Great Black-backed Gull <sup>2</sup>	S2B		
<i>Melanerpes erythrocephalus</i>	Red-headed Woodpecker <sup>2</sup>	S4B	SC	T
<i>Podiceps auritus</i>	Horned Grebe <sup>2</sup>	S1B, S4N	SC	SC
<i>Sterna forsteri</i>	Forster's Tern <sup>1</sup>	S2B	DD	DD
<i>Xanthocephalus xanthocephalus</i>	Yellow-headed Blackbird <sup>1</sup>	S2B		

<sup>1</sup> Ontario Breeding Bird Atlas (Cadman et. al 2007)

<sup>2</sup> Christmas Bird Count (National Audubon Society 2013)

#### Provincial Rank (S-Rank)

S1: Critically Imperiled  
S2: Imperiled  
S3: Vulnerable  
S4: Apparently Secure  
SH: Historic

#### COSEWIC and SARO Status

END/E: Endangered  
THR/T: Threatened  
SC: Special Concern  
NAR: Not at Risk  
DD: Data Deficient

Habitats for these species may be considered significant wildlife habitat, and will be reviewed in more detail during the site investigation and evaluation of significance phases of this Natural Heritage Assessment. Habitat descriptions for each species have been provided in Appendix III.

As a result of the review of species of conservation concern that may be present within the project area and preferred habitats of each species, NRSI biologists have determined that several of these species have the potential to be present within, or near,

the project area. Most of these species, if present, are most likely to be breeding within the nearby woodlands, hedgerows, pastures, or hay fields, and are unlikely to use the active agricultural fields and row crops, including soybeans, corn, and wheat. A description of whether or not each of these species will be carried forward to the site investigation has been provided in Appendix III.

### 7.3.2 Herpetofauna

A total of 2 herpetofauna species of conservation concern, both reptile species, have been documented within the vicinity of the project area. Each of these species, including provincial and federal status, has been identified in Table 6 below.

**Table 6. Herpetofauna Species of Conservation Concern Identified Near the Belle River Project Area**

Scientific Name	Common Name	S-Rank	SARO Status	COSEWIC Status
<i>Chelydra serpentina</i>	Snapping Turtle <sup>1,2,3</sup>	S3	SC	SC
<i>Graptemys geographica</i>	Northern Map Turtle <sup>1,2,3</sup>	S3	SC	SC

<sup>1</sup> Biodiversity Explorer Record (MNRF 2013b)

<sup>2</sup> Reptiles and Amphibians of Ontario (Ontario Nature 2013)

<sup>3</sup> MNRF Staff pers. comm. 2014

#### Provincial Rank (S-Rank)

S1: Critically Imperiled

S2: Imperiled

S3: Vulnerable

#### COSEWIC and SARO Status

END/E: Endangered

THR/T: Threatened

SC: Special Concern

Habitats of these species are considered candidate significant wildlife habitat, and will be reviewed in more detail during the site investigation and evaluation of significance phases of this Natural Heritage Assessment. Habitat descriptions for each species, as well as descriptions of whether or not each of these species will be carried forward to the site investigation, have been provided in Appendix III.

### 7.3.3 Mammals

No mammal species of conservation concern have been identified within the vicinity of the Belle River Wind Project through the records review.

### 7.3.4 Vegetation

A total of 19 vegetation species of conservation concern have been documented since 1980 within the vicinity of the project area. Each of these species, including provincial and federal status, has been identified in Table 7 below.

**Table 7. Vegetation Species of Conservation Concern Identified Near the Belle River Project Area**

Scientific Name	Common Name	S-Rank	SARO Status	COSEWIC Status
<i>Asclepias sullivantii</i>	Prairie Milkweed <sup>1,2</sup>	S3		
<i>Asimina triloba</i>	Pawpaw <sup>1,2</sup>	S3		
<i>Campsis radicans</i>	Trumpet Creeper <sup>1,2</sup>	S2?		
<i>Carex muskingumensis</i>	Muskingum Sedge <sup>1</sup>	S3		
<i>Cuscuta campestris</i>	Field Dodder <sup>1</sup>	S2		
<i>Cyperus schweinitzii</i>	Schweinitz's Flatsedge <sup>1</sup>	S3		
<i>Dichanthelium clandestinum</i>	Deer-tongue Panicgrass <sup>1</sup>	S2		
<i>Dichanthelium praecocius</i>	White-haired Panicgrass <sup>1</sup>	S3		
<i>Echinochloa walteri</i>	Coast Barnyard Grass <sup>1</sup>	S3		
<i>Euonymus atropurpureus</i>	Burning Bush <sup>1</sup>	S3		
<i>Hibiscus moscheutos</i>	Swamp Rose-mallow <sup>1,2</sup>	S3	SC	SC
<i>Ludwigia polycarpa</i>	Many-fruit Primrose-willow <sup>1,2</sup>	S2S3		
<i>Lythrum alatum</i>	Winged Loosestrife <sup>1</sup>	S3		
<i>Oenothera gaura</i>	Biennial Gaura <sup>1,2</sup>	S3		
<i>Quercus shumardii</i>	Shumard Oak <sup>1,2</sup>	S3	SC	SC
<i>Rosa setigera</i>	Climbing Prairie Rose <sup>1,2</sup>	S3	SC	SC
<i>Smilax ecirrata</i>	Upright Carrion Flower <sup>1,2</sup>	S3?		
<i>Smilax illinoensis</i>	Illinois Carrion Flower <sup>1</sup>	S2?		
<i>Vernonia gigantea</i>	Giant Ironweed <sup>1,2</sup>	S1?		

<sup>1</sup> Biodiversity Explorer Record (MNRF 2013b)

<sup>2</sup> MNRF Staff pers. comm. 2014

#### Provincial Rank (S-Rank)

S1: Critically Imperiled

S2: Imperiled

S3: Vulnerable

#### COSEWIC and SARO Status

END/E: Endangered

THR/T: Threatened

SC: Special Concern

Habitats of these species are considered candidate significant wildlife habitat, and should be reviewed in more detail during the site investigation and evaluation of significance phases of this Natural Heritage Assessment. Habitat descriptions for each species, as well as descriptions of whether or not each of these species will be carried forward to the site investigation, have been provided in Appendix III.

### 7.3.5 Insects

A total of 13 insect species of conservation concern, including 1 dragonfly and 12 butterfly species, have been documented within the vicinity of the project area. Each of these species, including provincial and federal status, has been identified in Table 8 below.

**Table 8. Insect Species of Conservation Concern Identified Near the Belle River Wind Project Area**

Scientific Name	Common Name	S-Rank	SARO Status	COSEWIC Status
<i>Aeshna clepsydra</i>	Mottled Darner <sup>1,3</sup>	S3		
<i>Asterocampa celtis</i>	Hackberry Emperor <sup>2</sup>	S2		
<i>Asterocampa clyton</i>	Tawny Emperor <sup>2</sup>	S2S3		
<i>Callophrys gryneus</i>	Juniper Hairstreak <sup>2</sup>	S2		
<i>Danaus plexippus</i>	Monarch <sup>2</sup>	S2N, S4B	SC	SC
<i>Erynnis brizo</i>	Sleepy Duskywing <sup>2</sup>	S1		
<i>Euphyes dion</i>	Dion Skipper <sup>2</sup>	S3		
<i>Euphyes dukesi</i>	Duke's Skipper <sup>1,2</sup>	S2		
<i>Papilio cresphontes</i>	Giant Swallowtail <sup>2</sup>	S3		
<i>Pholisora catullus</i>	Common Sootywing <sup>2</sup>	S3		
<i>Satyrrium caryaevorus</i>	Hickory Hairstreak <sup>2</sup>	S3		
<i>Staphylus hayhurstii</i>	Hayhurst's Scallopwing <sup>2</sup>	S1		
<i>Thorybes bathyllus</i>	Southern Cloudywing <sup>2</sup>	S3		

<sup>1</sup> Biodiversity Explorer Record (MNRF 2013b)

<sup>2</sup> Ontario Butterfly Atlas (Jones 2013)

<sup>3</sup> MNRF Staff pers. comm. 2014

#### Provincial Rank (S-Rank)

S1: Critically Imperiled

S2: Imperiled

S3: Vulnerable

#### COSEWIC and SARO Status

END/E: Endangered

THR/T: Threatened

SC: Special Concern

Habitats of these species are considered candidate significant wildlife habitat, and should be reviewed in more detail during the site investigation and evaluation of significance phases of this Natural Heritage Assessment. Habitat descriptions for each species, as well as descriptions of whether or not each of these species will be carried forward to the site investigation, have been provided in Appendix III below.

The records review has identified no other wildlife species of conservation concern that may occur within the vicinity of the project area. NRSI biologists will continue to examine potential habitats and document all wildlife species encountered during the site investigation and evaluation of significance phases of this Natural Heritage Assessment.

#### 7.4 Animal Movement Corridors

The records review process did not reveal any known animal movement corridors within 120m of the project location. Available basemapping indicated that there were several linear features, including treed fencerows and naturalized drains, within 120m of the project location. The suitability of these features as amphibian animal movement corridors will be examined during the site investigation phase of this Natural Heritage Assessment.

## 8.0 Summary of Records Review

In accordance with the REA Regulation, NRSI biologists have completed a comprehensive review of available background information pertaining to the Belle River project area. This complete review has been provided in the preceding sections, and has been summarized in Tables 9 to 11 below.

The results of the records review of natural features, including provincial parks, conservation reserves, ANSIs, wetlands, and woodlands are provided in Table 9 below. This table identifies which natural features will be carried forward to the site investigation phase of the project based on information collected during this review.

**Table 9. Summary of Natural Feature Records Review for the Belle River Wind Project**

Natural Feature	Present Within 120m of Project Location	Present Within Project Location	Carried Forward to Site Investigation (Y/N)
Provincial Park	No	No	No
Conservation Reserve	No	No	No
Provincially Significant Earth Science ANSI	No	No	No
Provincially Significant Life Science ANSI	No	No	No
Wetland	Unknown	Unknown	Yes
Woodland	Yes	Yes	Yes

The results of the records review of wildlife habitat are provided in Table 10 below. This table summarizes the presence of the full range of potential wildlife habitats within the project area. The purpose of this table is to guide the site investigation to further refine what types of wildlife habitats are within the project area. Any wildlife habitats that have already been confirmed to be either not applicable to the project area or are known to not occur within the project area will not be discussed in subsequent Natural Heritage Assessment reports for the Belle River Wind Project.



**Table 10. Summary of Wildlife Habitat Records Review for the Belle River Wind Project**

<b>Wildlife Habitat</b>	<b>Present Within 120m of Project Location</b>	<b>Present Within Project Location</b>	<b>Carried Forward to Site Investigation (Y/N)</b>
<b>Seasonal Concentration Areas</b>			
Waterfowl Stopover and Staging Areas (Terrestrial)	Possible	Possible	<b>Yes</b>
Waterfowl Stopover and Staging Areas (Aquatic)	Unknown	Unknown	<b>Yes</b>
Shorebird Migratory Stopover Area	Unknown	Unknown	<b>Yes</b>
Raptor Wintering Area	Unknown	Unknown	<b>Yes</b>
Bat Hibernacula	Unknown	Unknown	<b>Yes</b>
Bat Maternity Colonies	Unknown	Unknown	<b>Yes</b>
Bat Migratory Stopover Area	Unknown	Unknown	<b>No</b>
Turtle Wintering Areas	Unknown	Unknown	<b>Yes</b>
Snake Hibernaculum	Unknown	Unknown	<b>Yes</b>
Colonially – Nesting Bird Breeding Habitat (Bank and Cliff)	Unknown	Unknown	<b>Yes</b>
Colonially – Nesting Bird Breeding Habitat (Tree/Shrubs)	Unknown	Unknown	<b>Yes</b>
Colonially – Nesting Bird Breeding Habitat (Ground)	Possible	Possible	<b>Yes</b>
Migratory Butterfly Stopover Areas	N/A	N/A	<b>N/A</b>
Landbird Migratory Stopover Areas	N/A	N/A	<b>N/A</b>
Deer Winter Congregation Areas	No	No	<b>No</b>
<b>Rare Vegetation Communities</b>			
Cliffs and Talus Slopes	Unknown	Unknown	<b>Yes</b>
Sand Barrens	Unknown	Unknown	<b>Yes</b>
Alvar	Unknown	Unknown	<b>Yes</b>
Old Growth Forest	Unknown	Unknown	<b>Yes</b>
Savannah	Unknown	Unknown	<b>Yes</b>
Tallgrass Prairie	Unknown	Unknown	<b>Yes</b>
Other Rare Vegetation Communities	Unknown	Unknown	<b>Yes</b>
<b>Specialized Wildlife Habitats</b>			
Waterfowl Nesting Area	Unknown	Unknown	<b>Yes</b>
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	Unknown	Unknown	<b>Yes</b>
Woodland Raptor Nesting Habitat	Unknown	Unknown	<b>Yes</b>
Turtle Nesting Areas	Unknown	Unknown	<b>Yes</b>
Seeps and Springs	Unknown	Unknown	<b>Yes</b>
Amphibian Breeding Habitat (Woodland)	Unknown	Unknown	<b>Yes</b>
Amphibian Breeding Habitat (Wetlands)	Unknown	Unknown	<b>Yes</b>
<b>Habitats for Species of Conservation Concern</b>			
Marsh Bird Breeding Habitat	Unknown	Unknown	<b>Yes</b>
Woodland Area-Sensitive Bird Breeding Habitat	Unknown	Unknown	<b>Yes</b>
Open Country Bird Breeding Habitat	Unknown	Unknown	<b>Yes</b>
Shrub/Early Successional Bird Breeding Habitat	Unknown	Unknown	<b>Yes</b>
Terrestrial Crayfish	Unknown	Unknown	<b>Yes</b>

Wildlife Habitat	Present Within 120m of Project Location	Present Within Project Location	Carried Forward to Site Investigation (Y/N)
Special Concern and Rare Wildlife Species (Refer to Appendix III)	Possible	Possible	Yes
<b>Animal Movement Corridors</b>			
Amphibian Movement Corridors	Unknown	Unknown	Yes

Following a full review of available records applicable to the Belle River Wind Project, the following table has been prepared to outline the results of the records review as it specifically relates to the REA Regulation.

Table 11, below, outlines the presence of natural features and wildlife habitats that have the potential to overlap with, or occur within the project area.

**Table 11. Summary of Records Review for the Belle River Wind Project**

Criteria	Result
1. Within 120m of a Provincial Park or Conservation Reserve	The project is not located within 120m of a Provincial Park or Conservation Reserve.
2. In a Natural Feature	The results of this records review indicate the project location (i.e. disturbance area, cabling, access roads, etc.) overlaps with 3 wooded habitats. Species associations and distances of these habitats to the project location will be confirmed during the site investigation phase of this Natural Heritage Assessment. The intention of the proposed project layout is to avoid overlap with natural features, including woodlands, wherever possible.
3. Within 50m of a Provincially Significant ANSI-Earth Science (ES)	No Provincially Significant ANSI-ES is located within 50m of the project location.
4. Within 120m of a Natural Feature	
Provincially Significant ANSI-Life Science (LS)	No Provincially Significant ANSI-LS is located within the project area.
Coastal Wetland	No coastal wetlands are located within the project area.
Northern Wetland	No northern wetlands are located within the project area.
Southern Wetland	No known southern wetlands are located within the project area.
Wildlife Habitat	A total of 37 wooded habitats are located within the project area and could provide several types of Significant Wildlife Habitat (SWH).  Other natural features such as naturalized drainage ditches and hedgerows have been identified within the project area and could also provide SWH. These features will be surveyed to determine if they are used for animal movement corridors or provide habitat for species of conservation concern.

Criteria	Result
	All of these wildlife habitats will be examined during the site investigation phase and/or the evaluation of significance phase of this project to identify other habitat features and identify the significance of each natural feature.
Woodland	A total of 37 wooded habitats are located within the project area. Basemapping indicates these habitats range in size from 0.2 to 62.3ha. These wooded habitats are expected to be primarily dominated by mid-aged to mature deciduous tree species; however, young woodlands, treed plantations, or occasional coniferous woodlands may also be present within the project area.

## **9.0 References**

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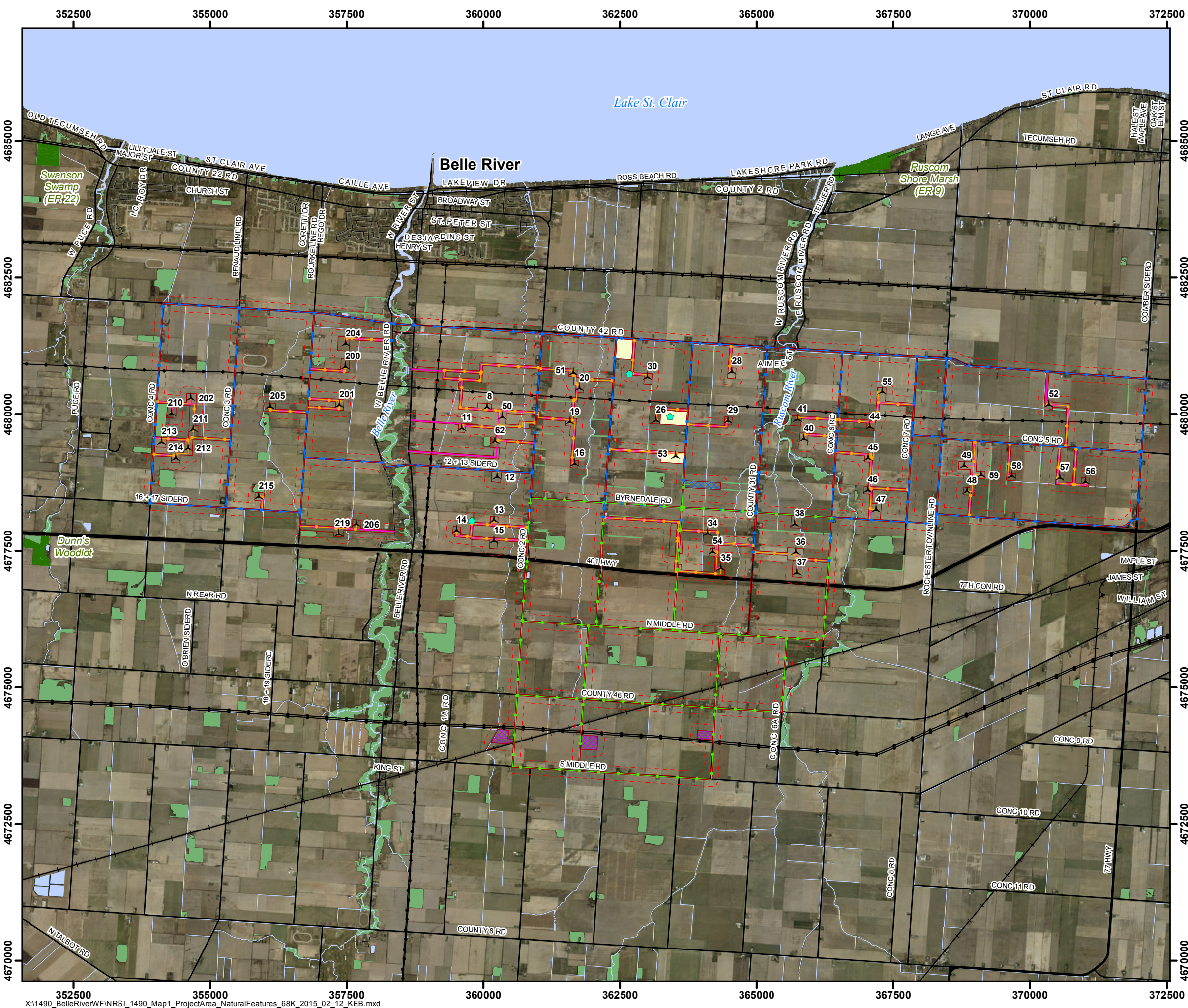
### **Personal Communication**

CWS Staff. Canadian Wildlife Service, Environment Canada. September 12, 2014.

MNRF Staff. District NHA Records Review Template for Renewable Energy Projects – Ecoregion 7E. October 10, 2014.







X:\1490\_BelleRiverWF\NRSI\_1490\_Map1\_ProjectArea\_NaturalFeatures\_68K\_2015\_02\_12\_KEB.mxd


Map 1

# Belle River Wind Project

## Project Area and Natural Features

**Legend**

- Project Area (120m Buffer)
- Construction Disturbance Area
- Proposed Turbine
- Proposed MET Tower
- Proposed Collection Line
- Proposed Collection ROW
- Proposed Transmission Line
- Proposed Access Road
- Potential POI Parcel
- Proposed Substation/Laydown/O&M
- Potential Laydown Area
- Existing Transmission Line
- Railway
- Highway
- Primary Road
- Secondary Road
- Permanent Watercourse
- Intermittent Watercourse
- Open Water
- Wooded Area
- Provincially Significant Wetland (PSW)



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Aquatic, Terrestrial and Wetland Biologists


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Project: 1490  
Date: February 12, 2015

NAD83 - UTM Zone 17  
Size: 11x17"  
1:68,000

01234

kms





**Appendix I**

**Ontario Ministry of Natural Resources and Forestry Records Review**

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# District NHA Records Review Template for Renewable Energy Projects

## ECOREGION 7E

This template has been aligned with the  
draft Ecoregion 7E Criterion Schedule

# NHA Records Review

<b>Project Name:</b>	Belle River			
<b>Project Location:</b>	MNR District Aylmer	Municipality Lakeshore	Geo.Twp, Lot(s) & Con(s)	
<b>Applicant:</b>	Samsung		<b>Phone #:</b>	
<b>Consultant:</b>			<b>Phone #:</b>	
<b>Generation type:</b>	<input checked="" type="checkbox"/> wind onshore	<input type="checkbox"/> wind offshore	<input type="checkbox"/> solar	<input type="checkbox"/> biomass/biogas
<b>Nameplate Capacity:</b>	150 MW			
<b>Name of MNR Records Reviewer:</b>	Jason Webb			
<b>Date Records Compiled:</b>	October 10th, 2014			
<b>What Ecodistrict is the project located in?</b>	7E-1 (Chatham)			
<b>% Woodland cover in planning area</b>	<5%			

Please note the following definitions:

**No** = MNR has verified that there is no such natural feature present in or within 120 m of the proposed site.

**YES** = MNR has verified that this natural feature is present in or within 120 m of the proposed site. Site investigation is required to delineate the boundary of the natural feature.

**UNKNOWN** = MNR does not have any data to indicate presence/absence of this type of natural feature. Site investigation is required.

Where the natural feature is deemed present, the boundary of the feature must be delineated.

**% Woodland cover in planning area** = based on a percentage of woodland cover in the lower-tier or single-tier municipality where the project has been proposed.

Although this data represents the MNR's best current available information, it is important to note that a lack of occurrence (ie: unknown response) at a site does not mean that natural feature type is not present at the location. The Natural Heritage Assessment Guide for Renewable Energy Projects (MNR, 2001) and the Draft Significant Wildlife Habitat Ecoregion 7E Criterion Schedule (MNR, 2012) provide guidance with respect to identifying those features requiring Site Investigations. MNR continues to encourage Renewable Energy Approval Applicants to maintain communication and seek technical advice throughout the approval process. Information on Threatened and Endangered species is provided in a separate table.

Feature Type	Present within 120m of project location (yes, no, unknown, N/A)	Present within project location (yes, no, unknown, N/A)	MNR Comments (comments may expand on information provided and/or may include relevant records within the vicinity that were not within project location or 120m of project area)	Information Source (NHIC, district staff, etc. Include the data layer name where possible)
Provincial Park	No	No	No provincial parks within 10km	LIO
Conservation Reserve	No	No	No conservation reserves within 10km	LIO
Earth Science ANSI*	No	No	No Earth Science	LIO

					ANSI's within 10km (Allied Chemical Quarry ~15km south- west)	
<b>Life Science ANSI</b>			Yes	Yes	Regional ANSI - Emeryville Clay Plain Woods	LIO
<b>Wetland</b>			Yes	Yes	<b>Within project boundary</b>  Ruscom Wetland Complex (PSW)  Several un-evaluated wetlands within woodlots throughout the project area.  Some potential unevaluated wetland along Belle River.  Confirm through site investigation.  <b>Within 120m of project boundary</b>  Ruscom shore marsh (PSW)  Dunn's Woodlot (PSW)	LIO/District Biologist
<b>Woodland</b>			Yes	Yes	Several woodlots throughout project area ranging in size from <1ha to ~30ha. Confirm significance through site investigation.	LIO/2006 SWOOP photography
<b>Valleyland</b>			N/A	N/A		
<b>Significant Wildlife Habitat</b>	<b>Habitats of Seasonal Concentrations of Animals</b>	Waterfowl stopover and staging areas (terrestrial)	Unknown	Unknown	No records available – information lacking Include this information in records review and carry forward to site investigation	
		Waterfowl stopover and staging areas (aquatic)	Unknown	Unknown	No records available – information lacking Include this information in records review and carry forward to site investigation	
		Shorebird migratory stopover areas	Unknown	Unknown	No records available – information lacking Include this information in records review and carry forward to site investigation	
		Raptor Wintering	Unknown	Unknown	No records available –	

		Area			information lacking Include this information in records review and carry forward to site investigation	
		Bat hibernacula	Unknown	Unknown	No records available – information lacking Include this information in records review and carry forward to site investigation	
		Bat Maternity Colonies	Unknown	Unknown	No records available – information lacking Include this information in records review and carry forward to site investigation	
		Bat Migratory Stopover Areas	Applies to Long-point only	n/a	No criteria	7E - Ecoregion Criterion Schedule
		Turtle Wintering Area	Unknown	Unknown	No records available – information lacking Include this information in records review and carry forward to site investigation	
		Snake Hibernaculum	Unknown	Unknown	No records available – information lacking Include this information in records review and carry forward to site investigation	
		Colonial-Nesting bird breeding habitat (bank and cliff swallows)	Unknown	Unknown	No records available – information lacking Include this information in records review and carry forward to site investigation	
		Colonial-Nesting bird breeding habitat (tree/shrub)	Unknown	Unknown	No records available – information lacking Include this information in records review and carry forward to site investigation	
		Colonial-Nesting bird breeding habitat (ground)	Unknown	Unknown	No records available – information lacking Include this information in records review and carry forward to site investigation  <b><i>Historical Forster's Tern (S3) colony at Ruscom Shores Conservation Area (~1km from project location)</i></b>	NHIC Database
		Migratory butterfly stopover areas	Only include if within 5km of Lake Erie	n/a	Not within 5km of Lake Erie or Ontario	7E - Ecoregion Criterion Schedule
		Landbird (songbird)	Only include if	N/A	Not within 5km of Lake	7E - Ecoregion

		migratory stopover areas	within 5km of Lake Erie		Erie or Ontario	Criterion Schedule
		Deer Winter Congregation Areas	Must be identified by MNR	No	Not present within project area	MNRF Biologist
	Rare Vegetation Communities or Specialized Habitats for Wildlife	Cliffs and Talus Slopes	Unknown	Unknown	No records available – information lacking Include this information in records review and carry forward to site investigation	
		Sand Barren	Unknown	Unknown	No records available – information lacking Include this information in records review and carry forward to site investigation	
		Alvar	Unknown	Unknown	No records available – information lacking Include this information in records review and carry forward to site investigation	
		Old Growth Forest	Unknown	Unknown	No records available – information lacking Include this information in records review and carry forward to site investigation	
		Savannah	Unknown	Unknown	No records available – information lacking Include this information in records review and carry forward to site investigation	
		Tallgrass Prairie	Unknown	Unknown	No records available – information lacking Include this information in records review and carry forward to site investigation	
		Other Rare Vegetation Communities	Unknown	Unknown	No records available – information lacking Include this information in records review and carry forward to site investigation	
		Waterfowl Nesting Area	Unknown	Unknown	No records available – information lacking Include this information in records review and carry forward to site investigation	
		Bald Eagle and Osprey Nesting, Foraging and Perching habitat	Unknown	Unknown	No records available – information lacking Include this information in records review and carry forward to site investigation	
		Woodland Raptor Nesting habitat	Unknown	Unknown	No records available – information lacking	

					Include this information in records review and carry forward to site investigation	
		Turtle Nesting Areas	Unknown	Unknown	No records available – information lacking Include this information in records review and carry forward to site investigation	
		Seeps and Springs	Unknown	Unknown	No records available – information lacking Include this information in records review and carry forward to site investigation	
		Amphibian Breeding Habitat (Woodland)	Unknown	Unknown	No records available – information lacking Include this information in records review and carry forward to site investigation	
		Amphibian Breeding Habitat (Wetlands)	Unknown	Unknown	No records available – information lacking Include this information in records review and carry forward to site investigation	
	Animal Movement Corridors (list all that apply)	Amphibians	unknown	Unknown	No records available – information lacking Include this information in records review and carry forward to site investigation	
	Species of Conservation Concern (list all that apply)	Marsh Bird Breeding Habitat	Unknown	Unknown	No records available – information lacking Include this information in records review and carry forward to site investigation	
		Woodland Area-Sensitive Breeding Bird Habitat	Unknown	Unknown	No records available – information lacking Include this information in records review and carry forward to site investigation	
		Open Country Breeding Bird Habitat	Unknown	Unknown	No records available – information lacking Include this information in records review and carry forward to site investigation	
		Shrub/Early Successional Bird Breeding Habitat	Unknown	Unknown	No records available – information lacking Include this information in records review and carry forward to site investigation	
		Special Concern Species	Yes	Yes	<b>Snapping Turtle</b> ( <i>Chelydra serpentina</i> )	NHIC Database/District Biologist

					<p><b>Northern Map Turtle</b> (<i>Graptemys geographica</i>) <b>Shumard Oak</b> (<i>Quercus shumardii</i>)</p> <p><b>Climbing Prairie Rose</b> (<i>Rosa setigera</i>)</p> <p><b>Swamp Rose-mallow</b> (<i>Hibiscus moscheutos</i>)</p> <p><b>Pawpaw</b> (<i>Asimina triloba</i>)</p> <p><b>CONSULT NHIC DATABASE FOR ADDITIONAL RECORDS</b></p>	
		S1-S3, SH species and communities	Yes	Yes	<p><b>Giant Ironweed</b> (<i>Vernonia gigantea</i>) - <b>S1?</b></p> <p><b>Prairie Milkweed</b> (<i>Asclepias sullivantii</i>) – <b>S3</b> Prairies, old fields, and thickets. Several recent records are from roadsides far from natural prairie vegetation and are presumably adventive.</p> <p><b>Many-fruit Primrose-willow</b> (<i>Ludwigia polycarpa</i>) - <b>S2S3</b> Moist open areas, ditches.</p> <p><b>Biennial Gaura</b> (<i>Oenothera gaura</i>) - <b>S3</b></p> <p><b>Mottled Darner</b> (<i>Aeshna clepsydra</i>) – <b>S3</b> – Dragonfly (Ruscom River)</p> <p><b>Trumpet Creeper</b> (<i>Campsis radicans</i>) – <b>S2?</b></p> <p><b>Upright Carrion Flower</b> (<i>Smilax ecirrata</i>) – <b>S3?</b></p> <p><b>CONSULT NHIC DATABASE FOR ADDITIONAL RECORDS</b></p>	NHIC Database/District Biologist

		Terrestrial Crayfish	Unknown	Unknown	No records available – information lacking Include this information in records review and carry forward to site investigation	
--	--	----------------------	---------	---------	--	--

**Is any portion of the project located within the Oak Ridges Moraine Plan Area?**    ☐Yes    ☒No

*If yes, are any of the following features known to be present on or within 120m of the project location?*

☐ Sand Barrens
 ☐ ANSI (Life Science)

☐ Savannah
 ☐ Southern Wetlands that are not provincially significant

☐ Tallgrass Prairie

☐ Unknown

**Is the project location within the Protected Countryside (Greenbelt)?**    ☐Yes    ☒No

*If yes, are any of the following features known to be present on or within 120m of the project location?*

☐ Sand Barrens
 ☐ ANSI (Life Science)

☐ Savannah
 ☐ Southern Wetlands that are not provincially significant

☐ Tallgrass Prairie

☐ Alvar

☐ Unknown

\* Earth Science ANSI only needs to be considered if it is located within 50m of the project location



**Appendix II**  
Biodiversity Explorer Query Results

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## Appendix II. Belle River Wind Project - Biodiversity Explorer Query Results

Atlas Square	Unique Identifier (Element ID)	EO ID	Scientific Name	Common Name	S-Rank	COSEWIC Status	SARO Status	Last Observed Date	Extirpated
<b>Birds</b>									
17LG7980	180071	23052	Nycticorax nycticorax	Black-crowned Night-heron	S3B,S3N			1939-05-19	No
<b>Herpetofauna</b>									
17LG7579	180745	95734	Chelydra serpentina	Snapping Turtle	S3	SC	SC	2003-06-21	No
17LG7980	180784	17354	Crotalus horridus	Timber Rattlesnake	SX	EXP	EXP	1948-PRE	Yes
17LG6684	180753	91659	Graptemys geographica	Northern Map Turtle	S3	SC	SC	1984-06-?	No
<b>Vegetation</b>									
17LG5683	151006	2241	Agastache scrophulariifolia	Purple Giant Hyssop	S1			1894-10-05	Yes
17LG5678	145016	5043	Asclepias sullivantii	Prairie Milkweed	S3			1990-07-18	No
17LG5777	69000	32541	Asimina triloba	Pawpaw	S3			1993	No
17LG4982	168266	1749	Bidens trichosperma	Crowned Beggarticks	S2			1894-09	No
17LG6684	154000	64951	Campsis radicans	Trumpet Creeper	S2?			1981-07-16	No
17LG4580	23320	5810	Carex muskingumensis	Muskingum Sedge	S3			1986-05-22	No
17LG6684	17302	2058	Cuscuta campestris	Field Dodder	S2			1988-08-29	No
17LG6684	23534	64778	Cyperus schweinitzii	Schweinitz's Flatsedge	S3			1999-07-29	No
17LG4980	83094	5341	Desmodium sessilifolium	Sessile-leaved Tick-trefoil	SX			1901-07-25	Yes
17LG5384	22200	3375	Dichanthelium clandestinum	Deer-tongue Panicgrass	S2			1983-07-01	No
17LG5384	17394	63709	Dichanthelium praecocius	White-haired Panicgrass	S3			1983-07-01	No
17LG6684	22260	3416	Echinochloa walteri	Coast Barnyard Grass	S3			1988-08-29	No
17LG5678	100008	33271	Euonymus atropurpureus	Burning Bush	S3			1981-09-22	No
17LG6184	109014	12723	Hibiscus moscheutos	Swamp Rose-mallow	S3	SC	SC	2002-08-14	No
17LG7980	148002	60202	Hydrophyllum appendiculatum	Appendaged Waterleaf	S2			1879-06	No
17LG4980	114012	23183	Lechea minor	Thyme-leaved Pinweed	SX			1901-07-23	Yes
17LG5483	125048	33210	Ludwigia polycarpa	Many-fruit Primrose-willow	S2S3			1996-09-26	No
17LG6684	121006	64953	Lythrum alatum	Winged Loosestrife	S3			1981-07-16	No
17LG7980	63500	2382	Nelumbo lutea	American Lotus	S2			1953-08-29	No
17LG5484	125038	33689	Oenothera gaura	Biennial Gaura	S3			1986-08-29	No
17LG6874	150002	60253	Phyla lanceolata	Northern Fogfruit	S2			1892-07-30	No
17LG5974	39086	59499	Platanthera ciliaris	Yellow-fringed Orchid	SX			1881-08-15	Yes

17LG6874	54038	2474	Polygonum erectum	Erect Knotweed	SH			1972-09-20	No
17LG5279	46022	2156	Quercus shumardii	Shumard Oak	S3	SC	SC	1993-06-15	No
17LG7277	82326	17053	Rosa setigera	Climbing Prairie Rose	S3	SC	SC	2000-2001	No
17LG6777	32500	63697	Smilax ecirrata	Upright Carrion Flower	S3?			1982-07-06	No
17LG6777	32506	64490	Smilax illinoensis	Illinois Carrion Flower	S2?			1982-07-06	No
17LG5384	168858	64613	Vernonia gigantea	Giant Ironweed	S1?			1992-08-10	No
<b>Other Wildlife Species</b>									
17LG7479	181137	41109	Aeshna clepsydra	Mottled Darner	S3			1985	No
17LG6684	180895	21572	Euphyes dukesi	Duke's Skipper	S2			1982-00-00	No

**Appendix III**

Summary of Habitat Descriptions for Species of Conservation Concern

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**Appendix III. Summary of Habitat Descriptions for Species of Conservation Concern (SCC) Identified Near the Belle River Project Area**

Scientific Name	Common Name	Habitat Description	Potential Habitat Present Within the Project Area (Y/N)	Potential Habitat Present Within the Project Location (Y/N)	Carried Forward to Site Investigation (Y/N)
<b>Birds</b>					
<i>Aythya americana</i>	Redhead	<ul style="list-style-type: none"> <li>• Prefers shallow cattail and bulrush marshes with good interspersions of vegetation with open areas, often near lakes, ponds and fens<sup>1,2</sup>.</li> <li>• Typically nests close to shallow water (most within 2m)<sup>1</sup>.</li> <li>• Considered to be an SCC for its rarity during the breeding season.</li> <li>• Potential breeding habitat may be found within the project area or project location.</li> <li>• Migratory habitat for this species is addressed separately under the consideration of Waterfowl Stopover and Staging Areas (Aquatic).</li> </ul>	Yes	Yes	Yes
<i>Aythya valisneria</i>	Canvasback	<ul style="list-style-type: none"> <li>• Prefers large marshes for nesting, and deep, permanent water bodies for feeding and courtship<sup>1</sup>.</li> <li>• Considered to be an SCC for its rarity during the breeding season.</li> <li>• Potential breeding habitat may be found within the project area or project location.</li> <li>• Migratory habitat for this species is addressed separately under the consideration of Waterfowl Stopover and Staging Areas (Aquatic).</li> </ul>	Yes	Yes	Yes
<i>Buteo lagopus</i>	Rough-legged Hawk	<ul style="list-style-type: none"> <li>• Prefers open coniferous forests, tundra and generally barren country<sup>16</sup>.</li> <li>• Breed on cliffs or in trees, and overwinter in grasslands and open cultivated areas<sup>16</sup>.</li> <li>• Considered to be an SCC for its rarity during the breeding season.</li> <li>• Breeding habitat for this species is not known to occur within this area of the province.</li> <li>• Overwintering habitat for this species is addressed separately under the consideration of Raptor Wintering Areas.</li> </ul>	No	No	No

Scientific Name	Common Name	Habitat Description	Potential Habitat Present Within the Project Area (Y/N)	Potential Habitat Present Within the Project Location (Y/N)	Carried Forward to Site Investigation (Y/N)
<i>Calcarius lapponicus</i>	Lapland Longspur	<ul style="list-style-type: none"> <li>Breeds in the Arctic tundra in wet meadows, grassy tussocks, and scrub<sup>16</sup>.</li> <li>Migrates and overwinters in plowed fields, stubble, and open grasslands<sup>16</sup>.</li> <li>Considered to be an SCC for its rarity during the breeding season.</li> <li>Breeding habitat for this species is not known to occur within this area of the province.</li> </ul>	No	No	No
<i>Chlidonias niger</i>	Black Tern	<ul style="list-style-type: none"> <li>Prefers wetlands, specifically large coastal or inland cattail marshes<sup>1</sup>.</li> <li>Occupy marshy edges of rivers, lakes or ponds, wet open fens and wet meadows<sup>1</sup>.</li> <li>Marshes greater than 20ha in size are generally required for suitable habitat, with a minimum recorded size of 5.3ha<sup>1,3</sup>.</li> <li>Grasslands adjacent to nesting habitat are also required for foraging of insects; however, this species will also feed on fish, crayfish and frogs<sup>1</sup>.</li> <li>Considered to be an SCC because it is listed as a species of Special Concern provincially.</li> <li>Potential breeding habitat for this species may be found within the project area and project location.</li> <li>Breeding habitat is also addressed under the consideration of Marsh Bird Breeding Habitat.</li> </ul>	Yes	Yes	Yes
<i>Chordeiles minor</i>	Common Nighthawk	<ul style="list-style-type: none"> <li>Prefers open habitats, such as forest clearings, open woodlands, ploughed fields, or gravel beaches<sup>1</sup>.</li> <li>Nests on open ground, in clearings in dense forests, ploughed fields, gravel beaches or barren areas with rocky soils, in open woodlands and on flat gravel roofs<sup>1</sup>.</li> <li>Considered to be an SCC because it is listed as a species of Special Concern provincially and also a Threatened species nationally.</li> <li>Potential breeding habitat for this species may be found within the project area and project location.</li> </ul>	Yes	Yes	Yes

Scientific Name	Common Name	Habitat Description	Potential Habitat Present Within the Project Area (Y/N)	Potential Habitat Present Within the Project Location (Y/N)	Carried Forward to Site Investigation (Y/N)
<i>Clangula hyemalis</i>	Long-tailed Duck	<ul style="list-style-type: none"> <li>Breeds in ponds, streams, and other arctic wetlands<sup>16</sup>.</li> <li>Winters on the open ocean, or on large freshwater lakes<sup>16</sup>.</li> <li>Considered to be an SCC for its rarity during the breeding season.</li> <li>Breeding habitat for this species is not known to occur within this area of the province.</li> <li>Migratory stopover habitat for this species is addressed separately under the consideration of Waterfowl Stopover and Staging Areas (Aquatic).</li> </ul>	No	No	No
<i>Contopus virens</i>	Eastern Wood-Pewee	<ul style="list-style-type: none"> <li>Prefers open, deciduous, mixed or coniferous forests predominated by oak with little understory, forest clearings, edges, farm woodlots, and parks<sup>1</sup>.</li> <li>Considered to be an SCC because it is listed as a species of Special Concern provincially and nationally.</li> <li>Potential breeding habitat for this species may be found within the project area and project location.</li> <li>Migratory habitat for this species is also addressed under the consideration of Landbird Migratory Stopover Areas, which is not applicable to this area of the province.</li> </ul>	Yes	Yes	Yes
<i>Falco peregrinus anatum/tundrius</i>	Peregrine Falcon	<ul style="list-style-type: none"> <li>Nests on rock cliffs, crags, especially situated near water, and on tall buildings in urban centres<sup>1</sup>.</li> <li>Considered to be an SCC for its rarity during the breeding season and because it is listed as a species of Special Concern provincially and nationally.</li> <li>Potential breeding habitat may be found within the project area or project location.</li> </ul>	Yes	Yes	Yes

Scientific Name	Common Name	Habitat Description	Potential Habitat Present Within the Project Area (Y/N)	Potential Habitat Present Within the Project Location (Y/N)	Carried Forward to Site Investigation (Y/N)
<i>Haliaeetus leucocephalus</i>	Bald Eagle	<ul style="list-style-type: none"> <li>Requires large continuous areas of deciduous or mixed woods near large lakes or rivers<sup>1</sup>.</li> <li>Require an area of 255ha for nesting, shelter, feeding and roosting<sup>1</sup>.</li> <li>Prefers open woods with 30 to 50% canopy cover and will nest in trees 50 to 200m from the shore of a water body. The bald eagle requires tall, dead or partially dead trees within 400m of a nest for perching<sup>1</sup>.</li> <li>Considered to be an SCC for its rarity during the non-breeding season and because it is listed as a species of Special Concern provincially.</li> <li>Potential breeding habitat for this species may be found within the project area and project location.</li> <li>Breeding habitat for this species is also addressed under the consideration of Bald Eagle and Osprey Nesting, Foraging and Perching Habitat.</li> </ul>	Yes	Yes	Yes
<i>Hylocichla mustelina</i>	Wood Thrush	<ul style="list-style-type: none"> <li>Prefers undisturbed, moist, mature deciduous or mixed forest with deciduous sapling growth<sup>1,4</sup>.</li> <li>Considered to be an SCC because it is listed as a species of Special Concern provincially and also a Threatened species nationally.</li> <li>Potential breeding habitat for this species may be found within the project area and project location.</li> <li>Migratory habitat for this species is also addressed under the consideration of Landbird Migratory Stopover Areas, which is not applicable to this area of the province.</li> </ul>	Yes	Yes	Yes
<i>Larus marinus</i>	Great Black-backed Gull	<ul style="list-style-type: none"> <li>Requires flat, rocky, coastal islands, moorlands, rocky beaches or cliffs and nests in solitary or in small (rarely large) colonies<sup>1</sup>.</li> <li>Considered to be an SCC for its rarity during the breeding season.</li> <li>Potential breeding habitat may be found within the project area or project location.</li> </ul>	Yes	Yes	Yes



Scientific Name	Common Name	Habitat Description	Potential Habitat Present Within the Project Area (Y/N)	Potential Habitat Present Within the Project Location (Y/N)	Carried Forward to Site Investigation (Y/N)
<i>Melanerpes erythrocephalus</i>	Red-headed Woodpecker	<ul style="list-style-type: none"> <li>Lives in open woodlands and woodland edges, especially in oak savannahs and riparian forest<sup>1</sup>.</li> <li>They can also be found in fields or pastures, orchards and small woodlots<sup>1</sup>. These habitats contain a higher density of dead trees, which they commonly used for nesting and perching<sup>1</sup>.</li> <li>Requires trees with a diameter at breast height of at least 40cm for tree cavity nesting and require approximately 4ha for territory<sup>1</sup>.</li> <li>Considered to be an SCC because it is listed as a species of Special Concern provincially and also a Threatened species nationally.</li> <li>Potential breeding habitat for this species may be found within the project area and project location.</li> </ul>	Yes	Yes	Yes
<i>Podiceps auritus</i>	Horned Grebe	<ul style="list-style-type: none"> <li>Prefers deep water marshes, or sloughs with a mix of open water and emergent vegetation, such as small freshwater ponds or protected bays of larger lakes with emergent vegetation<sup>1</sup>.</li> <li>Migratory stopover occurs regularly along coastlines and inland at larger bodies of water such as rivers (&gt;1000ha), and somewhat irregularly at smaller inland lakes<sup>16</sup>.</li> <li>Considered to be an SCC as a result of its rarity during the breeding season and because it is listed as a species of Special Concern provincially and nationally.</li> <li>Based on the lack of breeding records in all of southern Ontario in the second Ontario Breeding Bird Atlas<sup>17</sup>, this species is not known to breed in this area of the province.</li> <li>Potential migratory habitat for this species may be found within the project area and project location.</li> </ul>	Yes	Yes	Yes
<i>Sterna forsteri</i>	Forster's Tern	<ul style="list-style-type: none"> <li>Requires large, open and fresh or saltwater marshes, or deep cattail marshes, typically where there is a large amount of open water with islands or large floating mats of vegetation<sup>1,5</sup>.</li> <li>It seldom uses marshes that are less than 300ha in size<sup>1</sup>.</li> <li>Considered to be an SCC for its rarity during the breeding season.</li> <li>Potential breeding habitat for this species may be found within the project area.</li> </ul>	Yes	No	Yes

Scientific Name	Common Name	Habitat Description	Potential Habitat Present Within the Project Area (Y/N)	Potential Habitat Present Within the Project Location (Y/N)	Carried Forward to Site Investigation (Y/N)
<i>Xanthocephalus xanthocephalus</i>	Yellow-headed Blackbird	<ul style="list-style-type: none"> <li>• Prefers deep (0.6 to 1.2m) marshes or sloughs, lake edges with emergent vegetation, cattails, and reedy lakes<sup>1</sup>.</li> <li>• Forages on grain fields, freshly ploughed ground and barnyards<sup>1</sup>.</li> <li>• Considered an SCC for its rarity during the breeding season.</li> <li>• Potential breeding habitat for this species may be found within the project area and project location.</li> </ul>	Yes	Yes	Yes
<b>Herpetofauna</b>					
<i>Chelydra serpentina</i>	Snapping Turtle	<ul style="list-style-type: none"> <li>• Resides in habitat that consists of permanent or semi-permanent fresh water, marshes, swamps or bogs or rivers and streams with soft muddy banks or bottoms<sup>1</sup>.</li> <li>• Uses soft soil or clean dry sand on south-facing slopes for nest sites, which can be some distance from water. They will also take advantage of man-made structures for nest sites, including roads (especially with gravel shoulders), dams and aggregate pits<sup>1</sup>.</li> <li>• Often hibernate together in groups in mud under water<sup>1</sup>.</li> <li>• Potential breeding and over-wintering habitat for this species may be found within the project area and project location.</li> <li>• Suitable habitat for this species is also addressed under the consideration of Turtle Nesting Areas and Turtle Wintering Areas.</li> </ul>	Yes	Yes	Yes
<i>Graptemys geographica</i>	Northern Map Turtle	<ul style="list-style-type: none"> <li>• Found in large bodies of water with soft bottoms and aquatic vegetation<sup>1</sup>.</li> <li>• Basks in groups on logs, rocks, beaches or sandy edges and uses soft soil or clean dry sand for nest sites that can be some distance from water<sup>1</sup>.</li> <li>• Home range size is larger for females (approximately 70ha) than males (approximately 30ha) and includes hibernation, basking, nesting and feeding areas, while aquatic corridors (e.g. streams) are required for movement<sup>1</sup>.</li> <li>• Potential breeding and over-wintering habitat for this species may be found within the project area.</li> <li>• Suitable habitat for this species is also addressed under the consideration of Turtle Nesting Areas and Turtle Wintering Areas.</li> </ul>	Yes	No	Yes
<b>Vegetation</b>					

Scientific Name	Common Name	Habitat Description	Potential Habitat Present Within the Project Area (Y/N)	Potential Habitat Present Within the Project Location (Y/N)	Carried Forward to Site Investigation (Y/N)
<i>Asclepias sullivantii</i>	Prairie Milkweed	<ul style="list-style-type: none"> <li>• Prefers wet meadows and prairies, and can be found along roadsides and railroads<sup>1,6</sup>.</li> </ul>	Yes	Yes	Yes
<i>Asimina triloba</i>	Pawpaw	<ul style="list-style-type: none"> <li>• Found in moist forests and thickets and along stream banks<sup>1,6</sup>.</li> </ul>	Yes	Yes	Yes
<i>Campsis radicans</i>	Trumpet Creeper	<ul style="list-style-type: none"> <li>• Typically found in open, deciduous woods and hedgerows<sup>1</sup>.</li> </ul>	Yes	Yes	Yes
<i>Carex muskingumensis</i>	Muskingum Sedge	<ul style="list-style-type: none"> <li>• Prefers wet-mesic hardwood forests<sup>1</sup>.</li> </ul>	Yes	Yes	Yes
<i>Cuscuta campestris</i>	Field Dodder	<ul style="list-style-type: none"> <li>• Typically found in marshes, creek banks, pond margins, and cultivated fields<sup>1</sup>.</li> </ul>	Yes	Yes	Yes
<i>Cyperus schweinitzii</i>	Schweinitz's Flatsedge	<ul style="list-style-type: none"> <li>• Found in dunes, dry prairies, fields, and other open sandy areas<sup>1,6</sup>.</li> </ul>	Yes	Yes	Yes
<i>Dichanthelium clandestinum</i>	Deer-tongue Panicgrass	<ul style="list-style-type: none"> <li>• Found in moist depressions in rocky upland woodlands, sandy woodlands, sandy savannas, sand prairies, acidic gravelly seeps, sandy swamps, floodplains and thickets along streams, and abandoned sandy fields<sup>6,7</sup>.</li> </ul>	Yes	Yes	Yes
<i>Dichanthelium praecocius</i>	White-haired Panicgrass	<ul style="list-style-type: none"> <li>• Typically found in dry, open sandy woods and in prairie habitat<sup>1,6</sup>.</li> </ul>	Yes	Yes	Yes
<i>Echinochloa walteri</i>	Coast Barnyard Grass	<ul style="list-style-type: none"> <li>• Found in marshes along streams, ponds and lakes, wet shores, and sometimes on recent, sandy strands along the shores of the Great Lakes<sup>1,6</sup>.</li> </ul>	Yes	Yes	Yes
<i>Euonymus atropurpureus</i>	Burning Bush	<ul style="list-style-type: none"> <li>• Prefers moist to mesic woodlands, shaded to partially shaded riverbanks, woodland borders, wooded slopes, floodplains, small openings in wooded areas, and thickets<sup>6,7</sup>.</li> </ul>	Yes	Yes	Yes

Scientific Name	Common Name	Habitat Description	Potential Habitat Present Within the Project Area (Y/N)	Potential Habitat Present Within the Project Location (Y/N)	Carried Forward to Site Investigation (Y/N)
<i>Hibiscus moscheutos</i>	Swamp Rose-mallow	<ul style="list-style-type: none"> <li>Commonly found in deep-water cattail marshes and in meadow marshes<sup>8</sup>.</li> <li>Also found in open wet woods, thickets, spoil banks, drainage ditches<sup>8</sup>, and open river bottoms<sup>6</sup>.</li> </ul>	Yes	Yes	Yes
<i>Ludwigia polycarpa</i>	Many-fruit Primrose-willow	<ul style="list-style-type: none"> <li>Typically found in prairie, meadow and field habitats with less than 25% cover<sup>9</sup>.</li> <li>Also be found in nutrient rich swamps and marshes<sup>9</sup>.</li> </ul>	Yes	Yes	Yes
<i>Lythrum alatum</i>	Winged Loosestrife	<ul style="list-style-type: none"> <li>Occurs in wet areas, fields, prairie swales, swamps, ditches, margins of ponds, and sloughs<sup>10</sup>.</li> </ul>	Yes	Yes	Yes
<i>Oenothera gaura</i>	Biennial Gaura	<ul style="list-style-type: none"> <li>Prefers savannahs, prairies, meadows, fields and riparian habitats<sup>9</sup>.</li> </ul>	Yes	Yes	Yes
<i>Quercus shumardii</i>	Shumard Oak	<ul style="list-style-type: none"> <li>Prefers moist, heavier soils, and full sun, but is adaptable to loamy soils and partial shade<sup>8</sup>, in swamps<sup>6</sup>.</li> </ul>	Yes	Yes	Yes
<i>Rosa setigera</i>	Climbing Prairie Rose	<ul style="list-style-type: none"> <li>Typically found in open habitats with moist, heavy, clay to clay-loam soils such as old fields, abandoned agricultural land, as well as prairie remnants and shrub thickets<sup>8</sup>.</li> </ul>	Yes	Yes	Yes
<i>Smilax ecirrata</i>	Upright Carrion Flower	<ul style="list-style-type: none"> <li>Typically found in rich deciduous forests, moist forests, oak and oak-hickory forests, and thickets on riverbanks and floodplains<sup>1,6</sup>.</li> </ul>	Yes	Yes	Yes
<i>Smilax illinoensis</i>	Illinois Carrion Flower	<ul style="list-style-type: none"> <li>Typically found in rich deciduous forests, oak forests, thickets, and riverbanks and floodplains<sup>1,6</sup>.</li> </ul>	Yes	Yes	Yes

Scientific Name	Common Name	Habitat Description	Potential Habitat Present Within the Project Area (Y/N)	Potential Habitat Present Within the Project Location (Y/N)	Carried Forward to Site Investigation (Y/N)
<i>Vernonia gigantea</i>	Giant Ironweed	<ul style="list-style-type: none"> <li>• Prefers prairies and other grasslands, old fields, roadsides, savannas and woodlands growing on dry to moist soils<sup>11</sup>.</li> <li>• Floodplain forests, marshy thickets, and meadows<sup>6</sup>.</li> <li>• Especially common in overgrazed pasture<sup>11</sup>.</li> </ul>	Yes	Yes	Yes
<b>Insects</b>					
<i>Aeshna clepsydra</i>	Mottled Darner	<ul style="list-style-type: none"> <li>• Found in marshes and bogs with open water, ponds, lakes and bays<sup>12</sup>.</li> </ul>	Yes	No	Yes
<i>Asterocampa celtis</i>	Hackberry Emperor	<ul style="list-style-type: none"> <li>• Prefers wooded streams, forest glades, river edges, and wooded roadsides<sup>13</sup>.</li> </ul>	Yes	Yes	Yes
<i>Asterocampa clyton</i>	Tawny Emperor	<ul style="list-style-type: none"> <li>• Found in open woodlands and roadsides where there is hackberry<sup>14</sup>.</li> </ul>	Yes	Yes	Yes
<i>Callophrys gryneus</i>	Juniper Hairstreak	<ul style="list-style-type: none"> <li>• Typically found in old fields, bluffs, barrens, juniper woodlands, and cedar breaks<sup>13</sup>.</li> </ul>	Yes	Yes	Yes
<i>Danaus plexippus</i>	Monarch	<ul style="list-style-type: none"> <li>• Found in oak or oak-pine scrub, thickets, and barrens on well-drained sandy or shaly soils<sup>13</sup>.</li> <li>• Habitat for this species has been determined through the consideration of Migratory Butterfly Stopover Areas, which is not applicable to this area of the province.</li> </ul>	No	No	No
<i>Erynnis brizo</i>	Sleepy Duskywing	<ul style="list-style-type: none"> <li>• Prefers swamps, open marshes, and bogs<sup>13</sup>.</li> </ul>	Yes	Yes	Yes
<i>Euphyes dion</i>	Dion Skipper	<ul style="list-style-type: none"> <li>• Found in shaded swamps, partially shaded marshes or ditches<sup>13</sup>.</li> </ul>	Yes	No	Yes
<i>Euphyes dukesi</i>	Duke's Skipper	<ul style="list-style-type: none"> <li>• Typically found on rocky and sandy hillsides near streams or gullies<sup>13</sup>.</li> <li>• Open woodlands and fields<sup>15</sup>.</li> </ul>	Yes	Yes	Yes

Scientific Name	Common Name	Habitat Description	Potential Habitat Present Within the Project Area (Y/N)	Potential Habitat Present Within the Project Location (Y/N)	Carried Forward to Site Investigation (Y/N)
<i>Papilio cresphontes</i>	Giant Swallowtail	<ul style="list-style-type: none"> <li>• Prefers open or disturbed areas such as landfills, vacant lots, gardens, roadsides, fields, and pastures<sup>13</sup>.</li> </ul>	Yes	Yes	Yes
<i>Pholisora catullus</i>	Common Sootywing	<ul style="list-style-type: none"> <li>• Found in deciduous forests and second-growth woods in areas of rich soil<sup>13</sup>.</li> </ul>	Yes	Yes	Yes
<i>Satyrrium caryaevorus</i>	Hickory Hairstreak	<ul style="list-style-type: none"> <li>• Typically found along roads, trails, and openings in woods<sup>13</sup>.</li> </ul>	Yes	Yes	Yes
<i>Staphylus hayhurstii</i>	Hayhurst's Scallopwing	<ul style="list-style-type: none"> <li>• Prefers open, scrubby places including dry meadows, burned areas, dry prairie hills, and powerline right-of-ways<sup>13</sup>.</li> </ul>	Yes	Yes	Yes
<i>Thorybes bathyllus</i>	Southern Cloudywing	<ul style="list-style-type: none"> <li>• Found in marshes and bogs with open water, ponds, lakes and bays<sup>12</sup>.</li> </ul>	Yes	Yes	Yes

<sup>1</sup>: MNR Significant Wildlife Habitat Technical Guide (2000)

<sup>2</sup>: Woodin and Michot (2002)

<sup>3</sup>: Heath et al. (2009)

<sup>4</sup>: Evans et al. (2011)

<sup>5</sup>: McNicholl et al. (2001)

<sup>6</sup>: Reznicek et al. (2011)

<sup>7</sup>: Illinois Wildflowers (2012)

<sup>8</sup>: MNRF (2014)

<sup>9</sup>: Evergreen (2014)

<sup>10</sup>: Missouri Department of Conservation (2014)

<sup>11</sup>: United States Department of Agriculture (USDA) (2014)

<sup>12</sup>: Pennsylvania Natural Heritage Program (2007)

<sup>13</sup>: Butterflies and Moths of North America (2014)

<sup>14</sup>: Holmes et al. (1991)

<sup>15</sup>: Layberry et al. (1998)

<sup>16</sup>: Cornell Lab of Ornithology (2014)

<sup>17</sup>: Cadman et al. (2007)