Grand Bend Wind Farm

Natural Heritage Assessment

Evaluation of Significance Draft Report

Grand Bend Wind Limited Partnership,

c/o Northland Power Inc.

NORTHLAND POWER

NEEGAN BURNSIDE

August 2012

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0	August 14, 2012	Initial Submission to the Ministry of Natural Resources (MNR), Municipalities and First Nations.
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Glossary of Terms

ABH	**Amphibian Breeding Habitat**
BMC	**Bat Maternal Colony**
CNB	**Colonial Nesting Bird Habitat**
CNH	**Common Nighthawk Habitat**
CSWH	**Candidate Significant Wildlife Habitat**
DYA	**Deer Yarding Area**
EIS	**Environmental Impact Study**
ELC	**Ecological Land Classification**
EOS	**Evaluation of Significance**
GCSWH	**Generalized Candidate Significant Wildlife Habitat**
MBBH	**Marsh Breeding Bird Habitat**
MNR	**Ministry of Natural Resources**
NHA	**Natural Heritage Assessment**
PSW	**Provincially Significant Wetland**
RH	**Reptile Hibernacula**
RWA	**Raptor Wintering Area**
SCC	**Species of Conservation Concern**
SS	**Seeps and Springs**
TNA	**Turtle Nesting Habitat**
TWA	**Turtle Wintering Area**
WASBB	**Woodland Area-sensitive Bird Breeding Habitat**
WNA	**Waterfowl Nesting Area**
WRN	**Woodland Raptor Nesting Habitat**
WSSA	**Waterfowl Stopover and Staging Area**

1.0 Introduction

The Grand Bend Wind Limited Partnership, c/o Northland Power Inc. ("Northland") is proposing to develop, construct and operate a 100 MW wind facility located north of Grand Bend, Ontario. An application for approval is being prepared under Ontario Regulation 359/09 of the *Environmental Protection Act*. The project is classified as a Class 4 Wind facility under the Regulation. The Grand Bend Wind Farm ("the Project") is located in Huron County, spanning the lower-tier municipalities of Bluewater and Huron South. Portions of the transmission line also traverse the municipality of Huron East and municipality of West Perth in Perth County. The project location and study area is provided in the Site Investigation Report **Appendix A, Figure 1**.

The basic project components will include up to 48 turbines (Siemens SWT-2.3-113 direct drive wind turbine generators with a total name plate capacity of 100 MW), turbine access roads, a 36 kV electrical collection system, substation and a new transmission line within municipal road Right-Of-Ways ("ROWs") along Rodgerville Road, Line 17 and Road 183 with connection to the provincial power grid at the 230 kV transmission line south of the Seaforth Transformer Station. During construction temporary components will include access roads and work/storage areas at the turbine locations and transmission connections.

Under O.Reg. 359/09, a Natural Heritage Assessment ("NHA") is a required component of a REA Application for a Class 4 Wind Facility. The Natural Heritage Assessment is to be completed in four stages as follows:

- Stage 1: Records Review;
- Stage 2: Site Investigation;
- Stage 3: Evaluation of Significance (if required); and,
- Stage 4: Environmental Impact Study (if required).

The purpose of this report is to confirm the presence of any potentially significant natural features within 120 m of the project location. This includes areas within 120 m of turbine blade tip as well as any areas that may be used as temporary lay-down areas, crane pads, access roads, connector, distribution and transmission lines.

This report presents the findings of the Stage 3, Evaluation of Significance ("EOS") and builds upon the previous Records Review and Site Investigation. The applicant must submit an EOS Report to MNR for confirmation as outlined in Part IV, Section 28 of the REA Regulation.

In accordance with the Natural Heritage Assessment Guide for Renewable Energy Project (MNR, July 2011a), the purpose of the Evaluation of Significance is to:

- Determine if any natural features identified during the records review and/or site investigation are significant or provincially significant and thus subject to the development prohibitions and setbacks outlined in Section 38 of the REA regulation.

1.1 Project Location

The proposed Project is located in Huron County, spanning the lower-tier municipalities of Bluewater and South Huron as well as a portion of Huron East and the municipality of West Perth in Perth County. The Project Study Area, shown in **Figure 1, Appendix A** is bounded by:

- The Bluewater Highway (Highway 21) to the west;
- Main Street East/Grand Bend Line to the south;
- Blackbush and Shipka Lines with a small section of the study area in the central section of the project extending to Bronson Line and to the east;
- Staffa Road to the north; and,
- A preferred transmission line route, as described below.

Two transmission line routing options were originally studied, a northern route and a southern route, as described in the Records Review Report (Neegan Burnside Ltd., August 2012). The northern route was identified as having fewer natural heritage as well as social, aesthetic and technical constraints as was thus selected as the preferred route. This route runs from a transformer station on Lot 14, Concession 13, former Hay Township, and follows Sararas/Rodgerville Road to Line 17 and Road 183, connecting to the existing 230 kV Hydro One transmission line just south of the Seaforth Transformer Station ("TS") as shown on **Figure 1, Appendix A**. The southern route was discarded as an option and was not studied any further.

O.Reg. 359/09 defines the Project Location 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 in engaging in or proposes to engage in the project.*"

For the purposes of this Project, the Project Location includes the footprint of the facility components, plus any temporary work and storage locations. The boundary of the Project Location is used for defining setback and site investigation distances according to O.Reg. 359/09. The buildable area, which includes the footprint of the facility components, plus any temporary work and storage locations, will be staked. All construction and installation activities will be conducted within these designated areas;

this includes construction vehicles and personnel. Similarly, all installation activities related to collector lines within the municipal and provincial road allowance will be contained within the boundaries of the road allowance.

1.2 Ecoregion

Vegetation communities in Ontario have been classified in a hierarchical framework. Ecoregions represent the highest level (coarsest resolution) of the classification system.

The Project Location spans the boundary between Ecoregions 6E and 7E. The majority of the project is located within Ecoregion 6E, known as the Lake Simcoe-Rideau Region or the Great Lakes-St. Lawrence Forest Region, while a small portion of land at the southern end of the Study Area is within 7E, known as the Lakes Erie-Ontario Site Region, as shown in **Figure 2**, **Appendix A**. More specifically, the project is within Ecodistricts 6E 2 and 7E 2.

2.0 Findings of the Site Investigation

The Site Investigation identified a number of significant or candidate significant features within 120 m of the Project Location, including:

- Valleylands (unevaluated);
- Woodlands (unevaluated);
- Wetlands (Provincially Significant and unevaluated); and,
- Candidate Significant Wildlife Habitat, including:

Seasonal Concentration Areas of Animals

- Waterfowl stopover and staging areas (terrestrial and aquatic);
- Bat maternity colonies;
- Turtle wintering areas;
- Deer yarding areas (Provincially Significant);
- Snake hibernaculum; and,
- Colonially-nesting bird breeding habitat (ground).

Specialized Habitat for Wildlife

- Waterfowl nesting area;
- Woodland raptor nesting habitat;
- Turtle nesting areas;
- Seeps and springs; and,
- Amphibian breeding habitat (woodland).

Habitat for Species of Conservation Concern

- Marsh bird breeding habitat;
- Woodland area-sensitive bird breeding habitat;
- Shrub/early successional bird breeding habitat; and,
- Habitat for Special Concern and rare species.

Animal Movement Corridors

- Amphibian movement corridors.

3.0 Evaluation of Significance Framework

Candidate significant features were evaluated in accordance with various standards and protocols issued by the province in the guidance documents listed in **Table 3.1.**

Table 3.1 Evaluation Criteria and Protocols

Candidate Feature	Evaluation Protocol
Valleylands	• Table 9: Significant Valleylands Evaluation Criteria and Standards in Natural Heritage Assessment Guide for Renewable Energy Projects, First Addition (MNR, 2011a).
Wetlands	• Ontario Wetland Evaluation System for Southern Ontario, 3rd Edition (MNR, 2002); or, • Appendix C: Wetland Characteristics and Ecological Functions Assessment for Renewable Energy Projects in Natural Heritage Assessment Guide for Renewable Energy Projects, First Addition (MNR, 2011a).
Woodlands	• Table 8: Significant Woodland Evaluation Criteria and Standards in Natural Heritage Assessment Guide for Renewable Energy Projects, First Addition (MNR, 2011a).
Wildlife Habitat	• Significant Wildlife Habitat Technical Guide (MNR, 2000); and, • Appendix D: Determining the Significance of Identified Candidate Significant Wildlife Habitat in Natural Heritage Assessment Guide for Renewable Energy Projects, First Addition (MNR, 2011a).

3.1 Provincial Significance, Assumed Interim Significance and Generalized Significance

In the Site Investigation Report natural heritage features were identified which could be described as follows:

- features of known Provincial Significance, **Appendix A, Figure 2a-h**;
- features which are possible candidates for provincial significance **Appendix A, Figure 3a-h**; and,
- features which are assumed to be provincially significant and which will be treated as such (i.e., Generalized Candidate Significant Wildlife Habitat) **Appendix A, Figure 4a-h**.

This report focuses primarily on the evaluation of features of unknown significance. As such, features of known provincial significance and Generalized Candidate Significant

Wildlife Habitat which are treated as significant are only included in order to determine their location relative to various project components. An evaluation is not required.

The main body of the report addresses candidate features of unknown significance. The evaluation of their significance is accomplished using a variety of field surveys and desktop analysis. In some cases, features could not be surveyed due to time of year limitations or other factors. As permitted under MNR guidelines (MNR 2011a), the Grand Bend Wind Limited Partnership will commit to undertaking the necessary surveys at a later date prior to construction. These features will be treated as significant on an interim basis and brought forward to the Environmental Impact Study ("EIS") where they will be assessed and appropriate mitigation measures or additional studies will be identified, as required. If, upon completion of detailed studies, they are found to be non-provincially significant, then the mitigation may not be enacted.

Methodologies used to determine feature significance are described in Section 4.0 and summarized in **Table 4.3**.

3.2 Evaluation of Significance Studies vs. Alternative Investigation

As described in the Site Investigation Report (Neegan Burnside Ltd., August 2012), a number of private properties within 120 m of the Project Location could not be surveyed due to access limitations where permission to enter could not be obtained. On these properties, an Alternative Investigation was required. The location of the Alternative Investigation is provided in the Site Investigation Report (Neegan Burnside Ltd., August 2012). An Alternative Investigation was used on the same properties for the Evaluation of Significance, **Figure 5 a-h, Appendix A**. Detailed methodologies are provided in Section 4.0.

4.0 Evaluation of Significance Methodology

Evaluation methodologies are described in the following sections and summarized in **Table 4.3**.

4.1 Valleylands

Valleylands were evaluated using the criteria included in Table 9 of MNR (2011a) to assess the relative quality of:

- Landform-Related Functions and Attributes
  - Surface water functions (e.g., catchment area, erosion and deposition characteristics);
- Ecological Functions
  - Degree of naturalness (i.e., width of riparian area and type of vegetation);
  - Linkage function (i.e., connection provided to large natural areas); and,
- Restored Ecological Functions
  - Restoration: existing/committed projects (i.e., if any restoration projects have been undertaken or are planned within the feature).

These criteria were applied qualitatively using data collected during Ecological Land Classification ("ELC") mapping during the Site Investigation as well as aerial photography and drainage mapping to identify catchment areas. Ausable Bayfield Conservation Authority ("ABCA") Watershed Report Cards (ABCA, 1995) were reviewed for information related to planned and completed restoration projects.

4.2 Wetlands

Under the Renewable Energy Approval Regulation (O.Reg. 359/09), wetland features can be evaluated in two ways, as follows:

- by undertaking a full evaluation according to the MNR's Ontario Wetland Evaluation System (3rd edition; December, 2002); or,
- by treating any unevaluated wetland within 120 m of the proposed Project Location (but not within the Project Location itself) as provincially significant, provided the criteria and procedures found in the Wetland Characteristics and Ecological Functions Assessment for Renewable Energy Projects are followed.

Under the Ontario Wetland Evaluation System ("OWES"), wetlands are scored using a scientific point-based ranking system. Points are based on four components: Biological, Hydrological, Social and Rare Species. A Provincially Significant Wetland, which needs to be identified or confirmed by MNR, is defined as any OWES evaluated wetland which

scores a total of 600 or more points or 200 or more points in either the Biological Component or the Special Features Component.

The Hay Swamp Wetland Complex has been previously evaluated and identified as a Provincially Significant Wetland ("PSW"). There are two wetlands associated with the complex within 120 m of the Project Location. These will not be re-evaluated and their provincial significance status will be retained.

An additional twenty-two unevaluated wetlands were identified during the Site Investigation. For the purposes of this study, each will be treated as significant. In accordance with MNR (2011a), wetlands that are not evaluated using the full OWES system but which are treated as significant must be described in detail with respect to their biological and hydrological functions as well as any special features they may contain.

These characteristics were identified based on information collected during ELC mapping during the Site Investigation as well as aerial photography, drainage mapping and secondary source information collected during the Records Review. Where an Alternative Investigation was required, information was collected from the nearest vantage point.

4.3 Woodlands

A total of thirty-nine (39) woodlands were identified within 120 m of the Project Location. Each of these woodlands were evaluated following the criteria set out in Table 8: Significant Woodland Evaluation Criteria and Standards of the REA regulation under Section 6 - Evaluation of Significance of the Natural Heritage Assessment Guide for Renewable Energy Projects (MNR, 2011).

The significance of woodlands is determined at the lower-tier municipality level and is based on a number of factors including the present forest cover in the applicable municipality as well as woodland characteristics such as size, species composition, age, hydrological functions and location in relation to other significant features.

The percent forest cover in each municipality was determined based on information provided in municipal Official Plans, as summarized in **Table 4.1**.

Table 4.1 Percent Forest Cover by Municipality

Municipality	Current Percent Forest Cover
Municipality of Bluewater	16.5%
Municipality of South Huron	10%
Municipality of Huron East	10%
Perth County*	9%

*Upper-tier municipal Official Plan was referenced as the Lower Tier Plan does not cover the Study Area. A visual check of aerial photography (SWOOP, 2010 photos provided by Huron County) found that forest cover across the County was representative of the forest cover in the Municipality of West Perth.

As defined in the Natural Heritage Assessment Guide (MNR 2011a), Table 8, there are different criteria for establishing significance depending on the amount of forest cover present in a municipality. For the Municipality of Bluewater, the criteria for municipalities with between 16 and 30% forest cover were applied. For the remaining municipalities, the criteria for municipalities with between 5 and 15% forest cover were applied.

Evaluation criteria include woodland characteristics such as:

- woodland size;
- ecological functions, including:
  - woodland interior;
  - proximity to other significant woodlands or habitats;
  - linkages;
  - water protection;
  - woodland diversity representation (composition); and,
- uncommon characteristics.

Criteria were applied using a Geographic Information System ("GIS") analysis within input from the following data sources:

- woodland cover from SOLRIS/LIO (Southern Ontario Land Resource Information System/Land Information Ontario) mapping and refined with ELC mapping conducted during the Site Investigation;
- watercourse locations from LIO and refined through information collected as part of the Water Bodies Report;
- Groundwater Recharge Areas provided by the ABCA; and,
- vegetation communities identified through ELC mapping.

4.4 Wildlife Habitat

A number of habitats in the area are known to be significant or will be treated as significant. As such, a study of their significance is not required. This applies to:

- deer yarding areas (DYA-001, DYA-002) which are known to be provincially significant; and,
- all features identified in the Site Investigation as Generalized Candidate Significant Wildlife Habitat which will be treated as significant.

The methodologies described below do not apply to these features but were used only for candidate habitats for which significance has yet to be established. A summary of survey methodologies related to candidate wildlife habitats is provided in **Table 4.3**.

Bat Maternal Colonies
During the Site Investigation, eleven candidate sites for bat maternal colonies were identified within 120 m of a turbine. Only seven of those were on properties which could be accessed (BMC-001 through BMC-007).

Due to timing constraints, these habitats could not be surveyed for significance during the 2012 season. In accordance with **Appendix D** of MNR (2011a), the proponent will treat these as significant on an interim basis and commit to conducting evaluation of significance surveys prior to construction. Surveys were, therefore, not completed at this stage. A methodology for surveys to be completed prior to construction will be provided in the EIS along with an assessment of impacts and mitigation measures should any of the candidate sites be found significant.

The three additional candidate habitats located on non-participating properties (BMC-008 through BMC-010) could not be surveyed due to site access restrictions. In accordance to guidance provided by the MNR (email correspondence dated January 9, 2012, **Appendix B**), these habitats will not be surveyed but will be treated as significant and assessed in the EIS.

Turtle Wintering Areas
Two of the three Candidate Turtle Wintering Areas (TWA-001 and TWA-002) were surveyed on two warm, sunny days with temperatures above 20ºC in spring of 2012. Surveys took place on March 20, 2012 and May 11, 2012 between the hours of 12:00 and 16:00 hours. Weather conditions were sunny with abnormally warm conditions for the March 20 survey.

One hour (60 minutes or more) was spent at each site on each visit using binoculars to determine species observed. Each candidate habitat was observed for signs of turtles emerging from hibernation and basking on surrounding logs and rocks. Particular attention was paid to any observations of Special Concern or provincially rare species, such as snapping turtle, *Chelydra serpentina.*

Ponds outside of the Study Area were also inspected for basking turtles to confirm good seasonal conditions for observation. Turtles were observed on March 20 and 21, 2012 in ponds outside the Study Area confirming that survey timing was appropriate.

Turtles that were observed, if any, were photographed and the location was recorded with a GPS unit.

The third Candidate Turtle Wintering Area (TWA-003) will be treated as significant and studied further prior to construction.

Field notes are provided in **Appendix D**.

Snake Hibernacula

During the Site Investigation, six candidate hibernation sites were identified within 120 m of the turbines and access roads. All were characterized by rock and debris piles along the edges of agricultural fields.

Each candidate hibernation site was visited twice in the spring of 2012 to confirm use by snakes. Searches were scheduled on sunny, warm spring days with temperatures above 20ºC. Surveys took place on March 20/21, April 25, and May 11, 2012 between the hours of 12:00 and 17:00. Weather conditions were sunny and warm with temperatures above 20ºC. Approximately 10 minutes was spent at each potential site during each site visit.

Typically, snake surveys are conducted in April and May or September and October. In 2012, there was an unusually warm and early spring and it was felt that surveys should be initiated during March 2012. Weather conditions were suitable (i.e., above 20ºC) and snakes had been observed emerging from hibernation sites at this time on other properties associated with different projects. Surveys were, therefore, started early in order to avoid missing the emergence of species. This was discussed during a meeting held with the MNR on April 10, 2012 at which time it was confirmed that timing was appropriate due to the unusual weather conditions.

On each visit the rock or debris pile was approached slowly and scanned for the presence of snakes with binoculars from several metres back. An area search was conducted by slowly walking a circle 5 m out from the edge of the pile while scanning the ground for snakes. Each area was searched for a minimum of 20 minutes. On the first visit, the dimensions of the rock or debris pile was recorded as well as adjacent habitat conditions including vegetation, slope, presence of waterbodies and likelihood that the stones or debris extend below the frostline. At each site, rocks, logs and debris were overturned to determine if snakes are present. Snakes found, if any, were visually identified, approximate length estimated, and visually sexed by amount of tail tapering (if

possible). Particular attention was paid to any observations of Special Concern or provincially rare species, such as Eastern ribbonsnake, *Thamnophis sauritus* and milksnake, *Lampropeltis triangulum*.

No snakes were handled during the surveys. Any snakes that were observed were photographed and the location was recorded with a GPS unit.

Colonially-nesting Bird Breeding Habitat (Ground)

During the Site Investigation, three candidate areas for Colonially-nesting Bird Breeding Habitat (Ground) were identified (CNB-001, CNB-002, CNB-003). These three candidate areas were identified as candidate significant wildlife habitat ("SWH") based of the presence of suitable habitat for Brewer's blackbird (*Euphagus cyanocephalus*), a colonial ground nesting species. Suitable habitat for this species includes open fields or pastures with scattered trees or shrubs and close proximity to watercourses, and three watercourses with successional habitat in close proximity were surveyed. A total of ten point counts (3 to 4 ten-minute point counts per candidate area) were completed at each candidate area following standard protocols for surveying breeding birds outlined in the Ontario Breeding Bird Atlas Guide for Participants. All surveys were completed between 0500 and 1000, in fair weather conditions with little to no wind (0 to 3 on the Beaufort Scale). Evidence of all breeding bird species were recorded at each survey station, and the distance of each bird to the habitat area was estimated. Each survey station was visited a total of two times. Surveys were completed on May 29, 30 and June 18, 19, 2012.

Brewer's Blackbird observations were not made at any of the survey stations at any of the survey visits.

Field notes are provided in **Appendix D**.

Waterfowl Nesting

The Candidate Waterfowl Nesting Area (WNA-001) was evaluated with three Point Count surveys to determine the relative use of the habitat by waterfowl.

The Point Count surveys were conducted on May 30, June 19 and July 10, 2012. The first two surveys were completed in the early morning between dawn (one half hour before sunrise) and four hours after sunrise. The final survey was completed within three hours of sunrise as bird singing tends to drop of earlier later in the season.

Weather conditions were fair with no precipitation and little cloud cover, and wind conditions were between 0 to 3 on the Beaufort Scale.

The surveys involved a single point count station directly adjacent to the habitat. The surveyor listened for ten minutes at the station and recorded all waterfowl and other bird species observed or heard. The distance of each bird to the habitat area was estimated. Any nests or nesting behaviours were noted. The location of any nests, if found, were recorded using a GPS unit.

Field notes are provided in **Appendix D**.

Woodland Raptor Nesting
During the Site Investigation two Candidate Woodland Raptor Nesting were identified. This feature is being treated as significant and, as such, no surveys were undertaken. The feature is identified as Generalized Candidate Significant Wildlife Habitat (GCSWH-WRN), as shown in **Appendix A** on **Figure 4a-h**. General construction mitigation to address potential impacts to this feature will be provided in the EIS.

Turtle Nesting Areas
One Turtle Nesting Area (TNA-001) was surveyed using the same methodology as Turtle Wintering Areas. Refer to Turtle Wintering Areas for details. A second candidate habitat (TNA-002) was identified after the appropriate survey season had passed. This area will be treated as significant and subject to additional studies prior to construction.

Field notes are provided in **Appendix D**.

Seeps and Springs
One Candidate Seep and Spring was identified during the Site Investigation. This feature is being treated as significant and, as such, no surveys were undertaken. The feature is identified as Generalized Candidate Significant Wildlife Habitat (GCSWH-SS), as shown in **Appendix A** on **Figure 4a-h**. General construction mitigation to address potential impacts to this feature will be provided in the EIS.

Amphibian Breeding Habitat (Woodland)
Nine Candidate habitats were surveyed in order to confirm significance. Two different types of surveys were conducted to confirm the use of the habitats by frogs and salamanders, as described below.

Frogs
Amphibian call surveys followed the protocols identified in the Marsh Monitoring Program Manual (Bird Studies Canada, 1994). Surveys were conducted between one-half hour after sunset and midnight. The protocol involved the surveyor standing at each selected station and listening for three minutes. Amphibians were recorded to be within each surveyed station if they were within 100 m of the surveyor. Consistent with the Marsh Monitoring Program protocol, all calling activity was ranked using one of the

following three abundance code categories: (1) calls not simultaneous – number of individuals can be accurately counted; (2) some calls simultaneous –number of individuals can be reliably estimated; and (3) full chorus – calls continuous and overlapping, so number of individuals cannot be reliably estimated.

Field notes are provided in **Appendix D**.

Salamanders

A number of vernal pools were identified within woodland habitat by field staff during vegetation and ELC mapping. Vernal pools are a type of Amphibian Breeding Habitat (Woodland) which could support mole salamanders. Egg mass searches were conducted during daylight hours in early spring after a relatively warm rain.

Surveys entailed wading the perimeter and deeper parts of the vernal pools looking for egg masses using polarized eyewear. Any submerged sticks or shrubs standing in the water were checked for eggs which could be attached. A minimum search effort of 30 minutes was applied for each habitat, or a complete check of locations where egg masses may occur, whichever is less. The number of individuals or egg masses of each amphibian species observed was recorded along with information regarding the location and maximum depth of pools.

Any egg masses observed were documented along with a GPS location and photos taken of the pools. Visual observations or calls from other amphibians were also recorded along with other wildlife sightings.

Field notes are provided in **Appendix D.**

Marsh Bird Breeding Habitat

One Candidate Marsh Bird Breeding Habitat was identified within 120 m of the Project Location. In order to evaluate the significance of this feature, three Point Count surveys were conducted on May 30, June 19 and July 10, 2012. The first two surveys were completed in the early morning between dawn (one half hour before sunrise) and four hours after sunrise. The final survey was completed within three hours of sunrise as bird singing tends to drop of earlier later in the season.

Weather conditions were fair with no precipitation and little cloud cover, and wind conditions were between 0 to 3 on the Beaufort Scale.

The surveys involved a single point count station directly adjacent to the habitat. The surveyor listened for ten minutes at the station and recorded all bird species observed or heard. The distance of each bird to the habitat area was estimated. Any nests or

nesting behaviours were noted. The location of any nests, if found, were recorded using a GPS unit.

Field notes are provided in **Appendix D.**

Special Concern and Rare Wildlife Species

A number of candidate habitats for Special Concern and rare wildlife species were identified within 120 m of the Project Location, including candidate habitats for a variety of birds, reptiles, mammals, insects and plants. Their significance was determined through one of several methods, as described below.

Species with Habitats Under Previous Study

In many cases, wildlife was surveyed in conjunction with one or more of the applicable habitat types noted above. These are described in **Table 4.2**. Survey methodologies can be found by referring to the methodology used in the corresponding habitat type.

Table 4.2 Special Concern and Rare Species Surveyed in Conjunction with Other Significant Wildlife Habitat

Common Name	Scientific Name	Corresponding Habitat Type for Which Surveys Were Completed
Short-eared owl	*Asio flammeus*	Raptor Wintering Areas
Snapping turtle	*Chelydra serpentina*	Turtle Wintering Areas Turtle Nesting Sites
Milk snake	*Lampropeltis triangulum*	Snake Hibernacula
Eastern ribbon snake	*Thamnophis sauritus*	Snake Hibernacula
Little Brown Bat	*Myotis lucifugus*	Bat Maternal Colonies
Northern Long-eared Bat	*Myotis septentrionalis*	Bat Maternal Colonies
Tri-colored Bat	*Perimyotis subflavus*	Bat Maternal Colonies

Species with Unique Habitat Requirements

For other species with unique habitat requirements not covered by any of the habitat types previously described, special surveys were undertaken. This applies specifically to Common Nighthawk, (*Chordeiles minor*). Surveys were completed for this species at four candidate habitat units (CNH001, CNH002, CNH003 and CNH004), and a total of six point counts were completed (1 to 2 point counts at each habitat unit). Each point count was surveyed twice, before dawn on clear nights with the moon more than ¼ full, as is optimal for Common Nighthawk and Whip-poor-will (*Antrostomus vociferus*) surveys. These species are most active and call most frequently at night, and are thus

most detectable during this period. Surveys were completed on June 5, and July 10, 2012.

Surveys for this species included listening and observing breeding bird activity at each survey station. Ten minute points counts were completed at each station in fair weather conditions with no precipitation and little wind (0 to 2 on the Beaufort Scale).

Common Nighthawk was not detected at any of the survey stations.

Field notes are provided in **Appendix D**.

Plant Species

There are thirteen candidate habitats for rare plant species within 120m of an access road (SCC-001 through SCC-013).

Although vegetation was surveyed during ELC mapping exercises, certain rare plants may not have been readily identifiable as they may bloom during different times of the year. Detailed surveys at appropriate times of the year have not been undertaken as part of the EOS; however, Northland has committed to completing these surveys prior to construction. Survey methodology will be provided in the EIS. These habitats will be treated as significant in the interim. Impacts and mitigation will be provided in EIS.

Field notes are provided in **Appendix D**.

Amphibian Movement Corridors

Once significant Amphibian Woodland Breeding Habitat was identified, aerial photography was used to identify possible natural linkages between breeding and summer habitat. Conditions were verified on the ground during Amphibian Woodland Breeding Habitat surveys.

Table 4.3 Summary of Evaluation of Significance Methodology

Purpose	Summary of Methods	Date(s), Time(s) & duration	Weather Conditions
Valleylands			
Valleylands	**Alternative Investigation:** • Combination of ELC data (collected from nearest vantage point), Records Review data and GIS-derived information. • Information qualitatively compared to significance criteria provided in MNR (2011a).	September 12, 13, 14, 15, 2011 8:00-17:00 (32 hrs.) May 7, 8, 10, 16, 18, 23, 24, 30 and June 1, 2012 8:00- 17:00 (72 hrs.)	Conditions variable with some sun, rain and hail, cloud cover and wind conditions variable (Temp. range: 21.6 ºC – 6.4 ºC, 0-10.2mm precip.). Conditions variable with both sunny and rainy conditions, cloud cover and wind conditions variable (Temp. range: 20.6 ºC – 3.6 ºC, 0-7.5mm precip.).
Wetlands			
Unevaluated Wetlands	**Evaluation of Significance:** • Combination of ELC data, Records Review data and existing information sources, including the Ausable-Bayfield Conservation Authority's Environmentally Significant Areas Watershed Plan Report (ABCA,1995). • All unevaluated wetlands to be treated as significant. Wetland Characteristics and Ecological Functions Assessment (Appendix C of NHA Guide) will be applied. • Proximity to other wetlands, catchment areas, land use classification and interspersion data identified using GIS modeling and analysis. **Alternative Investigation:** • Same methodology as noted above. ELC data collected from nearest vantage point.	September 12, 13, 14, 15, 2011 8:00-17:00 (32 hrs.) May 7, 8, 10, 16, 18, 23, 24, 30 and June 1, 2012 8:00- 17:00 (72 hrs.)	Conditions variable with some sun, rain and hail, cloud cover and wind conditions variable (Temp. range: 21.6 ºC – 6.4 ºC, 0-10.2mm precip.) Conditions variable with both sunny and rainy conditions, cloud cover and wind conditions variable (Temp. range: 20.6 ºC – 3.6 ºC, 0-7.5mm precip.)
Woodlands			
Woodlands	**Evaluation of Significance:** • Combination of ELC data, Records Review data and GIS-derived information (e.g. size and location relative to other features). • Significance determined using criteria listed in Section 6.2.2.1 of NHA Guide using GIS. **Alternative Investigation:** • Same methodology as noted above. ELC data collected from nearest vantage point.	September 12, 13, 14, 15, 2011 8:00-17:00 (32 hrs.) May 7, 8, 10, 16, 18, 23, 24, 30 and June 1, 2012 8:00- 17:00 (72 hrs.)	Conditions variable with some sun, rain and hail, cloud cover and wind conditions variable (Temp. range: 21.6 ºC – 6.4 ºC, 0-10.2mm precip.) Conditions variable with both sunny and rainy conditions, cloud cover and wind conditions variable (Temp. range: 20.6 ºC – 3.6 ºC, 0-7.5mm precip.)
Wildlife Habitats			
Bat Maternal Colonies (includes habitat for Little Brown Bat, Northern Long-eared Bat and Tri-coloured Bat)	• Candidate habitats to be surveyed prior to construction. Methodology to be provided in the Environmental Impact Study.	N/A.	N/A.
Turtle Wintering Areas (includes habitat for Snapping Turtle)	**Evaluation of Significance:** • On two warm, sunny days with temperatures above 20ºC in spring of 2012, each candidate habitat will be observed for signs of turtles emerging from hibernation. Each site will be visited twice. Surveys will be limited to visual observations and will not include any live trapping. **Alternative Investigation:** • None required.	March 20, 2012 14:00-15:50 (1:50 hrs.) May 11, 2012 16:00-16:30 (0.30 hrs.)	Sunny, very warm, 25ºC, low wind. Sunny, warm, 19ºC, low wind.

Purpose	Summary of Methods	Date(s), Time(s) & duration	Weather Conditions
Reptile Hibernacula (includes habitat for Milksnake and Eastern Ribbonsnake)	**Evaluation of Significance:** • Each candidate hibernation site will be visited twice in the spring of 2012 to confirm use by snakes. Searches will be conducted on sunny, warm spring days with temperatures above 20ºC. **Alternative Investigation:** • None required.	March 20, 2012 14:00-15:50 (1:50 hrs.) April 25, 2012 14:00-19:00 (5 hrs.) May 11, 2012 12:00-15:00 (3:00 hrs.)	Sunny, very warm, 25ºC, low wind. Sunny, warm, 13ºC, low wind. Sunny, warm, 19ºC, low wind.
Colonial Nesting Bird Breeding Habitat (Ground) Brewer's Blackbird Only	**Evaluation of Significance:** • Point count surveys, scheduled for May, within candidate habitat to be conducted between dawn (one half hour before sunrise) and 4 hours after sunrise. • Point count surveys, scheduled for June-July, within candidate habitat to be conducted between dawn (one half hour before sunrise) and 3 hours after sunrise. **Alternative Investigation:** • Point count surveys from nearest vantage point.	May 29-30, June 18-19, 2012 Surveys completed between 0500 and 1000; 10 survey stations surveyed twice each (10 hrs.)	Fair weather conditions with little to no precipitation (<0.5 mm), between 17-30^{o}C. 0-3 wind on Beaufort Scale, cloud cover varied between 0-25%
Waterfowl Nesting	**Evaluation of Significance:** • Point count surveys, scheduled for May, within candidate habitat to be conducted between dawn (one half hour before sunrise) and 4 hours after sunrise. • Point count surveys, scheduled for June-July, within candidate habitat to be conducted between dawn (one half hour before sunrise) and 3 hours after sunrise. **Alternative Investigation:** • None required.	May 30, June 19, July 10, 2012 Surveys completed between 0500 and 1000; 1 survey station surveyed three times (2 hrs.)	Fair weather conditions with little to no precipitation (<0.5 mm), between 17-30^{o}C. 0-3 wind on Beaufort Scale, cloud cover varied between 0-25%
Turtle Nesting Areas	**Evaluation of Significance:** • See methodology under Turtle Wintering Areas.	See methodology under Turtle Wintering Areas.	See methodology under Turtle Wintering Areas.
Amphibian Breeding Habitat (Woodland)	**<u>Frogs</u>** **Evaluation of Significance:** Marsh Monitoring Program Protocol: • Surveys were conducted between one-half hour after sunset and midnight. • Point count stations surveyed for three minutes. • All calls within 100m recorded in accordance with abundance codes: – (1) calls not simultaneous – number of individuals can be accurately counted; – (2) some calls simultaneous –number of individuals can be reliably estimated; and – (3) full chorus – calls continuous and overlapping, so number of individuals cannot be reliably estimated. **Alternative Investigation:** • Calls recorded from nearest accessible location.	April 27, May 26 and June 24, 2011 19:30-24:00 (13.5 hrs) April 20, May 15 and June 27, 2012 19:30-23:00 (10.5hrs)	April 27, 11 – Cloudy (drizzle), 20ºC, low wind May 26, 11 – Cloudy cool, 17ºC, moderate wind June 24, 11 – Cloudy, rain, 17ºC, low wind. April 20/25, 12 – Cloudy, rain, 20ºC, moderate wind May15, 12 – Clear, previous rain events, 25ºC, low wind June 27, 12 – Clear, previous rain events, 27ºC, low wind.

Purpose	Summary of Methods	Date(s), Time(s) & duration	Weather Conditions
	<u>Salamanders</u> **Evaluation of Significance:** • Vernal pools surveyed for mole salamander egg masses. • Surveys entailed wading the perimeter and deeper parts of the vernal pools looking for egg masses using polarized eyewear. Information regarding location and max depth were recorded for each vernal pool along with a GPS location and photos. • Any egg masses observed were documented along with a GPS location and photos taken of the pools. Visual observations or calls from other amphibians were also recorded along with other wildlife sightings. **Alternative Investigation:** • None required.	March 20, 2012 12:00-17:00 (5 hrs.) March 21, 2012 10:00-16:00 (6 hrs.) March 30, 2012 10:00-17:00 (7 hrs.)	Sunny, very warm, 25ºC, low wind. Sunny, very warm, 25ºC, low wind. Cloudy, cold front, 5ºC, windy.
Marsh Bird Breeding Habitat	**Evaluation of Significance:** • Point count surveys, scheduled for May, within candidate habitat to be conducted between dawn (one half hour before sunrise) and 4 hours after sunrise. • Point count surveys, scheduled for June-July, within candidate habitat to be conducted between dawn (one half hour before sunrise) and 3 hours after sunrise. **Alternative Investigation:** • None required.	May 30, June 19, July 10, 2012 Surveys completed between 0500 and 1000; 1 survey station surveyed three times (2 hrs.)	Fair weather conditions with no precipitation, between 17-30ºC. 0-3 wind on Beaufort Scale, cloud cover varied between 0-25%.
Special Concern and Rare Wildlife Species	**<u>Species with Habitats Under Previous Study</u>** • For Short-eared Owl, Snapping Turtle, Milksnake, Eastern Ribbonsnake, Little Brown Bat, Northern Long-eared Bat and Tri-coloured Bat, refer to corresponding habitats noted above.	Refer to corresponding habitats noted above.	Refer to corresponding habitats noted above.
	<u>Species with Unique Habitats</u> • Point count surveys scheduled before dawn on clear nights with the moon more than ¼ full, as is optimal to detect Common nighthawk.	June 5, July 10, 2012 Surveys completed between 2100-0200; six survey stations surveyed two times (6 hours).	Fair weather conditions with no precipitation, between 17-22ºC. 0-2 wind on Beaufort Scale, cloud cover varied between 0-25%; moon was more than ¼ full during both survey periods.
	<u>Rare Plant Species</u> • Candidate habitats to be surveyed prior to construction. Methodology to be provided in the Environmental Impact Study.	N/A.	N/A.
Amphibian Movement Corridors	• N/A.	N/A.	N/A.

4.5 Qualifications of Evaluators

The Evaluation of Significance was undertaken by various staff of Neegan Burnside (Prime Consultant) and North-South Environmental (Sub-Consultant). Staff assignments are summarized in **Table 4.4** Curriculum vitae are presented in **Appendix C**.

Table 4.4 Staff Responsibilities

Task	Staff Member	Company
Valleyland Evaluation	Tricia Radburn, M.Sc.(Pl), MCIP, RPP Environmental Planner	Neegan Burnside
Wetland Evaluation	Dominique Evans Environmental Technologist	Neegan Burnside
Woodland Evaluation	Tricia Radburn, M.Sc.(Pl), MCIP, RPP Environmental Planner Paul Stubbert GIS Specialist	Neegan Burnside
Candidate Turtle Wintering Areas	Sarah Mainguy, M.Sc. Senior Ecologist Leah Lefler, M.E.S. Ecologist Sal Spitale, M.E.S. Ecologist Sarah Piett, B.Sc. Ecologist	North-South Environmental
Candidate Reptile Hibernacula	Chris Pfohl, C.E.T. Aquatic Resources Specialist	Neegan Burnside
Candidate Colonially-nesting Bird Breeding Habitat (Ground)	Sarah Mainguy, M.Sc. Senior Ecologist Chris Pfohl, C.E.T. Aquatic Resources Specialist	North-South Environmental Neegan Burnside
Candidate Waterfowl Nesting	Sarah Mainguy, M.Sc. Senior Ecologist	North-South Environmental
Candidate Turtle Nesting Areas	Sarah Mainguy, M.Sc. Senior Ecologist	North-South Environmental
Candidate Amphibian Breeding Habitat (Woodland)	Chris Pfohl, C.E.T. Aquatic Resources Specialist	Neegan Burnside
Candidate Marsh Breeding Habitat	Chris Pfohl, C.E.T. Aquatic Resources Specialist	Neegan Burnside
Candidate Habitat for Common Nighthawk	Sarah Mainguy, M.Sc. Senior Ecologist	North-South Environmental

5.0 Evaluation of Significance Results

5.1 Valleylands

One candidate valleyland was observed during the Site Investigation (V-001).The valley is approximately 1,400 m in length with an average width of 100 m. The valley's entire width is well vegetated and is comprised of a Green Ash Mineral Deciduous Swamp community that follows the Zurich Drain Tributary B. The entire swamp community extends beyond the valley forming a long corridor for wildlife movement (Although there is no large natural area at the western end of the valley towards which animals may wish to travel).

According to MNR guidance (MNR, 2011a), valleylands with a catchment of 50 ha or greater with at least 30m of riparian vegetation on each side and a total of 100 m in width may be considered significant. Linkage functions and the presence of any planned or completed restoration projects are also important.

Although no evidence of restoration projects within the valleyland could be identified, the area appears to meet the criteria for significance. This feature will therefore be brought forward to the EIS for assessment.

5.2 Wetlands

Twenty-four wetlands have been identified within 120 m of the Project Location. Two are wetlands associated with the Hay Swamp Provincially Significant Wetland Complex. As such, the significance of these wetlands has previously been established. These will be brought forward into the Environmental Impact Study (EIS").

The remaining twenty-two wetlands within 120 m of the Project Location have not previously been evaluated. These wetlands will be treated as significant and also brought forward for assessment in the EIS. In accordance with Table 1 in Appendix C of MNR, 2011a, the characteristics and functions of these wetlands are summarized in **Table 5.1**.

Table 5.1 Wetland Characteristics and Ecological Functions

Feature ID	Feature Size (Ha)	Wetland Type	Site Type	Vegetation Communities	Proximity to Other Wetlands (PAUL TO ASSIST)	Interspersion (# of intersections and description of "edges" of communities)	Open Water Types	Flood Attenuation (Total)	Water Quality Improvement (Total)	Shoreline Erosion Control	Groundwater Recharge (Total)	Species Rarity (Total)	Significant Features and Habitats (Total)	Fish Habitat (Total)
WE-001	172.3	Swamp	Palustrine	Deciduous tree, tall shrub, low shrub, ground cover.	667 m Not hydrologically connected by surface water.	114 – High interspersion; edges complex with openings throughout the community.	Type 1 (< 5% open water)	739 ha	>50% agricultural landscape; some smaller woodlots with high proportions of standing trees.	NA – mineral swamp community.	Palustrine swamp with predominately clay soils.	None known or observed.	None known or observed.	Absent.
WE-002	83.3	Swamp	Palustrine	Deciduous tree, tall shrub, low shrub, ground cover.	667 m Not hydrologically connected by surface water.	61 – Moderate interspersion; edges mostly uniform with minor extensions from the main wetland.	Type 1 (< 5% open water)	753 ha	>75% agricultural and developed landscape; incorporates a portion of the village of Dashwood.	NA – mineral swamp community.	Palustrine swamp with predominately clay soils.	None known or observed.	None known or observed.	Absent.
WE-008	0.3	Open Water (portion of complex with WE-008 – WE-011)	Riverine	Robust emergent, narrow leaved emergent, broad leaved emergent, floating plant, submerged plant.	275m – 896m (complex) Not hydrologically connected by surface water.	50 (complex total) – Low interspersion; simple community boundaries.	Type 8 (> 95% open water)	440 ha (complex total)	>75% agricultural landscape; only wooded area is associated with the wetland complex.	Moderate erosion control due to surrounding vegetation and adjacent swamp communities.	Open water community with unknown substrate.	None known or observed.	None known or observed.	Low quality habitat.
WE-009	1.2	Swamp (portion of complex with WE-008 – WE-011)	Riverine	Coniferous tree, standing dead coniferous tree, tall shrub, low shrub, narrow leaved emergent, ground cover	275m – 896m (complex) Not hydrologically connected by surface water.	50 (complex total) – Low interspersion; simple community boundaries.	Type 1 (< 5% open water)	440 ha (complex total)	>75% agricultural landscape; only wooded area is associated with the wetland complex.	NA – mineral swamp community.	Riverine swamp with predominately clay soils.	None known or observed.	None known or observed.	Absent.
WE-010	2.1	Marsh (portion of complex with WE-008 – WE-011)	Riverine	Tall shrub, robust emergent, narrow leaved emergent, ground cover.	275m – 896m (complex) Not hydrologically connected by surface water.	50 (complex total) – Low interspersion; simple community boundaries.	Type 3 (5% - 25% patchy open water)	440 ha (complex total)	>75% agricultural landscape; only wooded area is associated with the wetland complex.	Moderate erosion control due to surrounding vegetation and adjacent swamp communities.	Riverine marsh with predominately clay soils.	None known or observed.	None known or observed.	Absent.
WE-011	1.8	Swamp (portion of complex with WE-008 – WE-011)	Riverine	Coniferous tree, standing dead coniferous tree, tall shrub, low shrub, narrow leaved emergent, ground cover.	275m – 896m (complex) Not hydrologically connected by surface water.	50 (complex total) – Low interspersion; simple community boundaries.	Type 1 (< 5% open water)	440 ha (complex total)	>75% agricultural landscape; only wooded area is associated with the wetland complex.	NA – mineral swamp community.	Riverine swamp with predominately clay soils.	None known or observed.	None known or observed.	Absent.

Feature ID	Feature Size (Ha)	Wetland Type	Site Type	Vegetation Communities	Proximity to Other Wetlands (PAUL TO ASSIST)	Interspersion (# of intersections and description of "edges" of communities)	Open Water Types	Flood Attenuation (Total)	Water Quality Improvement (Total)	Shoreline Erosion Control	Groundwater Recharge (Total)	Species Rarity (Total)	Significant Features and Habitats (Total)	Fish Habitat (Total)
WE-012	1.4	Swamp	Palustrine	Coniferous tree, standing dead coniferous tree, tall shrub, low shrub, narrow leaved emergent, ground cover.	275 m Not hydrologically connected by surface water.	41– Low interspersion; simple community boundaries.	Type 1 (< 5% open water)	4 ha	>75% wooded area associated with the swamp; woodlot contains a high proportion of standing trees.	NA – mineral swamp community.	Palustrine swamp with predominately clay soils.	None known or observed.	None known or observed.	Absent.
WE-013	7.0	Swamp	Riverine	Coniferous tree, tall shrub, low shrub, narrow leaved emergent, ground cover	20 m Hydrologically connected by surface water.	43 (complex total) – Low interspersion; simple community boundaries.	Type 1 (< 5% open water)	1,371 ha	>75% agricultural and developed landscape; incorporates a portion of the village of Zurich.	NA – mineral swamp community.	Riverine swamp with predominately clay soils.	None known or observed.	None known or observed.	Absent.
WE-014	0.4	Swamp	Riverine	coniferous tree, tall shrub, low shrub, narrow leaved emergent, ground cover.	51 m Not hydrologically connected by surface water.	43 (complex total) – Low interspersion; simple community boundaries.	Type 1 (< 5% open water)	4 ha	>75% agricultural landscape feeding directly into swamp.	NA – mineral swamp community.	Riverine swamp with predominately clay soils.	None known or observed.	None known or observed.	Absent.
WE-015	0.9	Swamp	Palustrine	Coniferous tree, tall shrub, low shrub, dead shrub, narrow leaved emergent, ground cover.	30 m Hydrologically connected by surface water.	36 – Low interspersion; simple community boundaries.	Type 1 (< 5% open water)	791 ha	>75% agricultural and developed landscape; incorporates a portion of the village of Zurich.	Moderate erosion control due to surrounding vegetation.	Palustrine swamp with organic soils.	None known or observed.	None known or observed.	Absent.
WE-016	0.1	Open Water (between W-039 and OC-028)	Riverine	Robust emergent, narrow leaved emergent, broad leaved emergent, floating plant, submerged plant.	80 m Not hydrologically connected by surface water	30 – Low interspersion; simple community boundaries.	Type 8 (> 95% open water)	3 ha	>75% agricultural landscape feeding directly into open water.	Moderate erosion control due to robust emergent and adjacent woodlot.	Open water community with unknown substrate.	None known or observed.	None known or observed.	Low quality habitat.
WE-017	1.3	Swamp	Riverine	Coniferous tree, tall shrub, low shrub, dead shrub, narrow leaved emergent, ground cover	20 m Hydrologically connected by surface water.	37 – Low interspersion; simple community boundaries.	Type 1 (< 5% open water)	1,411 ha	>75% agricultural and developed landscape; incorporates a portion of the village of Zurich.	NA – mineral swamp community.	Riverine swamp with predominately clay soils.	None known or observed.	None known or observed.	Absent.
WE-020	2.2	Swamp	Palustrine	coniferous tree, tall shrub, low shrub, narrow leaved emergent, ground cover.	2 m Hydrologically connected by surface water.	44 – Low interspersion; simple community boundaries.	Type 1 (< 5% open water)	657 ha	>75% agricultural and developed landscape; incorporates a portion of the village of Zurich.	NA – mineral swamp community.	Palustrine swamp with predominately clay soils.	None known or observed.	None known or observed.	Absent.

Feature ID	Feature Size (Ha)	Wetland Type	Site Type	Vegetation Communities	Proximity to Other Wetlands (PAUL TO ASSIST)	Interspersion (# of intersections and description of "edges" of communities)	Open Water Types	Flood Attenuation (Total)	Water Quality Improvement (Total)	Shoreline Erosion Control	Groundwater Recharge (Total)	Species Rarity (Total)	Significant Features and Habitats (Total)	Fish Habitat (Total)
WE-022	9.3	Swamp	Palustrine	Coniferous tree, tall shrub, low shrub, narrow leaved emergent, ground cover.	1,563 m Not hydrologically connected by surface water.	40 – Low interspersion; simple community boundaries.	Type 1 (< 5% open water)	21 ha	>50% agricultural landscape feeding directly into swamp.	NA – mineral swamp community.	Palustrine swamp with predominately clay soils.	None known or observed.	None known or observed.	Absent.
WE-026	61.1	Swamp	Palustrine	Coniferous tree, tall shrub, low shrub, narrow leaved emergent, ground cover.	20 m Hydrologically connected by surface water	51 – Low interspersion; simple community boundaries.	Type 1 (< 5% open water)	965 ha	>75% agricultural and developed landscape; incorporates a portion of the village of Zurich.	NA – mineral swamp community.	Palustrine swamp with predominately clay soils.	None known or observed.	None known or observed.	Absent.
WE-027	10.1	Swamp	Palustrine	Coniferous tree, tall shrub, low shrub, narrow leaved emergent, ground cover.	122 m Not hydrologically connected by surface water.	34 – Low interspersion; simple community boundaries.	Type 1 (< 5% open water)	30 ha	>50% agricultural landscape feeding directly into swamp.	NA – mineral swamp community.	Palustrine swamp with predominately clay soils.	None known or observed.	None known or observed.	Absent.
WE-029	9.4	Swamp	Palustrine	Coniferous tree, tall shrub, low shrub, narrow leaved emergent, ground cover.	534 m Hydrologically connected by surface water.	43 – Low interspersion; simple community boundaries.	Type 1 (< 5% open water)	305 ha	>75% agricultural landscape; some smaller woodlots with high proportions of standing trees; adjacent to sewage lagoons.	NA – mineral swamp community.	Palustrine swamp with predominately clay soils.	None known or observed.	None known or observed.	Absent.
WE-030	0.7	Swamp	Riverine	Coniferous tree, tall shrub, low shrub, narrow leaved emergent, ground cover.	1,620 m Hydrologically connected by surface water.	46 – Low interspersion; simple community boundaries.	Type 1 (< 5% open water)	1662 ha	>75% agricultural landscape; some smaller woodlots with high proportions of standing trees.	NA – mineral swamp community.	Riverine swamp with predominately clay soils.	None known or observed.	None known or observed.	Absent.
WE-031	1.8	Swamp	Riverine	Coniferous tree, tall shrub, low shrub, narrow leaved emergent, ground cover.	45 m Hydrologically connected by surface water.	34 – Low interspersion; simple community boundaries.	Type 1 (< 5% open water)	1307 ha	>75% agricultural landscape; some smaller woodlots with high proportions of standing trees.	NA – mineral swamp community.	Riverine swamp with predominately clay soils.	None known or observed.	None known or observed.	Absent.
WE-032	0.9	Open Water (within disturbed site)	Palustrine	Floating plant, submerged plant.	536 m Not hydrologically connected by surface water.	40 – Low interspersion; simple community boundaries.	Type 8 (> 95% open water)	3 ha	>50% agricultural landscape feeding directly into open water.	Low erosion control due to lack of surrounding vegetation.	Open water community with unknown substrate.	None known or observed.	None known or observed.	Low quality habitat.
WE-033	1.0	Swamp	Riverine	Coniferous tree, tall shrub, low shrub, narrow leaved emergent, ground cover.	247 m Hydrologically connected by surface water.	37 – Low interspersion; simple community boundaries.	Type 1 (< 5% open water)	645 ha	>75% agricultural landscape; some smaller woodlots with high proportions of standing trees.	NA – mineral swamp community.	Riverine swamp with predominately clay soils.	None known or observed.	None known or observed.	Absent.

Feature ID	Feature Size (Ha)	Wetland Type	Site Type	Vegetation Communities	Proximity to Other Wetlands (PAUL TO ASSIST)	Interspersion (# of intersections and description of "edges" of communities)	Open Water Types	Flood Attenuation (Total)	Water Quality Improvement (Total)	Shoreline Erosion Control	Groundwater Recharge (Total)	Species Rarity (Total)	Significant Features and Habitats (Total)	Fish Habitat (Total)
WE-034	0.1	Open Water (small pond within W-102)	Palustrine	Robust emergent, narrow leaved emergent, broad leaved emergent, floating plant, submerged plant.	45 m Not hydrologically connected by surface water.	48 – Low interspersion; simple community boundaries.	Type 8 (> 95% open water)	1 ha	>75% wooded area associated with the open water; woodlot contains a high proportion of standing trees.	Moderate erosion control.	Open water community with unknown substrate.	None known or observed.	None known or observed.	Low to moderate quality habitat. Known trout habitat within creek.
WE-035	4.8	Open Water	Palustrine	Floating plant, submerged plant.	353 m Hydrologically connected by surface water.	41 – Low interspersion; simple community boundaries.	Type 8 (> 95% open water)	28 ha	~50% wooded area associated with the open water; woodlot contains a high proportion of standing trees; remainder of area is agricultural.	Low erosion control due to nature of slopes.	Open water community with unknown substrate.	None known or observed.	None known or observed.	Moderate quality habitat. Abandoned aggregate pit.
WE-037	1.6	Swamp	Riverine	Coniferous tree, tall shrub, low shrub, narrow leaved emergent, ground cover.	568 m Not hydrologically connected by surface water.	44 – Low interspersion; simple community boundaries.	Type 1 (< 5% open water)	2,790 ha	>75% agricultural landscape; some smaller woodlots with high proportions of standing trees.	NA – mineral swamp community.	Riverine swamp with predominately clay soils.	None known or observed.	None known or observed.	Absent.
WE-038	23.0	Swamp	Riverine	Coniferous tree, tall shrub, low shrub, narrow leaved emergent, ground cover.	2,697 m Hydrologically connected by surface water.	50 – Low interspersion; simple community boundaries.	Type 1 (< 5% open water)	1,204 ha	>75% agricultural landscape; some smaller woodlots with high proportions of standing trees.	NA – mineral swamp community.	Riverine swamp with predominately clay soils.	None known or observed.	None known or observed.	Absent.

NOTES:
Interspersion Classification– Low (60 or fewer intersections); Moderate (61 – 100 intersections); High (100 or greater intersections)

5.3 Woodlands

Thirty-nine woodlands were identified within 120 m of the Project Location ranging in size from 0.43 ha to 172.33 ha.

Using the methodology described in Section 4.3, seven woodlands were found to be non-significant due to their small size. The remaining 32 are significant and will be brought forward to the EIS for further assessment.

The characteristics and functions of each Significant Woodland are summarized in **Table 5.2**.

Table 5.2 Woodland Evaluation

Feature ID	ELC Unit	ELC Community Name	ELC Unit Area (Ha)	Size of Contiguous Woodland (Ha)	Minimum Distance Between Feature and Project Location	Habitat Features Present	Municipality	Meets one or more criteria for significance (Size, woodland interior, proximity to other significant features, linkages, water protection, diversity or uncommon characteristics) (y/n)	Provincially Significant? (y/n)
W-004	FOD4-2	Dry - Fresh White Ash - Hardwood Deciduous Forest Type.	4.82	35.97	37 m	Spring ephemerals abundant in FOD4-2 community	South Huron	Y	Y
	FOD5-8	Dry – Fresh Sugar Maple – White Ash Deciduous Forest Type.	31.15			Sugar Maple dominated forest with White Ash component.			
W-012 (WE-001)	SWD2-2	Green Ash Mineral Deciduous Swamp Type	172.33	172.33	69 m	Vernal pools; patches of Spicebush in shrub layer	South Huron	Y	Y
W-013	FOD4-2	Dry - Fresh White Ash - Hardwood Deciduous Forest Type.	3.17	3.17	7 m	White Ash dominated forest.	South Huron	Y	Y
W-014	FOD4-2	Dry - Fresh White Ash - Hardwood Deciduous Forest Type.	5.73	5.73	2 m	Spring ephemerals abundant; Shagbark Hickory abundant in some locations.	South Huron	Y	Y
W-020	FOD5-8	Dry – Fresh Sugar Maple – White Ash Deciduous Forest Type.	11.18	11.18	2 m	Sugar Maple dominated forest with White Ash component.	Bluewater	Y	Y
W-021	FOD5-1	Dry – Fresh Sugar Maple Deciduous Forest Type.	14.77	14.77	2 m	Vernal pools; Sugar Maple with Red Oak in canopy; north end more disturbed	Bluewater	Y	Y
W-023 (WE-002)	CUP3	Cultural Plantation.	1.13	87.89	36 m	CUP3 approximately 50 years old; vernal pools present in the FOM6-1 and SWD2-2 communities; dead ash present in canopy	Bluewater	Y	Y
	FOM6-1	Fresh – Moist Sugar Maple – Hemlock Mixed Forest Type.	3.43						
	SWD2-2	Green Ash Mineral Deciduous Swamp Type	83.33						
W-026	FOD4-2	Dry - Fresh White Ash - Hardwood Deciduous Forest Type.	17.76	34.06	2 m	Vernal pools; spring ephemerals abundant in some locations present in the FOD5-8 community	Bluewater	Y	Y
	FOD5-8	Dry – Fresh Sugar Maple – White Ash Deciduous Forest Type.	16.30						
W-029 (WE-003)	FOD6-5	Fresh – Moist Sugar Maple – Hardwood Deciduous Forest Type.	1.56	31.77	31 m	Vernal pools present in the SWD2-2 community	Bluewater	Y	Y
	FOM6-1	Fresh – Moist Sugar Maple – Hemlock Mixed Forest Type.	2.32						
	SWD2-2	Green Ash Mineral Deciduous Swamp Type.	27.89						
W-030 (WE-021)	FOD3-1	Dry – Fresh Poplar Deciduous Forest Type.	19.80	84.88	20 m	Datar's-Miller Swamp and adjacent upland forest.	Bluewater	Y	Y
	SWD2-2	Green Ash Mineral Deciduous Swamp Type.	65.08						

Feature ID	ELC Unit	ELC Community Name	ELC Unit Area (Ha)	Size of Contiguous Woodland (Ha)	Minimum Distance Between Feature and Project Location	Habitat Features Present	Municipality	Meets one or more criteria for significance (Size, woodland interior, proximity to other significant features, linkages, water protection, diversity or uncommon characteristics) (y/n)	Provincially Significant? (y/n)
W-031	FOD5-8	Dry – Fresh Sugar Maple – White Ash Deciduous Forest Type.	8.61	8.61	7 m	Sugar Maple and White Ash dominated forest.	Bluewater	Y	Y
W-032	CUP3-2	White Pine Coniferous Plantation Type.	1.94	1.94	20 m	White Pine plantation.	Bluewater	N Does not meet minimize size requirements for any criteria.	N
W-034	CUP3-2	White Pine Coniferous Plantation Type.	1.38	6.90	2 m	Pine plantation adjacent to upland deciduous forest.	Bluewater	Y	Y
	FOD4	Dry – Fresh Upland Deciduous Forest Ecosite.	5.52						
W-035	FOD5-8	Dry – Fresh Sugar Maple – White Ash Deciduous Forest Type.	0.96	0.96	4 m	Sugar Maple dominated forest with White Ash component	Bluewater	N Does not meet minimize size requirements for any criteria.	N
W-036	FOD3-2	Dry – Fresh White Birch Deciduous Forest Type.	8.74	37.97	2 m	Vernal pools present.	Bluewater	Y	Y
	FOD4-2	Dry - Fresh White Ash - Hardwood Deciduous Forest Type.	29.23						
W-037 (WE-012)	FOD5-8	Dry – Fresh Sugar Maple – White Ash Deciduous Forest Type.	16.56	30.35	2 m	Seepages noted; occasional Balsam Fir; spring ephemerals abundant in some locations	Bluewater	Y	Y
	FOD7-2	Fresh – Moist Green Ash - Hardwood Lowland Deciduous Forest Type.	12.42						
	SWD2-2	Green Ash Mineral Deciduous Swamp Type.	1.37						
W-038 (WE-014)	SWD2-2	Green Ash Mineral Deciduous Swamp Type.	0.43	.43	15 m	Green Ash dominated swamp.	Bluewater	N Does not meet minimize size requirements for any criteria.	N
W-039 (WE-013, WE-017)	FOD7-2	Fresh – Moist Green Ash - Hardwood Lowland Deciduous Forest Type.	1.37	13.19	2 m	Green Ash forest with some White Elm and Trembling Aspen; Green Ash Swamp with Trembling Aspen; European Buckthorn in understory	Bluewater	Y	Y
	FOD7-2	Fresh – Moist Green Ash - Hardwood Lowland Deciduous Forest Type.	3.49						
	SWD2-2	Green Ash Mineral Deciduous Swamp Type.	7.01						
	SWD4-1	Willow Mineral Deciduous Swamp.	1.32						
W-041	FOD4-2	Dry - Fresh White Ash - Hardwood Deciduous Forest Type.	2.57	2.57	30 m	Vernal pools present.	Bluewater	Y	Y

Feature ID	ELC Unit	ELC Community Name	ELC Unit Area (Ha)	Size of Contiguous Woodland (Ha)	Minimum Distance Between Feature and Project Location	Habitat Features Present	Municipality	Meets one or more criteria for significance (Size, woodland interior, proximity to other significant features, linkages, water protection, diversity or uncommon characteristics) (y/n)	Provincially Significant? (y/n)
W-042	CUP3-2	White Pine Coniferous Plantation Type	2.42	52.69	2 m	Garlic Mustard present in some locations in FOD4-2 community.	Bluewater	Y	Y
	FO	Forest.	1.69						
	FOD4-2	Dry - Fresh White Ash - Hardwood Deciduous Forest Type.	31.71						
	FOD4-2	Dry - Fresh White Ash - Hardwood Deciduous Forest Type.	1.86						
	FOD4-2	Dry - Fresh White Ash - Hardwood Deciduous Forest Type.	6.30						
	FOD4-2	Dry - Fresh White Ash - Hardwood Deciduous Forest Type.	5.16						
	FOD7-2	Fresh – Moist Green Ash - Hardwood Lowland Deciduous Forest Type	.55						
W-053	FOD3-1	Dry – Fresh Poplar Deciduous Forest Type.	10.36	10.36	2 m	Young poplar dominated forest.	Bluewater	Y	Y
W-067	FO	Forest.	3.75	3.75	90 m	Spring ephemerals present; vernal pooling	Bluewater	Y	Y
W-079 (WE-020)	SWD2-2	Green Ash Mineral Deciduous Swamp Type.	2.20	2.20	14 m	Green Ash dominated swamp.	Bluewater	Y	Y
W-081 (WE-022)	SWD2-2	Green Ash Mineral Deciduous Swamp Type.	9.30	9.30	18 m	Green Ash dominated swamp.	Bluewater	Y	Y
W-086 (WE-026)	SWD2-2	Green Ash Mineral Deciduous Swamp Type.	61.11	61.11	3 m	Green Ash dominated swamp.	Bluewater	Y	Y
W-087	FOD6	Forest.	1.69	1.69	95 m	Mature forest dominated by Sugar Maple and White Ash	Bluewater	N Does not meet minimize size requirements for any criteria.	N
W-088 (WE-027)	SWD2-2	Green Ash Mineral Deciduous Swamp Type.	10.15	10.15	6 m	Green Ash dominated swamp.	Bluewater	Y	Y
W-093	FOD6	Fresh – Moist Sugar Maple Deciduous Forest Ecosite.	6.54	6.54	120 m	Sugar Maple dominated forest.	Bluewater	Y	Y
W-094 (WE-029)	SWD2-2	Green Ash Mineral Deciduous Swamp Type.	9.36	9.36	26 m	Green Ash dominated swamp	Bluewater	Y	Y
W-099	FO	Forest.	18.48	18.48	28 m	Forested area setback from the road.	South Huron	Y	Y

Feature ID	ELC Unit	ELC Community Name	ELC Unit Area (Ha)	Size of Contiguous Woodland (Ha)	Minimum Distance Between Feature and Project Location	Habitat Features Present	Municipality	Meets one or more criteria for significance (Size, woodland interior, proximity to other significant features, linkages, water protection, diversity or uncommon characteristics) (y/n)	Provincially Significant? (y/n)
W-102 (WE-031, WE-033)	FO	Forest.	1.23	17.03	2 m	Patches of mature deciduous forest dominated by Sugar Maple, White Elm and White Ash; lowland portions dominated by Green Ash Swamp; portions of coniferous plantation	South Huron	Y	Y
	FOD6	Fresh – Moist Sugar Maple Deciduous Forest Ecosite.	0.85						
	FOD6	resh – Moist Sugar Maple Deciduous Forest Ecosite.	1.27						
	FOD6	Fresh – Moist Sugar Maple Deciduous Forest Ecosite.	1.74						
	FOD6	Fresh – Moist Sugar Maple Deciduous Forest Ecosite.	0.61						
	FOD6	Fresh – Moist Sugar Maple Deciduous Forest Ecosite.	6.61						
	FOD6/CUP3		1.96						
	SWD2-2	Green Ash Mineral Deciduous Swamp Type.	1.78						
	SWD2	Ash Mineral Deciduous Swamp Ecosite.	0.98						
W-103 (WE-030)	SWD	Deciduous Swamp.	0.69	0.69	19 m	Small wetland area along roadside.	Huron East	N Does not meet minimize size requirements for any criteria.	N
W-104	FO	Forest.	2.40	2.40	19 m	Forested area setback from the road.	Huron East	Y	Y
W-110	FO	Forest.	0.48	0.48	2 m	Forested area setback from the road.		N Does not meet minimize size requirements for any criteria.	Y
W-118	FOD5	Dry – Fresh Sugar Maple Deciduous Forest Ecosite.	12.40	12.40	5 m	Mature Sugar Maple and American Beech forest with some White Ash	Huron East	Y	Y
W-120 (WE-037)	SWD3-4	Manitoba Maple Mineral Deciduous Swamp Type	1.63	1.65	18 m	Small wetland area along drain.	Huron East	N Does not meet minimize size requirements for any criteria.	N
W-123	FOD6	Fresh – Moist Sugar Maple Deciduous Forest Ecosite.	4.68	4.68	18 m	White Ash dominated with some Sugar Maple; mid-aged	West Perth	Y	Y
W-127	FOD6	Fresh – Moist Sugar Maple Deciduous Forest Ecosite.	7.21	7.21	92 m	Forested area setback from the road.	West Perth	Y	Y

Feature ID	ELC Unit	ELC Community Name	ELC Unit Area (Ha)	Size of Contiguous Woodland (Ha)	Minimum Distance Between Feature and Project Location	Habitat Features Present	Municipality	Meets one or more criteria for significance (Size, woodland interior, proximity to other significant features, linkages, water protection, diversity or uncommon characteristics) (y/n)	Provincially Significant? (y/n)
W-128 (WE-038)	FOD6	Fresh – Moist Sugar Maple Deciduous Forest Ecosite.	0.52	23.54	23 m	Willow swamp; White Ash and Sugar Maple forest	Huron East	Y	Y
	SWD2	Ash Mineral Deciduous Swamp Ecosite.	23.02						

5.4 Candidate Significant Wildlife Habitat

5.4.1 Seasonal Concentration Areas

Waterfowl Stopover and Staging Areas (Aquatic)
One Candidate Waterfowl Stopover and Staging Area (Aquatic) was identified during the Site Investigation. This feature is being treated as significant and, as such, no surveys were undertaken. The feature is identified as Generalized Candidate Significant Wildlife Habitat (GCSWH-WSSA), as shown in **Appendix A** on **Figure 4a-h**. General construction mitigation to address potential impacts to this feature will be provided in the EIS.

Bat Maternal Colonies
Seven candidate habitats (BMC-001 through BMC-007) will be surveyed at a later date, prior to construction. In the interim, they will be treated as significant and carried forward for consideration and assessment in the EIS.

Three candidate habitats (BMC-008 through BMC-010) could not be surveyed due to property access limitations. These will also be treated as significant and assessed for potential impacts.

Finally, several Generalized Candidate Significant Wildlife Habitats (GCSWH-BMC) were present. These will be treated as significant and appropriate mitigation provided in the EIS.

Candidate Bat Maternal Colonies are summarized in **Table 5.2**.

Table 5.2 Evaluation of Candidate Bat Maternal Colonies

Feature ID	Minimum distance between feature and project location	Evaluation Results	Significant/ provincially significant or treated as (y/n)
BMC-001	2 m	Survey to be completed prior to construction (June 2013)	Y
BMC-002	2 m	Survey to be completed prior to construction (June 2013)	Y
BMC-003	2 m	Survey to be completed prior to construction (June 2013)	Y
BMC-004	2 m	Survey to be completed prior to construction (June 2013)	Y
BMC-005	2 m	Survey to be completed prior to construction (June 2013)	Y
BMC-006	2 m	Survey to be completed prior to construction (June 2013)	Y

Feature ID	Minimum distance between feature and project location	Evaluation Results	Significant/ provincially significant or treated as (y/n)
BMC-007	90 m	Survey to be completed prior to construction (June 2013)	Y
BMC-008	7 m	Property inaccessible. No survey possible. To be treated as significant.	Y
BMC-009	2 m	Property inaccessible. No survey possible. To be treated as significant.	Y
BMC-010	2 m	Property inaccessible. No survey possible. To be treated as significant.	Y
Generalized Candidate SWH-BMC	N/A	Treated as significant	Y

Turtle Wintering Habitat

Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate Dissolved Oxygen. Three Candidate Turtle Wintering Habitats were identified during the Site Investigations. During surveys at the site no turtles were seen at TWA-001 and limited basking areas were noted. One Midland painted turtle was observed basking on a log in a large vernal pool at (TWA-002). In order to meet the criteria for significance at least five Midland Painted Turtles must be present. As such, this area is not significant. An additional area (TWA-003) was identified late in the Site Investigation after the appropriate window for field surveys. The area was identified because snapping turtle eggs and a nest were observed west of Turnbull Road along the southern bank of Hay H drain. These nesting turtles may make use of potential overwintering habitat upstream of a dam found under the bridge at Turnbull Road. The watercourse in this location has been backed up providing deeper slow moving water that snapping turtles may use as overwintering habitat. This habitat will be treated as significant and surveyed at a later date prior to construction.

A fourth candidate habitat was identified as Generalized Candidate Significant Wildlife Habitat (GCSWH-TWA). It will be treated as significant and appropriate mitigation provided in the EIS.

Findings of surveys at the Candidate Wintering Area are summarized in **Table 5.3.**

Table 5.3 Evaluation of Candidate Turtle Wintering Areas

Feature ID	Minimum distance between feature and project location	Evaluation Results	Significant/ provincially significant or treated as (y/n)
TWA-001	38 m	No turtle observations	N
TWA-002	30 m	One Midland painted turtle observed	N
TWA-003	2 m	No survey completed. Habitat Use Study will be undertaken prior to construction.	N
GCSWH-TWA	<120 m	N/A	Y

Reptile Hibernacula

Six candidate hibernation sites were identified. All were characterized by rock and debris piles along the edges of agricultural fields (RH-01 to RH-06).

Each candidate site was visited twice to search for snake species. The only species of snake observed within the project location was the Eastern garter snake. This snake species is very common across southern Ontario. A total of five Eastern garter snakes were observed by qualified personnel at various times and locations throughout the Study Area. However, only one Eastern garter snake was observed in as the vicinity of a potential reptile hibernation site. At least five individuals of one snake species or two or more snake species are required to meet the criteria for significance. As such, none of the candidate hibernacula are significant. Snake observations are provided in **Table 5.4**.

Findings of surveys at Candidate Reptile Hibernacula are summarized in **Table 5.4**.

Table 5.4 Evaluation of Candidate Reptile Hibernacula Sites

Feature ID	Minimum distance between feature and project location	Evaluation Results	Significant/ provincially significant or treated as (y/n)
RH-01	37 m	No snakes observed	N
RH-02	47 m	No snakes observed	N
RH-03	34 m	No snakes observed	N
RH-04	61 m	No snakes observed	N
RH-05	41 m	No snakes observed	N
RH-06	40 m	One Eastern garter snake observed	N

Colonially-Nesting Bird Breeding Habitat (Ground)

A total of 20 point count surveys were completed for Brewer's Blackbird, a colonially-nesting bird species (ten point counts were surveyed two times each). Brewer's Blackbird was not detected at any of the point count surveys.

Table 5.5 Evaluation of Candidate Colonially-Nesting Bird Breeding Habitat

Feature ID	Minimum distance between feature and project location	Species Observed	Significant/ provincially significant or treated as (y/n)
CNB-001	4 m	No colonially-nesting species (*i.e.*, Brewer's Blackbird) were observed.	N
CNB-002	2 m	No colonially-nesting species (*i.e.*, Brewer's Blackbird) were observed.	N
CNB-003	2 m	No colonially-nesting species (*i.e.*, Brewer's Blackbird) were observed.	N

Deer Yarding Areas

Two pockets of a Deer Yarding Area have been identified within 120 m of the Project Location. Both areas are Stratum II deer wintering habitat associated with the Hay Swamp PSW. The areas have previously been identified as provincially significant. Both features will be brought forward for further study and assessment in the EIS, as noted in **Table 5.6**.

Table 5.6 Significant Deer Yarding Areas

Feature ID	Minimum distance between feature and project location	Evaluation Results	Significant/ provincially significant or treated as (y/n)
DYA-001	6 m	Previously evaluated as Stratum II Provincially Significant Deer Yard	Y
DYA-002	26 m	Previously evaluated as Stratum II Provincially Significant Deer Yard	Y

5.4.2 Specialized Habitat for Wildlife

Waterfowl Nesting Sites

Waterfowl nest in open upland areas adjacent to marshes, swamps and submerged shallow aquatic wetlands. Only one candidate habitat was identified (WFN-001).

One pair of nesting Wood Duck (*Aix sponsa*) were observed at the survey station on June 19 and July 10, 2012. No other species of waterfowl were noted. At least three nesting pairs are required to meet the criteria for significance. As such, this habitat is not significant.

In addition, two candidate habitats were identified as Generalized Candidate Significant Wildlife Habitat (GCSWH-TWA). They will be treated as significant and appropriate mitigation provided in the EIS.

Findings at Candidate Waterfowl Nesting Sites are summarized in **Table 5.7**.

Table 5.7 Evaluation of Candidate Waterfowl Nesting Sites

Feature ID	Minimum distance between feature and project location	Species Observed	Significant/ provincially significant or treated as (y/n)
WNA-001	2 m	A nesting pair of Wood Duck (male and female observed on two separate dates)	N
GCSWH-WFN	<120 m	N/A	Y

Turtle Nesting Areas

Turtles nest in sand and gravel areas within 100m of open water including lakes, wetlands, slow moving rivers and streams. Best nesting habitats are close to water and away from roads and sites that are less prone to loss of eggs by predation from skunks, raccoons or other animals. For an area to function as a turtle-nesting, it must provide sand and gravel that turtles are able to dig in, and located in open, sun exposed areas. Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes and rivers are most frequently used.

Two Candidate Turtle Nesting Areas (TNA-001 and TNA-002) were identified during the Site Investigation. Areas of sand and gravel found on southern facing slopes are typically used for turtle nesting. One snapping turtle nest was observed at TNA-002 along the south bank of the Unknown Hay H drain west of the Turnbull Road Bridge. The nest had broken egg shells with numerous raccoon tracks observed within the immediate area. Only one Snapping Turtle nest is required in order to meet the criteria for significance. As such, this habitat is significant and will be brought forward to the EIS.

A fourth candidate habitat was identified as Generalized Candidate Significant Wildlife Habitat (GCSWH-TNA). It will be treated as significant and appropriate mitigation provided in the EIS.

Findings of surveys at the Candidate Turtle Nesting Areas are summarized in **Table 5.8**.

Table 5.8 Evaluation of Candidate Turtle Nesting Areas

Feature ID	Minimum distance between feature and project location	Evaluation Results	Significant/ provincially significant or treated as (y/n)
TNA-001	19 m	No turtles, broken shells or disturbed sand and gravel used for nesting	N
TNA-002	2 m	Broken snapping turtle shells with sand and gravel used for nesting, No turtles observed,	Y
GCSWH-TNA	<120 m	N/A	Y

Amphibian Breeding Habitat (Woodland)
Amphibian surveys were conducted in all wetland habitats and forests with vernal pools.

Findings of surveys at Candidate Amphibian Woodland and Wetland Breeding Ponds are summarized in **Table 5.9**. No salamander egg masses were observed. At a number of sites, vernal pools were small and shallow in sandy soils and receded quickly in the spring, not offering standing water for sufficient time to allow for breeding. At several habitats only a very small number of frogs were heard. In order to meet the criteria for significance at least one species with 20 individuals must be observed at a candidate habitat. Only one area (ABH-007) met the criteria and was identified as significant. This site will be brought forward to the EIS.

Table 5.9 Summary of Salamander Egg Mass Surveys and Amphibian Survey Call Counts

Feature ID	Minimum distance between feature and project location	Salamander Egg Mass Surveys	Frog Call Counts			Significant/ provincially significant or treated as (y/n)
			Survey #1 (April 20/25, 2012)	Survey #2 (May 29, 2012)	Survey #3 (June 27, 2012)	
ABH-001	69 m	No egg masses observed	No Calls	No Calls	No Calls	N
ABH-002	5 m	No egg masses observed	No Calls	No Calls	No Calls	N
ABH-003	2 m	No egg masses observed	Spring Peeper 1-4	Green Tree Frog 1-2	No Calls	N
ABH-004	7 m	No egg masses observed	Spring Peeper 1-4	Green Tree Frog 1-3	No Calls	N
ABH-005	2 m	No egg masses observed	No Calls	No Calls	No Calls	N
ABH-006	8 m	No egg masses observed	No Calls	No Calls	No Calls	N

Feature ID	Minimum distance between feature and project location	Salamander Egg Mass Surveys	Frog Call Counts			Significant/ provincially significant or treated as (y/n)
			Survey #1 (April 20/25, 2012)	Survey #2 (May 29, 2012)	Survey #3 (June 27, 2012)	
ABH-007	21 m	No egg masses observed	Spring Peeper 3-chorus	Green Tree Frog 3-chorus	Green Tree Frog 3-chorus	Y
ABH-008	10 m	No egg masses observed	No Calls	No Calls	No Calls	N
ABH-009	40 m	No egg masses observed	Spring Peeper 1-5	Green Tree Frog 1-5	Green Tree Frog 1-2	N
ABH-010	98 m	No egg masses observed	No Calls	No Calls	No Calls	N
Generalized Candidate SWH- AWBH	<120m	N/A	N/A	N/A	N/A	Y

*Note: call count codes are as follows:
First number:
(1) calls not simultaneous – number of individuals can be accurately counted;
(2) some calls simultaneous –number of individuals can be reliably estimated; and
(3) full chorus – calls continuous and overlapping, so number of individuals cannot be reliably estimated.
Second number:
Number of individuals heard.

5.4.3 Species of Conservation Concern

Marsh Bird Breeding Habitat
Marsh birds typically require marsh bog or submerged shallow aquatic wetland habitats. Only one candidate habitat was identified (WFN-001).

The following species were observed at the site: a nesting pair of Wood Duck were observed at the survey station on June 19 and July 10, 2012. Both male and female were observed on both occasions. Other marsh breeding bird species observed at the site included: Red-winged Blackbird and Eastern Kingbird. Additional breeding bird species not dependent on marsh habitats were also noted during surveys completed, such as Yellow Warbler.

Findings of surveys at Candidate Marsh Bird Breeding Habitats are summarized in **Table 5.10**.

Table 5.10 Evaluation of Candidate Marsh Bird Breeding Habitat

Feature ID	Minimum distance between feature and project location	Evaluation Results	Significant/ provincially significant or treated as (y/n)
MBBH-01	21 m	One nesting pair of Wood Duck observed at survey station at two separate visits. Red-winged Blackbird and Eastern Kingbird were also noted.	N

Woodland Area-Sensitive Bird Breeding Habitat

Three Candidate Woodland Area-Sensitive Bird Breeding Habitats were identified during the Site Investigation, **Appendix A, Figure 3a-h**. Each feature is being treated as significant and, as such, no surveys were undertaken. The features are identified as Generalized Candidate Significant Wildlife Habitat (GCSWH-WASBB), as shown in **Appendix A on Figure 4a-h** and summarized in **Table 5.11**. General construction mitigation to address potential impacts to this feature will be provided in the EIS.

Table 5.11 Evaluation of Woodland Area-Sensitive Bird Breeding Habitat

Feature ID	Minimum distance between feature and project location	Evaluation Results	Significant/ provincially significant or treated as (y/n)
GCSWH-WASBB	<120m	Treated as Significant	Y

Habitat for Special Concern and Rare Species

Several Special Concern and provincially rare species are known to inhabit lands in the vicinity of the Project Location.

Species with Habitats Previously Studied

Habitats for several species were evaluated in conjunction with other habitat types previously described. Results are as follows:

- Candidate habitat for Short-eared Owl was found not to be significant based on results of Candidate Raptor Wintering Areas. No Short-eared Owls were observed.
- Candidate habitats for Snapping Turtle were found to be not significant based on results on Candidate Turtle Wintering and Turtle Nesting surveys. No Snapping Turtles were observed.
- Candidate habitats for Milksnake and Eastern Ribbonsnake were found to be not significant as a result of survey at Candidate Snake Hibernacula site. Neither species was observed.

- Significant habitats for Little Brown Bat, Northern Long-eared Bat and Tri-coloured Bat may be present at seven sites which will be surveyed at a later date prior to construction. Three additional sites will be treated as significant as site access is not permitted. Finally, several sites have been identified as Generalized Candidate Significant Wildlife Habitat (GCSWH-BMC) and will also be treated as significant.

Species with Unique Habitat Requirements

One species was identified which required a unique, species-specific survey. This was the Common Nighthawk. Common Nighthawk nests in open habitats, in forests and in urban areas. It prefers rock outcrops, alvars, sand barrens, bogs, fens, and in forests, openings created by clear cuts and burns. In agricultural areas, it has nested in grasslands, agricultural fields, gravel pits, prairies, and alvars.

A total of four candidate habitats were identified. Common Nighthawk was not observed during any of the surveys completed for this species.

Findings of surveys at Candidate Common Nighthawk Habitats are summarized in **Table 4.12**.

Table 4.12 Characteristics of Candidate Common Nighthawk Habitat

Feature ID	Minimum distance between feature and project location	Evaluation Results	Significant/ provincially significant or treated as (y/n)
CNH-001	69 m	Common Nighthawk was not observed.	N
CNH-002	2 m	Common Nighthawk was not observed.	N
CNH-003	7 m	Common Nighthawk was not observed.	N
CNH-004	20 m	Common Nighthawk was not observed.	N

Plant Species

Thirteen candidate habitats for various rare plant species were identified (SCC-001 through SCC-013). All will be surveyed at a later date, prior to construction. In the interim, they will be treated as significant and carried forward for consideration and assessment in the EIS. A survey methodology will be provided in the EIS based on the applicable bloom time for each species.

In addition, several Generalized Candidate Significant Wildlife Habitats (GCSWH-BMC) were present. These will be treated as significant and appropriate mitigation provided in the EIS.

Findings of surveys at Candidate Habitats for Species of Conservation Concern (Plants) are summarized in **Table 5.13**.

Table 5.13 Evaluation of Habitat for Species of Conservation Concern (Plants)

Feature ID	Minimum distance between feature and project location	Evaluation Results	Significant/ provincially significant or treated as (y/n)
SCC-001	37 m	Survey to be completed prior to construction	Y
SCC-002	3 m	Survey to be completed prior to construction	Y
SCC-003	74 m	Survey to be completed prior to construction	Y
SCC-004	7 m	Survey to be completed prior to construction	Y
SCC-005	5 m	Survey to be completed prior to construction	Y
SCC-006	2 m	Survey to be completed prior to construction	Y
SCC-007	7 m	Survey to be completed prior to construction	Y
SCC-008	2 m	Survey to be completed prior to construction	Y
SCC-009	8 m	Survey to be completed prior to construction	Y
SCC-010	2 m	Survey to be completed prior to construction	Y
SCC-011	27 m	Survey to be completed prior to construction	Y
SCC-012	40 m	Survey to be completed prior to construction	Y
SCC-013	2 m	Survey to be completed prior to construction	Y
Generalized Candidate SWH-SCC	<120m	Treated as significant	Y

5.4.4 Animal Movement Corridors

Amphibian Movement Corridors

Amphibian Movement Corridors allow amphibians to travel between their wetland spring breeding habitats and their upland forest summer foraging habitats. In order to be significant, corridors should consist of native vegetation at least 200 m wide or at least 30 m wide if following a watercourse (i.e., 15 m on either side). Corridors should not be broken by roads, fields or waterbodies.

One significant Amphibian Woodland Breeding Habitat (ABH-007) was identified within 120 m of the Project Location. This habitat is associated with wetlands WE-008 through WE-011 which are located directly adjacent to an upland sugar maple-white ash deciduous forest (W-037). As such, both breeding and summer habitats are available for amphibians directly within the same contiguous natural block. Beyond W-037, there is a blockage formed by Sararas Road to the north which separates the natural area from W-042. To the south is an agricultural field separating W-037 from W-036. To the west, there is a narrow treed corridor along a drain; however, this linkage leads to developed cottage sites along the Lake Huron shoreline rather than any other natural area.

Therefore, there are no significant amphibian movement corridors associated with ABH-007 and corridors will not be brought forward for further study in the EIS.

6.0 Evaluation of Significance Summary

6.1 Summary of Evaluation of Significance Findings

Based on the results of the Evaluation of Significance, the following features are present within 120 m of the Project Location and meet the criteria for provincial significance, **Appendix A, Figure 2a-h**, or are being treated as significant, **Appendix A, Figure 3a-h**:

- 1 Valleyland;
- 32 Woodlands;
- 24 Wetlands;
- Significant Wildlife Habitat, including:
  - 10 Bat Maternal Colonies;
  - 2 Deer Yarding Areas;
  - 1 Amphibian breeding habitat (woodland);
  - 13 Habitats for Special Concern and rare species; and,
  - Generalized Candidate Significant Wildlife Habitat.

The findings of the Evaluation of Significance along with any proposed changes to the Project based on the findings are summarized in **Table 6.1.**

6.2 Changes to the Project Based on Findings

Based on the findings of field investigations and the Evaluation of Significance, several changes were made to the Project and its configuration, as summarized in **Table 6.1**.

Table 6.1 Summary of Features Evaluated or Treated as Significant

Feature Type	# of Features	Feature Identifiers	Resulting Project Location Changes
Significant Features			
Valleyland	1	V-001	Transmission line was originally proposed to follow an unopened road allowance/easement directly through the valleyland. Line was re-routed to follow the existing road and cross private property thus avoiding the valleyland.
Provincially Significant Wetlands	2	WE-027, WE-029 (Hay Swamp Complex)	Northern transmission line selected over southern route to minimize impacts to avoid larger sections of the PSW.

Feature Type	# of Features	Feature Identifiers	Resulting Project Location Changes
Significant Woodlands	32	W-004, W-012, W-013, W-014, W-020, W-021, W-023, W-026, W-029, W-030, W-031, W-034, W-036, W-037, W-039, W-041, W-042, W-053, W-067, W-079, W-081, W-086, W-088, W-093, W-094, W-099, W-102, W-104, W-118, W-123, W-127, W-128	A road was originally planned through W-029 (WE-003) which would have required removal of vegetation to widen the existing farm road through the feature. The road was re-routed to enter off HWY 21 rather than off Shipka Line, thus avoiding the need to remove vegetation.
Turtle Nesting Areas	1	TNA-002	None.
Deer Yarding Areas	2	DYA-001 DYA-002	Northern transmission line selected over southern route to minimize impacts to DYA.
Amphibian Breeding Habitat (Woodland)	1	ABH-007	Road between T-23 and T-21 removed and realigned to avoid crossing in proximity to this habitat. Connector line between these two turbines to be directionally drilled below ground.
Wetlands Treated as Significant			
Wetlands Treated as Provincially Significant	22	WE-001, WE-002, WE-008, WE-010, WE-011, WE-012, WE-013, WE-014, WE-015, WE-016, WE-017, WE-020, WE-022, WE-026, WE-030, WE-031, WE-032, WE-033, WE-034, WE-035, WE-037, WE-038,	Location of overhead transmission line moved to opposite side of road or installed underground using directional drilling. A road was originally planned through W-029 (WE-003) which would have required removal of vegetation to widen the existing farm road through the feature. The road was re-routed to enter off HWY 21 rather than off Shipka Line, thus avoiding the need to remove vegetation.
Wildlife Habitat Treated as Significant and Requiring Habitat Use Study Prior to Construction			
Bat Maternal Colonies	10	BMC-001, BMC-002, BMC-003, BMC-004, BMC-005, BMC-006, BMC-007, BMC-008, BMC-009, BMC-010	None.
Turtle Wintering Areas	1	TWA-003	None.
Habitat for Special Concern and Rare Species	13	SCC-001, SCC-002, SCC-003, SCC-004, SCC-005, SCC-006, SCC-007, SCC-008, SCC-009, SCC-010, SCC-011, SCC-012, SCC-013	A road was originally planned through W-029 (WE-003) which would have required removal of vegetation to widen the existing farm road through the feature. The road was re-routed to enter off HWY 21 rather than off Shipka Line, thus avoiding the need to remove vegetation.

Feature Type	# of Features	Feature Identifiers	Resulting Project Location Changes
Generalized Candidate Significant Wildlife Habitat			
Generalized Candidate Significant Wildlife Habitat	N/A	N/A	The side of the road along which the transmission line will follow was determined primarily to avoid general habitat areas to the extent possible. Only in cases where the line would cause greater impact to a residence on the opposite side of the road was it routed through a GCSWH area.

7.0 Confirmation from Ministry of Natural Resources

Under Section 28 of O.Reg. 359/09, the Ministry of Natural Resources ("MNR") must review the Evaluation of Significance and confirm that it was completed in accordance with criteria and procedures accepted by that Ministry. This EOS is currently under review and is awaiting confirmation. A copy of the MNR confirmation will be provided in **Appendix E** upon receipt.

8.0 Conclusions

As a result of the EOS, a number of previously unevaluated natural features were found to be significant.

Efforts were made to revise the project layout and avoid impacts to these features as much as possible. However, due to other restrictions and setbacks, some features could not be avoided entirely. Within 120 m of the Grand Bend Wind Farm Project Location there are natural heritage features which:

- were previously known to be significant;
- were evaluated in this report and were found to be significant; and,
- will be treated as significant.

All will be brought forward to the EIS for further study and assessment.

Written by:

Signature _____ Date August 2012
Tricia Radburn, M.Sc. (Plan), MCIP, RPP
Environmental Planner
R.J. Burnside & Associates Limited

Reviewed by:

Signature _____ Date August 2012
Lyle Parsons, B.E.S.
Project Manager
R.J. Burnside & Associates Limited

Approved by:

Signature _____ Date August 2012
Jim Mulvale, P.Eng
Manager, Environment,Health and Safety
Northland Power Inc.

9.0 References

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