NORTHLAND POWER

Belleville North Solar Project

Natural Heritage Site Investigation Report

August 15, 2011

Northland Power Inc.
on behalf of
Northland Power Solar
Belleville North L.P.
Toronto, Ontario

Natural Heritage Site Investigation Report

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Project Report

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1. Introduction

1.1 Project Description

Northland Power Inc. on behalf of Northland Power Solar Belleville North L.P. (hereinafter referred to as "Northland") is proposing to develop a 10-megawattt (MW) solar photovoltaic (PV) project titled Belleville North Solar Project (hereinafter referred to as the "Project"). The Project will be located on approximately 40 hectares (ha) of land, located at Lot 65 of Concession V Bay Side in the single-tier municipality of the Corporation of the County of Prince Edward (Figure 1.1).

1.2 Legislative Requirements

Ontario Regulation (O. Reg.) 359/09 – *Renewable Energy Approvals Under Part V.0.1 of the Act*, (herein referred to as the REA Regulation) made under the *Environmental Protection Act* identifies the Renewable Energy Approval (REA) requirements for renewable energy projects in Ontario. Per Section 4 of the REA Regulation, ground-mounted solar facilities with a nameplate capacity greater than 10 kilowatts (kW) are classified as Class 3 solar facilities and require a REA.

Section 26 of the REA Regulation requires proponents of Class 3 solar projects to undertake a natural heritage site investigation for the purpose of determining

a) whether the results of the analysis summarized in the (natural heritage records review) report prepared under Subsection 25(3) are correct or require correction, and identifying any required corrections

b) whether any additional natural features exist, other than those that were identified in the (natural heritage records review) report prepared under Subsection 25(3); and

c) the boundaries, located within 120 m of the Project location, of any natural feature that was identified in the records review or the site investigation; and

d) the distance from the Project location to the boundaries determined under clause (c).

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

a) an area of natural and scientific interest (ANSI) (earth science)

b) an ANSI (life science)

c) a coastal wetland

d) a northern wetland

e) a southern wetland

f) a valleyland

g) a wildlife habitat, or

h) a woodland.

Subsection 3 of Section 26 of the REA Regulation requires the proponent to prepare a report setting out the following:

1. A summary of any corrections to the report prepared under Subsection 25(3) and the determinations made as a result of conducting the site investigations under Subsection (1).
2. Information relating to each natural feature identified in the records review and in the site investigations, including the type, attributes, composition and function of the feature.
3. A map showing
   i. the boundaries mentioned in clause (1) (c)
   ii. the location and type of each natural feature identified in relation to the Project location, and
   iii. the distance mentioned in clause (1) (d).
4. The dates and times of the beginning and completion of the site investigation.
5. The duration of the site investigation.
6. The weather conditions during the site investigation.
7. A summary of methods used to make observations for the purposes of the site investigation.
8. The name and qualifications of any person conducting the site investigation.
9. Field notes kept by the person conducting the site investigation.

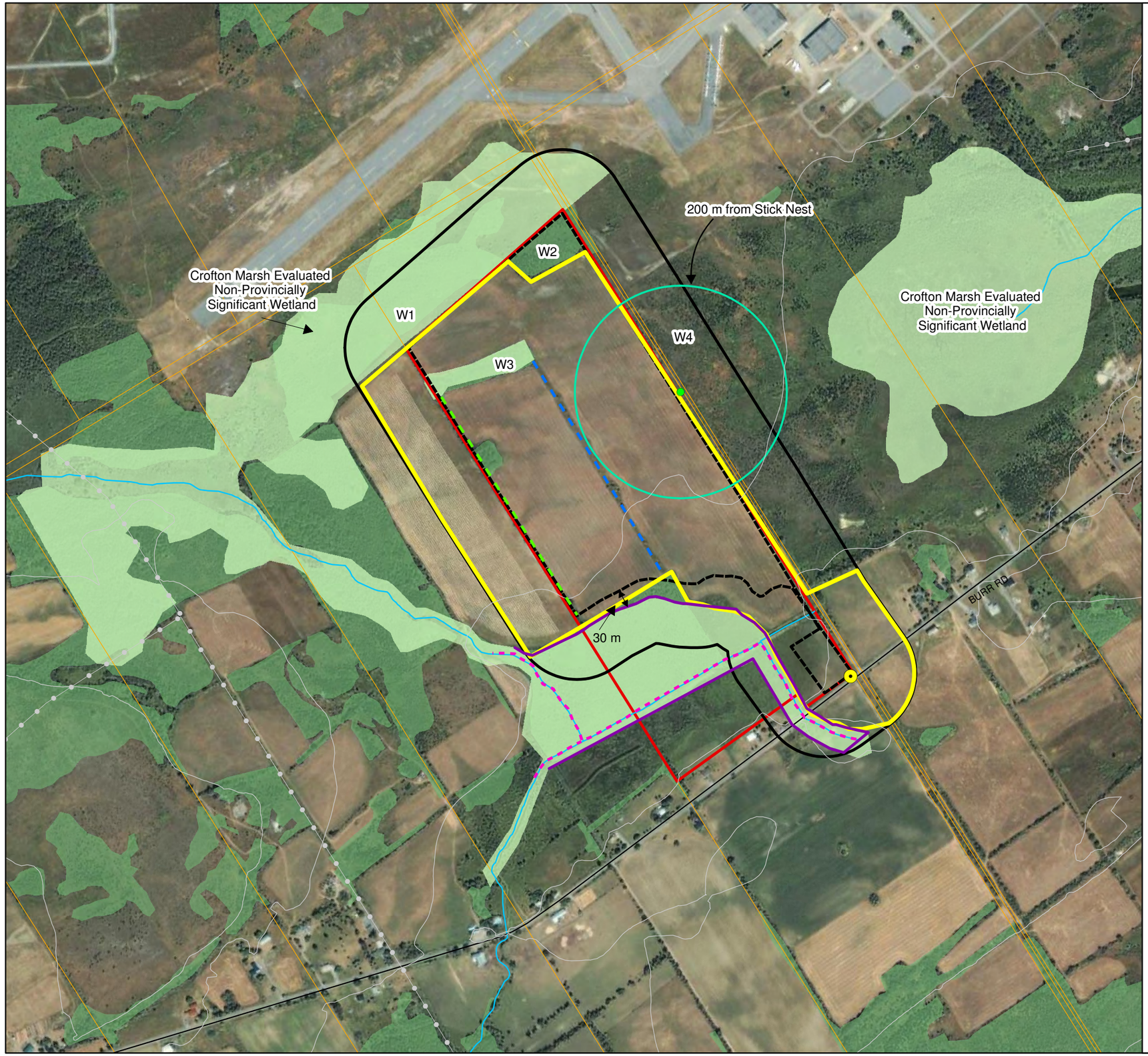
This Natural Heritage Site Investigations Report has been prepared to meet these requirements.

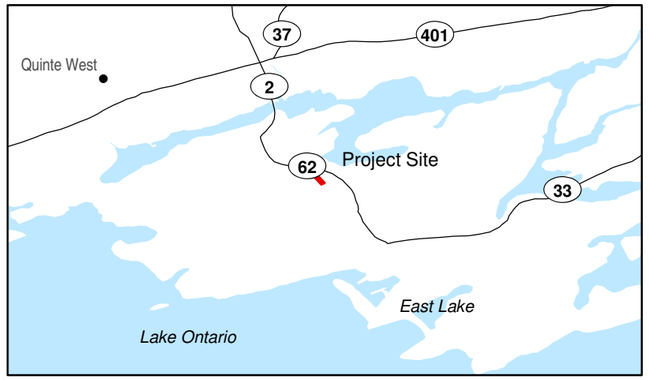
2. Summary of Results of Records Review

Table 2.1 summarizes the results of the records review.

Table 2.1 Summary of Records Review Determinations

Determination to be Made	Yes/No	Description
Is the Project in a natural feature?	Yes	There are woodlands identified on the Project location.
Is the Project within 50 m of an ANSI (earth science)?	No	The nearest earth science ANSI is located several kilometres from the Project location.
Is the Project within 120 m of a natural feature that is not an ANSI (earth science)?	Yes	There are woodlands and wetlands within 120 m of the Project location.





Legend

- Roads
- Transmission Line
- Topographic Contour (5m interval)
- Watercourse
- Available Lands
- 120m From Project Location
- Parcels

Natural Heritage Features

- Wetland
- Woodland
- Milksnake Movement Corridor
- -- Milksnake Foraging Habitat
- -- Western Chorus Frog Habitat
- -- Amphibian Breeding Habitat
- -- Amphibian Movement Corridor
- -- Northern Ribbonsnake Habitat
- Stick Nest
- Raptor Nesting Habitat

Project Components

- Connection Point With Existing Distribution Line
- Project Location

0 75 150 300 Metres

NORTH

1:7,500

Notes:
1. OBM and NRVIS data downloaded from LIO,with permission.
2. Spatial referencing UTM NAD 83.
3. Satellite imagery from Google Earth Pro.

Figure 1.1
Northland Power Inc.
Belleville North Solar Project
Project Location and Natural Heritage Features

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3. Site Investigation Methodology

3.1 Hatch Site Visit

3.1.1 Date, Time and Duration of Site Investigation

- Date: June 14, 2010
- Start Time: 09:30 to 15:00 and 22:00 to 23:00 hours
- Duration: 6.5 hours

3.1.2 Weather Conditions During Site Investigation

- Temperature: 22°C
- Beaufort Wind: 2
- Cloud Cover: 60%

3.1.3 Name and Qualifications of Person Conducting Site Investigation

The site investigation was completed by Martine Esraelian.

Martine Esraelian, B.Sc. is an Environmental Scientist specializing in species at risk and terrestrial ecosystems. She has a B.Sc. from Trent University where she specialized in Conservation Biology and Ecological Management and an Ecosystem Management Technician diploma from Sir Sandford Fleming College. During her time at Trent University, she completed a 1-yr internship with the Ministry of Natural Resources (MNR) which involved developing a genetic-based protocol for the extraction of DNA from unknown turtle eggshells to assist with species identification. The project entailed extensive molecular genetics research and intensive lab work to develop a protocol able to supplement existing conservation management practices.

She offers expertise across the full breadth of the field from environmental assessments and technical analysis of environmental data to conservation management, corporate and government consulting, and community outreach. Martine has liaised with all levels of government, the community, and a portfolio of clients that includes consulting firms, planners, and high-profile developers. She has both technical and hands-on experience conducting site investigations (terrestrial and aquatic), evaluations of significance, environmental and agricultural impact studies, constraint analyses, water quality and soil assessments, species at risk, wildlife management and fisheries studies to meet regulatory requirements.

Martine has a wide range of field experience related to terrestrial and aquatic ecosystems and species at risk. She has conducted reptile and amphibian surveys, small-mammal trapping, benthic invertebrate monitoring and fisheries inventories (seine netting and electrofishing). She has conducted detailed natural areas inventories which involve species identification of flora and fauna, vegetation community mapping, identifying rare vegetation communities and significant wildlife habitats.

Martine has project management and fieldwork experience for a number of species at risk monitoring projects. Some of the species she has been involved with include: fowler's toad, massasauga

rattlesnake, black ratsnake, Jefferson salamander, northern dusky and mountain alleghany dusky salamander, blanding's turtle, map turtle, spotted turtle, snapping turtle, queen snake, milksnake, ribbonsnake, flowering dogwood, swamp rose mallow and spoon-leaved moss.

Martine is a certified Butternut Health Assessor and also holds a certificate in the Ecological Land Classification (ELC) system.

3.1.4 Survey Methods

For the site investigation, the entire site was searched by the observer on foot in order to document natural features. Photographs of the site were taken. Any observations of wildlife, vegetation or natural features were noted. Natural features were identified in consideration of the criteria identified within Regulation, the Natural Heritage Reference Manual (MNR, 2009) and the Significant Wildlife Habitat Technical Guide (SWHTG) (MNR, 2000).

Vegetation communities on and within 120 m of the Project location were generally characterized according to the Ecological Land Classification for Southern Ontario.

Areas of Natural and Scientific Interest, both earth and life science, were not considered during the site investigation as these features are identified solely by the MNR and none are identified within 120 m of the Project location.

Criteria for identification of natural features are outlined in Table 3.1 below:

Table 3.1 Natural Features and the Criteria for Identification Considered During the Site Investigation

Natural Feature	Criteria/Methodology for Identification
Wetland	Land such as a swamp, marsh, bog or fen, other than land that is being used for agricultural purposes and no longer exhibits wetland characteristics, that • is seasonally or permanently covered by shallow water or has the water table close to or at the surface, and • has hydric soils and vegetation dominated by hydrophytic or water-tolerant plants. Wetlands were identified in relation to the criteria established in the Ontario Wetland Evaluation System.
Woodland	Areas that have, per hectare, at least • 1000 trees of any size • 750 trees measuring over 5 cm in diameter • 500 trees measuring over 12 cm in diameter; or • 250 trees measuring over 20 cm in diameter; and that does not include a cultivated fruit or nut orchard or a plantation established for the purpose of producing Christmas trees. Woodlands were identified through the use of Ecological Land Classification.
Valleyland	A natural area that occurs in a valley or other landform depression that has water flowing through or standing for some period of the year. Valleylands were identified based on observations of site topography.

Natural Feature	Criteria/Methodology for Identification
Wildlife Habitat	An area where plants, animals and other organisms live or have the potential to live and find adequate amounts of food, water, shelter, and space to sustain their population, including an area where a species concentrates at a vulnerable point in its annual or life cycle and an area that is important to a migratory or non-migratory species. Criteria and methodologies for identification of wildlife habitats are provided within the Significant Wildlife Habitat Technical Guide (MNR, 2000) and associated addendum (MNR, 2009).

A copy of the field notes kept by the observer is provided in Appendix A.

3.2 Natural Resource Solutions Inc. Site Visit

Natural Resource Solutions Inc. (NRSI) conducted a site investigation in order to determine boundaries and evaluate significance of wetland communities. Names, qualifications and survey methodologies are identified within their report provided in Appendix B.

3.2.1 Site Visit 1

3.2.1.1 Date, Time and Duration of Site Investigation

- Date: August 11, 2010
- Start Time: 0900 hours
- Duration: 6 hours

3.2.1.2 Weather Conditions During Site Investigation

- Temperature: 24
- Beaufort Wind: 2 (5.6 to 11 km/h)
- Cloud Cover: 5%

4. Results of Site Investigation

4.1 Valleyland

No valleylands were identified on or within 120 m of the Project location during the site investigation.

4.2 Wetland

A wetland community was identified in the northern section of the Project location. This community was described as

- hS_1 [ELC: Green Ash Mineral Deciduous Swamp Type (SWDM2-2)]

An additional wetland complex (see Figure 4.1), consisting of five different wetland communities was identified within 120 m of the Project location along the northern and southern boundaries. Wetland communities within the complex included

- tsS4 [ELC: Willow Mineral Deciduous Thicket Swamp Ecosite (SWTM3)]
- hS2 [ELC: Green Ash Mineral Deciduous Swamp Type (SWDM2-2)]
- neM1 [ELC: Mixed Graminoid Mineral Meadow Marsh Type (MAMM1-16)]
- reM2 [ELC: Cattail Mineral Shallow Marsh Type (MASM1-1)]
- hS3 [ELC: Silver Maple Mineral Deciduous Swamp Type (SWDM3-2)]

Figure 4.1 View of the Wetland Community Within 120 m of the Southern Portion of the Project Location

It was determined that the wetland community on the Project location should also be complexed to the wetland communities within 120 m of the Project location. Additional information on these wetland communities, including description of species observed during the site investigations, is provided within Appendix B.

Wildlife habitat functions of the various wetland communities are addressed in Section 4.3, where applicable. Other functions that the wetland may provide include the following:

- Primary production – Primary productions describes the relationship whereby plants absorb sunlight to create energy; this is often the starting point of energy flow through a food chain. Wetland communities, particularly those near flowing water sources which constantly provide new nutrients to the system, are regarded as having high primary production when compared to

other ecosystems. As such, the wetland communities within 120 m of the Project location provide primary production functions

- Watershed protection – Wetland communities provide protection of watersheds through (i) filtration of surface water inflow thereby improving water quality, (ii) flood control by trapping water flowing into a watercourse, and slowly releasing it, and (iii) protecting the shoreline of the watercourse from erosion by slowing the flow of water along the banks.
- Preservation of biodiversity – Wetland communities help preserve biodiversity by providing habitat for wetland obligate species of flora and fauna.
- Fish habitat – open water communities within the wetland provide habitat for fish communities
- Support of natural cycles – wetland communities provide an important component of support for carbon, nitrogen and water.

4.3 Wildlife Habitat

The Significant Wildlife Habitat Technical Guide (SWHTG) (MNR, 2000) identifies four main types of wildlife habitat:

- habitat for seasonal concentrations of animals
- rare or specialized habitats for wildlife
- habitat for species of conservation concern,
- wildlife movement corridors.

Each of these types of wildlife habitat have several specific wildlife habitats associated with them. In order to determine which of the specific wildlife habitats were to be considered during the site investigation, the Draft Significant Wildlife Habitat Ecoregion Criteria Schedules (MNR, 2009) were consulted for Ecoregion 6E, which encompasses the Project location.

In order to use the Ecoregion Criteria Schedules, Ecological Land Classification was completed for all lands on and within 120 m of the Project location. A map of the ELC communities on and within 120 m of the Project location is provided in Figure 4.2.

Wildlife habitats considered during the site investigation are discussed by wildlife habitat type below.

4.3.1.1 Habitats of Seasonal Concentrations of Animals

Habitats of Seasonal Concentrations of Animals that were considered during the site investigations include the following.

Waterfowl Stopover and Staging Areas (Terrestrial) – ELC Code: Cultural Meadow (CUM)

Habitat characteristics of terrestrial waterfowl stopover and staging areas were considered during the site investigation. No evidence of seasonally flooded areas (i.e., agricultural fields with vegetation communities consistent with areas that would be exposed to seasonal flooding) were detected during the site investigation. As a result, based on the results of the site investigation there is no evidence of this habitat type on or within 120 m of the Project location.

Waterfowl Stopover and Staging areas (Aquatic) – ELC Code: Meadow Marsh (MAMM) and Shallow Marsh (MASM)

Habitat characteristics of aquatic stopover and staging areas were considered during the site investigation. Locations of these habitat types within 120 m of the Project location are limited to occurrences located in proximity (generally less than 15 m) from the watercourse within 120 m of the Project location.

The narrow characteristics of the shallow marsh indicate that it is unlikely that this feature would be capable of supporting large numbers of waterfowl (more than 100). Therefore, based on the results of the site investigation, there is no evidence that the shallow marsh meets the requirements of a waterfowl stopover and staging area.

Similarly, the narrow characteristics of the meadow marsh, in association with the absence of shallow nature of this watercourse, indicated it is unlikely that this feature is capable of supporting large numbers of waterfowl. Therefore, based on the results of the site investigation, there is no evidence that the meadow marsh meets the requirements of a waterfowl stopover and staging area.

Colonial-Nesting Bird Breeding Habitat – ELC Code: Cultural Meadow (CUM)

Cultural meadows on and within 120 m of the Project location were searched for eroding banks, sandy hills, steep slopes, rock faces or piles. None of these habitat features were identified on or within 120 m of the Project location. Therefore, suitable habitat to support colonial-nesting bird breeding were not found on or within 120 m of the Project location.

Shorebird Migratory Stopover Area – ELC Code: Meadow Marsh (CUM)

Characteristics of the meadow marsh habitat identified within 120 m of the Project location were considered in relation to provision of shorebird migratory stopover areas. The watercourse was not identified as having a muddy or unvegetated shoreline that would identify preferred shorebird foraging habitat. Therefore, the results of the site investigation determined that there is no evidence of shorebird migratory stopover areas on or within 120 m of the Project location.

Songbird Migratory Stopover Area – ELC Code: Coniferous Forest (FOC), Deciduous Swamp (SWD)

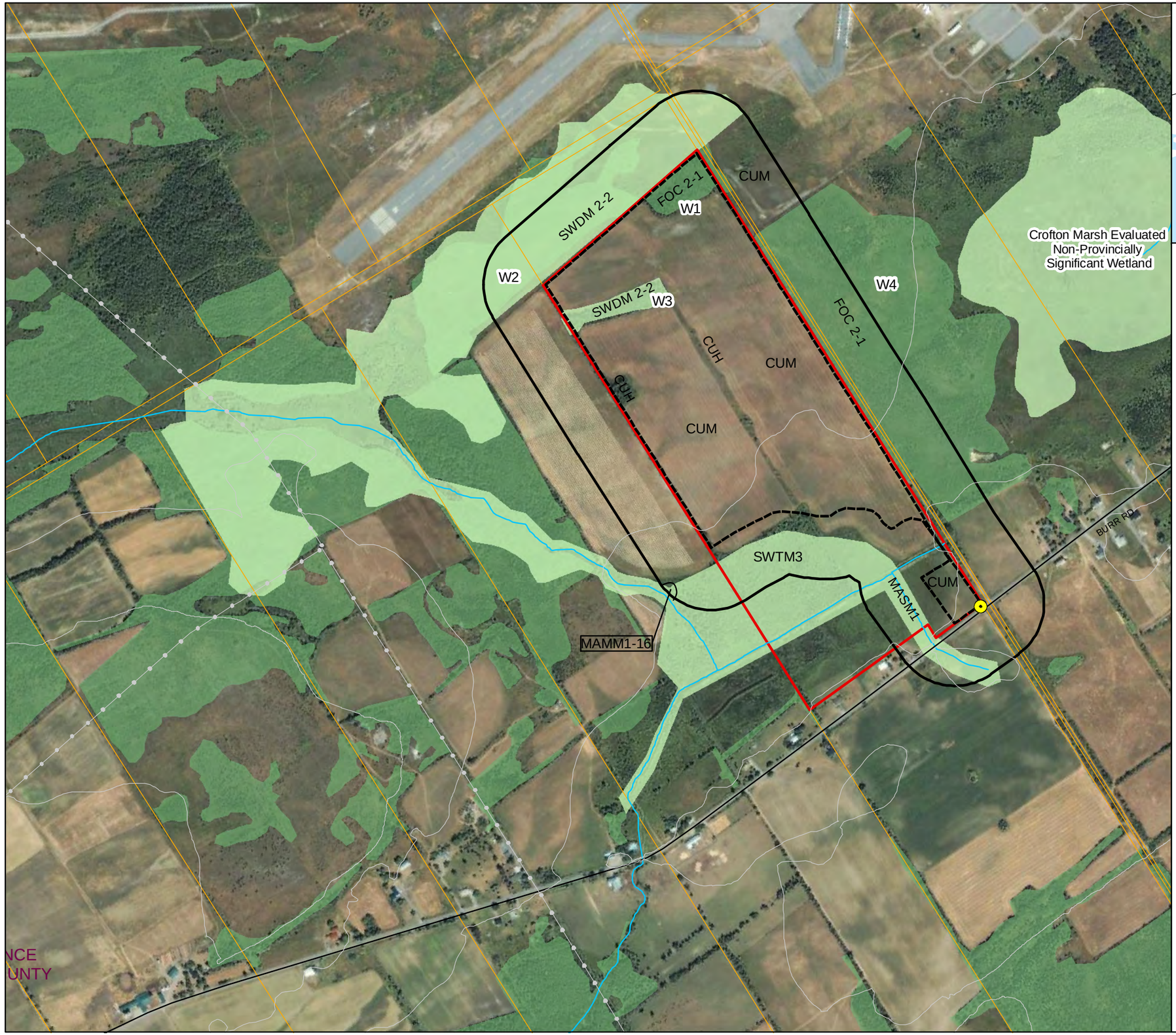
Songbird migratory stopover areas are found within woodlands located within 5 km of Lake Ontario. As the Project location is more than 5 km from the shoreline of Lake Ontario, conditions supportive of this habitat type are not present on or within 120 m of the Project location.

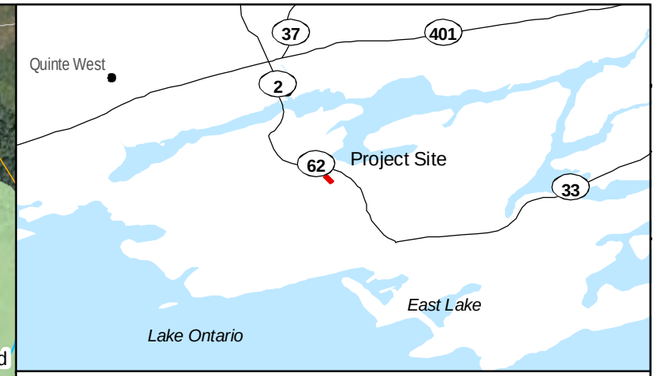
Raptor Wintering Area – ELC Code: Coniferous Forest (FOC), Cultural Meadow (CUM)

This combined habitat type features suitable raptor roosting sites in proximity to winter feeding areas.

The coniferous forest communities identified within 120 m of the Project location were identified as immature forest communities (see Section 4.4). Immature forest communities are not preferred raptor winter roosting or resting sites as immature forests lack the closed canopies of mature forests and therefore reduced shelter functions.

As a result of the age range of the forest communities, it is determined that there is no presence of raptor wintering area on or within 120 m of the Project location.





Legend

- Roads
- Transmission Line
- Topographic Contour (5m interval)
- Watercourse
- Project Location
- 120m From Project Location
- Available Lands
- Parcels
- Wetland
- Woodland

Project Components

- Connection Point With Existing Distribution Line
- Project Location

Ecological Land Classification

CUM - Cultural Meadow
CUH - Cultural Hedgerow
SWDM2-2 - Green Ash Mineral Decidous Swamp
FOC2-1 - Dry-Fresh Red Cedar Coniferous Forest
MAMM1-16 - Mixed Graminiod Mineral Meadow Marsh
SWTM3 - Willow Mineral Deciduous Thicket Swamp
MASM1 - Graminoid Mineral Shallow Marsh

0 75 150 300 Metres

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NORTH

Notes:
1. OBM and NRVIS data downloaded from LIO,with permission.
2. Spatial referencing UTM NAD 83.
3. Satellite imagery from Google Earth Pro.

Figure 4.2
Northland Power Inc.
Belleville North Solar Project
Ecological Land Classification

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Butterfly Migratory Route/Stopover Area – ELC Code: Coniferous Forest (FOC), Cultural Meadow (CUM)

Butterfly stopover areas are found within fields and woodlands located within 5 km of Lake Ontario. As the Project location is more than 5 km from the shoreline of Lake Ontario, conditions supportive of this habitat type are not present on or within 120 m of the Project location.

Snake hibernaculum – No ELC Code Specified

Snake hibernaculum are found in association with rock piles or steep slopes, stone fences, and crumbling foundations. There were small (less than 1 m^2) areas of exposed bedrock at the surface within 120 m of the Project location near the stick nest shown in Figure 1.1. No rock crevices were noted within the rock areas. Therefore, no evidence of conditions supportive of snake hibernaculum were identified during the site investigation on or within 120 m of the Project location.

However, it is acknowledged that Prince Edward County commonly has areas with shallow bedrock exposures, whereby fissures within the bedrock may provide suitable conditions for snake hibernaculum. Often, these features would not be visible on the surface, and may become exposed and therefore available for use as a result of construction activities. As a result, though an evaluation of significance is not required for this feature, monitoring measures will be incorporated within the Environmental Effects Monitoring Plan identified within the Environmental Impact Study to ensure that the construction workforce is aware of both (i) the possibility of large numbers of snakes being present on the Project location during construction in the spring or fall, and (ii) that suitable snake hibernacula habitat may become present during construction and to be aware of these features. This will include identification of measures to be undertaken should either large numbers of snakes or suitable hibernaculum habitats be identified.

Colonial-Nesting Bird Breeding Habitat (Tree/Shrub) – ELC Code: Deciduous Swamp (SWD)

Areas of deciduous swamp identified on and within 120 m of the Project location were searched for nesting herons during the breeding bird season. No heron nesting colonies were identified; such features are generally prominent on the landscape and it is expected they would have been observed were they present on or within 120 m of the Project location. Further, no herons were observed during the site investigation, though it is acknowledged that bird surveys were conducted in the latter half of the breeding season.

Deer Wintering Areas – ELC Code: Coniferous Forest (FOC)

Deer wintering areas are found in woodlands with canopy cover of more than 60%. Based on interpretation of aerial photography of the coniferous forest on and within 120 m of the Project location, a dense canopy cover is not observed. Though specific densities were not recorded in the field, observers identified the woodlands as low densities based on recollections from the site investigation.

Further, snow depths within the area must be greater than 40 cm for more than 60 days in a typical winter. The nearest climate monitoring station to the Project location is Belleville where average snowfall at month's end in the winter is less than 20 cm (Environment Canada, 2010).

Therefore, conditions suitable for provision of deer wintering areas are not identified on or within 120 m of the Project location.

Amphibian Breeding Habitat (Woodland) – ELC Code: Coniferous Forest (FOC), Deciduous Swamp (SWD)

Woodlands on and within 120 m of the Project location were searched for permanent, seasonal or ephemeral wetland breeding pools. Ephemeral or seasonal breeding pools were searched for based on characteristics of vegetation communities, i.e., presence of species requiring wet environments). No vegetation communities that would indicate the presence of ephemeral or seasonal breeding pools, or permanent breeding pools, were identified within the woodlands within 120 m of the Project location. Therefore, based on the site investigations, there is no evidence that amphibian breeding habitat is present within the woodlands on or within 120 m of the Project location.

Amphibian Breeding Habitat (Wetland) – ELC Code: Meadow Marsh (MAM)

Surveys during the site investigation determined that this habitat type (meadow marsh) is found within the wetland community present within 120 m of the Project location. Further, Northern Leopard Frogs were recorded within suitable habitat during the breeding season; as a targeted amphibian breeding survey was not conducted, it is likely that other species may also be present within this breeding habitat. Therefore, this habitat type is carried forward to the evaluation of significance.

4.3.1.1.1 Conclusion

Based on the results of the site investigation of the specialized habitats for wildlife, the results of the site investigation identified amphibian breeding habitat (wetland) as present within 120 m of the Project location and requiring an evaluation of significance.

4.3.1.2 Rare Vegetation Communities or Specialized Habitat for Wildlife

4.3.1.2.1 Rare Vegetation Communities

Rare vegetation communities include alvars, tall-grass prairies, savannahs, rare forest types, talus slopes, rock barrens, sand barrens, Great Lakes dunes, and old growth forest. Of these habitat types, ELC Ecosite Codes were only identified in respect of Old Growth Forest. This is discussed further below.

Old Growth Forest – ELC Code: Coniferous Forest (FOC)

Characteristics of old-growth forest were considered in relation to forest communities identified on and within 120 m of the Project location. Based on observations during the site investigation, forest communities were not described as mature forest communities (i.e., disturbed, not structurally complex, limited age classes), and therefore this habitat type is not found on or within 120 m of the Project location. See Section 4.4 for further discussion of the woodland communities.

4.3.1.2.2 Specialized Habitat for Wildlife

Specialized wildlife habitats include

- areas that support species that have highly specific habitat requirements
- areas with high species and community diversity
- areas that provide habitat that greatly enhances species survival.

Habitats of Seasonal Concentrations of Animals that were considered during the site investigations include the following.

Waterfowl Nesting Area – ELC Code: Meadow Marsh (MAM), Shallow Marsh (MAS), Ash Mineral Deciduous Swamp (SWD2)

Areas of suitable waterfowl breeding habitat were searched during the waterfowl breeding season for evidence of occupancy. No waterfowl were recorded, though it is acknowledged that surveys were conducted during the latter half of the breeding season.

Swamp habitats were not identified as containing suitable habitat for cavity-nesters given the absence of cavity-support trees as a result of the immaturity of the community.

Areas of shallow marsh and meadow marsh present within 120 m of the Project location are limited to narrow areas around the watercourse that are not located in proximity to suitable upland breeding areas given the small size of suitable features identified .

Therefore, based on habitat conditions observed during the site investigation, the presence of such habitat on or within 120 m of the Project location is not supported.

Woodland Raptor Nesting Habitat (Woodland) – ELC Code: Coniferous Forest (FOC), Deciduous Swamp (SWD)

Characteristics of the woodlands on and within 120 m of the Project location were considered in relation to potential for provision of raptor nesting habitat. Woodlands must be greater than 10 ha in size in order to provide this wildlife habitat. Woodlands 1 through 3 are all less than 10 ha in size. As a result, these woodlands do not appear to meet the requirements for this habitat type.

Woodland 4 is more than 10 ha in size, and a stick nest was recorded during the site investigation within the edge of the woodland, though no evidence of raptor use was identified near the nest location at the time of the site investigation. Therefore, as a stick nest has been observed, this habitat type is carried forward to the evaluation of significance. Areas within 200 m of the nest would also provide support for the raptor nest in the provision of foraging habitat. As the nest was recorded at the edge of the woodland, it is likely that the nest may be that of a Red-tailed Hawk, one of the only raptor species to nest along woodland edges (Szuba and Naylor, 1998). Red-tailed Hawks commonly forage in grasslands.

Turtle Nesting and Over-wintering Areas – ELC Code: Meadow Marsh (MAM), Shallow Marsh (MAS)

Turtle nesting areas consists of sand and/or gravel habitats in proximity to wetlands. Such habitat types were not identified on or within 120 m of the Project location.

Turtle over-wintering areas consist of permanent waterbodies, large wetlands, and bog or fens with adequate dissolve oxygen. Permanent waterbodies associated with the meadow marsh and shallow marsh habitats are not considered to provide suitable turtle over-wintering habitat as the watercourse is both narrow (4 to 5 m wide) and shallow (<0.6 m deep), conditions that would promote freeze-through and would not favour turtle over-wintering.

Seeps and Springs – ELC Code: Forest/Swamp Communities (FO/SW)

A seepage area was identified during the water body site investigation (Hatch 2010b) in association with the wetland present southwest of the Project location. As the seepage area is located within the wetland community, and not within a forested community, it does not meet the wildlife habitat requirements for wildlife habitat. No seepage areas were identified within the forest or swamp communities.

4.3.1.2.3 Conclusion

Based on the results of the site investigation, no rare vegetation communities were identified on or within 120 m of the Project location. As a stick nest was observed, there is candidate significant raptor nesting habitat identified that will require an evaluation of significance.

4.3.1.3 Habitat of Species of Conservation Concern

Habitats types for species of conservation concern that were considered during the site investigation included the following.

Marsh Bird Breeding Habitat – ELC Code: Meadow Marsh (MAM)

Areas of meadow marsh are found within 120 m of the Project location, though the extent is extremely limited. Areas of marshland were searched during the latter half of the breeding bird season; none of the species listed in Table 1.3 of MNR (2009) were recorded within these habitats. The nature of the marshland within 120 m of the Project location (i.e., consisting of a narrow band of marsh habitat around a waterbody), suggests that this area of habitat is not preferred breeding habitat for marsh birds.

Area-Sensitive Bird Breeding Habitat –
ELC Code: Coniferous Forest (FOC) and Deciduous Swamp (SWD)

These habitat types are found in either large mature forest stands or woodlands greater than 30 ha in size. Such habitat types were not identified on or within 120 m of the Project location.

Open-Country Bird Breeding Habitat – ELC Code: Cultural Meadow (CUM)

The Project location and agricultural lands within 120 m represent large grasslands that may provide breeding habitat for area-sensitive open country breeding birds. An indicator (Bobolink) and common (Northern Harrier) species associated with this habitat type were recorded during the site investigation. Therefore, this habitat type is considered to be present on and within 120 m of the Project location.

Special Concern and S1-S3 Species

The following Special Concern and S1-S3 species were considered during the site investigation:

- Climbing Prairie Rose – No Climbing Prairie Rose were recorded during the site investigation. It is not expected that they are present on the Project location as they would have been detected during the site investigation. However, in order to ensure that this species is not present on the Project location, prior to removal of vegetation from the hedgerow or small woodland communities, these areas will be searched for Climbing Prairie Rose.
- Red-headed Woodpecker – Red-headed Woodpecker were not recorded during the site investigation. As surveys were conducted during the latter half of the breeding bird period, and since Red-headed Woodpeckers are a conspicuous species that would be expected to be observed were they present, it is expected that if Red-headed Woodpeckers were present on site that they would likely have been detected. Therefore, habitat for Red-headed Woodpecker is not present on or within 120 m of the Project location.
- Cerulean warbler – Suitable habitat for Cerulean Warbler (mature deciduous forests) was not found on or within 120 m of the Project location.

- Common Nighthawk — There is very little bare ground present on the Project location that would serve as suitable breeding habitat for Common Nighthawk. Areas of suitable habitat, such as the roadway to the agricultural fields, were walked during the time period suitable for Common Nighthawk nesting and no nighthawks were observed. Further, no Common Nighthawk were noted during the crepuscular survey of the study area. Therefore, Common Nighthawk habitat is not considered to be present on or within 120 m of the Project location.
- Milksnake – As Milksnake are habitat generalists, suitable habitat is present on and within 120 m of the Project location, predominantly associated with the hedgerows and cultural meadow communities. All agricultural fields on and within 120 m of the Project location would represent potential foraging habitat for the species. Of these features on and within 120 m of the Project location, the hedgerow within 120 m of the Project location may provide a movement corridor for Milksnake within the foraging habitat. Therefore, Milksnake habitat is present on and within 120 m of the Project location.
- Northern Ribbonsnake — The watercourse which crosses the Project location was considered to be capable of supporting Northern Ribbonsnake, though none were recorded during the site investigation. As a result, Northern Ribbonsnake habitat is found within 120 m of the Project location.
- Western Chorus Frog – Though not observed during the site investigation, suitable habitat for Western Chorus Frog is found within the wetland communities within 120 m southwest of the Project location. Therefore, habitat for Western Chorus Frogs is present within 120 m of the Project location.
- Northern Map/Snapping Turtle – The shallow and narrow nature of the water body which crosses the Project location, suggests that this feature is not conducive to occupancy by turtles. Further, as previously discussed, there is no turtle over-wintering or nesting areas identified on or within 120 m of the Project location. Therefore, suitable habitat for species of turtles is not found on or within 120 m of the Project location.

4.3.1.3.1 Conclusions

Based on the results of the site investigation discussed above, habitat for species of conservation concern were detected in relation to

- open country bird breeding habitat
- habitat for Milksnake
- habitat for Northern Ribbonsnake
- habitat for Western Chorus Frog.

4.3.1.4 Animal Movement Corridors

There are three types of animal movement corridors identified as wildlife habitat within Ecoregion 6E:

Amphibian Movement Corridors

As amphibian breeding habitat was identified within 120 m of the Project location, amphibian movement corridors must be considered. Amphibian movement corridors would be present within 120 m of the Project location in association with the watercourses that would provide a movement corridor from breeding habitats to over-wintering areas in deeper waterbodies more than 120 m from the Project location. This habitat type is therefore present within 120 m of the Project location.

Deer Movement Corridors

As no deer wintering habitat was identified, this habitat type is not present on or within 120 m of the Project location.

Bat Migration Corridors

As the project location is not located on a shoreline, or an area of high elevation, and since the Project will not require installation of components more than 30 m above the ground, this habitat type is not found.

4.3.1.4.1 Conclusion

As a result, amphibian movement corridors within 120 m of the Project location will be considered during the evaluation of significance.

4.4 Woodland

Site investigations confirmed the presence of woodlands on and within 120 m of the Project location, however several of the woodland communities were determined to be larger than identified during the Records Review through LIO mapping. The woodland boundaries identified in Figure 4.1 represent a correction from the Records Review report.

Wildlife habitat functions of the various woodland communities are addressed in Section 4.3, where applicable. Beyond these functions, an additional function of the woodland communities on and within 120 m of the Project location is contribution to local and regional water quantity and quality as woodlands provide a source for retention of surface water runoff en route to watercourses. With interior forest habitat within Woodland 4, the woodland also provides habitat for species reliant on these communities.

4.4.1 Woodland 1

Woodland 1 is located within 120 m north of the Project location. The boundaries of the woodland were confirmed during the site investigation, providing an overall size of 7.2 ha.

The woodland community is characterized as a Green Ash Mineral Deciduous Swamp Type (SWDM2-2), which is also a wetland community. This community is described further in Section 4.2.

Vegetation species and the host community recorded are common to the area and are not considered to be at risk. A high native diversity of composition or terrain were not recorded within the woodland.

4.4.2 *Woodland 2*

Woodland 2 is located on the Project location, in the northeastern corner. The site investigation confirmed the boundaries of the woodland (shown in Figure 1.1), and as such the woodland is 1.1 ha in size.

The dominant tree species included Red Cedar with Green Ash along the edge. Though this community type is not truly characterized within the Ecological Land Classification (ELC), the community type most representative of this habitat type is a Dry-Fresh Red Cedar Coniferous Forest Type FOC2-1).

The dominant shrubs included Buckthorns, Prickly-Ash, Downy Arrow-wood and Common Apple. Groundcover vegetation included Bedstraws, Orange Hawkweed, Common Yarrow, Tall Buttercup, Cow Vetch, Wild Carrot, Clovers, and Violets. Vegetation species and the host community recorded are common to the area and are not considered to be at risk. A high native diversity of composition or terrain were not recorded within the woodland.

A view of the woodland is shown in Figure 4.3.

Figure 4.3 View of the Woodland Located Along the Northeast Corner of the Project Location

4.4.3 *Woodland 3*

Woodland 3 is located on the Project location, along the northwestern boundary. The boundaries of the woodland were confirmed during the site investigation, providing an overall size of 1.2 ha.

The woodland is situated within a low-lying area with poorly drained soils. The site investigation determined that the woodland portion is approximately 0.8 ha in size and has a canopy cover of

approximately 80%. The remaining 0.40 ha is described as a hedgerow community and scrubland, dominated by sparse shrubs and tree species with 0% canopy cover.

The woodland community is characterized as a Green Ash Mineral Deciduous Swamp Type (SWDM2-2), which is also a wetland community. This community is described further in Section 4.2.

Vegetation species and the host community recorded are common to the area and are not considered to be at risk. A high native diversity of composition or terrain were not recorded within the woodland.

A view of the woodland is shown in Figure 4.4.

Figure 4.4 View of the Woodland Along the Northwest Boundary

4.4.4 Woodland 4

Woodland 4 is located within 120 m east of the Project location. The boundaries of the woodland were confirmed during the site investigation, providing an overall size of 16.5 ha. Community composition was similar to that described for Woodland 2, being characterized as a Dry-Fresh Red Cedar Coniferous Forest Type FOC2-1).

Vegetation species and the host community recorded are common to the area and are not considered to be at risk. A high native diversity of composition or terrain were not recorded within the woodland.

5. Conclusions

Based on the results of the site investigation identified above, the following corrections to the Records Review Report are required:

- The unevaluated wetland boundary extends beyond the mapped area shown on the LIO mapping. The wetland boundary extends beyond the southeast corner toward the eastern boundary of the Project location.
- There are woodlands located adjacent to the Project location, along the north, east and west boundaries. These areas are not shown on the LIO mapping.

Natural features are present on and within 120 m of the Project location are identified in Table 5.1 and will require an evaluation of significance in order to determine whether an environmental impact study is required.

Table 5.1 Natural Features, Attributes and Function on and Within 120 m of the Project Location

Feature	Attributes/Composition	Function
Wetland	hS_1 [ELC: Green Ash Mineral Deciduous Swamp Type (SWDM2-2)] tsS_4 [ELC: Willow Mineral Deciduous Thicket Swamp Ecosite (SWTM3)] hS_2 [ELC: Green Ash Mineral Deciduous Swamp Type (SWDM2-2)] neM_1 [ELC: Mixed Graminoid Mineral Meadow Marsh Type (MAMM1-16)] reM_2 [ELC: Cattail Mineral Shallow Marsh Type (MASM1-1)] hS_3 [ELC: Silver Maple Mineral Deciduous Swamp Type (SWDM3-2)]	- Wildlife habitat - Primary production - Watershed protection - Preservation of biodiversity - Fish habitat - Support of natural cycles
Wildlife Habitat		
Raptor nesting habitat	- Stick nest located along the edge of Woodland 4. - Grassland and woodland communities within 200 m of the nest provide foraging habitat	Provision of nesting and foraging habitat for raptor species.
Amphibian breeding habitat and amphibian movement corridor	Located within the wetland community within 120 m of the Project location	Provision of breeding habitat for amphibian communities, as well as a movement corridor for amphibian from breeding areas to over-wintering sites.
Open country bird breeding habitat	Located within the agricultural fields on and within 120 m of the Project location. Agricultural fields consisted of old hay fields	Open country bird breeding habitat provides breeding areas for grassland bird species; species which once relied on tall grass prairie habitats, a habitat type which is no longer common within the province.
Northern Ribbonsnake Habitat	Located within the wetland community within 120 m south of the Project location	Provision of Northern Ribbonsnake breeding habitat.

Feature	Attributes/Composition	Function
Western Chorus Frog Habitat	Located within the wetland community within 120 m south of the Project location	Provision of Western Chorus Frog breeding habitat.
Milksnake Habitat	Agricultural fields within 120 m of the Project location	Provision of movement corridor (hedgerow) and foraging habitat (agricultural fields) for Milksnake.
Woodlands		
Woodland 1	Green Ash Mineral Deciduous Swamp Type (SWDM2-2)	Contribution to local and regional water quantity and quality.
Woodland 2	Dry-Fresh Red Cedar Coniferous Forest Type FOC2-1)	Contribution to local and regional water quantity and quality.
Woodland 3	Green Ash Mineral Deciduous Swamp Type (SWDM2-2)	Contribution to local and regional water quantity and quality.
Woodland 4	Dry-Fresh Red Cedar Coniferous Forest Type FOC2-1)	- Contribution to local and regional water quantity and quality - Interior forest habitat.

6. References

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MNR. 2000. Significant Wildlife Habitat Technical Guide. Fish and Wildlife Branch, Wildlife Section and Science Development and Transfer Branch, Southcentral Sciences Section.

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Appendix A

Site Investigation Field Notes

TABULATION

OF CIRCULAR CURVE'S DEFLECTION ANGLES AND CHORD LENGTHS FOR LAYING OUT PURPOSES FROM CURVE TABLE I OR IA AND II

TRANSIT AT THE +	ℓ_i = • m; $\Delta\ell$ = • m; ℓ_e = • m	C_i = • m; C = • m; C_e = • m	GIVEN: P.I. STA. +; Δ = ° ′ ″; R = m	CURVE N°

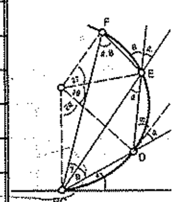
POINT	STATION SIGHTED	CONSECUTIVE arc length	CONSECUTIVE defl. angles	DEFL. ∡ for STATION	DEFL. ∡ for STATION to nearest second	CONSECUTIVE chord length	CURVE DATA
H.O.T.	•						
	•						

Az (or Bear) = ° ′ ″
Δ = ° ′ ″
R = m
T = m
L = m
E = m

T = R tan Δ/2
E = R exsec Δ/2
L = RΔ π/180
} or read off Table II with Δ as table entry

P.I. STA. +
- T -
B.C. +
+ L +
E.C. +

$\text{Defl. } \measuredangle = \frac{90}{\pi}\frac{\ell}{R} = \arcsin\left(\frac{C}{2R}\right)$
$\text{Chord} = 2R\sin\left(\frac{90}{\pi}\frac{\ell}{R}\right)$
} or read off Table I or IA with R as table entry



Subscript 'i' denotes initial
Subscript 'e' denotes end or last
ℓ - any arc length
$\Delta\ell$ - constant arc increament
C - chord length

No
Date Belleville North Page 1

Date June 14 2010
Time 0930 - 1500 & 2200-2300
% C.C. 60%
Temp: 22°C
Beaufort Wind Scale = 2

Northern harrier +
swallow
black-capped chickadee

- Hay field
Field species
cow vetch
bird's-foot trefoil
self-heal
ox-eye daisy
red clover
white clover
common buttercup
- sedges
- willow sp (R) within field
- canada bluegrass
common milkweed
- bebb's sedge
- awl fruited sedge

No
Date Page 2

red-winged blackbird nest with eggs
bobolink. wild turkey
leopard frog.
deer tracks
chickweed or sandwort
sow thistle.
yellow bedstraw
yarrow
wild carrot
rough-fruited cinquefoil
goldenrod sp.
alfalfa
field horsetail
fragrant bedstraw
Canada anemone
common strawberry
common plantain
ground cedar?
aster sp.
common burdock
riverbank grape.
prickly ash
prickly-gooseberry
raspberry sp.
cow vetch
birdsfoot trefoil
wild madder

No
Date Page 3

Wetland area
grasses
sedges
small-fruited bulrush
woolgrass
red-osier dogwood
common cattail
purple loosestrife
Virginia creeper
willow sp.
Canada bluejoint
[illegible]
- spotted jewelweed -
gray dogwood (D)
field horsetail
narrow-leaved meadowsweet
buckthorn (C) - hedgerow
red cedar (D) - hedgerow
prickly ash (A) - hedgerow
riverbank grape.
- Same groundcover as field.
gray dogwood (D)
- common juniper (R)
red osier dogwood
beaked sedge?

hedgerow

No ....
Date .... Page 4

Hedgerow cont'd
Ash sp. (R)
apple tree (R)
deptford's pink
prickly gooseberry
Shagbark hickory (R)
chicory
orange hawkweed
bittersweet nightshade

rock outcrops northern boundary

No ...... [illegible]
Date ...... [illegible] .... Page 5

Green/black ash swamp

[illegible] [illegible] canopy cover
Green ash (D) canopy 80%
- Black ash (D) understory
Buckthorn (R) inside
Buckthorn (A) edge
Leaf litter (A)
downed debris (O)
standing snags (R)
groundcover
- [illegible] (A)
- sedges (A)
- green sedge
+ bladder sedge
wire sedge
- mosses
+ lichen
goldenrod sp. (R)
bedstraw
narrow leaved meadowsweet
- [illegible] bluebird
bobolink
american woodcock
- shagbark hickory (R)
virginia creeper
wood strawberry

blue, and grass in open area
north of black oak savanna area
mullein (A)
sedges
grasses
beaked sedge
violet sp.

north boundary hedgerow
downy arrow-wood
Red cedar (D)
buckthorn
shrubs
prickly ash
black ash (R)

Stick nest in red cedar across from wooded area

corner - bur oak (R)
- 9 wild turkey
- cottontail
horned lark
- chipping sparrow
killdeer
robin
white-tailed deer

Appendix B

Natural Resource Solutions Inc.
Wetland Evaluations

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

1139

January 26, 2011

Mr. Sean Male
Hatch
4342 Queen Street, Suite 500,
Niagara Falls, ON L2E 7J7

Dear Mr. Male:

Re: Belleville North Solar Project Wetland Evaluations

On behalf of Natural Resource Solutions Inc., I am pleased to provide the following which documents the work completed relative to wetland evaluation at the above noted solar project being proposed by Northland Power.

The objectives of this assignment were to provide project-specific assessments and possibly evaluations of wetlands found on or within 120m of proposed project components as per Renewable Energy Approval Regulation 359/09. Review of Land Information Ontario (LIO) and aerial photography indicated that potential unevaluated wetlands are on the subject property as well as neighbouring lands within 120m. Portions of the Crofton Marsh wetland are located to the east of the project area and portions of another, larger non-provincially significant wetland are found to the west.

Study Approach
This work included the following:

- Collection and review of background information on wetland-related natural features in the vicinity of the project site.

- Identification of all wetlands, evaluated and non-evaluated, within approximately 750m of the subject wetlands to assess the extent of wetland mapping that would be required to address whether wetlands in the vicinity of the project site would be complexed with other wetlands (i.e. to identify whether a 'string' of unevaluated wetlands occur between the subject wetlands and the nearest evaluated wetland)

- Conduct field surveys of subject wetlands on the project site as well as on neighbouring lands. This included mapping of wetland vegetation communities based on OWES (as well as Ecological Land Classification – ELC), and recording all species of flora and fauna within the wetlands.

The above tasks feed into a determination of whether the wetlands on or within 120m of the project site are a portion of the existing evaluated wetland, are of insufficient size or ecological/hydrologic character to be considered stand alone wetlands under OWES, and/or are not part of the wetland complex when reviewed under the OWES complexing criteria. If

wetlands were considered to not be part of the existing evaluated wetland, the assessment considered whether the wetlands would be part of a 'new' wetland complex.

This letter report documents the analysis of the above.

Summary

A number of wetlands were found on the project site and within 120m, which were described under the OWES as well as using ELC based on field surveys completed on August 11, 2010. Copies of field data forms are appended to this letter. No significant species of flora or fauna were observed during the field survey.

Portions of the existing non-provincially significant Crofton Marsh are located approximately 300m to the east. Although not observed to be hydrologically connected, current upland vegetation provides an ecological connection to this wetland. As such, it was concluded that the wetlands in the vicinity of the project area could be complexed with the Crofton Marsh.

In the northern section of the project area, a small, isolated wetland was identified. This wetland is in close proximity (within 200m) of the rest of the wetland areas and should be complexed. This community is described as:

hS_1 [ELC: Green Ash Mineral Deciduous Swamp Type (SWDM2-2)]

A portion of one wetland community borders the south end of, and also falls within the southeastern area of the lands available for the project. The community is described as:

tsS_4 [ELC: Willow Mineral Deciduous Thicket Swamp Ecosite (SWTM3)]

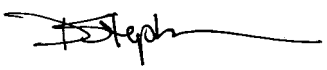
Four other communities border the project area to the north and west as well as to the south. They are described as:

hS_2 [ELC: Green Ash Mineral Deciduous Swamp Type (SWDM2-2)]
neM_1 [ELC: Mixed Graminoid Mineral Meadow Marsh Type (MAMM1-16)]
reM_2 [ELC: Cattail Mineral Shallow Marsh Type (MASM1-1)]
hS_3 [ELC: Silver Maple Mineral Deciduous Swamp Type (SWDM3-2)]

The total area of the wetland communities described above is 38.7ha. Due to the absence of significant ecological features found in the wetlands, it is not anticipated that addition of these wetlands to the Crofton Marsh would affect the non-provincially significant status of this complex.

I trust that this information is adequate. Please contact me if you have any questions.

Yours sincerely,
Natural Resource Solutions Inc.



David Stephenson, M.Sc.,
Senior Biologist

Wetland Vegetation Communities:

Wetland 1:

hS_1 [ELC: Green Ash Mineral Deciduous Swamp Type (SWDM2-2)]
h*: *Fraxinus pennsylvanica, Ulmus americana*
gc: *Lythrum salicaria, Toxicodendron radicans ssp. Negundo, Parthenocissus tricuspidata*
ne: *Carex vulpinoidea, Carex scoparia, Phalaris arundinacea, Poa palustris, Calamagrostis Canadensis*

hS_2 [ELC: Green Ash Mineral Deciduous Swamp Type (SWDM2-2)]
h*: *Fraxinus pennsylvanica*
ne: *Carex bebbii, Carex vulpinoidea, Carex lupulina*

hS_3 [ELC: Silver Maple Mineral Deciduous Swamp Type (SWDM3-2)]
h*: *Acer saccharinum, Fraxinus pennsylvanica, Acer rubrum*
ne: *Carex sp., Phalaris arundinacea*
be: *Sagittaria latifolia, Alisma plantago-aquatica*

neM_1 [ELC: Mixed Graminoid Graminoid Mineral Meadow Marsh Type (MAMM1-16)]
ls: *Spiraea alba, Cornus stolonifera*
gc: *Lythrum salicaria, Impatiens capensis, Eupatorium perfoliatum*
ne*: *Carex vulpinoidea, Carex lupulina*

tsS_4 [ELC: Willow Mineral Deciduous Thicket Swamp Ecosite (SWTM3)]
ts*: *Salix sp., Cornus foemina ssp. Racemosa*
gc: *Soldiago sp., Lythrum salicaria, Eupatorium maculatum ssp. Maculatum*

reM_2 [ELC: Cattail Mineral Shallow Marsh Type (MASM1-1)]
ne: *Eleocharis sp., Phalaris arundinacea*
re*: *Typha latifolia, Scirpus atrovirens*

* dominant form

Project Team:

Member	Qualifications	Role
David Stephenson, MSc	Certified Wetland Evaluator Certified ELC Certified Arborist	Project Management Field Survey Data Analysis, Evaluation, Reporting
Kevin Dance, M.Sc.	Certified ELC	Field Survey Data Analysis, Evaluation
Matt Ross, B.Sc., FWT	Field Biologist	Field Survey Data Analysis, Evaluation
Shawn MacDonald, B.A.	GIS Mapping	Mapping

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Wetland Vegetation Communities

Project Name: Belleville North **Project #:** 1139

Observer(s): KSD, MR

Date: Aug 11/10 **Time (24h):** 9:00

Field #: 1 (hedgerows) **Weather:** Precipitation: 0 Temp (°C): 24

Map Code: 1 Wind Speed & Direction: 2 Cloud %: 5

Wetland Type: not wetland **Site Type:** N/A **Dominant Form:** 15

% Open Water: no water **ELC Code:**

Photos:

Forms % (Circle those ≥25%)	Species (dominant species, secondary species, present species)
h	bur oak
c	red cedar
dc,dh,ds	
ts	
ls	Prickly Ash, red osier dogwood
gc	Queen Anne's Lace = red clover
ne	grass sp.
be	
re	
ff	
f	
su	
m	

Rare Species (Local, Regional, Provincial):

Wildlife Notes:

AMKE – III — cabbage white
KILL – II — Summer Azure
AMGO
Monarch

SAR observations must also include a specific UTM location.

Forms: **h**=deciduous trees; **c**=coniferous trees; **dh, dc, ds**=dead trees/shrubs; **ts**=tall shrubs; **ls**=low shrubs; **gc**=ground cover; **ne**=narrow emergents; **be**=broad emergents; **f**=floating plants; **ff**=free-floating plants; **su**=submerged plants; **m**=mosses

Wetland Type: **S**=swamp; **M**=marsh; **B**=bog; **F**=fen

Site Type: **L**=lacustrine; **P**=palustrine; **R**=riverine; **IS**=isolated

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Wetland Vegetation Communities

Project Name: Belleville North **Project #:** 1139

Observer(s): KSD, MR

Date: Aug. 11/10 **Time (24h):** 9:00

Field #: 2 **Weather:** Precipitation: 0 Temp (°C): 24

Map Code: 2 (hsi) Wind Speed & Direction: 2 Cloud %: 5

Wetland Type: 5 **Site Type:** 15 **Dominant Form:** h

% Open Water: no water **ELC Code:** SWDM2-2

Photos:

Forms % (Circle those ≥25%)	Species (dominant species, secondary species, present species)
h	green Ash, white Elm
c	red cedar
dc,dh,ds	
ts	European buckthorn, gray dogwood
ls	prickly Ash, red-osier dogwood, narrow leaved meadowsweet
gc	purple loosestrife, poison ivy, virginia creeper
ne	sedge sp. (Fox sedge, pointed broom sedge), grass sp. (reed canary, fowl meadow, Canada bluegrass)
be	
re	
ff	
f	
su	
m	

Rare Species (Local, Regional, Provincial):

Wildlife Notes:

BLJA
SOSP
Deer – bedding areas seen

SAR observations must also include a specific UTM location.

Forms: **h**=deciduous trees; **c**=coniferous trees; **dh, dc, ds**=dead trees/shrubs; **ts**=tall shrubs; **ls**=low shrubs; **gc**=ground cover; **ne**=narrow emergents; **be**=broad emergents; **f**=floating plants; **ff**=free-floating plants; **su**=submerged plants; **m**=mosses

Wetland Type: **S**=swamp; **M**=marsh; **B**=bog; **F**=fen

Site Type: **L**=lacustrine; **P**=palustrine; **R**=riverine; **IS**=isolated

Natural Resource Solutions Inc.

Aquatic, Terrestrial and Wetland Biologists

Wetland Vegetation Communities

Project Name: Belleville North **Project #:** 1139

Observer(s): KSD, MR

Date: Aug. 11/10 **Time (24h):** 900

Field #: 3 **Weather:** Precipitation: 0 Temp (°C): 24

Map Code: 3 Wind Speed & Direction: 2 Cloud %: 5

Wetland Type: not wetland **Site Type:** N/A **Dominant Form:** gc

% Open Water: no water **ELC Code:**

Photos:

Forms % (Circle those ≥25%)	Species (dominant species, secondary species, present species)
h	
c	
dc,dh,ds	
ts	
ls	
(gc)	Alfalfa, red clover, Queen Anne's lace, milkweed
ne	
be	
re	
ff	
f	
su	
m	

Rare Species (Local, Regional, Provincial):

Wildlife Notes:

AMCR
clouded sulphur
black swallowtail
Monarch

SAR observations must also include a specific UTM location.

Forms: **h**=deciduous trees; **c**=coniferous trees; **dh, dc, ds**=dead trees/shrubs; **ts**=tall shrubs; **ls**=low shrubs; **gc**=ground cover; **ne**=narrow emergents; **be**=broad emergents; **f**=floating plants; **ff**=free-floating plants; **su**=submerged plants; **m**=mosses

Wetland Type: **S**=swamp; **M**=marsh; **B**=bog; **F**=fen

Site Type: **L**=lacustrine; **P**=palustrine; **R**=riverine; **IS**=isolated

Natural Resource Solutions Inc.

Aquatic, Terrestrial and Wetland Biologists

Wetland Vegetation Communities

Project Name: Belleville North **Project #:** 1139

Observer(s): KSD, MR

Date: Aug. 11/10 **Time (24h):** 900

Field #: 4 **Weather:** Precipitation: 0 Temp (°C): 24

Map Code: hS2 Wind Speed & Direction: 2 Cloud %: 5

Wetland Type: S **Site Type:** P **Dominant Form:** h

% Open Water: 10% **ELC Code:** SWDM2-2

Photos:

Forms % (Circle those ≥25%)	Species (dominant species, secondary species, present species)
(h)	Green Ash
c	Red Cedar
dc,dh,ds	
ts	gray dogwood
ls	red-osier dogwood, narrow leaved meadowsweet
gc	goldenrod, purple loosestrife, joe pye weed
(ne)	sedge sp. (bebb's sedge, fox sedge, hop sedge),
be	
re	black bulrush, broad leaved cattail
ff	
f	
su	
m	

Rare Species (Local, Regional, Provincial):

wolf - TK ?

Deer - TK

Raccoon - TK

beaver - cut down trees & branches

AMCR
Rufous-sided towhee

Wildlife Notes:

green frog
red Admiral
white-faced meadowhawk
Fragile forktail
clouded sulphur

SAR observations must also include a specific UTM location.

Forms: **h**=deciduous trees; **c**=coniferous trees; **dh, dc, ds**=dead trees/shrubs; **ts**=tall shrubs; **ls**=low shrubs; **gc**=ground cover; **ne**=narrow emergents; **be**=broad emergents; **f**=floating plants; **ff**=free-floating plants; **su**=submerged plants; **m**=mosses

Wetland Type: **S**=swamp; **M**=marsh; **B**=bog; **F**=fen

Site Type: **L**=lacustrine; **P**=palustrine; **R**=riverine; **IS**=isolated

Green Ash swamp

Natural Resource Solutions Inc.

Aquatic, Terrestrial and Wetland Biologists

Wetland Vegetation Communities

Project Name: Belleville North **Project #:** 1139

Observer(s): KSD, MR

Date: Aug. 11/10 **Time (24h):** 900

Field #: 5 **Weather:** Precipitation: 0 Temp (°C): 24

Map Code: hS3 Wind Speed & Direction: 2 Cloud %: 5

Wetland Type: S **Site Type:** P **Dominant Form:** h

% Open Water: No standing water **ELC Code:** SWDM3-2

Photos:

Forms % (Circle those ≥25%)	Species (dominant species, secondary species, present species)
(h)	Silver Maple >> Green Ash > red Maple
c	
dc,dh,ds	
ts	European buckthorn
ls	narrow leaved meadowsweet
gc	spotted jewelweed, woodland stinging nettle, boneset, purple loosestrife
(ne)	Sedge sp, , reed canary, ~~bur-reed~~
(be)	broad-leaved Arrowhead > waterplantain
re	broad-leaved Cattail
ff	
f	
su	
m	

Rare Species (Local, Regional, Provincial):

- evidence of previous standing water

Wildlife Notes:

Giant Swallowtail
Monarch
Cabbage white
beaver - trees taken down
RCCH
AMGO
Leopard frog

SAR observations must also include a specific UTM location.

Forms: h=deciduous trees; c=coniferous trees; **dh, dc, ds**=dead trees/shrubs; **ts**=tall shrubs; **ls**=low shrubs; **gc**=ground cover; **ne**=narrow emergents; **be**=broad emergents; **f**=floating plants; **ff**=free-floating plants; **su**=submerged plants; **m**=mosses

Wetland Type: S=swamp; M=marsh; B=bog; F=fen

Site Type: L=lacustrine; P=palustrine; R=riverine; IS=isolated

Natural Resource Solutions Inc.

Aquatic, Terrestrial and Wetland Biologists

Wetland Vegetation Communities

Project Name: Belleville North **Project #:** 1139

Observer(s): KSD, MR

Date: Aug. 11/10 **Time (24h):** 900

Field #: 6 **Weather:** Precipitation: 0 Temp (°C): 24

Map Code: 6 Wind Speed & Direction: 2 Cloud %: 5

Wetland Type: old field/meadow **Site Type:** n/a **Dominant Form:** ne

% Open Water: no water **ELC Code:**

Photos:

Forms % (Circle those ≥25%)	Species (dominant species, secondary species, present species)
h	
c	
dc,dh,ds	
ts	
ls	
(gc)	golden rod sp., Queen Annes lace, common milkweed
(ne)	grass sp. (largely reed canary)
be	
re	
ff	
f	
su	
m	

Rare Species (Local, Regional, Provincial):

Wildlife Notes:

SAR observations must also include a specific UTM location.

Forms: h=deciduous trees; c=coniferous trees; **dh, dc, ds**=dead trees/shrubs; **ts**=tall shrubs; **ls**=low shrubs; **gc**=ground cover; **ne**=narrow emergents; **be**=broad emergents; **f**=floating plants; **ff**=free-floating plants; **su**=submerged plants; **m**=mosses

Wetland Type: S=swamp; M=marsh; B=bog; F=fen

Site Type: L=lacustrine; P=palustrine; R=riverine; IS=isolated

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Aquatic, Terrestrial and Wetland Biologists

Wetland Vegetation Communities

Project Name: Belleville North **Project #:** 1139
Observer(s): KSD, MR
Date: Aug. 11/10 **Time (24h):** 900
Field #: 7 (creek channel) **Weather:** Precipitation: 0 Temp (°C): 24
Map Code: 7 Wind Speed & Direction: 2 Cloud %: 5
Wetland Type: M (MM1) **Site Type:** R **Dominant Form:** ne
% Open Water: No water **ELC Code:** MAMM1-16
Photos:

Forms % (Circle those ≥25%)	Species (dominant species, secondary species, present species)
h	
c	
dc,dh,ds	
ts	willow sp.
ls	narrow-leaved Meadowsweet, red osier dogwood
gc	purple loosestrife, boneset, spotted jewelweed
ne	sedges (fox sedge, hop sedge), grass sp.
be	
re	broad-leaved cattail,
ff	
f	
su	
m	

Rare Species (Local, Regional, Provincial):	Wildlife Notes:
	COYE

SAR observations must also include a specific UTM location.

Forms: **h**=deciduous trees; **c**=coniferous trees; **dh, dc, ds**=dead trees/shrubs; **ts**=tall shrubs; **ls**=low shrubs; **gc**=ground cover; **ne**=narrow emergents; **be**=broad emergents; **f**=floating plants; **ff**=free-floating plants; **su**=submerged plants; **m**=mosses

Wetland Type: **S**=swamp; **M**=marsh; **B**=bog; **F**=fen

Site Type: **L**=lacustrine; **P**=palustrine; **R**=riverine; **IS**=isolated

Creek Channel

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Wetland Vegetation Communities

Project Name: Belleville North **Project #:** 1139
Observer(s): KSD, MR
Date: Aug. 11/10 **Time (24h):** 900
Field #: 4b **Weather:** Precipitation: 0 Temp (°C): 24
Map Code: b (ts S4) Wind Speed & Direction: 2 Cloud %: 5
Wetland Type: S **Site Type:** P **Dominant Form:** ts
% Open Water: no standing water **ELC Code:** SWTN3
Photos:

Forms % (Circle those ≥25%)	Species (dominant species, secondary species, present species)
h	Green Ash
c	red cedar
dc,dh,ds	
ts	willow sp., gray dogwood
ls	red osier dogwood
gc	goldenrod sp, purple loosestrife, joe-pye weed
ne	Sedge sp
be	
re	black bulrush, broad-leaved cattail
ff	
f	
su	
m	

Rare Species (Local, Regional, Provincial):	Wildlife Notes:
	AMGO BCCH White-faced Meadowhawk GRCA

SAR observations must also include a specific UTM location.

Forms: **h**=deciduous trees; **c**=coniferous trees; **dh, dc, ds**=dead trees/shrubs; **ts**=tall shrubs; **ls**=low shrubs; **gc**=ground cover; **ne**=narrow emergents; **be**=broad emergents; **f**=floating plants; **ff**=free-floating plants; **su**=submerged plants; **m**=mosses

Wetland Type: **S**=swamp; **M**=marsh; **B**=bog; **F**=fen

Site Type: **L**=lacustrine; **P**=palustrine; **R**=riverine; **IS**=isolated

willow swamp

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Aquatic, Terrestrial and Wetland Biologists

Wetland Vegetation Communities

Project Name: Belleville N **Project #:** 1139

Observer(s): KSD, MR

Date: Aug. 11/10 **Time (24h):** 900

Field #: 8 **Weather:** Precipitation: 0 Temp (°C): 24+

Map Code: reMz Wind Speed & Direction: 2 Cloud %: 5

Wetland Type: Marsh **Site Type:** R **Dominant Form:** re

% Open Water: 10% **ELC Code:** MASM1-1

Photos:

Forms % (Circle those ≥25%)	Species (dominant species, secondary species, present species)
h	
c	
dc,dh,ds	
ts	willow sp.
ls	red-osier dogwood, narrow leaved meadowsweet
gc	poison Ivy, Queen Annes lace, sporadic, dogbane, purple loosestrife
(ne)	spike rush sp., reed canary grass
be	
(re)	broad-leaved cattails, black bulrush
ff	
f	northern small white water lily, lady's thumb
su	
m	

Rare Species (Local, Regional, Provincial):

Wildlife Notes:

CEDW

SAR observations must also include a specific UTM location.

Forms: **h**=deciduous trees; **c**=coniferous trees; **dh, dc, ds**=dead trees/shrubs; **ts**=tall shrubs; **ls**=low shrubs; **gc**=ground cover; **ne**=narrow emergents; **be**=broad emergents; **f**=floating plants; **ff**=free-floating plants; **su**=submerged plants; **m**=mosses

Wetland Type: **S**=swamp; **M**=marsh; **B**=bog; **F**=fen

Site Type: **L**=lacustrine; **P**=palustrine; **R**=riverine; **IS**=isolated

Natural Resource Solutions Inc.

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Wetland Vegetation Communities

Project Name: Belleville N. **Project #:** 1139

Observer(s): KSD, MR

Date: Aug. 11/10 **Time (24h):** 900

Field #: 9 **Weather:** Precipitation: 0 Temp (°C): 24+

Map Code: 9 Wind Speed & Direction: 2 Cloud %: 5

Wetland Type: not wetland **Site Type:** N/A **Dominant Form:** C

% Open Water: None **ELC Code:**

Photos:

Forms % (Circle those ≥25%)	Species (dominant species, secondary species, present species)
h	
(c)	red cedar
dc,dh,ds	
ts	
ls	
gc	
ne	
be	
re	
ff	
f	
su	
m	

Rare Species (Local, Regional, Provincial):

upland dry, next to no vegetation in understory

Wildlife Notes:

SAR observations must also include a specific UTM location.

Forms: **h**=deciduous trees; **c**=coniferous trees; **dh, dc, ds**=dead trees/shrubs; **ts**=tall shrubs; **ls**=low shrubs; **gc**=ground cover; **ne**=narrow emergents; **be**=broad emergents; **f**=floating plants; **ff**=free-floating plants; **su**=submerged plants; **m**=mosses

Wetland Type: **S**=swamp; **M**=marsh; **B**=bog; **F**=fen

Site Type: **L**=lacustrine; **P**=palustrine; **R**=riverine; **IS**=isolated

Belleville North Solar Project

Wetland Vegetation

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

August 20, 2010
Project No: NRSI-1139
UTM Zone 18, NAD 83
Scale: 1:10,000 (at 11x17")

311000 311500 312000 312500 313000 313500 314000 314500

4882500 4882000 4881500 4881000 4880500

N

CROFTON R

HWY 62

BURR RD

WETLAND #1

hS_2
SWDM2-2

hS_1
SWDM2-2

Crofton Marsh

neM_1
MAMM1-16

hS_3
SWDM3-2

reM_2
MASM1

tsS_4
SWTM3

tsS_4
SWTM3

Legend

- Project Site
- Ecological Land Classification
- (MAMM1-16) Mixed Graminoid Graminoid Mineral Meadow Marsh Type
- (MASM1) Graminoid Mineral Shallow Marsh Ecosite
- (SWDM2-2) Green Ash Mineral Deciduous Swamp Type
- (SWDM3-2) Silver Maple Mineral Deciduous Swamp Type
- (SWTM3) Willow Mineral Deciduous Thicket Swamp Ecosite
- Road
- Watercourse Permanent
- Other Wetland
- Waterbody
- Wetland
- Wooded Area

Meters
0 250 500 750

NRSI_1139_ELC_10K_2010_08_20_SWM