



Belleville North Solar Project

Natural Heritage Evaluation of Significance Report

August 15, 2011



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

Natural Heritage
Evaluation of Significance

Belleville North Solar Project

H334844-0000-07-124-0014

Rev. 1

August 15, 2011

Disclaimer

This report has been prepared by or on behalf of Northland Power Inc. for submission to the Ontario Ministry of the Environment as part of the Renewable Energy Approval process. The content of this report is not intended for the use of, nor is it intended to be relied upon by, any other person. Neither Northland Power Inc. nor any of its directors, officers, employees, agents or consultants has any liability whatsoever for any loss, damage or injury suffered by any third party arising out of, or in connection with, their use of this report.

Project Report

August 15, 2011

**Northland Power Inc.
Belleville North Solar Project**

**Natural Heritage Evaluation of Significance
Table of Contents**

1. Introduction	3
1.1 Project Description	3
1.2 Legislative Requirements.....	3
1.2.1 Records Review Report	3
1.2.2 Site Investigation Report.....	4
1.2.3 Evaluation of Significance Report	4
1.3 Evaluation of Significance Report Format	7
2. Summary of Results of Records Review and Site Investigation.....	7
3. Wildlife Habitat	7
3.1 Evaluation Criteria and Guidelines for Wildlife Habitat, and Determination of Significance	7
3.1.1 Seasonal Concentration Areas	8
3.1.2 Specialized Wildlife Habitat.....	9
3.1.3 Habitat for Species of Conservation Concern.....	9
3.1.3.1 Open Country Bird Breeding Habitat.....	9
3.1.3.2 Habitat for Special Concern and S1-S3 Species.....	10
3.1.4 Animal Movement Corridors	11
3.1.5 Overall Evaluation.....	12
3.2 Date of Beginning and Completion of Evaluation	12
3.3 Name and Qualifications of Evaluator	12
4. Woodlands	13
4.1 Description of Natural Feature	13
4.2 Evaluation Criteria and Guidelines for Woodlands	14
4.3 Date of Beginning and Completion of Evaluation	14
4.4 Determination of Significance	14
4.4.1 Woodland 1	15
4.4.2 Woodland 2	15
4.4.3 Woodland 3	15
4.4.4 Woodland 4	15
5. Wetlands.....	15
6. Conclusions.....	16
7. References.....	16
Appendix A Natural Resource Solutions Inc. Wetland Evaluations	

List of Tables

Table 2.1	Natural Features on and within 120 m of the Project Location.....	7
Table 6.1	Significant Natural Features on and within 120 m of the Project Location.....	17

List of Figures

Figure 1.1	Project Location and Significant Natural Heritage Features	5
------------	--	---

1. Introduction

1.1 Project Description

Northland Power Solar Belleville North L.P. (hereinafter referred to as “Northland”) is proposing to develop a 10-megawatt (MW) ground-mounted solar photovoltaic (Solar PV) facility in the Corporation of the County of Prince Edward. This Project, known as the Belleville North Solar Project, is hereafter referred to as “Belleville North” or the “Project.”.

1.2 Legislative Requirements

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

Section 24(1) of O. Reg. 359/09 requires proponents of Class 3 solar projects to undertake a natural heritage assessment consisting of a records review report, site investigation report and an evaluation of significance report for each natural feature identified during the records review and site investigation.

Natural features are defined in Section 1(1) of O. Reg. 359/09 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.

1.2.1 Records Review Report

Section 25 of the REA Regulation requires proponents of Class 3 solar projects to undertake a natural heritage records review to identify “whether the project is,

- (a) in a natural feature
- (b) within 50 m of an area of natural and scientific interest (earth science)
- (c) within 120 m of a natural feature that is not an area of natural or scientific interest (earth science)” (O. Reg. 359/09, s. 25, Table).

Subsection 2 of Section 30 of the REA Regulation requires the proponent to prepare a report “setting out a summary of the records searched and the results of the analysis” (O. Reg. 359/09). The Natural Heritage Records Review Report (Hatch Ltd., 2010a) was prepared to meet these requirements.

1.2.2 Site Investigation Report

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

- 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
- whether any additional natural features exist, other than those that were identified in the (natural heritage records review) report prepared under Subsection 30(2)
- 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
- the distance from the Project location to the boundaries determined under clause (c).

The Natural Heritage Site Investigation Report (Hatch Ltd., 2010b) was prepared to meet these requirements.

1.2.3 Evaluation of Significance Report

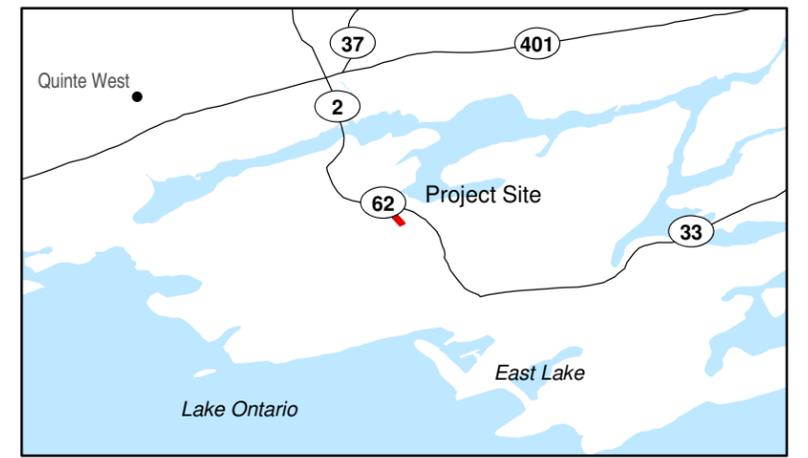
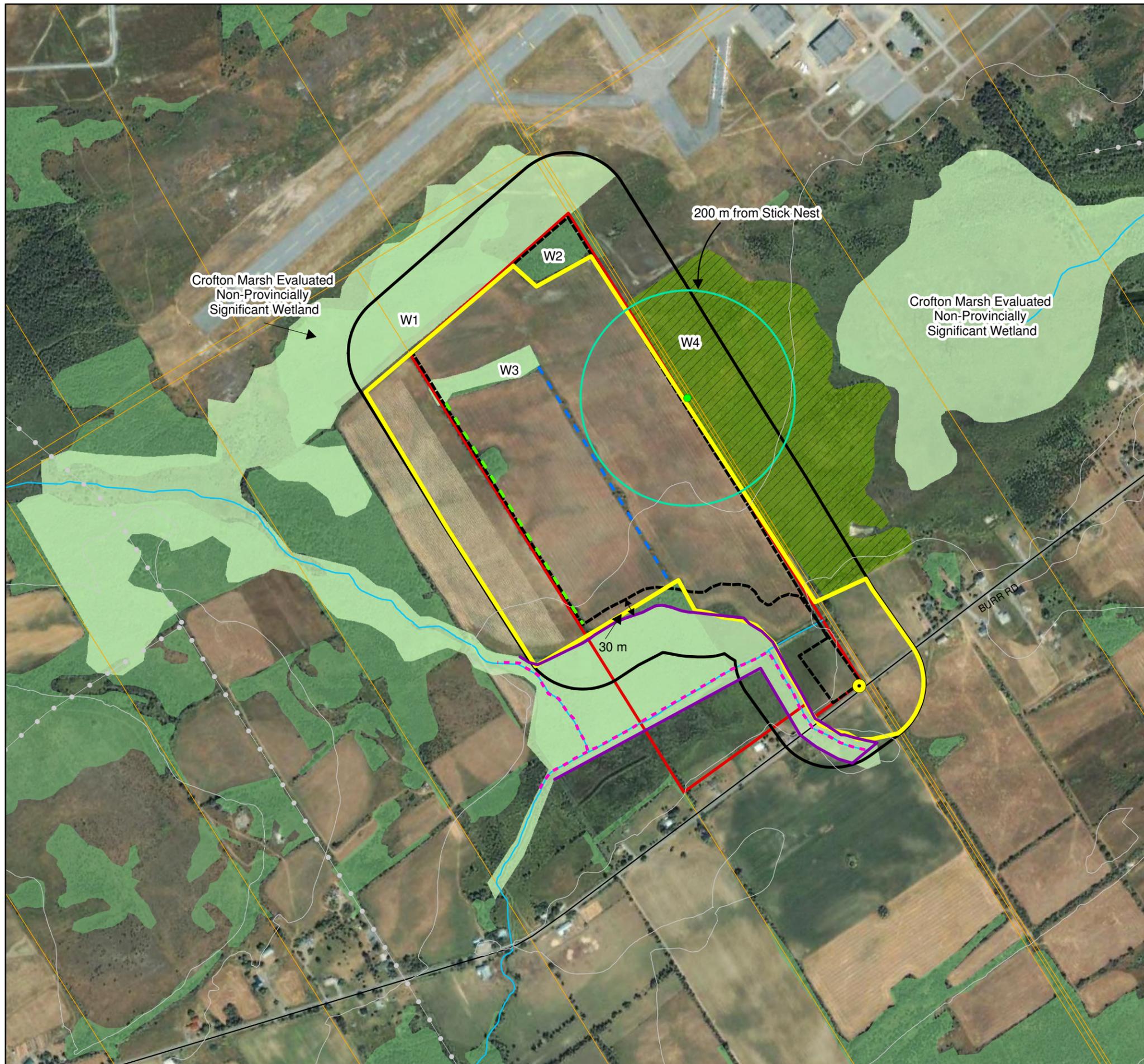
Section 27 of the REA Regulation requires proponents of Class 3 solar projects to undertake an evaluation of significance (EOS) for natural heritage features identified during the records review, site investigation, and public, aboriginal and municipal consultation activities within 120 m of the Project location (with the exception of ANSI, earth science which must be within 50 m of the Project location).

Natural features can be identified as significant or provincially significant as a result of previous identification by the Ministry of Natural Resources (MNR), or that is determined to be significant or provincially significant based on an evaluation completed according to evaluation criteria or procedures established or accepted by the MNR.

The EOS Report sets out

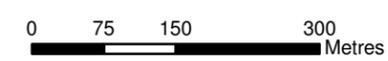
- a determination of whether the natural feature is
 - ◆ provincially significant/not provincially significant (in respect of wetlands and ANSIs)
 - ◆ significant/not significant (in respect of wildlife habitat, woodlands, and valleylands)
- a summary of the evaluation criteria or procedures used to make the determinations
- the name and qualifications of any person who applied to evaluation criteria or procedures
- the dates of the beginning and completion of the evaluation.

This EOS Report for the natural features identified within 120 m of the Project has been prepared to meet these requirements.



Legend

- Roads
 - Transmission Line
 - Topographic Contour (5m interval)
 - Watercourse
 - ▭ Available Lands
 - ▭ 120m From Project Location
 - ▭ Parcels
 - ▭ Wetland
 - ▭ Woodland
 - ▭ New Hedgerow
- Significant Natural Heritage Features**
- Milksnake Movement Corridor
 - ▭ -- Milksnake Foraging Habitat
 - ▭ -- Western Chorus Frog Habitat
 - ▭ -- Amphibian Breeding Habitat
 - ▭ -- Amphibian Movement Corridor
 - ▭ -- Northern Ribbonsnake Habitat
 - Stick Nest
 - ▭ Raptor Nesting Habitat
 - ▭ Significant Woodland
- Project Components**
- Connection Point With Existing Distribution Line
 - ▭ Project Location



▲ 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 Significant Natural Heritage Features **HATCH™**

Blank back

1.3 Evaluation of Significance Report Format

Section 1 of this EOS has identified the legislative requirements for an EOS under the REA Regulation and identified the reasons why an EOS is required for the Project. Section 2 provides a summary of the results of the records review and site investigation. Section 3 provides the evaluation of significance for wildlife habitat, while Section 4 provides the EOS for the wetland, and Section 5 provides the EOS for the woodlands. Section 6 identifies the conclusions of the evaluation of significance, and the references are provided in Section 7.

2. Summary of Results of Records Review and Site Investigation

As stated above, natural features requiring an EOS are identified through the records review (Hatch Ltd., 2010a) and site investigation (Hatch Ltd., 2010b) required under Sections 25 and 26 of the REA Regulation, respectively. These studies have already been completed, and the results are summarized in Table 2.1. This report provides the evaluations for the features identified in Table 2.1.

Table 2.1 Natural Features on and within 120 m of the Project Location

Natural Feature	Project Location	Adjacent Lands (within 120 m)
ANSI – Earth Science	No	No
ANSI – Life Science	No	No
Valleyland	No	No
Wetland	Yes	Yes
Woodland	Yes	Yes
Wildlife Habitat	Yes	Yes

3. Wildlife Habitat

Several types of wildlife habitats were identified during the site investigation:

- amphibian breeding habitat
- amphibian movement corridor
- raptor nesting habitat
- habitat for species of conservation concern (including open country bird breeding habitat, and habitat for milksnake, northern ribbonsnake, and western chorus frog).

3.1 Evaluation Criteria and Guidelines for Wildlife Habitat, and Determination of Significance

The criteria and processes outlined in the MNR Natural Heritage Reference Manual (NHRM) (MNR, 2010), Significant Wildlife Habitat Technical Guide (SWHTG) (MNR, 2000) and the Significant Wildlife Habitat Ecoregion Criteria Schedules (SWHECS) (MNR, 2009) are used to evaluate the

significance of wildlife habitat. The specific criteria used in the evaluation from these sources are discussed by habitat type below.

3.1.1 Seasonal Concentration Areas

Amphibian breeding habitats (wetland) were the seasonal concentration area identified within 120 m of the Project location during the site investigation.

Criteria for Determining Significance

Ecoregion 6E Criteria for amphibian breeding habitat (wetland) are provided within Table 1.1 of the SWHECS:

- presence of breeding population of two or more of the [following] species with at least 20 breeding individuals (adults, juveniles, egg/larval masses):
 - ◆ Eastern Newt
 - ◆ Blue-spotted Salamander
 - ◆ Spotted Salamander
 - ◆ American Toad
 - ◆ Gray Treefrog
 - ◆ Spring Pepper
 - ◆ Chorus Frog
 - ◆ Northern Leopard Frog
 - ◆ Pickerel Frog
 - ◆ Green Frog
 - ◆ Mink Frog
 - ◆ American Bullfrog, or
- any wetland with confirmed breeding by American Bullfrog is to be considered significant.

Procedures for Determining Significance

Suitable wetland habitats were surveyed on June 14, 2010 by observers trained in the identification of amphibians by calls and sight.

An additional site investigation by observers trained in the identification of amphibians by calls and sight was also completed on August 11, 2010. Though this site investigation was completed outside of the time frame for conducting surveys, observations of amphibians are considered during this evaluation.

Determination of Significance

Northern Leopard Frogs were recorded within the wetland community during the June site investigation. Though not recorded within the identified wetland community, Northern Leopard Frogs and Green Frogs were recorded within the wetland complex during a site investigation on August 11, 2010.

As two species of frogs were recorded within the overall wetland complex, though size of the local populations is unknown, the amphibian breeding habitat is determined to be a significant natural feature within 120 m of the Project location and an Environmental Impact Study will be required.

3.1.2 Specialized Wildlife Habitat

Raptor nesting habitat, associated with the stick nest identified in Woodland 4, was the only type of specialized wildlife habitat identified during the site investigation.

Criteria for Determining Significance

Ecoregion 6E Criteria for woodland raptor nesting habitat are

- All natural or conifer plantation stands > 10 ha in size
- studies confirm presence of 1 or more active nests.

Procedures for Determining Significance

Area searches of the woodlands were conducted on June 14, 2010. As this time period is late in the raptor nesting period, any stick nests observed are presumed to be active nests.

Determination of Significance

As a stick nest was observed within Woodland 4, which is greater than 10 ha in size, this stick nest, and an area of 200 m around the nest are determined to provide significant wildlife habitat.

3.1.3 Habitat for Species of Conservation Concern

Two types of habitat of species of conservation concern were identified during the site investigation:

- Open Country Bird Breeding Habitat
- Habitat for Special Concern and S1-S3 Species.

These habitat types are discussed separately below.

3.1.3.1 Open Country Bird Breeding Habitat

Open Country Bird Breeding Habitat was identified on and within 120 m of the Project location in association with the agricultural fields.

Criteria for Determining Significance

Ecoregion 6E Criteria for open country bird breeding habitat are provided within Table 1.3 of the SWHECS:

- grassland 30 ha or larger in size, not Class 1 or 2 agricultural lands, and not being actively used for farming (i.e., no row-cropping in the last 5 years)
- studies confirm
 - ♦ presence of nesting or breeding of two or more Indicator or Special Concern Species and at least 1 of the Common Species:
 - Indicator Species: Bobolink, Grasshopper Sparrow, Vesper Sparrow, Upland Sandpiper
 - Common Species: Eastern Kingbird, Eastern Meadowlark, Northern Harrier, American Kestrel

- Special Concern: Short-eared Owl.

Procedures for Determining Significance

Area searches of open country bird breeding habitat were conducted on June 14, 2010. Point count surveys were not employed within the open country environment as the small size of the Project location and lands within 120 m would have enabled only two point counts to be conducted (as a result of minimum spacing requirements in open environments). Conducting two point count surveys within this habitat was determined to not provide meaningful information when compared to what could be obtained through area searches.

An additional site was also completed on August 11, 2010. Though this site investigation was completed outside of the breeding bird time frame for conducting surveys, observations of birds are considered during this evaluation.

Determination of Significance

The grassland community was determined to be more than 30 ha in size, not Class 1 or 2 agricultural land, and not actively used for farming.

Area searches documented the presence of one indicator species (Bobolink) and one common species (Northern Harrier). In addition, a second common species (American Kestrel) were recorded during the August site investigation.

Though only one indicator species was observed, as the open country bird breeding habitat is located within the Napanee Limestone Plain Important Bird Area, an area which has obtained this designation for the availability of open country bird breeding habitat, and since bird surveys were conducted within the latter half of the bird breeding season such that other indicator species may be present, it is determined to be significant

3.1.3.2 *Habitat for Special Concern and S1-S3 Species*

Criteria for determining significance

Criteria for evaluation habitat of conservation concern are identified within Table Q-3 of Appendix Q of the SWHTG. The criteria that were considered during this evaluation include

- degree of rarity of species found at site (i.e., habitat of rare species is significant)
- documented significant decline in a species and/or its critical habitat
- species whose range is solely or primarily found in Ontario
- condition of existing habitat at site (i.e., sites with minimal disturbance, non-invasive sp., etc)
- size of species population at site
- size and location of habitat
- potential for long-term protection of habitat
- evidence of use of the habitat.

Procedures for Determining Significance

Suitable habitat for these species was searched on June 14 and August 11, 2010 to search for these species and document their habitat.

Determination of Significance

The species of conservation concern with potential habitat on and/or within 120 m of the Project location are discussed further in relation to these criteria below:

- Northern Ribbonsnake – Potential habitat for Northern Ribbonsnake was identified within the watercourse within 120 m south of the Project location, though not observed during baseline investigation. The habitat within 120 m of the Project location appears to be of suitable quality, though the size of the populations in the area is unknown. The habitat is located on private land, and therefore long-term protection cannot be assured. Significant declines have been noted in Northern Ribbonsnake, given their designations of Special Concern on the ESA. Northern Ribbonsnake occur beyond the provincial boundary. Given that Northern Ribbonsnake are listed on the ESA, though use is unconfirmed, the watercourse will be treated as significant wildlife habitat and carried forward in the EIS.
- Western Chorus Frog – Potential habitat for Western Chorus Frog was identified within the wetland within 120 m south of the Project location, though not observed during baseline investigation. The habitat within 120 m of the Project location appears to be of suitable quality, though the size of the populations in the area is unknown. The habitat is located on private land, and therefore long-term protection cannot be assured. Significant declines have been noted in Western Chorus Frog, given their designations of Threatened on SARA. Western Chorus Frog occur beyond the provincial boundary. Given that Western Chorus Frog are listed on SARA, though use is unconfirmed, the wetland area will be treated as significant wildlife habitat and carried forward in the EIS.
- Milksnake – 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. As Milksnake are difficult to detect, use of the area was unconfirmed, and the size of the population is uncertain. The habitat is located on private land and therefore long-term protection cannot be assured. Milksnake are not solely or primarily found within the province. Milksnake are identified as a species of Special Concern on the ESA, and therefore though use is unconfirmed, the area is treated as significant wildlife habitat and carried forward in the EIS.

3.1.4 *Animal Movement Corridors*

An amphibian movement corridor was identified during the site investigation associated with the waterbodies within 120 m of the Project location.

Criteria for Determining Significance

The criteria for significance of animal movement corridors are outlined in Table Q-4 of Appendix Q in the SWHTG, and include the following:

- Importance of areas to be linked by corridor – Areas linking critical habitats/significant areas.
- Importance of corridor to survival of target species – Corridors linking significant or critical habitat for a target species.
- Dimensions of corridor – Most significant corridors should be at least 200 m wide.

- Continuity of corridor – Corridor should be unbroken.
- Habitat and habitat structure of corridor – Corridor with several layers of vegetation and other structures, such as watercourses.
- Species found in corridor or presumed to be using corridor – Corridors with high species diversity are significant.
- Risk of mortality for species using corridor – Corridors with low risk of road kills or adjacent to residential areas.
- Opportunity for protection – Corridors within areas that may be protected, such as undeveloped shorelines or borders of conservation areas.
- Provision of other related values (such as erosion protection).

Procedures for Determining Significance

The characteristics of the proposed amphibian movement corridor were documented during site investigations on June 14 and August 11, 2010.

Determination of Significance

The corridor links breeding habitats with over-wintering habitats, critical habitat features for amphibian species and for their survival in the local area. The corridor is somewhat narrow, less than 20 m wide at points. The risk of mortality for species using the corridor is generally low given low density of residential development in area and few road crossings. Opportunities for protection are high given that the corridor is associated with a watercourse.

As a result, several of the criteria are met and the amphibian movement corridor is considered to be a significant feature.

3.1.5 Overall Evaluation

Significant wildlife habitat is found on and within 120 m of the Project location in

- the watercourses and associated meadow marsh and marsh habitats within 120 m south of the Project location as an amphibian movement corridor, amphibian breeding habitat (wetland), and Northern Ribbonsnake habitat
- the wetland south of the Project location as western chorus frog habitat
- agricultural lands and hedgerow on and within 120 m of the Project location as foraging habitat and movement corridor, respectively, for species of conservation concern (milksnake)
- stick nest and 200 m around the nest as significant raptor nesting habitat.

3.2 Date of Beginning and Completion of Evaluation

The evaluation of wildlife habitat commenced with records reviews in May 2010 and is finalized with the completion of this Report in November 2010. Site visits were completed in association with this evaluation on June 14 and August 11, 2010.

3.3 Name and Qualifications of Evaluator

Evaluations of wildlife habitat were completed by Sean K. Male of Hatch.

Sean K. Male, M.Sc. is a Terrestrial Ecologist specializing in assessments of terrestrial habitat, flora and fauna. Sean received his Bachelors of Science (Honours) in Biology from Queen's University, where he completed his Honour's thesis under Dr. Raleigh J. Robertson, studying the impacts of nestbox density in Tree Swallows (*Tachycineta bicolor*) on nest-building behaviour. He then completed a Master's of Science degree in the Watershed Ecosystem Graduate Program at Trent University under Dr. Erica Nol. Sean's thesis focussed on examining the impacts of a Canadian diamond mine on a population of breeding passerines. For his thesis, Sean spent two summers in the Canadian arctic studying populations of Lapland Longspurs (*Calcarius lapponicus*) around the Ekati Diamond Mine, located 300 km northeast of Yellowknife. While at Trent, Sean participated in the Northern Saw-whet Owl (*Aegolius acadicus*) Migration Banding Project at the Oliver Centre. Following his time at Trent, Sean participated in the Landscape Monitoring Program, participating in a study of the impacts of woodlot size on breeding birds.

Sean joined Hatch as a Terrestrial Ecologist in 2006. Since joining Hatch, Sean has participated in several environmental assessments, REAs and other regulatory approvals for hydro, wind and solar power developments as the terrestrial biologist specializing in field investigations identifying flora and fauna species, including species of significance. He has developed and implemented baseline monitoring and impact assessment programs for both terrestrial wildlife and plant communities, including detailed bird and bat studies for several wind power developments, including the proposed 100-MW Coldwell Wind Power Development near Marathon, Ontario, a proposed 20-MW facility near Port Dover, Ontario, and a proposed 110-MW wind facility in southwestern Ontario. Sean has also conducted terrestrial and wetland vegetation surveys for several proposed hydropower projects totalling over 40 MW in southern and northern Ontario and has participated in fisheries surveys for several of these projects.

4. Woodlands

4.1 Description of Natural Feature

Section 1 of O. Reg. 359/09 defines "woodland" as land

- (a) that is south and east of the Canadian Shield
- (b) that has per hectare, at least
 - (i) 1000 trees of any size
 - (ii) 750 trees measuring over 5 cm in diameter
 - (iii) 500 trees measuring over 12 cm in diameter
 - (iv) 250 trees measuring over 20 cm in diameter
- (c) that does not include a cultivated fruit or nut orchard or a plantation established for the purpose of producing Christmas trees.

4.2 Evaluation Criteria and Guidelines for Woodlands

The EOS was completed in consideration of the Evaluation Approach outlined in Section 7 of the NHRM (MNR, 2010). The evaluation criteria recommended in the NHRM to assess significance of a woodland are as follows:

- Woodland Size – Woodlots greater than 20 ha in size are considered significant. This size recommendation is for this area where woodlots represent approximately 25% of the land cover based on the proportion of land cover represented by forests within 5 km of the Project location.
- Ecological Functions
 - ◆ Woodland Interior – Woodlands with 2 ha or more of interior habitat.
 - ◆ Proximity to Other Woodlands or Other Habitats – Woodlands within 30 m of a significant natural feature or fish habitat likely receiving ecological benefit from the woodland.
 - ◆ Linkages – Woodlands providing a connecting link between two other significant features within 120 m of the woodland.
 - ◆ Water Protection – Woodlands located within a sensitive or threatened watershed or within 50 m of various water features (such as watercourses or sensitive recharge areas).
 - ◆ Woodland Diversity – Woodlands with (i) a naturally occurring composition of forest species that have declined or (ii) with a high native diversity through a combination of composition and terrain.
- Uncommon Characteristics – Woodlands with (i) a unique species composition or site (ii) a vegetation community with a provincial ranking of S1, S2, or S3 (iii) important habitat or a rare, uncommon, or restricted woodland plant species or (iv) characteristics of older woodlands or woodlands with larger tree size structure in native species.
- Economic and Social Functional Values – Woodlands with (i) a high productivity in terms of economic value products together with continuous native natural attributes (ii) a high value in special services, such as air quality improvement or recreation at a sustainable level that is compatible with long-term retention, or (iii) important identified appreciation, education, cultural or historical value.

Many of these criteria have a minimum area threshold attached, which for this area is determined to be 2 ha.

4.3 Date of Beginning and Completion of Evaluation

The evaluation of woodlands commenced with records reviews in May 2010 and is finalized with the completion of this report in July 2010. A site visit was completed in association with this evaluation on June 14, 2010.

4.4 Determination of Significance

There are several woodlands identified on and within 120 m of the Project location. These woodlands, shown in Figure 1.1, are evaluated individually below. Woodland sizes were calculated

using the MNR Land Information Ontario wooded area layer, supplemented with boundaries confirmed during site investigations, in ArcMap 9.3.

4.4.1 Woodland 1

Woodland 1 is located within 120 m north of the Project location. Woodland size is estimated to be 7.2 ha, with no interior habitat. The woodland is not within the required distances from water or significant natural features, and does not provide linkage habitat between two significant features. The woodland was not composed of species that have declined or with a high native diversity of composition and terrain. The vegetation community was not considered to be uncommon and is not known to contain economic or social functional values.

As a result, none of the criteria of significance are met and this woodlot is not considered significant.

4.4.2 Woodland 2

Woodland 2 is located in the northeastern portion of the Project location, and is 1.1 ha in size. As such, this woodland does not meet the minimum area threshold and is not considered significant.

4.4.3 Woodland 3

Woodland 3 is located in the northwestern portion of the Project location, and is 1.2 ha in size. As such, this woodland does not meet the minimum area threshold and is not considered significant.

4.4.4 Woodland 4

Woodland 4 occurs within 120 m of the eastern boundary of the Project location. Woodland size is estimated to be 16.5 ha with approximately 2 ha of interior habitat. The woodland is also located within 30 m of a locally significant wetland.

The woodland is not within the required distances from water features, and does not provide linkage habitat between two significant features. The woodland was not composed of species that have declined or with a high native diversity of composition and terrain. The vegetation community was not considered to be uncommon and is not known to contain economic or social functional values.

Therefore, this woodland is considered significant as it meets the requirements for interior habitat and proximity to other habitats.

5. Wetlands

A previously unevaluated wetland was identified on and within 120 m of the Project location. The boundary of this wetland was updated after the site investigation. An evaluation of the wetland was completed by Natural Resources Solutions Inc., whereby it was determined that the wetland is ecologically connected to the Crofton Marsh Evaluated Non-Provincially Significant Wetland and should be complexed to that feature. Further, it was determined that including this extension to the Crofton Marsh wetland would not impact the determined on non-provincial significance. The full evaluation of this feature is available in Appendix A.

As a result of the evaluation, it was determined that this feature is complexed to the Crofton Marsh Evaluated Non-Provincially Significant Wetland, and is therefore not a provincially significant wetland.

6. Conclusions

Results of the EOS are summarized in Table 6.1. Based on the EOS outlined above, there are significant natural features present on and within 120 m of the Project location. The locations of these features are shown in Figure 1.1.

An environmental impact study conducted according to the requirements of Section 38(2) of O. Reg. 359/09 will be required in order to construct Project components within 120 m of these significant natural features.

7. References

Hatch Ltd. 2010a. Belleville North Solar Project – Natural Heritage Records Review. Prepared for Northland Power.

Hatch Ltd. 2010b. Belleville North Solar Project – Natural Heritage Site Investigations. Prepared for Northland Power.

Ministry of Natural Resources (MNR). 2010. Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005. Second Edition. Toronto: Queen's Printer for Ontario. 248 pp.

Ministry of Natural Resources (MNR). 2009. Significant Wildlife Habitat Ecoregion Criteria Schedules – Addendum to Significant Wildlife Habitat Technical Guide – Working Draft, January 2009. 70 pp.

MNR. 2000. Significant Wildlife Habitat Technical Guide. 151 pp.

Ontario Partners in Flight. 2005. Ontario Landbird Conservation plan: Lower Great Lakes/St. Lawrence Plain (North American Bird Conservation Region 13), *Priorities, Objectives, and Recommended Actions*. Environment Canada/Ontario Ministry of Natural Resources.

Table 6.1 Natural Features on and within 120 m of the Project Location

Feature	Attributes/Composition	Function	Significant?
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	Non-Provincially Significant
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.	Significant
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.	Significant
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.	Significant
Northern Ribbonsnake Habitat	Located within the wetland community within 120 m south of the Project location	Provision of Northern Ribbonsnake breeding habitat.	Significant
Western Chorus Frog Habitat	Located within the wetland community within 120 m south of the Project location	Provision of Western Chorus Frog breeding habitat.	Significant

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

Appendix A
Natural Resource Solutions Inc.
Wetland Evaluations

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:

hS₁ [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:

tsS₄ [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:

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)]

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:

- hS₁ [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*
- hS₂ [ELC: Green Ash Mineral Deciduous Swamp Type (SWDM2-2)]
h*: *Fraxinus pennsylvanica*
ne: *Carex bebbii*, *Carex vulpinoidea*, *Carex lupulina*
- hS₃ [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*
- neM₁ [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*
- tsS₄ [ELC: Willow Mineral Deciduous Thicket Swamp Ecosite (SWTM3)]
ts*: *Salix* sp., *Cornus foemina* ssp. *Racemosa*
gc: *Solidago* sp., *Lythrum salicaria*, *Eupatorium maculatum* ssp. *Maculatum*
- reM₂ [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 (hedges) Weather: Precipitation: 0 Temp (°C): 27
 Map Code: 1 Wind Speed & Direction: 2 Cloud %: 5
 Wetland Type: not wetland Site Type: N/A Dominant Form: IS
 % Open Water: no water ELC Code:

Photos:

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

Rare Species (Local, Regional, Provincial):	Wildlife Notes:
	<u>AMKE - III</u> <u>cabbage white</u>
	<u>KILL - II</u> <u>Summer Azure</u>
	<u>AMGO</u>
	<u>Monarch</u>

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: S Site Type: IS Dominant Form: h
 % Open Water: no water ELC Code: SWDM2-2

Photos:

Forms % (Circle those ≥25%)	Species (dominant species, secondary species, present species)
<u>h</u> <u>green ash, white Elm</u>	
<u>c</u> <u>red cedar</u>	
<u>dc, dh, ds</u>	
<u>ts</u> <u>European buckthorn, gray dog wood</u>	
<u>ls</u> <u>prickly ash, red osier dogwood, narrow leaved meadowsweet</u>	
<u>gc</u> <u>purple loosestrife, poison ivy, virginia creeper</u>	
<u>ne</u> <u>sedge sp. (foxsedge, pointed sedge), grass sp. (reed grass, foxtail grass, Canada bluegrass)</u>	
<u>be</u>	
<u>re</u>	
<u>ff</u>	
<u>f</u>	
<u>su</u>	
<u>m</u>	

Rare Species (Local, Regional, Provincial):	Wildlife Notes:
	<u>BLJA</u>
	<u>SOSP</u>
	<u>Deer - bedding areas seen</u>

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: GL

% 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	
<u>gc</u>	Alfalfa, red clover, Queen Anne's lace, milkweed
ne	
be	
re	
ff	
f	
su	
m	

Forms % (Circle those >25%)	Species (dominant species, secondary species, present species)
h	
c	
dc,dh,ds	
ts	
ls	
<u>gc</u>	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 #: 40

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: SWDMZ-2

Photos:

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

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

Rare Species (Local, Regional, Provincial):

Wolf-TK? Wildlife Notes:

Deer-TK
Raccoon-TK
beaver - cut down trees & branches
AMCR
Rufous-sided towhee
green frog
red Admiral
white-faced meadowhawk
Fragile fork tail
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)
<u>h</u>	<u>Silver Maple >> Green Ash > red Maple</u>
<u>c</u>	
<u>dc, dh, ds</u>	
<u>ts</u>	<u>European buck thorn</u>
<u>ls</u>	<u>narrow leaved meadowswet</u>
<u>gc</u>	<u>Spotted jewelweed, woodland stinging nettle, boneset, ^{purple} ironweed</u>
<u>ne</u>	<u>Sedge sp., reed canary, horsetail</u>
<u>be</u>	<u>broad-leaved Arrowhead > waterplantain</u>
<u>re</u>	<u>broad-leaved Cattail</u>
<u>ff</u>	
<u>f</u>	
<u>su</u>	
<u>m</u>	

Rare Species (Local, Regional, Provincial): <u>- evidence of previous standing water</u>	Wildlife Notes: <u>Giant Swallowtail BCOH</u> <u>Monarch AMGO</u> <u>Cabbage white Leopard Frog</u> <u>beaver - trees taken down</u>
---	--

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: na Dominant Form: ne
 % Open Water: no water ELC Code:

Photos:

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

Rare Species (Local, Regional, Provincial): <u>.</u>	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



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 #: 7 (creek channel) Weather: Precipitation: 0 Temp (°C): 24
 Map Code: 7 Wind Speed & Direction: 2 Cloud %: 5
 Wetland Type: M (M.H.) Site Type: R Dominant Form: ne
 % Open Water: no water ELC Code: HANMI-16

Photos:

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

Rare Species (Local, Regional, Provincial):	Wildlife Notes: <u>COYE</u>
---	--------------------------------

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



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 #: 4b Weather: Precipitation: 0 Temp (°C): 24
 Map Code: b (+S4) Wind Speed & Direction: 2 Cloud %: 5
 Wetland Type: S Site Type: P Dominant Form: ts
 % Open Water: no standing water ELC Code: SWTH3

Photos:

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

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

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



NATURAL RESOURCE SOLUTIONS INC.

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: reNz Wind Speed & Direction: 2 Cloud %: 5
 Wetland Type: Marsh Site Type: R Dominant Form: re
 % Open Water: 107 ELC Code: NASHI-1

Photos:

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

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 #: 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	<u>red cedar</u>
dc,dh,ds	
ts	
ls	
gc	
ne	
be	
re	
ff	
f	
su	
m	

Rare Species (Local, Regional, Provincial):

Wildlife Notes:

Upland dry, next to no vegetation in understorey

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

311000 311500 312000 312500 313000 313500 314000 314500

Belleville North Solar Project

Wetland Vegetation



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



4882500
4882000
4881500
4881000
4880500

4882500
4882000
4881500
4881000
4880500

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

WETLAND #1

hS₂
SWDM2-2

hS₁
SWDM2-2

hS₃
SWDM3-2

neM₁
MAMM1-16

reM₂
MASM1

tsS₄
SWTM3

tsS₄
SWTM3



BURR RD

HWY 22

CROFTON R.



This map is proprietary and confidential and must not be duplicated or distributed by any means without express written permission of Natural Resource Solutions Inc. (NRSI). Information used under license with the Ministry of Natural Resources, copyright the Queen's Printer of Ontario.

NRSI_1139_ELC_10K_2010_08_20_SWM 311000 311500 312000 312500 313000 313500 314000 314500