



**NORTHLAND
POWER**

Burk's Falls East Solar Project

Draft Natural Heritage Evaluation of Significance Report

February 24, 2011



Northland Power Inc.
on behalf of
Northland Power Solar
Burk's Falls East L.P.
Toronto, Ontario

DRAFT Natural Heritage
Evaluation of Significance

Burk's Falls East Solar Project

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Disclaimer

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Project Report

February 24, 2011

Northland Power Inc.
Burk's Falls East Solar Project

DRAFT Natural Heritage Evaluation of Significance

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1. Introduction

1.1 Project Description

Northland Power Solar Burk's Falls East L.P. (hereinafter referred to as "Northland") is proposing to develop a 10-megawatt (MW) solar photovoltaic project titled Burk's Falls East Solar Project (hereinafter referred to as the "Project"). The Project will be located on approximately 80 hectares (ha) of land, located at 827 Chetwynd Road in the single tier Municipality of Armour Township (Figure 1.1).

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 a 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.

In respect of woodlands and valleylands, Section 1 (1) of O. Reg. 359/09 requires that these features be located south and east of the Canadian Shield as shown in Figure 1 in the Provincial Policy Statement issued under Section 3 of the *Planning Act*. This figure shows that the proposed Project is located on the Canadian Shield, and therefore valleylands and woodlands as defined by O. Reg. 359/09 cannot be located on the Project location.

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 3 of Section 25 of the REA Regulation requires the proponent to prepare a report "setting out a summary of the records searched and the results of the analysis" (O. Reg. 359/09). 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

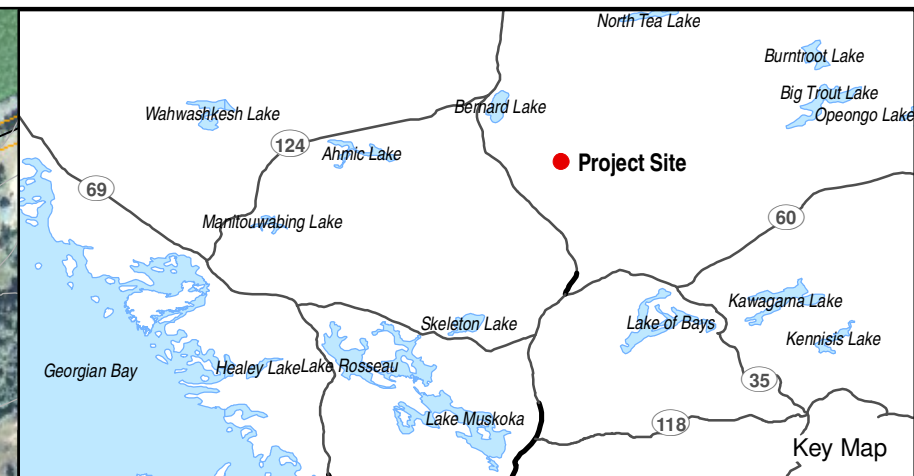
- whether the results of the analysis summarized in the (Natural Heritage Records Review) report prepared under Subsection 25 (3) are correct or require correction, and identifying any required corrections
- whether any additional natural features exist, other than those that were identified in the (Natural Heritage Records Review) report prepared under Subsection 25 (3)
- 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 for natural heritage features identified during the records review and site investigation and prepare a report that sets out

- a determination of whether the natural feature is
 - ◆ provincially significant
 - ◆ significant
 - ◆ not significant
 - ◆ not provincially significant
- 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.



- Legend**
- Roads
 - +— Rail
 - Topographic Contour (5m interval)
 - - - Grassed Waterway
 - Watercourse
 - ▭ Parcels
 - ▭ Provincially Significant Wetland (Assumed)
 - ▭ Wooded Area
- Significant Wildlife Habitats**
- - - Northern Ribbonsnake Habitat
 - - - Animal Movement Corridor
 - ▲ Seepage Areas
 - ▭ Milksnake Habitat
- Project Components**
- Connection Point with Existing Distribution Line
 - - - Project Location
 - ▭ 120 m from Project Location

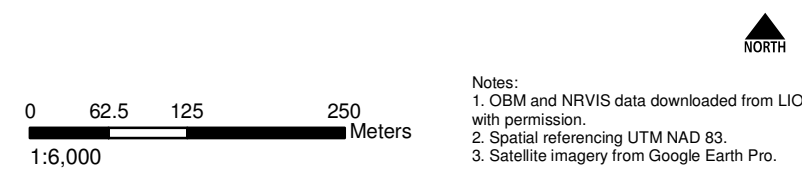


Figure 1.1
 Northland Power Inc.
Burk's Falls East Solar Energy Project
Project Location and
Significant Natural Heritage Features

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The Evaluation of Significance must consider any information available relating to natural features, including all information obtained during

- the records review conducted in accordance with section 25
- the site investigation conducted in accordance with section 26
- consultations conducted under sections 16, 17 and 18. O. Reg. 359/09, s. 27 (1).

This Evaluation of Significance (EOS) Report for the natural features identified on and within 120 m of the Project location has been prepared to meet these requirements.

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 identifies any input to the evaluation of significance determined through consultation activities. Section 4 provides the evaluation of significance for wildlife habitat, while Section 5 provides the evaluation of significance for the wetlands. 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 evaluation of significance 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.

No additional information relating to natural features was obtained through consultations with the public, local municipality, or aboriginal communities required under Sections 16, 17, and 18.

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

Natural Feature	Project Location	Adjacent Lands (within 120 m)	Notes
ANSI – Earth Science	No	No	
ANSI – Life Science	No	No	
Wetland	No	Yes	There is a wetland located within 120 m of the Project location.
Wildlife Habitat	Yes	Yes	Candidate significant wildlife habitats were identified on and within 120 m of the Project location.

3. Input to Evaluation of Significance from Consultation Activities

As required by Section 27 of O.Reg. 359/09, the evaluation of significance must consider information obtained through consultation with the public, aboriginal communities and municipalities and local authorities. Results of these consultation activities in relation to the evaluation of significance are discussed below.

3.1 Public Consultation

Two public meetings have been held in association with this Project; notices for these meetings have been published in the local newspaper. In addition, landowners within 120 m of the Project location have been mailed notices of the proposed Project and meeting dates.

To date, no information relating to natural features relevant to the evaluation of significance has been obtained through these consultation activities.

3.2 Aboriginal Consultation

Aboriginal communities identified by the Ministry of the Environment as communities to be consulted through the Renewable Energy Approval process have been mailed letters requesting information relating to the Project, along with meeting notices and copies of the Project Description Report.

To date, no information relating to natural features relevant to the evaluation of significance has been obtained through these consultation activities.

3.3 Municipal/Local Authority Consultation

Meetings have been held with staff of the Township of Armour, and representatives of Northland and Hatch have attended a meeting of the Township Council. In addition, the Township has received notices of the public meetings, copies of the Project Description Report, and a municipal consultation form.

To date, no information relating to natural features relevant to the evaluation of significance has been obtained through these consultation activities.

4. Wildlife Habitat

Three types of candidate significant wildlife habitats were identified during the site investigation:

- seepage areas
- habitat for species of conservation concern (Milksnake, Northern Ribbonsnake, Northern Map Turtle, Snapping Turtle)
- animal movement corridors.

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

The criteria and processes outlined in the Ministry of Natural Resources (MNR) Natural Heritage Reference Manual (NHRM) (MNR, 2010) and Significant Wildlife Habitat Technical Guide (SWHTG) (MNR, 2000) 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.

4.1.1 *Specialized Habitat for Wildlife*

Criteria for evaluation of specialized habitat for wildlife are identified within Table Q-2 of Appendix Q of the SWHTG. The criteria that were considered during the evaluations of the features are discussed in respect of the individual features below.

4.1.1.1 *Seepage Areas*

The criteria for seepage areas include the following:

- Abundance of seeps – Three seepage areas were identified during the site investigation, therefore this criteria is not met.
- Duration of surface water – Surface water remains present within the northern and eastern seep during a dry summer, though not within the southern seep.
- Nature of adjacent area – The southern and eastern seepage area is located within a naturalized area, though the northern seepage area is surrounded by agricultural lands.
- Presence of rare species – No rare or uncommon species were identified in association with the seepage areas.
- Location of seeps – The southern and eastern seepage area is located within a woodland.

Therefore, based on the criteria identified above, the seeps are considered to be significant.

4.1.2 *Habitat for Species of Concern*

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 disturbances, 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.

The species of conservation with potential habitat on the Project location are discussed further in relation to these criteria below:

- Milksnake – Given that Milksnake are habitat generalists, the entire Project location was considered to be suitable habitat for Milksnake. As Milksnake are difficult to detect, use of the area was unconfirmed, and the size of the population is uncertain. The site is located on private land and therefore long-term protection cannot be assured, though lands located on the Project location will be protected by Northland Power during the life of the Project. Milksnake are identified as a species of Special Concern on the Species at Risk in Ontario (SARO) list, and therefore though use is unconfirmed, the area is treated as significant wildlife habitat and carried forward in the EIS.
- Northern Ribbonsnake – Suitable habitat for Northern Ribbonsnake was found within the watercourses within 120 m of the Project location. As Ribbonsnake are difficult to detect, use of the area was unconfirmed, and the size of the population is uncertain. As the habitats are associated with a watercourse, long-term protection is possible. Ribbonsnake are identified as a species of Special Concern on the SARO list, and therefore though use is unconfirmed, the area is treated as significant wildlife habitat and carried forward in the EIS.
- Northern Map and Snapping Turtle – Both turtle species are listed as Special Concern on the SARO list, and may use the watercourse within 120 m south of the Project location as a movement corridor. As the habitat is that of a movement corridor, and would not provide critical habitat functions for either of these species, this area will be considered in relation to animal movement corridors (see Section 3.1.4), and is not considered to be significant habitat for species of conservation concern.

4.1.3 Animal Movement Corridors

Potential animal movement corridors were identified in the hedgerows on and adjacent to the Project location, and the watercourse which crosses the Project location.

Evaluation methodology of animal movement corridors is identified within Section 8.7 of the SWHTG. The criteria for significance 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).

The hedgerows and woodland are discussed separately below.

- Hedgerows – Section 8.7 of the SWHTG states that “fence and hedgerows should not be considered significant unless they provide the only animal movement corridors in the planning areas”. Given that there is a large animal movement corridor present in the local area (represented by the woodland surrounding the Project location), these features are not considered to be significant wildlife habitat.
- Woodland/watercourse within 120 m south of the Project location – This corridor encompasses the wetland which is being treated as a Provincially Significant Wetland, and links Three Mile Lake and the Magnetawan River. There are no target species identified for this corridor, though likely deer, moose, coyotes, other mammals, birds, and species of amphibians and reptiles use the corridor. The corridor is mostly continuous (excepting the right of way for the gas pipeline), wide, and the risk of mortality is low. The corridor is located on private land, and therefore long-term protection cannot be assured. There are no other related values identified for this corridor. As several criteria appear to be met, this feature is considered to be a significant animal movement corridor.
- Other woodlands within 120 m of the Project location – Though there are other woodland areas identified within 120 m of the Project location, they form part of large contiguous woodland features and though animal movement occurs within the feature, movement would be diffuse given the abundance of suitable cover and therefore no true animal movement corridor is expected. As a result, this habitat type is not found.

4.2 Date of Beginning and Completion of Evaluation

The evaluation of wildlife habitat commenced with records reviews in June 2010 and was finalized with the completion of this Report in January 2011. Site visits were completed in association with this evaluation on June 5, August 6, October 7 and November 19, 2010.

4.3 Overall Conclusion

Based on the evaluation above, the following significant wildlife habitat features were identified:

- seepage areas
- habitat for species of Conservation Concern (Milksnake, Northern Ribbonsnake)
- woodland/watercourse within 120 m south of the Project location as a significant animal movement corridor.

4.4 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.

5. Wetlands

In accordance with the Natural Heritage Assessment Guide (NHAG) for Renewable Energy Projects (MNR, 2010), the wetland within 120 m of the Project location is treated as a Provincially Significant Wetland, and an Environmental Impact Study will be required.

As part of this process, a specific assessment of the wetland community according to specified processes within the NHAG is required, which is provided in Appendix A.

5.1 Dates of Beginning and Completion of Assessment

The assessment of the wetland commenced in June 2010 and is completed with the submission of this report in January 2011. Site investigations associated with the assessment of the wetland were completed on August 6th 2010.

5.2 Names and Qualifications of Assessors

The assessment of the wetland was completed by Natural Resources Solutions Inc. Names and qualifications of individuals involved in the assessment are provided in Appendix A.

6. Conclusions

Results of the evaluation of significance are summarized in Table 6.1. Based on the evaluation of significance outlined above, there is significant wildlife habitat on and within 120 m of the Project location, and the wetland within 120 m of the Project location is treated as a Provincially Significant Wetland.

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 features.

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

Natural Feature		Project Location	Adjacent Lands (within 120 m)
SIGNIFICANT	Wildlife Habitat	Yes	Yes
	Wetland	No	Yes (wetland treated as provincially significant)
PROVINCIALY SIGNIFICANT	Earth Science ANSI	No	No
	Life Science ANSI	No	No

7. References

- Hatch Ltd. 2010a. Burk's Falls East Solar Project – Natural Heritage Records Review. Prepared for Northland Power Inc. on behalf of Northland Power Solar Burk's Falls East L.P. August 2010.
- Hatch Ltd. 2010b. Burk's Falls East Solar Project – Natural Heritage Site Investigation. Prepared for Northland Power Inc. on behalf of Northland Power Solar Burk's Falls East L.P. August 2010.
- Ministry of Natural Resources (MNR). March 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
- MNR. 2000. Significant Wildlife Habitat Technical Guide. 151p.

Appendix A
Natural Resource Solutions Inc.
Wetland Evaluations



Memo

Project No. 1141

To: Sean Male

From: David Stephenson; Kevin Dance

Date: February 22, 2011

**Re: Burk's Falls Solar Project Wetland Evaluations
Response to MNR Comments**

The wetlands in the vicinity of the proposed Burk's Falls Solar Project lands are unevaluated at this time. The new Natural Heritage Assessment Guide (NHAG) for Renewable Energy Projects (OMNR 2010) allows for the evaluation of these wetlands using Appendix C.

Our assessment of the unevaluated wetland complex, within the catchment area provided on the attached Catchment Area map in accordance with the appropriate sections of the Ontario Wetland Evaluation System for Northern Ontario (MNR 2002), is attached as Table 1. It is our understanding that this table will be used by Hatch to identify potential negative environmental effects and mitigations as required for preparation of an EIS as per the NHAG.

The filed study approach taken by NRSI during the August 6th and 7th, 2010 site visit included:

- Collection and review of background information on wetland-related natural features in the vicinity of the project location.
- 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 location 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 location as well as on neighbouring lands. This included mapping of wetland vegetation communities based on Ontario Wetland Evaluation System (OWES) Northern Manual as well as Ecological Land Classification (ELC), and recording all species of flora and fauna within the wetlands.

Some of the wetlands in the catchment area were not able to be visited in the field on August 6th and 7th, 2010 by NRSI staff, as they were on private property and not visible from public roads. For wetlands which were not accessible during the site visit, information on those wetlands was then based on air photo interpretation. Air photos and MNR NRVIS wetland mapping was used to determine wetland boundaries for wetlands that were inaccessible in the field. This allowed for the size of the wetlands to be determined for use in completing the Appendix C evaluation (see the attached Catchment Area and Wetland Size map).

As part of Appendix C of the NHAG, we have completed an interspersion map covering the wetlands in the catchment area, and have attached the interspersion map with this memo.

I trust that this information is adequate. If any further information or clarification is needed please contact me.

Yours Sincerely,
Natural Resource Solutions Inc.

A handwritten signature in black ink, appearing to read "D. Stephenson", with a long horizontal flourish extending to the right.

David Stephenson, M.Sc.,
Senior Biologist

Work Cited

Work Cited:

Natural Heritage Information Centre (NHIC). 2010. Species Search. Ministry of Natural Resources. Available Online:

<https://www.biodiversityexplorer.mnr.gov.on.ca/nhicWEB/mainSubmit.do>

Ontario Ministry of Natural Resources. 2010. Natural heritage assessment guide for renewable energy projects. Ontario Ministry of Natural Resources. Pp86.

Ontario Ministry of Natural Resources (MNR). 2002. Ontario Wetland Evaluation System: Northern Manual. Ontario Ministry of Natural Resources. 252p.

Table 1 Wetland Characteristics and Ecological Functions Assessment for Renewable Energy Projects, Wetland Complex

Characteristic/ Ecological Function	Evaluation Results	Scoring																				
Actual Wetland Size (ha)	<p>Wetland 1: Tall shrub, swamp #1 (tsS1) =0.81ha Coniferous, swamp #1 (cS1) = 1.58ha Tall shrub, swamp #2 (tsS2) =1.38ha</p> <p>Wetland 2: Narrow-leaved emergent, marsh #1(neM1) =1.59ha Tall shrub, swamp #3 (tsS3) =1.98ha</p> <p>Wetland 3: Tall shrub, swamp #4 (tsS4) =0.82</p> <p>Wetland 4: Coniferous, swamp #2 (cS2) =1.25ha Narrow-leaved emergent, marsh #2 (neM2) =1.41ha Tall shrub, swamp #5 (tsS5) =3.41ha Narrow-leaved emergent, marsh #3 (neM3) =0.90ha Tall shrub, swamp #6 (tsS6) =6.76ha Narrow-leaved emergent, marsh #4 (neM4) =0.47ha</p> <p>Wetland 5: Coniferous, swamp #3 (cS3) =1.35ha</p> <p>Wetland 6: Narrow-leaved emergent, marsh #6 (neM6) = 4.40ha</p> <p>Wetland 7: Narrow-leaved emergent, marsh #5 (neM5) =0.75ha Coniferous, swamp #7 (cS7) =25.43ha Tall shrub, swamp #7 (tsS7) =1.9ha</p> <p>Total : 56.19ha</p>																					
Wetland Type	<p>WETLAND TYPE (Fractional Area = area of wetland type/total wetland area)</p> <table border="1" data-bbox="454 1302 1396 1575"> <thead> <tr> <th></th> <th>Fractional Area</th> <th></th> <th>Score</th> </tr> </thead> <tbody> <tr> <td>Bog</td> <td></td> <td>x 3</td> <td>0.00</td> </tr> <tr> <td>Fen</td> <td></td> <td>x 6</td> <td>0.00</td> </tr> <tr> <td>Swamp</td> <td>0.831</td> <td>x 8</td> <td>6.648</td> </tr> <tr> <td>Marsh</td> <td>0.169</td> <td>x 15</td> <td>2.535</td> </tr> </tbody> </table> <p style="text-align: right;">Wetland type score (maximum 15 points) 9</p> <p>Fractional Area of Wetland Types: Swamp: <i>Swamp (ha)</i> Total ha = 46.67</p>		Fractional Area		Score	Bog		x 3	0.00	Fen		x 6	0.00	Swamp	0.831	x 8	6.648	Marsh	0.169	x 15	2.535	<p>9</p>
	Fractional Area		Score																			
Bog		x 3	0.00																			
Fen		x 6	0.00																			
Swamp	0.831	x 8	6.648																			
Marsh	0.169	x 15	2.535																			

	<p>FA=46.67/56.19 =0.831</p> <p>Marsh: <i>Marsh (ha)</i> Total ha = 9.52</p> <p>FA =9.52/56.19 =0.169</p>	
Site Type	<p>Palustrine: 0.048 *2 =0.096 Riverine: 0.952 *4 =3.808</p>	4
Vegetation Communities	<p>Seven wetland areas have information on vegetation communities. Ten of the wetlands have no detailed vegetation information as only available information is from air photos as there was no property access to these private property areas.</p> <p>Areas with known vegetation 7= 6 pts Assuming all areas have only 1-3 forms 17= 11</p>	6 (11 max)
Proximity to other Wetlands	Hydrologically connected by surface water to other wetlands (same dominant wetland type), within 0.5 km	8
Interspersion	<p>See Appended Interspersion Map</p> <p>Total vertical: 31 Total horizontal: 27</p> <p>Total =58</p>	9
Open Water Types	Open water occupies 5-25% of the wetland area, occurring in a central area	8
Flood Attenuation (total)	Details of Flood Attenuation calculations are provided below Table 1	73
Water Quality Improvement (Total)	Details of water quality improvement calculations are provided below Table 1	10 +8
Shoreline Erosion Control	<p>Step 1: If any part of the wetland is riverine or lacustrine (proceed to Step 2) = Yes, therefore go to step 2</p> <p>Step 2: Choose the one characteristic that best describes the shoreline vegetation = Emergent vegetation</p>	8
Groundwater Recharge (Total)	Details of Groundwater Recharge calculations are provided below Table 1	21
Species Rarity(Total)	No rare species noted during 2010 surveys within the wetland.	0
	Section	0

	<p>4.1.2.1 Breeding Habitat for Endangered or Threatened Species = none</p> <p>4.1.2.2 Traditional Migration or Feeding Areas for an Endangered or Threatened Species = none</p> <p>4.1.2.3 and 4.1.2.4 Provincially Significant Plant and Animal Species = none</p> <p>4.1.2.5 Regionally Significant Species = none</p> <p>4.1.2.6 Locally Significant Species = none</p> <p>4.1.2.7 Species of Special Status = none</p>	
<p>Significant Features and Habitats (Total)</p>	<p>Section:</p> <p>4.2.1 Colonial Waterbirds = none</p> <p>4.2.2 Winter Cover for Wildlife = none</p> <p>4.2.3 Waterfowl Staging and/or Molting Area = none</p> <p>4.2.4 Waterfowl Breeding = none</p>	<p>0</p>
<p>Fish Habitat (Total)</p>	<p>A visual observation survey of aquatic habitat within the wetland area was conducted on June 5, 2010 by Hatch. No specific fish community assessment work was conducted by Hatch.</p> <p>Hatch staff observed Brook Trout in several areas during the field investigation and it was determined that the watercourse within the wetland provides cold water habitat for this species.</p> <p>There were groundwater seepage areas, observed by both NRSI staff on August 6, 2010 and Hatch staff during their June site visit, throughout the wetland which assist in maintenance of base flow and cold water temperatures to maintain aquatic habitat values. Wetland vegetation provides overhanging and in stream cover along the periphery of the watercourse, which would provide habitat for brook trout and other fish species.</p> <p>The watercourse/wetland also is deemed to provide spawning, nursery and residence habitat for the fish community, as well as some migration/movement function as fish travel to and from various habitat areas based on observations by Hatch staff.</p> <p>According to Hatch staff there was no background information regarding fisheries within the wetland was obtained during the Records Review process.</p>	

Flood Attenuation Calculations:

HYDROLOGICAL 3.0 COMPONENT

FLOOD 3.1 ATTENUATION

If the wetland is a complex including isolated wetlands, apportion the 100 points according to area. For example if 10 ha of a 100 ha complex is isolated, the isolated portion receives the maximum proportional score of 10. The remainder of the wetland is then evaluated out of 90.

Step 1: If wetland is entirely Isolated, go directly to Step 5.

If wetland is lacustrine and the ratio of wetland area: lake area is <0.1 , or wetland is riverine on the St. Mary's River, go to Step 5

All other wetlands, go through steps 2, 3, 4 and 5.

Step 2: Determination of Upstream Detention Factor (DF)

(a)	Wetland area (ha)	56.19
(b)	Total area (ha) of <u>upstream</u> detention areas (include the wetland itself)	56.19
(c)	Ratio of (a):(b)	1.00
(d)	Upstream detention factor: (c) x 2 = (maximum allowable factor = 1)	2.00 1.00

Step 3: Determination of Peak Flow Attenuation Factor (AF)

(a)	Wetland area (ha)	56.19
(b)	Size of catchment basin (ha) <u>upstream</u> of wetland (include wetland itself in catchment area)	468.45
(c)	Ratio of (a):(b)	0.12
(d)	Wetland attenuation factor: (c) x 10 = (maximum allowable factor = 1)	1.2 1.00

Step 4: Determination of Wetland Surface Form Factor (FF)

From the list below, select the surface form which best describes the wetland.

	Factor
Flooded with little or no aquatic vegetation	0
Flooded but with submergent, emergent or floating vegetation	X 0.2
Flat (lawn) vegetation (typical of fens)	0.5
Hummock-depression microtopography	0.7
Patterned (e.g., string bog, ribbed fen)	1
Surface Form Factor (FF)	0.2

(Maximum allowable factor = 1)

Flood Attenuation Continued:

Step 5:

- 1. Wetland is entirely Isolated 100 points
- 2. Wetland is lacustrine and the ratio of wetland area: lake area is <0.1 0 points
- 3. Wetland is riverine along the St. Mary's River 0 points
- 4. For all other wetlands*, calculate as follows:
 - a) Upstream Detention Factor (DF) (Step 2) 1.00
 - b) Wetland Attenuation Factor (AF) (Step 3) 1.00
 - c) Surface Form Factor (FF) (Step 4) 0.20

$[(DF + AF + FF)/3] \times 100^*$ 73.33333

*Unless wetland is a complex including isolated portions -- see above

Total Flood Attenuation Score (maximum 100 points)

73.000

Water Quality Improvement Calculations:

3.3 DOWNSTREAM WATER QUALITY IMPROVEMENT

3.3.1 WATERSHED IMPROVEMENT FACTOR

Calculation of Watershed Improvement Score is based upon the fractional area (FA) of each site type within the wetland. FA = area of site type/total area of the wetland.

<u>Site Type</u>	<u>Improvement Factor (IF)</u>			
Isolated	FA	0	x	0.5 = 0.00
Riverine	FA	0.952	x	1 = 0.95
Palustrine with no inflow	FA	0.048	x	0.7 = 0.03
Palustrine with inflows	FA		x	1 = 0.00
Lacustrine on lake shoreline	FA		x	0.2 = 0.00
Lacustrine at lake inflow or outflow	FA		x	1 = 0.00

**Watershed Improvement Score (IF x 30)
(maximum = 30)**

29.40

3.3.2 ADJACENT AND WATERSHED LAND USE EVALUATION

Step 1: Determination of Maximum Initial Score

- _____ Wetland on the Great Lakes or St. Mary's River (Go to Step 5a)
- _____ All other wetlands (Go through steps 2, 3,4 and 5b)

Step 2: Determination of Broad Upslope Land Use (BLU)

Assess broad upslope land uses within the previous 5 years, agriculture, or other activities which alter the natural vegetation cover in an extensive manner.

Choose one	Score
>50% of catchment basin	20
20-50% of catchment basin	14
<20% of catchment basin	4

Score for BLU

4

Step 3: Determination of Linear Upslope Land Uses (LUU)

Assess linear upslope uses (LUU) e.g., roads, railways, hydro corridors, pipelines, etc., crossing the upslope catchment within 200m of the wetland boundary.

Choose the highest only	Score
Major corridor*	15
Secondary corridor	11

Tertiary corridor	6
Temporary or abandoned	3
None	0

Score for LUU

6

Determination of Point-source Land

Step 4: Use (PS)

Assess point source (PS) land uses producing industrial effluents such as heavy industry, pulp and paper plants, major aggregate operations (but not small pits use for local road construction), etc. Score as present' only if a point source land use is located less than 1km upstream from the wetland.

	Score
Present	15
Not present	0

Score for PS

0

Calculation of total score for Adjacent and Watershed

Step 5: Land Use

- a) Wetland on the Great Lakes or St. Mary's River
- b) All other wetlands, calculate as follows:

Final Score BLU+LUU+PS

10

3.3.3 VEGETATION FORM

Choose the category that best describes the vegetation of the wetland

Trees, shrubs or herbs (h, c, ts, ls, gc)	X	Score 8 points
Emergents, submergents (ne, re, be, f, ff, su)		10
Little or no vegetation (u)		0

Dominant Vegetation Form Score (maximum 10 points)

8

Ground Water Discharge Calculations:

3.6 GROUNDWATER DISCHARGE

(Circle the characteristics that best describe the wetland being evaluated and then sum the scores)

Category	Catchment Interaction				
Wetland type	Bog = 0		Swamp/Marsh = 2	2	Fen = 5
Basin topography	Flat/Rolling = 5	5	Hilly = 2		Major relief break = 5
Wetland area: Upslope catchment area	Large (>50%) = 0		Moderate (6-50%) = 2	2	Small (<5%) = 5
Lagg Development	None found = 0	0	Minor = 2		Extensive = 5
Seeps at wetland edge	None found = 0		1-3 seeps = 5	5	4 or more seeps = 10
Iron precipitates evident at edge	None = 0	0	1-3 deposits = 2		4 or more deposits = 5
Surface marl deposits	None = 0	0	1-3 deposits = 2		>3 = 5
Wetland pH	Low < 4.2 = 0	0	Moderate 4.2-5.7 = 5		High >5.7 = 10
Catchment soil coverage	Patchy = 0		Thin (<20cm) = 2		Thick = 5
Catchment soil permeability	Low = 0		Moderate = 2	2	High = 5
Totals		5		11	5

(Scores are cumulative maximum score 30 points)

Groundwater Discharge Score (maximum 30 points)

21

Project Team:

Member	Qualifications	Role
David Stephenson, MSc	Certified Wetland Evaluator Certified ELC Certified Arborist	<ul style="list-style-type: none">• Project Management• Field Survey• Data Analysis, Evaluation, Reporting• Natural Heritage Assessment Guide Appendix C – for revised catchment area (air photo interpretation, interspersed mapping, and evaluation)
Kevin Dance, MES.	Certified ELC	<ul style="list-style-type: none">• Field Survey• Data Analysis• Evaluation• Natural Heritage Assessment Guide Appendix C – for revised catchment area (evaluation)
Ken Burrell, BES	Field Biologist	<ul style="list-style-type: none">• Field Survey
Cheryl-Anne Payette B.Sc, FWT	Field Biologist	<ul style="list-style-type: none">• Data Analysis• Evaluation
Caleb Coughlin, FWT	Field Biologist	<ul style="list-style-type: none">• Field Survey
Shawn MacDonald, B.A.	GIS Mapping	<ul style="list-style-type: none">• Mapping

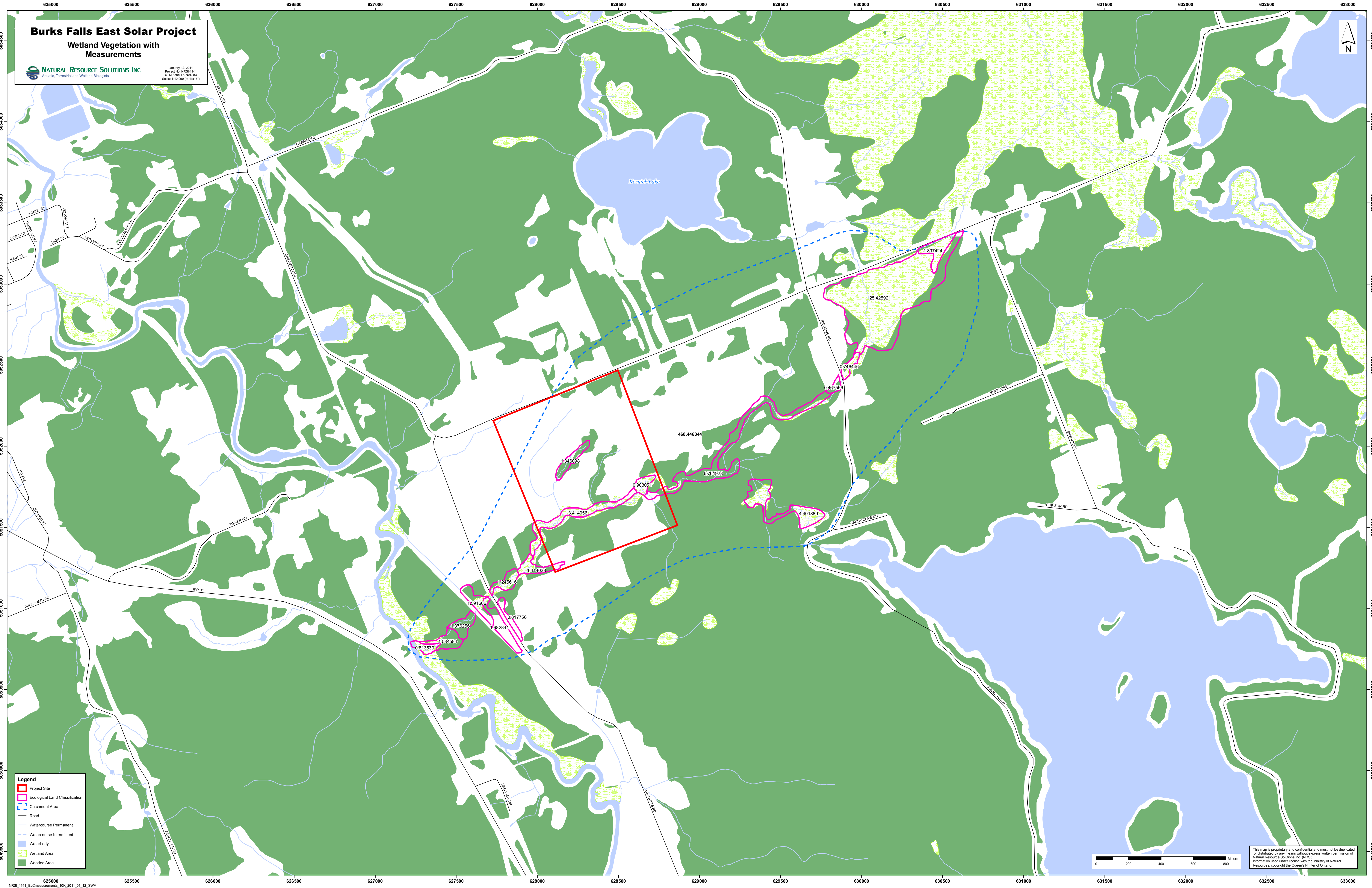
Catchment Area and Wetland Size (ha) Map

Burks Falls East Solar Project

Wetland Vegetation with Measurements

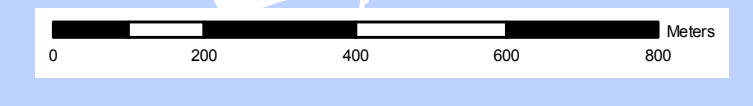
NATURAL RESOURCE SOLUTIONS INC.
 Aquatic, Terrestrial and Wetland Biologists

January 12, 2011
 Project No: NRS1141
 UTM Zone 17, NAD 83
 Scale: 1:10,000 (at 11x17")



Legend

- Project Site
- Ecological Land Classification
- Catchment Area
- Road
- Watercourse Permanent
- Watercourse Intermittent
- Waterbody
- Wetland Area
- Wooded Area



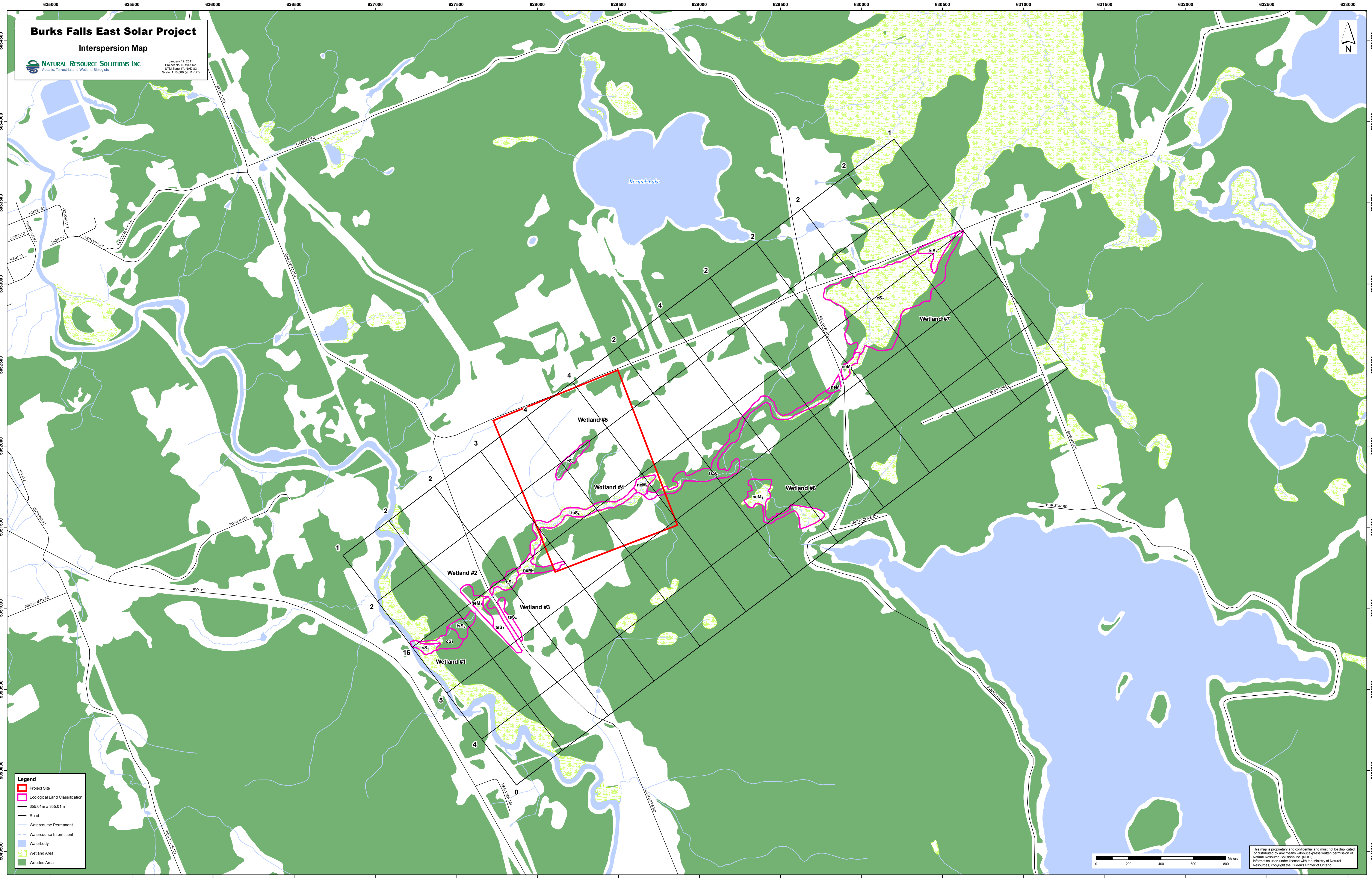
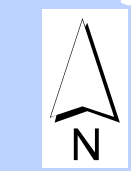
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Burks Falls East Solar Project

Interspersion Map

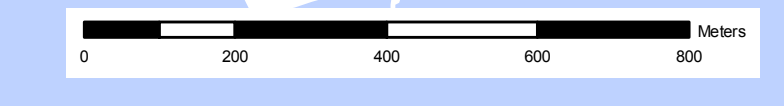
NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

January 12, 2011
Project No: NRS-1141
UTM Zone 17, NAD 83
Scale: 1:10,000 (at 11x17")



Legend

- Project Site
- Ecological Land Classification
- 355.01m x 355.01m
- Road
- Watercourse Permanent
- Watercourse Intermittent
- Waterbody
- Wetland Area
- Wooded Area



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NATURAL RESOURCE SOLUTIONS INC.

Aquatic, Terrestrial and Wetland Biologists

Wetland Vegetation Communities

Project Name: Burk's Falls Project #: 1141

Observer(s): KSD, KGB

Date: Aug. 6/10 Time (24h): 905

Field #: C Weather: Precipitation: 0 Temp (°C): 19

Map Code: CS2 Wind Speed & Direction: 2 Cloud %: 15

Wetland Type: S Site Type: P Dominant Form: C

% Open Water: 8% ELC Code: SWMM2

Photos:

Forms % (Circle those ≥25%)	Species (dominant species, secondary species, present species)
<u>h</u>	<u>Trunkling maple, white birch, red maple</u>
<u>c</u>	<u>white spruce = Tamarak, black spruce</u>
<u>dc, dh, ds</u>	
<u>ts</u>	<u>Willow sp.</u>
<u>ls</u>	<u>Narrow leaved Meadowsweet, black chokeberry</u>
<u>gc</u>	<u>aster sp, canada mayflower, bunchberry, Crowweed, yarrow</u>
<u>ne</u>	<u>sedge sp,</u>
<u>be</u>	
<u>re</u>	<u>broad-leaved cattail</u>
<u>ff</u>	
<u>f</u>	
<u>su</u>	
<u>m</u>	<u>moss sp.</u>



NATURAL RESOURCE SOLUTIONS INC.

Aquatic, Terrestrial and Wetland Biologists

Wetland Vegetation Communities

Project Name: Burk's Falls Project #: 1141

Observer(s): KSD, KGB

Date: Aug. 7/10 Time (24h): 830

Field #: D Weather: Precipitation: 0 Temp (°C): 15°C

Map Code: +sS2 Wind Speed & Direction: 0 Cloud %: 40

Wetland Type: S Site Type: R Dominant Form: +s

% Open Water: 20% ELC Code: SWTH1-1

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>speckled Alder</u>
<u>ls</u>	<u>narrow leaved meadowsweet</u>
<u>gc</u>	<u>grass sp., rough leaved goldenrod,</u>
<u>ne</u>	<u>sedge sp., marsh cinquefoil, marsh st. john's wort</u>
<u>be</u>	<u>giant burreed, water arum</u>
<u>re</u>	<u>broad-leaved cattail, hardstemmed bulrush, grass wool grass</u>
<u>ff</u>	
<u>f</u>	
<u>su</u>	
<u>m</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

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: Burk's Falls Project #: 1141

Observer(s): KSD, KGB

Date: Aug. 7/10 Time (24h): 9/2

Field #: E Weather: Precipitation: _____ Temp (°C): _____

Map Code: ncH3 Wind Speed & Direction: _____ Cloud %: _____

Wetland Type: AN Site Type: R Dominant Form: ne

% Open Water: 10% ELC Code: NAHNS

Photos: _____

Forms % (Circle those ≥25%)	Species (dominant species, secondary species, present species)
h	_____
c	_____
dc,dh,ds	_____
ts	<u>Speckled Alder</u>
ls	_____
gc	<u>groundwood, black raspberry, northern buggleweed, var. pyc wood</u>
ne	<u>hop sedge, rice cut grass, sedge sp. r</u>
be	<u>broad leaved arrowhead</u>
re	<u>black bulrush, wool grass</u>
ff	_____
f	<u>pond weed sp.</u>
su	_____
m	<u>moss sp.</u>

Rare Species (Local, Regional, Provincial):	Wildlife Notes:
_____	<u>Deer + K</u>
_____	<u>COYE</u>
_____	<u>AMRO</u>
_____	<u>BCCH</u>
_____	<u>leopard frog</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

mineral rich marsh



NATURAL RESOURCE SOLUTIONS INC.

Aquatic, Terrestrial and Wetland Biologists

Wetland Vegetation Communities

Project Name: Burk's Falls Project #: 1141

Observer(s): KSD, KGB

Date: Aug. 7/10 Time (24h): 9:38

Field #: F Weather: Precipitation: _____ Temp (°C): _____

Map Code: ncH4 Wind Speed & Direction: _____ Cloud %: _____

Wetland Type: M Site Type: R Dominant Form: re

% Open Water: 100 ELC Code: HASH-1

Photos: _____

Forms % (Circle those ≥25%)	Species (dominant species, secondary species, present species)
h	_____
c	_____
dc,dh,ds	_____
ts	_____
ls	_____
gc	_____
ne	<u>grass sp.</u>
be	_____
re	<u>broad-leaved cattail, hard stemmed bulrush</u>
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



NATURAL RESOURCE SOLUTIONS INC.

Aquatic, Terrestrial and Wetland Biologists

Wetland Vegetation Communities

Project Name: Burk's Falls Solar Park Project #: 1141

Observer(s): KSD, KGB

Date: Aug. 6/10 Time (24h): 915

Field #: 1 Weather: Precipitation: 0 Temp (°C): 28°

Map Code: neM1 Wind Speed & Direction: 1 Cloud %: 40%

Wetland Type: M Site Type: P Dominant Form: ne

% Open Water: 3% ELC Code: HANMB

Photos:

Forms % (Circle those ≥25%)	Species (dominant species, secondary species, present species)
<u>h</u>	<u>White birch, Trembling Aspen</u>
<u>c</u>	<u>white spruce, Eastern white cedar</u>
<u>dc, dh, ds</u>	<u>E. wh. cedar</u>
<u>ts</u>	<u>grass sp.</u>
<u>ls</u>	<u>speckled Alder, willow sp.</u>
<u>gc</u>	<u>sensitive fern, field horsetail, arrowleaved tearthumb</u> <small>spotted iceweed</small>
<u>ne</u>	<u>Sedge sp (finned sedge, hep sedge)</u>
<u>be</u>	
<u>re</u>	<u>hard stemmed bulrush, woodgrass</u>
<u>ff</u>	
<u>f</u>	
<u>su</u>	
<u>m</u>	

Rare Species (Local, Regional, Provincial):

Wildlife Notes:

→ seepage coming from hills

Cabbage white BARS
white Admiral
E. chipmunk Common wood nymph
SAVS
AMER
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

meadow near marsh



NATURAL RESOURCE SOLUTIONS INC.

Aquatic, Terrestrial and Wetland Biologists

Wetland Vegetation Communities

Project Name: Burk's Falls Solar Park Project #: 1141

Observer(s): KSD, KGB

Date: Aug. 6/10 Time (24h): 915

Field #: 2 Weather: Precipitation: 0 Temp (°C): 28

Map Code: +SS1 Wind Speed & Direction: 1 Cloud %: 40

Wetland Type: S Site Type: R Dominant Form: ts

% Open Water: 15% ELC Code: SWTNI-1

Photos:

Forms % (Circle those ≥25%)	Species (dominant species, secondary species, present species)
<u>h</u>	<u>white birch</u>
<u>c</u>	<u>white spruce,</u>
<u>dc, dh, ds</u>	
<u>ts</u>	<u>speckled Alder</u>
<u>ls</u>	
<u>gc</u>	<u>sensitive fern, lance leaved goldenrod, red clover,</u> <small>spotted iceweed</small> <small>yellow wood</small>
<u>ne</u>	<u>sedge sp.</u>
<u>be</u>	
<u>re</u>	<u>hard-stemmed bulrush, woodgrass</u>
<u>ff</u>	
<u>f</u>	
<u>su</u>	
<u>m</u>	

Rare Species (Local, Regional, Provincial):

Wildlife Notes:

brook trout in creek BCCH
ebony jewelwing
Monarch
white Admiral
creek chub

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

area around creek



NATURAL RESOURCE SOLUTIONS INC.

Aquatic, Terrestrial and Wetland Biologists

Wetland Vegetation Communities

Project Name: Burk's Falls Project #: 1141
 Observer(s): KSD, KGB
 Date: Aug. 6/10 Time (24h): 830
 Field #: A Weather: Precipitation: 0 Temp (°C): 19
 Map Code: +SS4 Wind Speed & Direction: 2 Cloud %: 15
 Wetland Type: S Site Type: R Dominant Form: +S
 % Open Water: none ELC Code: SWTHI-1

Photos:

Forms % (Circle those ≥25%)	Species (dominant species, secondary species, present species)
h	
c	
dc,dh,ds	
<u>ts</u>	<u>speckled Alder</u>
ls	
gc	<u>awl meadow grass, timothy, bracken fern, wild evening primrose</u>
ne	<u>fringed sedge, spotted jewelweed, sedge sp.</u>
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

alder thicket



NATURAL RESOURCE SOLUTIONS INC.

Aquatic, Terrestrial and Wetland Biologists

Wetland Vegetation Communities

Project Name: Burk's Falls Project #: 1141
 Observer(s): KSD, KGB
 Date: Aug. 6/10 Time (24h): 840
 Field #: B Weather: Precipitation: 0 Temp (°C): 19
 Map Code: noMS Wind Speed & Direction: 2 Cloud %: 15
 Wetland Type: M Site Type: P Dominant Form: ne
 % Open Water: none ELC Code: HANMI-7

Photos:

Forms % (Circle those ≥25%)	Species (dominant species, secondary species, present species)
h	
c	<u>white spruce</u>
dc,dh,ds	
ts	<u>speckled Alder</u>
ls	<u>Narrow leaved meadow sweet</u>
gc	<u>sensitive fern, showy golden rod</u>
<u>ne</u>	<u>fringed sedge, sedge sp. awl meadow grass</u>
be	
re	<u>broad-leaved cattail</u>
ff	
f	
su	
m	

Rare Species (Local, Regional, Provincial):

Wildlife Notes:

NOFL
TUVU
BCCH
CORA

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

min. meadow



NATURAL RESOURCE SOLUTIONS INC.

Aquatic, Terrestrial and Wetland Biologists

Wetland Vegetation Communities

Project Name: Burk's Falls Project #: 1141

Observer(s): KSD, KGB

Date: Aug 6/10 Time (24h): 115

Field #: 5 Weather: Precipitation: 0 Temp (°C): 28+

Map Code: REN2 Wind Speed & Direction: 1 Cloud %: 40

Wetland Type: M Site Type: NE Dominant Form: NE

% Open Water: 0 ELC Code: NAHHS

Photos:

Forms % (Circle those >25%)	Species (dominant species, secondary species, present species)
h	
c	<u>white spruce, tamarak</u>
dc,dh,ds	
ts	<u>spotted Alder</u>
ls	<u>narrow leaved meadowsweet</u>
gc	<u>sensitive fern, meadow jar dip weed, rough leaved goldenrod</u>
ne	<u>^{grass sp.} fringed sedge, hop sedge, meadow horsetail, knobby blue grass</u>
be	
re	<u>woolgrass,</u>
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

Sedge Meadow



NATURAL RESOURCE SOLUTIONS INC.

Aquatic, Terrestrial and Wetland Biologists

Wetland Vegetation Communities

Project Name: _____ Project #: _____

Observer(s): _____

Date: _____ Time (24h): _____

Field #: _____ Weather: Precipitation: _____ Temp (°C): _____

Map Code: _____ Wind Speed & Direction: _____ Cloud %: _____

Wetland Type: _____ Site Type: _____ Dominant Form: _____

% Open Water: _____ ELC Code: _____

Photos:

Forms % (Circle those >25%)	Species (dominant species, secondary species, present species)
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ts	
ls	
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