Martin’s Meadows Solar Project
Draft Water Body Site Investigation Report
April 27, 2012
Northland Power Inc.  
on behalf of  
Northland Power Solar  
Martin's Meadows L.P.  
Toronto, Ontario  

DRAFT Water Body  
Site Investigation Report  

Martin's Meadows Solar Project  

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April 27, 2012  

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Northland Power Inc.
Martin's Meadows Solar Project

DRAFT Water Body Site Investigation Report

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1. Introduction

1.1 Project Description
Northland Power Solar Martin’s Meadows L.P. (hereinafter referred to as “Northland”) is proposing to develop a Class 3 10-megawatt (MW) ground mounted solar photovoltaic (Solar PV) facility in the Town of Cochrane. This Project, known as the Martin’s Meadows Solar Project, is hereafter referred to as “Martin’s Meadows” or the “Project.”

The Project location is comprised of two primary components. The first part of the Project is the location of the solar panels, including access roads, inverters, transformers, fencing, etc, and is hereafter referred to as the “solar panel Project location.” The solar panel Project location is approximately 82 hectares (ha) in size and located on Lot 16, Concession 8 of the Town of Cochrane. The solar panel Project location is situated on Glackmeyer Concession Road 9 (shown in Figure 1.1).

The second part of the Project is the approximately 20 km distribution line from the solar panel Project location to the connection point west of the Project location near Hunta, ON. This portion of the project is referred to as the distribution line Project location, with locations shown in Figures 1.2 and 1.3.

1.2 Legislative Requirements
Ontario Regulation (O. Reg.) 359/09 – Renewable Energy Approvals Under Part V.0.1 of the Act, (herein referred to as the REA Regulation), came into force on September 24, 2009 and identifies the Renewable Energy Approval (REA) requirements for renewable energy generation facilities in Ontario. The REA Regulation has since been amended by O. Reg. 521/10, which came into effect as of January 1, 2011.

As per the REA Regulation (Part II, Section 4), ground-mounted solar facilities with a nameplate capacity greater than (>) 12 kilowatts (kW) are classified as Class 3 solar facilities and require an REA. Part IV, subsection 29 (1) of the REA Regulation requires proponents of Class 3 solar projects to conduct a water assessment consisting of a Water Body Records Review (Hatch Ltd., 2012) and a Water Body Site Investigation.

Subsection 1(1) of the REA Regulation defines a “water body” as a lake, permanent stream, intermittent stream or seepage area, but does not include:

a) grassed waterways
b) temporary channels for surface drainage, such as furrows, or shallow channels that can be tilled or driven through
c) rock chutes and spillways
d) roadside ditches that do not contain a permanent or intermittent stream
e) temporarily ponded areas that are normally farmed
f) dugout ponds, or
g) artificial bodies of water intended for the storage, treatment or recirculation of runoff from farm animal yards, manure storage facilities and sites and outdoor confinement areas.

Furthermore, a *permanent stream* means “a stream that continually flows in an average year” (O. Reg. 359/09).

An *intermittent stream* is defined as “a natural or artificial channel, other than a dam, that carries water intermittently and does not have established vegetation within the bed of the channel, except vegetation dominated by plant communities that require or prefer the continuous presence of water or continuously saturated soils for their survival” (O. Reg. 359/09).

A *seepage area* is defined as “a site of emergence of groundwater where the water table is present at the ground surface, including a spring” (O. Reg. 359/09).

As amended by O. Reg. 521/10, Subsection 31(1) requires an investigation of the land and water within 120 meters of the Project Location, either by visiting the site or by alternative investigation of the site, in order to determine the following:

a) whether the results of the analysis summarized in the Water Body Records Review Report (Hatch Ltd., 2012) prepared under Subsection 30(2) are correct or require correction, and identifying any required corrections;

b) whether any additional water bodies exist, other than those that were identified in the Water Body Records Review Report (Hatch Ltd., 2012) prepared under Subsection 30(2);

c) the boundaries, located within 120 m of the Project Location, of any water body that was identified in the Water Body Records Review Report (Hatch Ltd., 2012) or the site investigation; and

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

Subsection 31(2) of the REA Regulation has specific requirements if designated lake trout lakes are present within 300 m of the Project Location. These requirements were not deemed applicable to the Project as no such lakes were found in the Water Body Records Review Report (Hatch Ltd., 2012).

As amended by O. Reg. 521/10, Subsection 31(4) of the REA Regulation requires the proponent to prepare a report setting out the following:

1. A summary of any corrections to the Water Body Records Review Report (Hatch Ltd., 2012) and the determinations made as a result of conducting the site investigation.

2. Information relating to each water body identified in the Water Body Records Review Report (Hatch Ltd., 2012) and in the site investigation, including the type of water body, plant and animal composition and the ecosystem of the land and water investigated.

3. A map showing,
   i. the boundaries mentioned in clause 31 (1) (c),
   ii. the location and type of each water body identified in relation to the Project Location, and
   iii. all distances mentioned in clause 31 (1) (d).
**Figure 1.1**

Northland Power Inc.
Martin’s Meadows Solar Project
Water Body Site Investigation Results

**Notes:**
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2. Spatial referencing UTM NAD 83.

**LEGEND**
- Building
- Grassed Swale (Non-Water Body)
- Intermittent Stream (Water Body)
- Permanent Stream (Water Body)
- Road
- Topographic Contour (5m interval)
- High Water Mark
- 30 m from High Water Mark
- Parcel
- Waterbody
- Wetland Area

**Project Components**
- Project Location
- 120 m from Project Location

**Key Map**
- Project Site
- Lake Abitibi
- Night Hawk Lake
- Kenogamissi Lake
- Timmins Project Site

**Legend**
- Building
- Grassed Swale (Non-Water Body)
- Intermittent Stream (Water Body)
- Permanent Stream (Water Body)
- Road
- Topographic Contour (5m interval)
- High Water Mark
- 30 m from High Water Mark
- Parcel
- Waterbody
- Wetland Area

**Project Components**
- Project Location
- 120 m from Project Location

Notes:
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2. Spatial referencing UTM NAD 83.
Figure 1.2
Northland Power Inc.
Distribution Line Project Location
(Eastern Half) - Waterbody Site Investigation Results

Legend
- Connection Point
- Road
- Utility Line
- Northland Power Project Location
- 120 m from Distribution Line
- Wetland Area
- Wooded Area

Waterbody Feature
- Watercrossing (Hatch)
- Watercourse (LIO Mapping)
- Waterbody

Notes:
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2. Spatial referencing UTM NAD 83.
Distribution Line Project Location (Western Half) - Waterbody Site Investigation Results

Notes:
1. Produced by Hatch under licence from Ontario Ministry of Natural Resources, Copyright © Queens Printer 2011.
2. Spatial referencing UTM NAD 83.

Legend
- Connection Point
- Road
- Utility Line
- Northland Power Project Location
- 120 m from Distribution Line
- Wetland Area
- Wooded Area
- Waterbody Feature
  - Watercrossing (Hatch)
  - Watercourse (LIO Mapping)
  - Waterbody

Figure 1.3
Northland Power Inc.
4. A summary of methods used to make observations for the purposes of the site investigation.

5. The name and qualifications of any person conducting the site investigation.

6. If an investigation was conducted by visiting the site:
   i. the dates and times of the beginning and completion of the site investigation
   ii. the duration of the site investigation
   iii. the weather conditions during the site investigation
   iv. field notes kept by the person conducting the site investigation.

7. If an alternative investigation of the site was conducted:
   i. the dates of the generation of the data used in the site investigation
   ii. an explanation of why the person who conducted the alternative investigation determined
      that it was not reasonable to conduct the site investigation by visiting the site.

This Water Body Site Investigation Report has been prepared to meet these requirements.

2. **Summary of Water Body Records Review Results**

Table 2.1 summarizes the results of the *Water Body Records Review Report* (Hatch Ltd., 2012).

**Table 2.1 Summary of Water Body Records Review Determinations**

<table>
<thead>
<tr>
<th>Determination to be Made</th>
<th>Yes/No</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is the Project in a water body?</td>
<td>Yes</td>
<td>The proposed access road to the adjoining facility will cross Munroe Creek.</td>
</tr>
<tr>
<td>Is the Project within 120 m of the average annual high water mark of a lake, other than a lake trout lake that is at or above development capacity?</td>
<td>Yes</td>
<td>No lakes were identified within 120 m of the solar panel Project location. The proposed distribution line will come within 120 m of the average annual high water mark of Lower Deception Lake.</td>
</tr>
<tr>
<td>Is the Project within 300 m of the average annual high water mark of a lake trout lake that is at or above development capacity?</td>
<td>No</td>
<td>No lake trout lakes were identified within 300 m of the Project location.</td>
</tr>
<tr>
<td>Is the Project within 120 m of the average annual high water mark of a permanent or intermittent stream?</td>
<td>Yes</td>
<td>Two watercourses were identified within 120 m of the Project Location: Munroe Creek to the east and a tributary of Munroe Creek to the west. There are several other drainage features visible on aerial photography of the Project location, but it is unknown if these meet the definition of a water body per the REA Regulation. There are 34 watercourses located within 120 m of the distribution line Project location.</td>
</tr>
<tr>
<td>Determination to be Made</td>
<td>Yes/No</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------</td>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td>Is the Project within 120 m of a seepage area?</td>
<td>No</td>
<td>No seepage areas were identified on or within 120 m of the Project Location.</td>
</tr>
</tbody>
</table>

Therefore, depending on the layout of the proposed Project, some components of the solar panel Project location could potentially be located within 120 m of the average annual high water mark of Munroe Creek and/or its tributary. An access road and connection line to the adjoining solar facility will cross Munroe Creek. The proposed distribution line may cross a total of 24 waterbodies (depending on the route selected) and may be located within 120 m of 10 additional waterbodies, including Lower Deception Lake, depending on the route selected.

3. Site Investigation Methodology

A number of different site investigation events were undertaken as part of the overall water body site investigation for the proposed Project. Five site investigations were undertaken on the proposed solar panel Project, while six separate investigations were conducted along the proposed distribution line Project location. These various investigations are described in the following sections.

3.1 Solar Panel Site Investigation Details

3.1.1 Date, Time, Duration and Weather Conditions

The date, time, duration and weather conditions of the three site investigations undertaken at the solar panel Project location are summarized in Table 3.1.

<table>
<thead>
<tr>
<th>Site Investigation</th>
<th>Date (dd/mm/yy)</th>
<th>Start Time</th>
<th>Duration</th>
<th>Temperature</th>
<th>Beaufort Wind</th>
<th>Cloud Cover</th>
<th>Assessor(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>22/08/10</td>
<td>1300</td>
<td>6.0 hrs</td>
<td>n/a</td>
<td>1-2</td>
<td>100%</td>
<td>Martine Esraelian (Hatch)</td>
</tr>
<tr>
<td>2</td>
<td>23/08/10</td>
<td>1600</td>
<td>3.5 hrs</td>
<td>24 °C</td>
<td>2</td>
<td>0%</td>
<td>Martine Esraelian (Hatch)</td>
</tr>
<tr>
<td>3</td>
<td>24/08/10</td>
<td>1400</td>
<td>1 hr</td>
<td>24 °C</td>
<td>3</td>
<td>90%</td>
<td>Martine Esraelian (Hatch)</td>
</tr>
<tr>
<td>4</td>
<td>28/09/11</td>
<td>0930</td>
<td>2 hrs</td>
<td>12 °C</td>
<td>0</td>
<td>100%</td>
<td>Martine Esraelian, Joe Viscek (Hatch)</td>
</tr>
</tbody>
</table>

3.1.2 Name and Qualifications of Persons Conducting Site Investigation

Site investigations on the solar panel Project location were completed by Martine Esraelian, B.Sc., of Hatch Ltd. Martine is a terrestrial ecologist with diverse technical and consulting experience, as well as strong field identification skills. She has conducted field inventories and assessments that have
included wildlife and vegetation surveys, species at risk surveys and monitoring, Ecological Land Classification (ELC) and habitat mapping, soil surveys, land use surveys, and hydrological assessments. Martine has managed several environmental projects from initial design and planning through technical analysis, documentation, and delivery. She has completed several environmental and agricultural impact studies for major development projects which have enabled her to liaise with all levels of government, the community, and a portfolio of clients that include consulting firms, planners, and high-profile developers. She also has considerable experience working with species at risk, including Jefferson salamander, spotted turtle, spoon-leaved moss, Massasauga and gray ratsnake, among others.

Joe Viscek of Hatch Ltd. completed site investigations 3 (along with Martine Esraelian). Joe is an Environmental Scientist who joined Hatch after completing a successful internship assignment with the company through his post-graduate studies. He is currently engaged in the Renewable Energy Approval (REA) process for a number of green-energy projects in Ontario. Joe specializes in completing environmental work for renewable energy projects through a combination of field work, data management, environmental assessment, digital mapping (GIS) and technical writing. He has experience in fisheries field surveys, species at risk assessments and water body site investigations.

### 3.1.3 Survey Methods

The entire site was searched by the observer on foot in order to document the presence/absence of waterbodies. Photographs of the site were taken, and were GPS referenced where necessary using a sub-meter accuracy, handheld GPS unit. Any observations of waterbodies were noted, including: the type of water body, instream habitat types, surrounding riparian areas, average annual high water mark and wildlife use. Geographic coordinates at representative areas of the average annual high water mark for waterbodies on and within 120 m of the Project location were recorded using a handheld GPS unit, for mapping purposes.

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

### 3.2 Distribution Line Project Location Site Investigations

The purpose of these site investigations was to confirm waterbodies on and within 120 m of the distribution line Project location, including documentation of water body types, habitat features. Prior to these surveys, a map of the potential waterbodies was prepared through interpretation of satellite imagery as well as background records obtained from the Ministry of Natural Resources, Cochrane District. Presence of and average annual high water mark boundaries of the waterbodies along the roadside associated with the Project location were then confirmed through visual observation. A copy of the field notes kept by the observers is provided in Appendix A.

Site Investigations 5 through 10 were completed by Martine Esraelian and Joe Viscek. Martine is trained in the use of Ecological Land Classification, and has participated in several vegetation community surveys within Northeastern Ontario. Joe Viscek is an environmental technologist with experience in terrestrial and aquatic field studies in support of renewable energy projects throughout the province.
4. Results of Site Investigation

This section documents the results of the site investigations on the solar panel and distribution line Project locations and discusses specific water features observed on and within 120 m of the Project location. Features noted in the following sections, including the proposed Project location and the average annual high water mark of watercourses on and within 120 m of the Project location, are shown in Figure 1.1 (Solar Panel Project Location) and Figures 1.2 and 1.3 (Distribution Line Project Location).

4.1 Solar Panel Project Location

The Water Body Records Review Report (Hatch Ltd., 2012) identified two watercourses within 120 m of the Project Location: Munroe Creek, situated within 120 m east of the solar panel Project; and a tributary of Munroe Creek, situated within 120 m southwest of the solar panel Project location (Figure 1.1). The presence of each of these water body features was confirmed during the site investigations, and they are described in detail in the following sections.

In addition, a watercourse not previously identified during the records review (hereinafter referred to as Watercourse A) was discovered on the northeast portion of the Project Location (Figure 1.1). An assessment of Watercourse A is also been provided in the following sections. Several other grassed swales, which do not meet the definition of a water body per the REA Regulation, were observed during the site investigation (Figure 1.1). These are also described in the following sections.

4.1.1 Munroe Creek

The Land Information Ontario (LIO) mapping obtained for the Water Body Records Review Report (Hatch Ltd., 2011) indicates that Munroe Creek originates approximately 800 m south of the Project location at the outflow from Lauzon Lake, and flows north towards Abitibi River.

During the site investigations, the presence of Munroe Creek was confirmed, and it was determined to be a permanent stream. Munroe Creek flows in a relatively wide, low lying valley, with abundant wetland vegetation, surrounding by wooded areas adjacent to the agricultural fields on the adjacent properties. This wetland is comprised of emergent vegetation and dominated by broadleaved cattails, grasses and sedges. The meadow marsh type wetland is bordered by a shrub thicket swamp.
dominated will willow and dogwood species. Beaver activity is evident at several locations along the creek, with several dams creating online ponds. In these areas, the average annual high water mark is >100 m across. In other areas not affected by beaver activity, the average annual high water mark is approximately 30 m across, due to the meadow vegetation surrounding the main creek channel. A photograph of the wetland area of Munroe Creek, adjacent to the road is shown in Figures 4.1 and Figure 4.2.

Figure 4.1 View of Munroe Creek from the South Side of Glackmeyer Concession Road 9
Munroe Creek meets the definition of a water body, as outlined in the REA Regulation (Section 1.2). The average annual high water mark of Munroe Creek would be located a minimum distance of 30 m from the solar panel Project location. However, it would be crossed by the proposed access road and connection lines to the adjoining solar facility (Figure 1.1). Therefore, an EIS will be required to assess the potential negative effects of the Project on the creek and lands within 30 m of the average annual high water mark.

4.1.2 Tributary of Munroe Creek

The Land Information Ontario (LIO) mapping obtained for the Water Body Records Review Report (Hatch Ltd., 2012) indicates that a tributary of Munroe Creek passes by the southwest corner of the solar panel Project location. The tributary arises in a wooded wetland on the property west of the solar panel Project location, and flows in a generally southern direction, past the southwest corner of the solar Panel Project location within a wooded area.

During the site investigations, the presence of the Tributary of Munroe Creek was confirmed, and it appeared to be an intermittent stream (Figure 1.1). The proposed Project Location is situated outside of the 30 m setback area of the average annual high water mark of the tributary (Figure 1.1). Therefore, an EIS will be required to assess the potential negative effects of the Project on the creek and lands within 30 m of the average annual high water mark.
4.1.3 Watercourse A

The presence of Watercourse A, an intermittent stream, was confirmed during the site investigations. Watercourse A occurs on the northwestern portion of the Project Location. It appears to be a man-made ditch that utilizes the natural contours of the land to help facilitate surface water drainage from the adjacent agricultural fields (Figure 4.3). It was determined to be an intermittent stream that likely receives flow after heavy precipitation events, and is dry the remaining months of the year. The watercourse did not appear to be connected to the municipal ditch. This watercourse has in-stream and riparian vegetation that consists of grasses, sedges, rushes and shrubs, such as small-fruited bulrush, broadleaved cattail, and scattered shrubs including alder and dogwood. The Project Location and adjacent fields appear to be actively used for hay production. The channel itself is approximately 1 to 2 m in width, with an average annual high water mark of approximately 6 m across. Watercourse A follows the property line south, before making a slight bend southeast on the Project Location (Figure 1.1).

The watercourse transitions into a grassed swale (i.e., non-water body) as it extends southeast, just after it connects to a 0.5-m culvert and associated water crossing, likely used by the farmer to easily access different sides of the agricultural field (Figure 1.1). The grassed swale is relatively shallow (i.e., can be driven/tilled through), contains grassy vegetation that is not water dependant and has a width that covers a span of approximately 15 m (Figure 4.4). As such, this segment adjacent to Watercourse A was not considered an intermittent stream (or a water body feature), as per the REA regulation (Section 1.2). The grassed swale continues southeast until it dissipates into the woodland that is located on the western boundary of the Project Location (Figure 4.4).

Figure 4.3 View of Watercourse A, Facing South
The site investigation confirmed that Watercourse A is a water body feature. The proposed development area will occur within 30 to 120 m of the average annual high water mark of Watercourse A (Figure 1.1). Therefore, an EIS will be required to assess the potential negative effects of the Project on the creek and lands within 30 m of the average annual high water mark.

4.2 **Lakes**
Lakes are considered water body features under the REA Regulation (Section 1.2). The site investigations further confirmed the findings of the *Water Body Records Review Report* (Hatch, 2012) that there are no lakes present on or within 120 m of the solar Project Location.

4.3 **Seepage Areas**
Seepage areas are considered water body features under the REA Regulation (Section 1.2). No seepage areas or areas of groundwater discharge were identified on or within 120 m of the solar Project Location during the site investigations.

4.4 **Other Water Features**
During the site investigations, two grassed swales were identified on the central portion of the Project Location (Figure 1.1). These grassed swales are situated in an east-west manner, respectively, between the woodland on the west side of the Project Location and the woodland/Munroe Creek valley to the east. The swales exist in areas of low topography on the agricultural fields, and likely receive occasional stormwater runoff inputs from the surrounding land. The swales are very shallow (i.e., can be driven/tilled through) and range in width along their length, from several meters to approximately 10 m. No standing water was observed within the grassed swales during the time of the site investigations. The majority of water runoff caught in the swales is likely absorbed by
vegetation, or dries up within. Vegetation within the swales included primarily grasses with some
forbs (Figure 4.5).

These grassed swales were not found to be water body features. As per the REA Regulation,
temporary channels for surface drainage, such as furrows, or shallow channels that can be tilled or
driven through, are not considered intermittent streams or water bodies (Section 1.2)

Figure 4.5  View of Grassed Swale on Central Portion of Project Location, Facing West

4.5  Distribution Line Project Location
A total of 38 waterbodies were observed along the distribution line route options, as shown in
Figures 1.2 and 1.3, and summarized in Table 4.1, which presents the watercourse identifier (as
labelled on Figures 1.2 and 1.3), summary of watercourse observations (watercourse type, average
width and depth, substrate, bank vegetation and other observations). There were 36 unnamed
watercourses, the Frederickhouse River and Deception Creek. In addition, the proposed distribution
line will pass within 120 m of Lower Deception Lake.

There were also several watercourses shown on LIO mapping that were not found during the Site
Investigations. For the purposes of this report, it is assumed that the LIO mapping is correct, and that
the watercourses are present.

Since the Project Distribution line will cross or run within 120 m of the watercourses noted in
Table 4.1, as well as one lake (Lower Deception Lake), an EIS will be required.
<table>
<thead>
<tr>
<th>Watercourse Identifier</th>
<th>Water Body Type</th>
<th>Average Width</th>
<th>Average Depth</th>
<th>Substrate Type</th>
<th>Riparian Vegetation</th>
<th>Additional Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>WC1</td>
<td>Permanent stream</td>
<td>3 m</td>
<td>1 m</td>
<td>N/A</td>
<td>Grasses, shrubs, thicket</td>
<td>Small bridge crossing</td>
</tr>
<tr>
<td>WC2</td>
<td>Permanent stream</td>
<td>2.5 m</td>
<td>1 m</td>
<td>N/A</td>
<td>Cattails, grasses, shrubs</td>
<td>Watercourse drains into large marsh to north; culvert under road</td>
</tr>
<tr>
<td>WC3</td>
<td>Intermittent stream</td>
<td>2 m</td>
<td>No open water present</td>
<td>N/A</td>
<td>Cattails, grasses</td>
<td>Intermittent stream coming from marsh to north; culvert under road (0.75 m diameter)</td>
</tr>
<tr>
<td>WC4</td>
<td>Intermittent stream</td>
<td>2 m</td>
<td>No open water present</td>
<td>N/A</td>
<td>Cattails, grasses</td>
<td>Intermittent stream with wetland; culvert under road (0.75 m diameter)</td>
</tr>
<tr>
<td>WC5</td>
<td>Intermittent stream</td>
<td>1.5 m</td>
<td>0.10 to 0.20 m</td>
<td>Sandy, muck</td>
<td>Grasses and thicket</td>
<td>Two culverts side by side under road (0.75 m diameter)</td>
</tr>
<tr>
<td>WC6</td>
<td>Permanent stream</td>
<td>2 m</td>
<td>0.30 m</td>
<td>Muck</td>
<td>Grasses, shrubs, thicket</td>
<td>Beaver dam on north side by road; water pools up behind dam (approximately 5 m wide); culvert under road (1.5 m diameter), channel extends with 15 to 20 m wide floodplain to south</td>
</tr>
<tr>
<td>WC7</td>
<td>Intermittent stream</td>
<td>2 m</td>
<td>0.20 m</td>
<td>Muck</td>
<td>Grasses</td>
<td>No water present in channel on north side; small wetland/ponded water to south; culvert under road (0.5 m diameter)</td>
</tr>
<tr>
<td>WC8</td>
<td>Intermittent stream</td>
<td>1 m</td>
<td>0.10 to 0.20 m</td>
<td>Muck</td>
<td>Grasses</td>
<td>Standing water near road; channel leads to large wetland/marsh to southeast; two culverts under road about 5 m apart (0.5 m diameter)</td>
</tr>
<tr>
<td>WC9</td>
<td>Intermittent stream</td>
<td>2.5 m</td>
<td>0.30 m</td>
<td>Muck</td>
<td>Grasses, trees, thicket</td>
<td>Watercourse enters ditch west of road; no flow; no culvert under road; water dries up in ditch after about 15 m</td>
</tr>
<tr>
<td>WC10</td>
<td>Intermittent stream</td>
<td>2 m</td>
<td>0.10 to 0.20 m</td>
<td>Muck</td>
<td>Grasses</td>
<td>Watercourse meets ditch to north; water dissipates in ditch to the west after passing through culvert under road (0.5 m diameter)</td>
</tr>
<tr>
<td>Frederick House River</td>
<td>Permanent stream</td>
<td>100 m</td>
<td>1 to 2 m</td>
<td>Cobble, boulder</td>
<td>Grasses, trees, thicket</td>
<td>Large river flowing north to south; existing transmission line crossing</td>
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<tr>
<td>WC11</td>
<td>Permanent stream</td>
<td>3 m</td>
<td>0.5 to 0.75 m</td>
<td>Pebble/cobble, sand</td>
<td>Grasses, thicket</td>
<td>Watercourse from north connects to wetland south of road via culvert (0.75 m diameter); moose tracks visible along banks</td>
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<tr>
<td>WC12</td>
<td>Intermittent stream</td>
<td>1 m</td>
<td>No open water present</td>
<td>Muck</td>
<td>Cattails, thicket</td>
<td>Wetland north of road connects to south with intermittent channel; culvert under road (0.75 m diameter)</td>
</tr>
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<td>Watercourse Identifier</td>
<td>Water Body Type</td>
<td>Average Width</td>
<td>Average Depth</td>
<td>Substrate Type</td>
<td>Riparian Vegetation</td>
<td>Additional Notes</td>
</tr>
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</tr>
<tr>
<td>WC13</td>
<td>Permanent stream</td>
<td>3 m</td>
<td>0.10 to 0.30 m</td>
<td>Muck, some cobble</td>
<td>Grasses, shrubs, thicket</td>
<td>Water gently flowing north; culvert under road (1.5 m diameter)</td>
</tr>
<tr>
<td>WC14</td>
<td>Intermittent stream</td>
<td>0.75 m</td>
<td>0.05 to 0.10 m</td>
<td>Muck</td>
<td>Grasses, shrubs, thicket</td>
<td>Water gently flowing north; culvert under road (1 m diameter); some water ponded on north side of road (about 0.5 to 1 m deep)</td>
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<tr>
<td>WC15</td>
<td>Intermittent stream</td>
<td>1.5 m</td>
<td>0.20 to 0.30 m</td>
<td>Muck, sand</td>
<td>Grasses, shrubs, thicket</td>
<td>Wetland to south with grassy emergent vegetation and some standing water; water very gently flowing north; large culvert under road (3 m diameter)</td>
</tr>
<tr>
<td>WC16</td>
<td>Permanent stream</td>
<td>3 m</td>
<td>0.30 to 0.75 m</td>
<td>Cobble, sand</td>
<td>Grasses</td>
<td>Associated wetlands to south and north; culvert under road</td>
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<tr>
<td>WC17</td>
<td>Intermittent stream</td>
<td>2 m</td>
<td>0 to 0.05 m</td>
<td>Muck, grass</td>
<td>Cattails, grasses</td>
<td>Culvert under road (0.75 m diameter)</td>
</tr>
<tr>
<td>Deception Creek</td>
<td>Permanent stream</td>
<td>3 to 5 m</td>
<td>0.5 to 1.5 m</td>
<td>N/A</td>
<td>Grasses, thicket, some trees</td>
<td>Large creek; water flows west under road bridge</td>
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<tr>
<td>WC18</td>
<td>Intermittent stream</td>
<td>2 m</td>
<td>0.10 to 0.20 m</td>
<td>Muck</td>
<td>Grasses</td>
<td>Culvert under road (0.75 m diameter)</td>
</tr>
<tr>
<td>WC19</td>
<td>Intermittent stream</td>
<td>1 m</td>
<td>0 to 0.10 m</td>
<td>Muck, grass</td>
<td>Grasses, thicket, trees</td>
<td>Intermittent ditch west of road; no culvert present</td>
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<tr>
<td>WC20</td>
<td>Intermittent stream</td>
<td>2 m</td>
<td>0 to 0.05 m</td>
<td>Muck, grass</td>
<td>Cattails, Grasses, shrubs, thicket</td>
<td>Channel extends from east to wetland-like ditches adjacent to road; culvert under road (0.30 m diameter)</td>
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<tr>
<td>WC21</td>
<td>Intermittent stream</td>
<td>1 m</td>
<td>0 to 0.05 m</td>
<td>Muck, grass</td>
<td>Grasses, thicket</td>
<td>Ditch-like channel extends west; no culvert present</td>
</tr>
<tr>
<td>WC22</td>
<td>Intermittent stream</td>
<td>1 m</td>
<td>No open water present</td>
<td>N/A</td>
<td>Grasses, cattails</td>
<td>Small, dry, ditch-like channels extending out on both sides of the road; no culvert present</td>
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<tr>
<td>WC23</td>
<td>Intermittent stream</td>
<td>1 m</td>
<td>0.10 m</td>
<td>Muck, sand</td>
<td>Trees, thicket, grasses, cattails</td>
<td>Water flows gently in valley-like depression to the east; culvert under road (0.75 m diameter)</td>
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<tr>
<td>WC24</td>
<td>Intermittent stream</td>
<td>1 m</td>
<td>0.05 m</td>
<td>Muck</td>
<td>Trees, thicket, grasses</td>
<td>Water flows generally in valley-like depression to the east; culvert under road (0.5 m diameter)</td>
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<td>WC25</td>
<td>Intermittent stream</td>
<td>1 m</td>
<td>0 to 0.05 m</td>
<td>Muck, grass</td>
<td>Grasses, cattails, trees</td>
<td>Small channel with very shallow water flowing east; culvert under road (0.5 m diameter)</td>
</tr>
<tr>
<td>WC26</td>
<td>Intermittent stream</td>
<td>1.5 m</td>
<td>0.10 to 0.30 m</td>
<td>Muck</td>
<td>Grasses, thicket</td>
<td>Water flows gently east; culvert under road (0.75 m diameter)</td>
</tr>
<tr>
<td>WC27</td>
<td>Permanent stream</td>
<td>2.5 m</td>
<td>0.10 to 0.20 m</td>
<td>Muck</td>
<td>Short grasses, some thicket</td>
<td>Water flowing gently east; culvert under road (0.5 m diameter)</td>
</tr>
<tr>
<td>Watercourse Identifier</td>
<td>Water Body Type</td>
<td>Average Width</td>
<td>Average Depth</td>
<td>Substrate Type</td>
<td>Riparian Vegetation</td>
<td>Additional Notes</td>
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<tr>
<td>WC28</td>
<td>Permanent stream</td>
<td>3 m</td>
<td>0.20 to 0.30 m</td>
<td>Muck</td>
<td>Grasses, thicket, trees</td>
<td>Channel on north side of road only, with pooled water to south; water flows gently north; culvert under road (0.75 m diameter)</td>
</tr>
<tr>
<td>WC29</td>
<td>Intermittent stream</td>
<td>1 to 2 m</td>
<td>0 to 0.10 m</td>
<td>Muck, grass</td>
<td>Cattails, grasses, some thicket</td>
<td>Water flows gently north; culvert under road (0.5 m diameter)</td>
</tr>
<tr>
<td>WC30</td>
<td>Permanent stream</td>
<td>5 to 6 m</td>
<td>0.5 to 1 m</td>
<td>Muck, sand, pebbles</td>
<td>Grasses, thicket</td>
<td>Large creek with bridge crossing; drains north into small lake</td>
</tr>
<tr>
<td>WC31</td>
<td>Permanent stream</td>
<td>2 to 3 m</td>
<td>0.5 m</td>
<td>Muck</td>
<td>Grasses</td>
<td>Water flows north; large culvert under road (2.5 m diameter)</td>
</tr>
<tr>
<td>WC32</td>
<td>Intermittent stream</td>
<td>1.5 m</td>
<td>0.20 to 0.30 m</td>
<td>Muck</td>
<td>Grasses, cattails, thicket</td>
<td>Water gently flows north; wetland/swamp with grasses and small trees to south; two culverts under road, about 6 m apart (0.5 m diameter)</td>
</tr>
<tr>
<td>WC33</td>
<td>Intermittent stream</td>
<td>0.5 to 1 m</td>
<td>0 to 0.05 m</td>
<td>Muck</td>
<td>Thicket, trees</td>
<td>Very gentle flow north; little to no standing water (intermittent channel); culvert under road (0.5 m diameter)</td>
</tr>
<tr>
<td>WC34</td>
<td>Intermittent stream</td>
<td>1.5 m</td>
<td>0.20 m</td>
<td>Muck</td>
<td>Thicket, grasses</td>
<td>Channel visible on north side of road; water pooled in ditches to north and south of road; no visible flow or culvert</td>
</tr>
<tr>
<td>WC35</td>
<td>Permanent stream</td>
<td>2 m</td>
<td>0.30 m</td>
<td>Muck</td>
<td>Cattails, grasses, thicket</td>
<td>Irregular channel passing through large wetland complex (swamp/marsh mix); wetland area extends north; water flows north towards lake</td>
</tr>
<tr>
<td>WC36</td>
<td>Permanent stream</td>
<td>4 m</td>
<td>0.30 to 0.40 m</td>
<td>Muck</td>
<td>Grasses, thicket</td>
<td>Watercourse drains north into Deception Lake; wetland-like area (approximately 12 m wide) makes up floodplain zone</td>
</tr>
</tbody>
</table>
5. **Summary of Results**

Subsection 31(1) of the REA Regulation requires that the *Water Body Site Investigation Report* include a summary of any corrections to the *Water Body Records Review Report* (Hatch Ltd., 2012), as well as the determinations made as a result of conducting the site investigations. Table 5.1 identifies the corrections required (if any) to the water body features identified in the *Water Body Records Review Report* (Hatch Ltd., 2012), and any new determinations made as a result of the site investigations.

**Table 5.1 Conclusion of the Site Investigations and Corrections Required to the Martin’s Meadows Solar Project Water Body Records Review Report**

<table>
<thead>
<tr>
<th>Determination to be Made</th>
<th>Yes/No</th>
<th>Conclusions of the Site Investigations and Necessary Corrections to the Records Review</th>
</tr>
</thead>
</table>
| Is the Project Location in a water body?                                                | Yes    | The following corrections are required to the *Water Body Records Review Report* (Hatch Ltd., 2012) based on observations made during the site investigations.  
  - The records review did not identify any water body features on the Project Location. However, the site investigations determined that Watercourse A (i.e., an intermittent stream) is situated on the northwestern portion of the Project Location.  
  The proposed access road connection to the adjoining solar facility will cross Munroe Creek and a water crossing structure (e.g., culvert) will be required. |
| Is the Project Location within 120 m of the average annual high water mark of a lake, other than a lake trout lake that is at or above development capacity? | No     | The site investigation confirmed that there are no lakes on or within 120 m of the Project Location. There are no corrections required to the *Water Body Records Review Report* (Hatch Ltd., 2012) with respect to lakes. |
| Is the Project Location within 300 m of the average annual high water mark of a lake trout lake that is at or above development capacity? | No     | No lake trout lakes are situated on or within 300 m of the Project Location. There are no corrections required to the *Water Body Records Review Report* (Hatch Ltd., 2012) with respect to lake trout lakes. |
| Is the Project Location within 120 m of the average annual high water mark of a permanent or intermittent stream? | Yes    | The *Water Body Records Review Report* (Hatch Ltd., 2012) identified Munroe Creek, within 120 m east of the solar panel Project location; and a tributary of Munroe Creek situated within the 120 m southwest of the solar panel Project location. The presence of these water body features was confirmed during the site investigations, and they were assessed to be permanent streams.  
  The following corrections are required to the *Water Body Records Review Report* (Hatch Ltd., 2012) based on observations made during the site investigations.  
  - The records review did not confirm that Watercourse A (i.e., an intermittent stream) situated on the northwestern portion of the property on which the Project is located, was a water body per the REA Regulation definition. |
6. Conclusions

Based on the results of the site investigation and the proposed Project components and boundaries shown in Figure 1.1, some components of the solar panel Project Location will be located between 30 and 120 m of Munroe Creek, the Tributary of Munroe Creek and Watercourse A. The proposed access road and connection line to adjoining solar facility will cross Munroe Creek. In addition, the proposed distribution line Project location will cross or run within 120 m of approximately 38 waterbodies, depending on the final route selected. Therefore, an EIS will be required to assess the potential effects of the Project and the required mitigation measures to prevent or minimize adverse effects on these waterbodies.

7. References


Appendix A
Site Investigation
Field Notes
Project: Mayne Meadow

Date: Aug 22, 2010

Net 1300 - 1900

IC 100%

Wind: 1-2

Land Use: Only

The agricultural field on the project site are used for the production of hay. There are several trees on the site surrounding the project site. There is a small creek that traverses north south through the site. The wetlands is shown on the site mapping.

The wetlands are surrounded by wetland vegetation characteristic of a meadow marsh (e.g., broad leaf cattails, grasses, sedges). Surrounding the meadow marsh community is a thicker even more dominant

There are several deciduous species present on the site such as maple, aspen, and birch. There is also a smaller stand of tall pine trees.

The wetland surrounding the site is a mix of both open water and emergent vegetation.

Small aquatic insects are abundant in the wetlands.
Date: 16/03/2001 (35)

[Handwritten notes]

Wind: 2

[More handwritten notes]
<table>
<thead>
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<th>Date</th>
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</tr>
</thead>
</table>

| Small woodlot       |     |      |     |     |      |
| Willows             |     |      | Agapanthus |     |      |
| Trembling aspen     |     |      | Rees sp  |     |      |
| Alder               |     |      | Veins poster edge (G slant down) |     |      |
|                    |     |      | Alder      |     |      |

**About Site**

- North East Woodlot and shore
- North West Woodlot and shore
- Alder, willow, red
- Salix 'Nancy D' along edge
- Trembling aspen (b) within woodland
- Red raspberry sp
- Spruce sapling
- Red oak sapling (D)
- Fragile beech
- Spirea
- Lakes sp
- Alder (understory D)
- Cenon for (spirea) (D)
- Sedges
- Grasses
- Hibernia (understory)
<table>
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<th>Date</th>
<th>Page 53</th>
</tr>
</thead>
<tbody>
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</tr>
</tbody>
</table>

- South central (Alaska) site
- Alder, willow, trembling asp
- White birch (P)
- Small-barked birch
- Spotted sycamore

- Southern portion of Picnic site
- Hemlock coniferous trees
- Yew
- Spruce
- Black bear in woodland
Date: Aug 24, 2010  % C: 90%

No...: 174988  Imp:  5.0  (3.9)  and  5.9  Page: 57

Project: Site between Martin: Meadow w/ Hazlakn.

- Killing down slope: make drainage west
- South side, make the low line
- Northern (P) mix with alder &
- Willow & some spruce
- Brook in front of the middle
- no observed this year

Southern section: river
Some trees near
Burrow, etc. (H) are sp.
- Pending anyone. Some seedlings

- Willid
- Verm. bush
- Sand
- - Remains of
- - Clearly
- - Willow
- - Alder
- - El -

- Northern area
- Meadow rice
- Alder (H)
- Tree at (H)

Red flag
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<th>GPS Coordinates</th>
<th>Notes</th>
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<td></td>
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<tr>
<td></td>
<td></td>
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<td>Thicket</td>
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<tr>
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<td>From car</td>
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<tr>
<td></td>
<td>Water Crossing, roadside</td>
<td>1470 NW</td>
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<td>Cont'd: Re-phy to Trans. Line Access.</td>
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<td></td>
<td></td>
<td>(Vevers, Martinette, Pecar, March)</td>
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<tr>
<td></td>
<td></td>
<td>-driving from West (can. 6+7 arrie), 9 am</td>
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<tr>
<td>GPS</td>
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<td>Parto</td>
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<tr>
<td>376</td>
<td></td>
<td>1655 NW</td>
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<td>1656 NE</td>
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<td>1657 E</td>
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<td>371</td>
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<td>1659 S</td>
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<td>372</td>
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<td>1660 SE</td>
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<td>373</td>
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<td>1661 NE</td>
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<td>1662 SE</td>
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<td>374</td>
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<td>1663 NE</td>
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<td>1664 SE</td>
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<tr>
<td>375</td>
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<td>1666 NE</td>
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<td>1667 SE</td>
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<tr>
<td>376</td>
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<td>1669 NE</td>
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<td></td>
<td></td>
<td>1670 N</td>
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<tr>
<td>Wello</td>
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<td>1671 S</td>
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<td></td>
<td></td>
<td>1672 W</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>1673 W</td>
<td></td>
</tr>
<tr>
<td>Crossing</td>
<td></td>
<td>N, 7-8m wide, p.m. 10:00</td>
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<tr>
<td>(Bridge)</td>
<td></td>
<td>arch in top of WK</td>
<td></td>
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<td>No.</td>
<td>Date</td>
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<tr>
<td>395</td>
<td>1722 NE</td>
<td>1723 SE</td>
<td></td>
</tr>
<tr>
<td>396</td>
<td>1724 N</td>
<td>1747 NE</td>
<td></td>
</tr>
<tr>
<td>396</td>
<td>Well &amp; creek coming from N</td>
<td>1748 SE</td>
<td></td>
</tr>
<tr>
<td>396</td>
<td>0.75 ft dike on culvert under road</td>
<td>1749 S</td>
<td></td>
</tr>
<tr>
<td>396</td>
<td>1725 N</td>
<td>1750 NE</td>
<td></td>
</tr>
<tr>
<td>397</td>
<td>1727 E</td>
<td>1751 SE</td>
<td></td>
</tr>
<tr>
<td>397</td>
<td>Closing ATV trail to N</td>
<td>1752 N</td>
<td></td>
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<tr>
<td>397</td>
<td>1729 N</td>
<td>1753 N</td>
<td></td>
</tr>
<tr>
<td>397</td>
<td>- no open water in creek (wetland)</td>
<td>1756 E</td>
<td></td>
</tr>
<tr>
<td>399</td>
<td>1738 N</td>
<td>1757 N</td>
<td></td>
</tr>
<tr>
<td>399</td>
<td>- no water present</td>
<td>1758 N</td>
<td></td>
</tr>
<tr>
<td>400</td>
<td>1736 N</td>
<td>1759 SE</td>
<td></td>
</tr>
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<td>401</td>
<td>1737 NE</td>
<td>1760 NE</td>
<td></td>
</tr>
<tr>
<td>401</td>
<td>- open field</td>
<td>1761 NE</td>
<td></td>
</tr>
<tr>
<td>401</td>
<td>Wet field, would burn</td>
<td>1762 SE</td>
<td></td>
</tr>
<tr>
<td>401</td>
<td>1739 N</td>
<td>1763 SE</td>
<td></td>
</tr>
<tr>
<td>402</td>
<td>1740 S, 1741 SW</td>
<td>1764 E</td>
<td></td>
</tr>
<tr>
<td>402</td>
<td>- Run open field</td>
<td>1765 E</td>
<td></td>
</tr>
<tr>
<td>403</td>
<td>1742 NW</td>
<td>1766 NW</td>
<td></td>
</tr>
<tr>
<td>403</td>
<td>- depression (wetland), no water present</td>
<td>1767 SE</td>
<td></td>
</tr>
<tr>
<td>403</td>
<td>1743 E</td>
<td>1768 E</td>
<td></td>
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<tr>
<td>403</td>
<td>1744 N</td>
<td>1777 S</td>
<td></td>
</tr>
<tr>
<td>403</td>
<td>- driveway on side</td>
<td>1778 SE</td>
<td></td>
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<td>403</td>
<td>1745 E</td>
<td>1779 N</td>
<td></td>
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<tr>
<td>404</td>
<td>1746 M trail to N</td>
<td>1780 SE</td>
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<td>No.</td>
<td>Date</td>
<td>Page</td>
<td>1834 SE</td>
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<td>429</td>
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<td>430</td>
<td>1839 E</td>
</tr>
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<td>431</td>
<td>431</td>
<td>432</td>
<td>1840 SE</td>
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<td>432</td>
<td>432</td>
<td>433</td>
<td>1841 NE</td>
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<td>434</td>
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<td>435</td>
<td>1842 SE</td>
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<td>435</td>
<td>435</td>
<td>436</td>
<td>1843 NE</td>
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<td>436</td>
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<td>1844 SE</td>
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<td>438</td>
<td>1845 NE</td>
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<td>1846 SE</td>
</tr>
<tr>
<td>439</td>
<td>439</td>
<td>440</td>
<td>1847 SE</td>
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</table>

- small pond/wetland
- small wetland
- small wetland
- small wetland
- small wetland
- small wetland
- small wetland
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<tr>
<th>No.</th>
<th>Date</th>
<th>Page</th>
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<tbody>
<tr>
<td>463</td>
<td>3950 N, 3951 S E, 3952 E</td>
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<tr>
<td>464</td>
<td>3953 NE, 3954 S E</td>
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<td>465</td>
<td>3955 N, 3956 S E, 3957 S E</td>
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</tr>
<tr>
<td>467</td>
<td>3958 NE, 3959 S E, 3960 E</td>
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</tr>
<tr>
<td>468</td>
<td>Waterworks near 3961</td>
<td></td>
</tr>
<tr>
<td></td>
<td>~ 2m wide 3961 N</td>
<td></td>
</tr>
<tr>
<td></td>
<td>~ 0.5 m deep, cover 3961 W</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Water depth 10-06am</td>
<td></td>
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<tr>
<td></td>
<td>3962 N</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3964 S</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3965 W, ditch on right</td>
<td></td>
</tr>
<tr>
<td>469</td>
<td>- 3966 S, - trail S to S E</td>
<td>4-72</td>
</tr>
<tr>
<td>470</td>
<td>- trail to NE 3967</td>
<td>4-72</td>
</tr>
<tr>
<td></td>
<td>= 3988 E (road ends to end)</td>
<td>1918 W, 1918 S NW, 1918 S</td>
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<tr>
<td></td>
<td>3969 SE (Lone Field)</td>
<td>1908 S</td>
</tr>
<tr>
<td>471</td>
<td>- trail 3970 N W</td>
<td>175</td>
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<tr>
<td></td>
<td>- road north 3971 E</td>
<td>180 E</td>
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<tr>
<td></td>
<td>- field 3972 S</td>
<td>180 NE</td>
</tr>
<tr>
<td></td>
<td>End Time 7 PM</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- No water within</td>
<td></td>
</tr>
<tr>
<td></td>
<td>~ 2m wide, soddy</td>
<td></td>
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</table>

Sun Oct 2 2011 Northland

Control Trunk Line Assessment
(Joe Viscek, Maritime Esquimalt)
<table>
<thead>
<tr>
<th>No.</th>
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<tbody>
<tr>
<td>S00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S01</td>
<td>1990 NE</td>
<td>1991 SE</td>
</tr>
<tr>
<td>S03</td>
<td>Cathed, end in N, 1991 N, 1992 NE, 1993 SE</td>
<td></td>
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<tr>
<td>S04</td>
<td>2004 NW</td>
<td></td>
</tr>
<tr>
<td>S05</td>
<td>2005 NE</td>
<td>2006 SE</td>
</tr>
<tr>
<td>S06</td>
<td>2007 N (ATU Tank)</td>
<td></td>
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<tr>
<td>S07</td>
<td>2008 NE</td>
<td>2009 SW (Hallam)</td>
</tr>
<tr>
<td>S08</td>
<td>2010 SW (Hallam)</td>
<td></td>
</tr>
<tr>
<td>S10</td>
<td>2016 S, 2017 SW, 2018 S (Hall)</td>
<td></td>
</tr>
<tr>
<td>S12</td>
<td>2023 SW (Hall)</td>
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</table>

- S05: Water gently flowing N
- S06: Swale S
- S07: Mulch substrate visible
- S08: Small pond, 10 m
<table>
<thead>
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<th>No.</th>
<th>Description</th>
<th>Date</th>
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<tbody>
<tr>
<td>530</td>
<td>2129 N, 2126 NE (born to NE)</td>
<td>2129 SE (tore)</td>
<td>2128 S</td>
</tr>
<tr>
<td>531</td>
<td>2129 NW (chose)</td>
<td>2130 SW (chose)</td>
<td>2131 N, 2132 NE, 2133 SE</td>
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<tr>
<td>532</td>
<td>2134 NW, 2135 NE, 2136 SE</td>
<td></td>
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<tr>
<td>533</td>
<td>2137 NE, 2138 SE, 2139 SE, 2140 S</td>
<td></td>
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<tr>
<td>534</td>
<td>2141 N, ditch covered w/cover</td>
<td></td>
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<tr>
<td>535</td>
<td>Wetlands near Tunneling</td>
<td>2142 S, 2143 SW</td>
<td>2144 S</td>
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<tr>
<td></td>
<td>20-30 cm, deep</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Wetland to south, many emergent</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>much vegetation</td>
<td></td>
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<tr>
<td></td>
<td>2145 N = 1.5 m width, channel</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>a. h. m. = 1 m, near</td>
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<td></td>
<td>2146 E = 7 m, 2.5 m, diam.</td>
<td></td>
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<td></td>
<td>Very quick, Heron N</td>
<td></td>
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<tr>
<td></td>
<td>into wetland</td>
<td>2147 NE, 2148 NE</td>
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<tr>
<td>536</td>
<td>Watercourse Crossing</td>
<td>2150 S</td>
<td>4-5 m width</td>
</tr>
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<td>Associated Wetland</td>
<td></td>
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<td></td>
<td>2151 SW, 2152 SW</td>
<td></td>
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<tr>
<td></td>
<td>2153 S</td>
<td>2154 S</td>
<td></td>
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<tr>
<td></td>
<td>~ 30 cm - 0.7 m in area</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>- debate with send Erich, etc.</td>
<td></td>
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<tr>
<td>537</td>
<td>2155 N</td>
<td>2156 NW, 2157 W</td>
<td>2158 S (large)</td>
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<tr>
<td></td>
<td>Connect at wetland N</td>
<td></td>
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<tr>
<td></td>
<td>2159 NE</td>
<td>2160 SE (tore)</td>
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<tr>
<td></td>
<td>2161 NW, 2162 SW</td>
<td>2163 W (wetland)</td>
<td></td>
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<tr>
<td>538</td>
<td>2164 NW, 2165 SE</td>
<td>2166 S</td>
<td>2167 SE, 2168 SE, 2169 SE</td>
</tr>
<tr>
<td></td>
<td>2169 NW, 2170 SE</td>
<td>2170 SE</td>
<td>2171 SE</td>
</tr>
<tr>
<td></td>
<td>2172 SE, 2173 SE, 2174 N</td>
<td>2175 S</td>
<td></td>
</tr>
<tr>
<td>539</td>
<td>2176 S</td>
<td>2177 NW, 2178 NW</td>
<td>2179 SE</td>
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<tr>
<td></td>
<td>Possible Anglo road, turned</td>
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<td></td>
<td>40-50 cm diameter, ~ 10 cm from road</td>
<td></td>
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<tr>
<td>541</td>
<td>2180 S</td>
<td>2181 N, 2182 NE, 2183 S</td>
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</tbody>
</table>
Northland - Cochrane Solar Sites
Transmission Line Corridor Assessment

Thurs, Nov. 10, 2011

Joe Viscoff (Hatch)
with Martin Israelian

Temp: 4°C, light snow
Wind: 3
Cloud Cover: 100%

8:00 am Start time
Hwy 668 West of river
just past railway track, heading North

GPS

Substation 2365 NW, 2366 N, 2367 NE
(substation to west, near railway tracks)

POI 001 Watercourse Crossing
0.75 m cement, 4 m wide
5 cm to no standing water
- cattails

POI 002 Watercourse Crossing - Bridge (Watercourse) (Deception Creek)
2368 SE, 2370 W, 2371 SW

POI 003 Watercourse Crossing (Watercourse)
2373 N, 2374 SE, 2375 N
2376 N, 2377 S, 2378 N
2379 NW

POI 004 Ditch to West
(Deception)
2385 N, 2386 E, 2387 SE, 2388 SW
2389 W, 2390 W
POI 005  2391 E, 2390 N, 2393 NE
          2395 W, 2398 N
          Culvert = 30 cm dia.
          Wetland/wetland crossing
          ~2 m wide, mostly no
          standing water, some pooled
          area < 5 cm; Cattails + grasses

POI 006  ditch, standing W, no
          (Wetland)
          Culvert, some pooled
            (x 3)
          Standing water < 5 cm deep
          2395S, 2400 NE, 2401 N
          2402 SW, 2403 W, 2404 NW
          - green veg., "1" in yrs.

POI 007  before lake (Kennedy Lake)
          (x 4)
          Green, dry, swale to West
          2405 N, 2406 SE, 2407 SW,
          2408 W, 2409 NW, 2410 N

POI 008  Kennedy Lake
          2411 - 2412 (East)
POI 012: Small watercourse crossing
- Culvert ~ 0.5 m dia
- Culvert ~ 10 cm dia
~ 1 m wide channel
~ 5 cm depth, flowing E
2436 E, 2435 E, 2436 N, 2437 W
2438 NW

POI 013: Watercourse crossing
- Culvert ~ 0.75 m dia
~ 1-2 m wide channel
~ 10-30 cm variable depth
- Flowing gently
- Some small trees
2439 N, 2440 NE, 2441 E,
2442 W, 2443 NW, 2444 N

POI 014: Near HWY 668/Conway Inter
2445 NW, 2446 NE, 2447 SE,
2448 SW, 2449 NW

POI 015: HWY 668/Conway 8+7
Intersection

POI 016: 2441 N, 2452 W
Concrete, 8+8, backing W

POI 017: Watercourse crossing
- Culvert ~ 0.5 m dia
~ 3 m wide
~ 1-4 m high banks
~ 10-30 cm deep
- Some small trees
2453 NE, 2454 NE, 2455 E,
2456 S, 2457 E, 2458 NW
2459 NW
- Gently flowing E

POI 018: 2460 S, 2461 E, 2462 N

POI 019: 2463 E, 2464 NE, 2465 NW,
2466 W
POI 020 Watercourse Crossing
(Watercourse 6) 0.75 dm, culvert
channel on N side only,
flowed water on S side
~3-4 m width
trees + grass up, very
~20-30 cm depth
very gentle flow N
muck, very debris bottom
2467 SE, 2468 S, 2469 E,
2470 N, 2471 W, 2472 E

POI 021 Watercourse Crossing
(×8) culvert ~0.5 dm, drain
~1.5 m wide
silted + grasses
<10 cm deep to dry
2473 SE, 2474 S, 2475 NW,
2476 W, 2477 NE, 2478 E
2479 N, 2480 W, 2481 N
flowing gently N

POI 023 Lake in view
2486 E, 2487 SE,
2488 SW, 2489 W, 2490 N
2491/2492 E
(Lower Reception Lake to E)

POI 024 2493 SE, 2494 E
2495 NW, 2496 N, 2497 N,
2498 SE, 2499 S
(beginning to head lake)

POI 025 2500 E, 2501 S, 2502 S
2503 SE (just before bridge)

POI 026 Water Crossing
-Bridge
stream ~5-6 m wide, 0.5-1 m deep
flowing W into lake
2504 S, 2505 W, 2506 E,
2507 S, 2508 NE, 2509 NE,
2510 W, 2511 W
2512 NE, 2513 W, 2514 E
<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Page</th>
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<tbody>
<tr>
<td>POI 027</td>
<td>2515 E, 2516 E</td>
<td>2517 NE, 2518 NE</td>
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<tr>
<td></td>
<td>2519 NW, 2520 W</td>
<td>- Rounding Lake to SW</td>
</tr>
<tr>
<td></td>
<td>2529 NW</td>
<td></td>
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<tr>
<td>POI 028</td>
<td>2522 E</td>
<td></td>
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<tr>
<td>POI 029</td>
<td>2523 E, 2524 N, 25 25 W</td>
<td>- Proceeded SW along Wastew</td>
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<tr>
<td>POI 030</td>
<td>Road ends off E</td>
<td>0526 E, 2527 S, 2528 SW</td>
</tr>
<tr>
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<td>0526 E, 2527 S, 2528 SW</td>
<td>Snowmobile/ATV trail continues to E</td>
</tr>
<tr>
<td>POI 031</td>
<td>Wastewater Crossing near Long Lake Site</td>
<td>(Conc. 8 + 9)</td>
</tr>
<tr>
<td></td>
<td>NE 0.5 m drian Culvert</td>
<td>2-3 m under stream</td>
</tr>
<tr>
<td></td>
<td>Running North</td>
<td>~ 0.8 m deep</td>
</tr>
<tr>
<td>POI 032</td>
<td>Long Lake Site</td>
<td>Photos for Computer Rendering</td>
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<td>2537 E, 2538 SE, 2539 S</td>
<td>2540 S, 2541 SW, 2542 W</td>
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<td>2543 SE, 2544 S</td>
<td>2545 SE, 2546 SE</td>
</tr>
<tr>
<td></td>
<td>2547 W</td>
<td>- Video taken at HWY 668 + Conr 8 + 9 C site</td>
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<td>Finalized at 4:00 pm - proceeded to MNR office to obtain FRI maps</td>
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Northland - Cochrane 4 solar site
Transmission Carrier Assess.

Joe Viscek (Macleod)
with Martin Essdelan

Fri, Nov. 11, 2011

Temp: -10°C
dew point: 2
Cloud Cover: 95%
Light Snow, on and off

5:00 am Start time
From Conner Conc. U +11
and Conc. 8 + 9 Clute
(West of river)

GPS Photo

POI 032 2549 SE, 2550 E
2551 NE, 2552 W
(intersection of 10/11 + 8/11)

POI 034 2555 SW, 2554 NW

POI 035 2555 SW, 2556 NW

POI 036 Water Crossing

(17) 2 x 0.5 m daim - Culvert 6 m apart
- wetland w/ ponded water
- to south
- depth ~ 70 - 30 cm
- channel width 8 m, nearly 15 m
- channel width 8 m, mostly 8 - 15 m
- water enters wetland area
- 2557 N, 2558 NW, 2559 SW,
2560 SW, 2561 SW, 2562 S,
2563 W

POI 037 2564 SW, 2565 NW

POI 038 2565 SW, 2567 NW, 2568 N

POI 039 2570 SW, 2571 NW

POI 040 2572 SW, 2573 NW

Culvert 0.5 m diam
- 5 cm water, gentle flow N
- more wetland like than

Watercourse, ~ 1 m wide
<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>P01 048</td>
<td>2600 SW, 2601 NW</td>
</tr>
<tr>
<td>P01 049</td>
<td>2602 SW, 2603 NW</td>
</tr>
<tr>
<td>P01 050</td>
<td>2604 S - possible wetland to south (cattails visible) 2605 SW, 2606 SW, 2607 NW</td>
</tr>
<tr>
<td>P01 051</td>
<td>Under Power lines 2608 SW, 2609 W, 2610 NE 2611 NE, 2612 E, 2613 SW</td>
</tr>
<tr>
<td>P01 052</td>
<td>Road turns North, Trans Line Corridor continues down bush trail 2614 W, 2615 NW, 2616 W a 617 - Animal skull + mandible Fawn near trail (maybe Fox) 2618</td>
</tr>
<tr>
<td>No.</td>
<td>Date</td>
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<tr>
<td>POI 053</td>
<td>2619 W</td>
</tr>
<tr>
<td>POI 054</td>
<td>2620 W</td>
</tr>
<tr>
<td>POI 055</td>
<td>2621 W</td>
</tr>
<tr>
<td>POI 056</td>
<td>2622 W - wetland area</td>
</tr>
<tr>
<td>POI 057</td>
<td>2624 SW, 2626 E</td>
</tr>
<tr>
<td>POI 058</td>
<td>2627 W</td>
</tr>
<tr>
<td>POI 059</td>
<td>2630 W, 2631 E</td>
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<tr>
<td>POI 060</td>
<td>2632 W, 2633 E</td>
</tr>
<tr>
<td>POI 061</td>
<td>2634/35 S</td>
</tr>
<tr>
<td>POI 062</td>
<td>2638 W, 2639 NE, 2640 SE</td>
</tr>
<tr>
<td>POI 063</td>
<td>2644 W, 2646 E</td>
</tr>
<tr>
<td>POI 064</td>
<td>2645 W, 2646 E</td>
</tr>
<tr>
<td>POI 065</td>
<td>2647 W, 2648 E, 2649 E</td>
</tr>
<tr>
<td>POI 066</td>
<td>2652 W, 2653 N, 2654 E</td>
</tr>
<tr>
<td>POI 067</td>
<td>2656 W, 2657 W, 2658 NW, 2659 E</td>
</tr>
</tbody>
</table>

Note: Trail continues, wetland-like

Right site @ 4:30 pm
<table>
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</table>
| POI 075 | 2691 W, 2692 E  
- Very large poplars |
| POI 076 | 2693 E, 2694 W  
- North/South trail detours  
- No trail continues west |
| POI 077 | 2695 N, 2696 W, 2697  
- North detours on trail taken to hook at dead end  
- 2698 S, 2699 W |
| POI 078 | Watercourse  
- Drains into decodation lake  
- 4 m wide, 30-40 cm deep  
- 2700 W, 2701 N, 2702 N  
- 2703 SW, 2704 N  
- Wetland ~10 m across |
Transmission Line Assessment
Location: Cochrane, ON
Hwy 668 North to east
Conc. 8 + 9 Culvert

Date: Nov. 10, 2011
Time: 0800 - 1600 (8 hours)
%CC: 100
Temp: 0 to 10°C
Wind: 19 km/h SW
Precip: 21 mm rain; 1 mm snow

Water Feature
1. Deception Creek
   - Water present
   - Flow: East

Water Feature
2. Present - yes (flowing) Flow: East
   - Water present
   - Depth: 0.5 m
   - Water feature does not have a defined bank (right)
   - For the portion observed from the road
   - Flow through a "wetland/wooded" area
   - Sedges, cattails, speckled alders, grasses
   - Some, both sides of road
   - Water present east under road through
   - a salvaged culvert (6.7 m)
   - Photo: 4359 - 4357
     (left side, facing)
     - Duckweed, horsetail spin.
     - 1 in. soft, easy
     - Photo: 4357 - 4355
     (right side, facing)
   - "Municipal drain" on both sides of road
   - 5 m lower elevation than road
   - Composite of cattails, sedges, grasses
   - Low-lying area connects with
   - Water feature 2
   - Water feature 1
   - Low-lying area 1
   - Low-lying area is a defined bank (municipal drain) across
   - What are low-lying SW peg banks or
   - slope, that area is intermittent
   - Changes in slope, rolling terrain
Drainage Feature
- West of Hwy 668 across from Hanx Meander Church/Cone 6 & 7 built.
- Photos
  - 4354 - West
  - 4355 - North
  - 4356 - South
- 4357 - 4358 - Vegetation - Hair Grass (A) grasses, sedges in ditch
- 3" water present
- Drainage feature connected to roadside ditch.
- No flow present.
- Slightly sloped bank - grasses/sedges

Drainage Feature
- West side only.
- 4359 - photos 4359 - " ditch w water present"
- 4360 - " ditch w water present"
- 4361 - " ditch w water present"
- 4362 - " ditch w water present"
- possibly flow meters
- Drainage snake through "Meadow March" sedges, grasses, and through muddy water
- "Meadow March channel"
- Bank - steep slope - top = 7"
drainage feature - not a water Body
- Naturally follows topography
- Present: Year
- Flow: East
- Water feature: Currently flowing

X4:1 - photo 4366 - S

Kennedy Lake
- Photos 4369 - 4379

X5 - East side
- Drainage swale cut west through woodland
- Grass, trees, marsh
- No defined channel

X5-1 - drainage swale - no defined channel

photo 4376
Water Feature (Tower creek)

4 - West side 4390 - 4395

4-1 - East side 4390 - 4405
Water present
Ditch to the north, flows south into water feature. Water feature flows east
- Water present - 4" deep
- Channel width ~ 1.5 - 2 m
- Sandy/slower and gravel on banks
- Organic substrate

4-1 - East side 4390 - 4396
Water present
Ditch to the north, flows south into water feature. Water feature flows east
- Water present
- Channel width ~ 7 - 8 m
- Depth ~ 20 cm (8")
- Organic substrate and gravel
- Grass, sedges, reeds, and bare
- Take notes (above)

X7 - West side, culvert 4385 - 4387
Flows exit drainage channel, 3.5 m wide

X7-1 - East side, culvert 4380
- No defined channel
- Grasses, sedges, weeds through
- Piplines & open meadow/foreshore
- Collars

X6 - East side

Exit 4381
Water present
Flow east through
- Culvert, open
- Channel width < 1 m, wide

X6 - West side - 4382
- Open meadow
- Grasses/sedges
- No defined channel, no water

X6 - West side - 4383
- Open meadow

X6 - East side - 4384
5) Water Feature  (east side, 4410)

- Street name: 4410 - East
- Street number: 4410 - SE
- Street direction: 4410 - NE
- Street number: 4410 - NE

- Culvert
  - Width: 6 m wide
  - Ramped bank - 75 cm
  - "cut" grass along bank
  - Alder + poplar surrounding
  - "gravel/identify mark" pocket
  - Depth: < 20 cm (near @ backfill)

6) South side - 4410

- Paved water feature (does not reroute)

X8) North side of Rd - Culvert

- Drainage Feature
  - Flow: North (flow present / water present)

4410 - Culvert

- Cotton / sedges / sedge
- Alder / poplar

X7) South side - Culvert

- Drainage feature
  - Dutch - water flow east / well
  - Honey for Dutch / Flows north

4410 - Culvert

- Sedges, cotton, etc.
- Water present
Photo 4417 - 4418 - lower deception lake
Photo 4419 - 4422 - lower deception lake

POI27
- Tramline
tunnel
- Bulwark for water level?
- other bully
tunnel, just pipe?

(35) Water feature (long lake)
Flow - north

Photo 4433 - 4434 - north
Photo 4436 - 4435 - south

(10) Water feature
- bridge crossing - 6 m wide

North side 4436 - 4426 - 4422
South side 4425 - 4418 - 4416

Rocky, cobble substrates, dammed river
TS riparian - older (over 50 degrees)
- depth ~ 1 m
- water present

...in the river...
Location: Cochrane, ON
Conc. 8 + Conc. 10 + Conc. 11 Club

Date: Nov 11, 2011
Time: 0800 - 1600 (8 hours)

% C.C.: 100
Temp.: -3°C
Wind: 10 km/h
Precip: Light snow < 1 mm, slight snow on ground

17) Water Feature / Wadland
- no defined channel, more of a wetland
- photos: 4438, 4441 Sunny South
- a-culvert under Rd. ~ 7-8 m apart
- water present
- flow present - North
- grass, plants, dead trees
- some standing water
- young

15 (oldest, discolored)
Spruce
Slender

3 + 3 (young)
Spruce

Dead (standing)
Trees
(SOUTH OF ROAD (ditch))

photo 446: 4460 - N
- only on north side of road
- width ~ 2m
- depth 20-25cm @ bankside
- organic substrate
- riparian - seepage
- Blaž spore, Taxus
- spikelike alder
- connected to drainage ditch along the road. Drainage ditch is the same width, depth & camp.
- no flow obs

Roadside ditch on the south side of road has standing water. No flow.
- 2m wide
- 20cm depth of water for flow
- there is no culvert connecting the ditch to the water feature.

Photos: 4442 - 4447

4442 - N
4443 - NE
4444 - E
4445 - SE
4446 - Facing west
4447 - Facing west
4448: 4449 = written note

Water Feature

4456 - 8 > adjacent woodland
4457 - N
4458 - N
4459 - E
4460 - W

Ts
= alder, 95
Red-cedar below, 95
35
105

context: Red-cedar vegetation within ditch
(10) **Water Feature / Wetland**
- Water present (permanent)

(13) Presence of water begins & continues east. This is true for both ditch (north & south of Rd).

(14) South side of road
- Photo 4465 - S
  - 4466 - W
- Grasses (4)
  - Willow, speckled alder present
  - Band of cattail observed further south.

(15) Phobus
  - 4464 - N
  - 4465 - W
  - 4470 - N