# 3.0 SITE INVESTIGATION

Under the REA process, an applicant is required to confirm the presence and boundaries of water features at, or within, 120 metres of the project location (O. Reg. 359/09, Section 31). This process is referred to as Site Investigation, and requires the applicant to determine:

- whether the results of the analysis summarized in the Records Review prepared under subsection 30 (2) are correct or require correction, and identifying any required corrections;
- whether any additional water bodies exist, other than those identified in the Records Review;
- the boundaries, located within 120 metres of the project location, of any water body that was identified in the records review or the site investigation; and
- the distance from the project location to the boundary of any water body located within 120 metres of the project location.

For each water body identified during records review or site investigation, the applicant must also include information regarding the type of water body, plant and animal composition and the ecosystem of the land and water investigated.

The following subsections describe the Site Investigation process in more detail, including: the methodologies employed; the results obtained from field surveys and alternative investigations; corrections made to the information obtained through Records Review (including any new water features identified); and, identification of those features carried forward as water bodies and further addressed in the Water Body Report.

## 3.1 METHODS

The Site Investigation phase of the Project helped to inform the placement of project components such that the Project Location was not fully defined prior to this phase. For that reason, some water features were studied and are included in the results presented in the subsequent section that were determined ultimately not to be within 120m of the Project Location. Site investigations included study of the land and water components of all identified water features. Any corrections made to information obtained through records review are summarized in Section 3.2.1.

### 3.1.1 Alternative Site Investigations

All lands proposed to host infrastructure associated with the wind power project were accessible to field crews during site investigation; however, many non-participatory landowners denied access to their property. A land agent was retained by the proponent to secure land access from landowners where possible. Figure 2 defines the Project Location and indicates which properties were accessible to the field crew conducting the surveys. Where access to a feature was permitted by the landowner, investigations

were conducted directly through field surveys; however, when access to properties was denied, an alternative site investigation was completed from the closest accessible property boundary, and further supported with analysis of orthographic images and resources listed as background information in Section 2.0. Most alternative site investigations occurred where underground electrical collection line is proposed within the existing road right of way. In these cases the water feature was characterized from roadside. A list of features assessed through this type of alternative site investigation is presented in Table 3. All results, including those for alternative site investigations, are presented in Section 3.2.

**Table 3: Summary of Water Features entirely assessed through Alternative Site Investigation**

| Water Feature ID | Reason for Alternative Site Investigation | Description of Alternative Site Investigation | Date of Field Visits | Results of Alternative Investigation |
|---|---|---|---|---|
| W41<br>W42<br>W44<br>W51<br>W52 | Property access was not permitted by landowner. | Use of orthographic images and background information as listed in Section 2.0 was referenced to determine structure and composition of feature. ELC methods were also employed where natural features were noted. | May 15, 2012<br>June 14, 2012 | W41 – dugout pond<br>W42 – wetland feature<br>W44 – wetland feature<br>W51 – dugout pond<br>W52 – dugout pond |

Note: other features where a specific portion of the feature was not accessible are indicated as such in Table 4 including associated details of the investigation conducted.

### 3.1.2 Water Assessments

The water features identified through records review and site investigation were studied to collect data regarding the type of water body, the plant and animal composition and the ecosystem of the water and the land surrounding the feature. Table 4 summarizes the names of the qualified individuals that conducted the surveys, as well as the dates, times and methodologies employed in order to characterize and inventory existing conditions within a minimum of 120m from the Project Location. There was considerable overlap in field visits intended as part of the NHA prepared for the project and the Water Assessment; therefore Table 4 documents the details of field visits from 2009 to 2012 that in some cases involved both natural and water features. All dates for wetland assessments are included in Table 4 as those studies lead to the classification of those areas as features other than water bodies, as defined under the REA process; however, wetland evaluation records and results are included exclusively within the NHA.

Data was not available through the SVCA for the average annual high water mark of water bodies within the Study Area; therefore the approach outlined in the Department of Fisheries and Oceans (DFO) Fish Habitat Management Program (2005) was applied to determine the location of the high water mark during field surveys. This was done by measuring the bankfull width of water feature as indicated by changes in the nature of the soil or vegetation along the bank gradient (e.g. erosion, scour mark, shelving, lack of terrestrial vegetation, etc.). In the case of streams where channels were deeply incised, the bankfull width approximated the wetted width of the watercourse.

All field investigations were conducted by qualified biologists and field technicians. Field notes from each site survey, and qualifications of the personnel conducting the surveys are included in Appendix C and D, respectively. Data collected depended on the type of feature identified; for example for features identified as dugout ponds during field surveys, data collection was limited to a photographic record and notes regarding wildlife since this type of feature is not addressed as a 'water body' under O.Reg. 359/09. In the case of features that met the definition of a water body under the REA process, data was collected as it pertained to the following:

- Mean bankfull and wetted width;
- Mean bankfull and wetted depth;
- Substrate size and composition;
- Bank stability;
- Instream cover;
- Water temperature;
- Evidence of seepage (watercress, iron staining, bubbling from substrate, etc.)
- Riparian vegetation community;
- Adjacent land use;
- Indicators of fish use (barriers to fish passage, fish observations at time of survey, fisheries records as obtained from MNR during Records Review); and
- Additional wildlife observed during site visits (as obtained from the East Durham Wind Energy Centre Natural Heritage Assessment, LGL 2012).

### 3.1.4 Vegetation Communities

The classification of vegetation communities according to the Ecological Land Classification (ELC) for Southern Ontario (Lee *et.al.*, 1998) was completed for all natural features within a minimum of 120m from the Project Location. Initially ELC was identified to a course community level through interpretation of aerial photographs. Through field investigations the initial classification was refined to ecosite; or, where possible, vegetation type. A unique numerical identity was assigned to each vegetation type and other important features to allow for ELC communities to be easily tracked through the NHA process. The ELC data collected was used to describe riparian vegetation and to characterize features ruled out as water bodies during the site investigation effort. Much of the effort to identify seepage areas within the Study Area was also done through ELC field surveys. The figures that delineate ELC boundaries and the table that describes the composition and attributes of each community are included in Appendix B.

**Table 4: Details of Site Investigations conducted for East Durham Wind Energy Centre**

| Purpose | Location | Summary of Methods (Field notes included in Appendix C) | If investigation was conducted on site | | Sources & Dates of Information Used/Applied | Names of Investigators (see Appendix D for full qualifications) |
|---|---|---|---|---|---|---|
| | | | Date Time Total Hours | Weather | | |
| Reconnaissance of Water Features | General study area bounded by Concession 4 Road, Sideroad 50, Stone Hill Rd. and Camp Oliver Rd. | Comparison of data layers and existing orthoimagery with observed features in the field. Evidence of wildlife use also noted. | Nov.19, 2009 1130-1700 7.5 hours | Mean temperature: 5.8°C | Aerial photography NHIC records (2009) LIO/NRVIS data layers (2009) | AHF, JCN |
| Investigation of Natural Features, Wildlife Habitat (including aquatic habitat) and Vegetation Communities ELC | Along County Rd. 4 between Camp Oliver Rd. & Baptist Church Rd. LT 28-30 Con 2 N of Durham Rd. GLENELG Pt LT 21-27 Con 1 N of Durham Rd. GLENELG PT LT 31-33 Con 1 N of Durham Rd. GLENELG PT LT 34 CON 1 N of Durham Rd GLENELG | Area searches for evidence of wildlife (scat, dens, nests, tracks, egg masses, etc.) within 120m of project components. Documentation of botanical species and classification of vegetation communities using Ecological Land Classification (ELC) for Southern Ontario. | April 28, 2011 10:30 – 17:00 17 hours | Temperature: : +1.7-4.8°C[i] Wind: 28-44 km/hr[1] | Aerial photography Ecological Land Classification for Southern Ontario: First Approximation and Its Application. 1998 Lee at al. Significant Wildlife Habitat Technical Guide, OMNR 2000 | JCN, VLK |

| Purpose | Location | Summary of Methods (Field notes included in Appendix C) | If investigation was conducted on site | | Sources & Dates of Information Used/Applied | Names of Investigators (see Appendix D for full qualifications) |
|---|---|---|---|---|---|---|
| | | | Date Time Total Hours | Weather | | |
| Investigation of Natural Features, Wildlife Habitat (including aquatic habitat) and Vegetation Communities ELC | LT 35 Con 1 S of Durham Rd. GLENELG<br>LT 39-40; PT LT 37-38 CON 1 N of Durham Rd GLENELG | Area searches for evidence of wildlife (scat, dens, nests, tracks, etc.) within 120m of project components.<br>Documentation of botanical species and classification of vegetation communities using Ecological Land Classification (ELC) for Southern Ontario.<br>Surveys for basking reptiles. | May 12, 2011<br>10:30 – 17:00<br>25.5 hours | Temperature: +14.5- 21°C[i]<br>Wind: 9-17 km/hr[i] | Aerial photography<br>Ecological Land Classification for Southern Ontario: First Approximation and Its Application. 1998 Lee at al.<br>Significant Wildlife Habitat Technical Guide, OMNR 2000 | JCN, VLK, AHF |
| Frog Monitoring (amphibian breeding) | LT 21-22 Con 2 N of Durham Rd. GLENELG<br>Pt LT 21-27 Con 1 N of Durham Rd. GLENELG<br>PT LT 31-33 Con 1 N of Durham Rd. GLENELG<br>LT 35 Con 1 S of Durham Rd. GLENELG<br>LT 39-40; PT LT 37-38 CON 1 N of Durham Rd GLENELG | Aural survey for 3 minutes at point count stations following the Marsh Monitoring Program (MMP) protocol for amphibian surveys. Calls were classified according to MMP as level 1, 2 or3. This survey was conducted at air temperatures of 10C. Monitoring stations were located in close proximity to marsh and open water aquatic habitat. | June 2, 2011<br>21:30 – 24:00<br>5 hours | Temperature: 10°C<br>Calm, clear, cool<br>Wind:15-20 km/hr[i] | Marsh Monitoring Program protocol as viewed at: http://www.bsc-eoc.org | MJO, GH |

| Purpose | Location | Summary of Methods (Field notes included in Appendix C) | If investigation was conducted on site | | Sources & Dates of Information Used/Applied | Names of Investigators (see Appendix D for full qualifications) |
|---|---|---|---|---|---|---|
| | | | Date Time Total Hours | Weather | | |
| Frog Monitoring (amphibian breeding) | LT 21-22 Con 2 N of Durham Rd. GLENELG Pt LT 21-27 Con 1 N of Durham Rd. GLENELG PT LT 31-33 Con 1 N of Durham Rd. GLENELG LT 35 Con 1 S of Durham Rd. GLENELG LT 39-40; PT LT 37-38 CON 1 N of Durham Rd GLENELG | Aural survey for 3 minutes at point count stations following the Marsh Monitoring Program (MMP) protocol for amphibian surveys. Calls were classified according to MMP as level 1, 2 or3. This survey was conducted at air temperatures of 14C to 23C. Monitoring stations were located in close proximity to marsh and open water aquatic habitat. | June 15, 2011 21:30 – 24:00 5 hours | Temperature: +14 to 23°C Wind: 2-6 km/hr[i] Calm, clear Full moon | Marsh Monitoring Program protocol as viewed at: http://www.bsc-eoc.org/volunteer/glmmp | MJO, JV |
| Investigation of Natural Features, Wildlife Habitat (including aquatic habitat) and Vegetation Communities ELC | LT 20 Con 1 S of Durham Rd. GLENELG LT 46 Con 1 N of Durham Rd. GLENELG | Area searches for evidence of wildlife (scat, dens, nests, tracks, etc.) within 120m of project components. Documentation of botanical species and classification of vegetation communities using Ecological Land Classification (ELC) for Southern Ontario. | Aug. 31, 2011 10:30 – 18:00 7.5 hours | Temperature: +19 to 24°C[i] Wind: 6-11 km/hr[i] | Aerial photography Ecological Land Classification for Southern Ontario: First Approximation and Its Application. 1998 Lee at al. Significant Wildlife Habitat Technical Guide, OMNR 2000 | JCN, VLK |

| Purpose | Location | Summary of Methods (Field notes included in Appendix C) | If investigation was conducted on site | | Sources & Dates of Information Used/Applied | Names of Investigators (see Appendix D for full qualifications) |
|---|---|---|---|---|---|---|
| | | | Date Time Total Hours | Weather | | |
| Investigation of Natural Features, Wildlife Habitat (including aquatic habitat) and Vegetation Communities ELC | LT 21-22 Con 2 N of Durham Rd. GLENELG Pt LT 21-27 Con 1 N of Durham Rd. GLENELG PT LT 34 CON 1 N of Durham Rd GLENELG | Area searches for evidence of wildlife (scat, dens, nests, tracks, etc.) within 120m of project components. Documentation of botanical species and classification of vegetation communities using Ecological Land Classification (ELC) for Southern Ontario. | Sept. 1, 2011 08:00 – 17:00 9 hours | Temperature: +18 to 24.5°C[i] Wind: 4-11 km/hr[i] | Aerial photography Ecological Land Classification for Southern Ontario: First Approximation and Its Application. 1998 Lee at al. Significant Wildlife Habitat Technical Guide, OMNR 2000 | JCN, VLK |
| Investigation of water features (W49), vegetation communities (ELC). | LT 43-45 CON 1 S of Durham Rd GLENELG | Documentation of botanical species and classification of vegetation communities using Ecological Land Classification (ELC) for Southern Ontario. | Feb. 29, 2012 09:30 – 16:00 6.5 hours | Temperature: -2.5 to 0°C[i] Wind: 11-24 km/hr[i] | Aerial photography Ecological Land Classification for Southern Ontario: First Approximation and Its Application. 1998 Lee at al. | JCN |
| Investigation of water features (W25, W35 and W36), vegetation communities (ELC). | LT 21-22 Con 2 N of Durham Rd. GLENELG LT 39-40; PT LT 37-38 CON 1 N of Durham Rd GLENELG | Documentation of botanical species and classification of vegetation communities using Ecological Land Classification (ELC) for Southern Ontario. | March 1, 2012 09:00 – 15:00 6 hours | Temperature: -0.5 to +1°C[i] Wind: 9-15 km/hr[i] | Aerial photography Ecological Land Classification for Southern Ontario: First Approximation and Its Application. 1998 Lee at al. | JCN |

| Purpose | Location | Summary of Methods (Field notes included in Appendix C) | If investigation was conducted on site | | Sources & Dates of Information Used/Applied | Names of Investigators (see Appendix D for full qualifications) |
|---|---|---|---|---|---|---|
| | | | Date<br>Time<br>Total Hours | Weather | | |
| Investigation of natural and water features (W8, W46), wildlife habitat, and communities. | LT 46 Con 1 N of Durham Rd. GLENELG<br>LT 20 Con 1 S of Durham Rd. GLENELG<br>LT 47 CON 2 S of Durham Rd. GLENELG | Area searches for evidence of wildlife (scat, dens, nests, tracks, etc.) within 120m of project components. | March 8, 2012<br>10:20- 17:00<br>6.7 hours | Temperature: +0.5 to 9.5°C[i]<br>Wind: 17-24 km/hr[i] | Aerial photography<br>Significant Wildlife Habitat Technical Guide (OMNR, 2000) | AHF |
| Investigation of Natural Features, Wildlife Habitat (including aquatic habitat) and Vegetation Communities ELC | LT 43-45 CON 1 S of Durham Rd GLENELG<br>LT 46 Con 1 N of Durham Rd. GLENELG<br>LT 28-30 Con 2 N of Durham Rd. GLENELG<br>PT LT 31-33 Con 1 N of Durham Rd. GLENELG<br>PT LT 34 CON 1 N of Durham Rd GLENELG<br>LT 43-45 CON 1 S of Durham Rd GLENELG<br>PT LT 23-25 Con 4 N of Durham Rd. GLENELG | Documentation of botanical species and classification of vegetation communities using Ecological Land Classification (ELC) for Southern Ontario. Surveys for basking reptiles. | March 22, 2012<br>10:00 – 18:00<br>16 hours | Temperature: +20 to 25°C[i]<br>Wind: 2-15 km/hr[i] | Aerial photography<br>Ecological Land Classification for Southern Ontario: First Approximation and Its Application. 1998 Lee at al. | JCN, VLK |
| Investigation of natural and water (W8, W46) features and wildlife habitat. | LT 39-40; PT LT 37-38 CON 1 N of Durham Rd GLENELG | Area searches for evidence of wildlife (scat, dens, nests, tracks, etc.) within 120m of project components. Searches for amphibian egg masses in woodland ponds, frogs in wetlands and water bodies, and basking reptiles. | May 15, 2012<br>10:00- 15:30<br>5.5 hours | Temperature: +20.5 to 23.5°C[i]<br>Wind: 15-22 km/hr[i] | Aerial photography<br>Significant Wildlife Habitat Technical Guide (OMNR, 2000) | AHF |

| Purpose | Location | Summary of Methods (Field notes included in Appendix C) | If investigation was conducted on site | | Sources & Dates of Information Used/Applied | Names of Investigators (see Appendix D for full qualifications) |
|---|---|---|---|---|---|---|
| | | | Date Time Total Hours | Weather | | |
| Investigation of natural features, wildlife habitat, vegetation communities (ELC), and water bodies. | LT 47 CON 2 S of Durham Rd. GLENELG<br>LT 43-45 CON 1 S of Durham Rd GLENELG<br>PT LT 23-25 Con 4 N of Durham Rd. GLENELG<br>LT 35 Con 1 S of Durham Rd. GLENELG<br>Water bodies along County Rd 4 from Baptist Church Rd to Artemesia/Glenelg Townline | Area searches for evidence of wildlife (scat, dens, nests, tracks, etc.) within 120m of project components.<br>Documentation of botanical species and classification of vegetation communities using Ecological Land Classification (ELC) for Southern Ontario.<br>Investigations of water bodies to document morphology, substrate, and thermal regime and characterize fish habitat.<br>Surveys for basking reptiles. | May 15, 2012<br>10:00-17:45<br>15.5 hours | Temperature: +20.5 to 23.5°C[1]<br>Wind: 15-22 km/hr[i] | Aerial photography<br>Ecological Land Classification for Southern Ontario: First Approximation and Its Application. 1998 Lee at al.<br>Significant Wildlife Habitat Technical Guide, OMNR 2000<br>Adapted Ontario Streams Assessment Protocol (Stanfield, 2010) | JCN, LKR |

| Purpose | Location | Summary of Methods (Field notes included in Appendix C) | If investigation was conducted on site | | Sources & Dates of Information Used/Applied | Names of Investigators (see Appendix D for full qualifications) |
|---|---|---|---|---|---|---|
| | | | Date Time Total Hours | Weather | | |
| Investigation of natural features, wildlife habitat, vegetation communities (ELC), and water bodies. | LT 35 Con 1 S of Durham Rd. GLENELG<br>LT 39-40; PT LT 37-38 CON 1 N of Durham Rd GLENELG<br>LT 43-45 CON 1 S of Durham Rd GLENELG<br>Water bodies along County Rd 4 from Baptist Church Rd to Artemesia/Glenelg Townline | Area searches for evidence of wildlife (scat, dens, nests, tracks, etc.) within 120m of project components.<br>Documentation of botanical species and classification of vegetation communities using Ecological Land Classification (ELC) for Southern Ontario.<br>Investigations of water bodies to document morphology, substrate, and thermal regime and characterize fish habitat.<br>Surveys for basking reptiles. | May 16, 2012<br>08:00-14:30<br>13 hours | Temperature: +5 to 10.5°C[i]<br>Wind: 15-24 km/hr[i]<br>Fog present | Aerial photography<br>Ecological Land Classification for Southern Ontario: First Approximation and Its Application. 1998 Lee at al.<br>Significant Wildlife Habitat Technical Guide, OMNR 2000<br>Adapted Ontario Streams Assessment Protocol (Stanfield, 2010) | JCN, LKR |

| Purpose | Location | Summary of Methods (Field notes included in Appendix C) | If investigation was conducted on site | | Sources & Dates of Information Used/Applied | Names of Investigators (see Appendix D for full qualifications) |
|---|---|---|---|---|---|---|
| | | | Date Time Total Hours | Weather | | |
| Frog Monitoring (amphibian breeding) | LT 39-40; PT LT 37-38 CON 1 N of Durham Rd GLENELG<br>LT 43-45 CON 1 S of Durham Rd GLENELG | Aural survey for 3 minutes at point count stations following the Marsh Monitoring Program (MMP) protocol for amphibian surveys. Calls were classified according to MMP as level 1, 2 or 3. This survey was conducted at air temperatures above 17°C. Monitoring stations were located in close proximity to marsh and open water aquatic habitat. | May 24, 2012<br>20:30 – 24:00<br>7 hours | Temperature: +20.5 to 23°C[i]<br>Wind: 9-11 km/hr[i] | Marsh Monitoring Program protocol as viewed at: http://www.bsc-eoc.org/volunteer/glmmp | AHF, LKR |
| Species at Risk (Birds), general wildlife, watercourses and associated valleylands | LT 21-22 Con 2 N of Durham Rd. GLENELG<br>PT LT 31-33 Con 1 N of Durham Rd. GLENELG<br>PT LT 34 CON 1 N of Durham Rd GLENELG<br>LT 39-40; PT LT 37-38 CON 1 N of Durham Rd GLENELG<br>LT 20 Con 1 S of Durham Rd. GLENELG<br>Pt LT 21-27 Con 1 N of Durham Rd. GLENELG<br>Water bodies along Concession 4 Rd from County Rd. 23 to turbine 15 property. | Investigations of water bodies to document morphology, substrate, and thermal regime and characterize fish habitat. Area searches for evidence of wildlife (scat, dens, nests, tracks, etc.) within 120m of project components. Searches for frogs in wetlands and water bodies, and basking reptiles. | June 14, 2012<br>06:15-13:00<br>20.25 hours | Temperature: +11 to 19°C<br>Wind scale 2 (~6-11 km/hr)<br>Clear skies | SAR survey protocols as discussed with MNR Midhurst SAR Biologist.<br>Aerial photography<br>Significant Wildlife Habitat Technical Guide, OMNR 2000<br>Adapted Ontario Streams Assessment Protocol (Stanfield, 2010) | AHF, EEB, LKR |

| Purpose | Location | Summary of Methods (Field notes included in Appendix C) | If investigation was conducted on site | | Sources & Dates of Information Used/Applied | Names of Investigators (see Appendix D for full qualifications) |
|---|---|---|---|---|---|---|
| | | | Date Time Total Hours | Weather | | |
| Species at Risk (Birds), general wildlife, watercourses and associated valleylands | LT 28-30 Con 2 N of Durham Rd. GLENELG<br>LT 43-45 CON 1 S of Durham Rd GLENELG<br>PT LT 23-25 Con 4 N of Durham Rd. GLENELG<br>LT 47 CON 2 S of Durham Rd. GLENELG<br>LT 35 Con 1 S of Durham Rd. GLENELG<br>Water bodies along Concession 4 Rd from County Rd. 23 to turbine 15 property. | Investigations of water bodies to document morphology, substrate, and thermal regime and characterize fish habitat. Area searches for evidence of wildlife (scat, dens, nests, tracks, etc.) within 120m of project components. Searches for frogs in wetlands and water bodies, and basking reptiles. | June 15, 2012<br>06:20-13:00<br>13.3 hours | Temperature: +22 to 26°C[i]<br>Wind: 19-30 km/hr[i] | SAR survey protocols as discussed with MNR Midhurst SAR Biologist.<br>Aerial photography<br>Significant Wildlife Habitat Technical Guide, OMNR 2000<br>Adapted Ontario Streams Assessment Protocol (Stanfield, 2010) | AHF, LKR |
| Species at Risk (Birds), general wildlife, watercourses and associated valleylands | LT 28-30 Con 2 N of Durham Rd. GLENELG<br>LT 39-40; PT LT 37-38 CON 1 N of Durham Rd GLENELG<br>PT LT 23-25 Con 4 N of Durham Rd. GLENELG<br>LT 46 Con 1 N of Durham Rd. GLENELG<br>LT 47 CON 2 S of Durham Rd. GLENELG<br>Pt LT 21-27 Con 1 N of Durham Rd. GLENELG<br>Water bodies along Baptist Church Rd. from Southline to Northline. | Investigations of water bodies to document morphology, substrate, and thermal regime and characterize fish habitat. Area searches for evidence of wildlife (scat, dens, nests, tracks, etc.) within 120m of project components. Searches for frogs in wetlands and water bodies, and basking reptiles. | June 22, 2012<br>06:00-9:30<br>10.5 hours | Temperature: +16 to 20°C<br>Wind scale 2-3 (~6-13 km/hr)<br>Fog early, then clear | SAR survey protocols as discussed with MNR Midhurst SAR Biologist.<br>Aerial photography<br>Significant Wildlife Habitat Technical Guide, OMNR 2000<br>Adapted Ontario Streams Assessment Protocol (Stanfield, 2010) | AHF, LKR, EEB |

| Purpose | Location | Summary of Methods (Field notes included in Appendix C) | If investigation was conducted on site | | Sources & Dates of Information Used/Applied | Names of Investigators (see Appendix D for full qualifications) |
|---|---|---|---|---|---|---|
| | | | Date<br>Time<br>Total Hours | Weather | | |
| Investigation of natural features, wildlife habitat, vegetation communities (ELC), plant and bird Species at Risk, water bodies and valleylands. | LT 28-30 Con 2 N of Durham Rd. GLENELG<br>PT LT 31-33 Con 1 N of Durham Rd. GLENELG<br>PT LT 34 CON 1 N of Durham Rd GLENELG<br>LT 43-45 CON 1 S of Durham Rd GLENELG | Systematic walking search looking for plant Species at Risk within 25 m of project components.<br>Documentation of wildlife use (area searches) and ELC on accessible properties.<br>Investigations of water bodies to document morphology, substrate, and thermal regime and characterize fish habitat (W22).<br>Documentation of botanical species and classification of vegetation communities using Ecological Land Classification (ELC) for Southern Ontario. | June 27, 2012<br>07:00 – 16:00<br>18 hours | Temperature: +15 to 24°C[i]<br>Wind: 6-15 km/hr[i] | Aerial photography<br>Ecological Land Classification for Southern Ontario: First Approximation and Its Application. 1998 Lee at al.<br>Significant Wildlife Habitat Technical Guide, OMNR 2000<br>Adapted Ontario Streams Assessment Protocol (Stanfield, 2010) | JCN, MJO |

| Purpose | Location | Summary of Methods (Field notes included in Appendix C) | If investigation was conducted on site | | Sources & Dates of Information Used/Applied | Names of Investigators (see Appendix D for full qualifications) |
|---|---|---|---|---|---|---|
| | | | Date Time Total Hours | Weather | | |
| Species at Risk (Birds), General wildlife, watercourses | LT 28-30 Con 2 N of Durham Rd. GLENELG<br>LT 39-40; PT LT 37-38 CON 1 N of Durham Rd GLENELG<br>LT 47 CON 2 S of Durham Rd. GLENELG | Species at Risk surveys were conducted in consultation with Midhurst District MNR SAR Biologist.<br>Investigations of water bodies using an adapted Ontario Streams Assessment Protocol (Stanfield, 2010) to document morphology, substrate, and thermal regime and characterize fish habitat.<br>Area searches for evidence of wildlife (scat, dens, nests, tracks, etc.) within 120m of project components. | June 29, 2012<br>6:10-10:50<br>9.25 hours | Temperature: +16.5 to 20.5°C<br>Wind scale 2-3 (~6-19 km/hr)<br>Clear skies | SAR survey protocols as discussed with MNR Midhurst SAR Biologist.<br>Aerial photography<br>Significant Wildlife Habitat Technical Guide, OMNR 2000<br>Adapted Ontario Streams Assessment Protocol (Stanfield, 2010) | DTS, EEB |

| Purpose | Location | Summary of Methods (Field notes included in Appendix C) | If investigation was conducted on site | | Sources & Dates of Information Used/Applied | Names of Investigators (see Appendix D for full qualifications) |
|---|---|---|---|---|---|---|
| | | | Date Time Total Hours | Weather | | |
| Species at Risk (Birds), General wildlife, watercourses and associated valleylands | PT LT 23-25 Con 4 N of Durham Rd. GLENELG<br>Pt LT 21-27 Con 1 N of Durham Rd. GLENELG<br>Watercourses along Concession4 Road | Species at Risk surveys were conducted in consultation with Midhurst District MNR SAR Biologist.<br>Investigations of water bodies using an adapted Ontario Streams Assessment Protocol (Stanfield, 2010) to document morphology, substrate, thermal regime and characterize fish habitat.<br>Area searches for evidence of wildlife (scat, dens, nests, tracks, etc.) within 120m of project components. | July 5, 2012<br>06:15 – 09:30<br>6.5 hours | Temperature: +18 to 28°C[i]<br>Wind: 2-6 km/hr[i] | SAR survey protocols as discussed with MNR Midhurst SAR Biologist.<br>Aerial photography<br>Significant Wildlife Habitat Technical Guide, OMNR 2000<br>Adapted Ontario Streams Assessment Protocol (Stanfield, 2010) | AHF, LKR |

| Purpose | Location | Summary of Methods (Field notes included in Appendix C) | If investigation was conducted on site | | Sources & Dates of Information Used/Applied | Names of Investigators (see Appendix D for full qualifications) |
|---|---|---|---|---|---|---|
| | | | Date Time Total Hours | Weather | | |
| Surveys for plant Species at Risk, Wildlife, ELC and wetlands | PT LT 23-25 Con 4 N of Durham Rd. GLENELG | Systematic walking search looking for plant Species at Risk within 25 m of project components.<br>Documentation of wildlife use (area searches) and ELC on accessible properties.<br>Documentation of botanical species and classification of vegetation communities using Ecological Land Classification (ELC) for Southern Ontario. Surveys for basking reptiles and wildlife.<br>Area searches for evidence of wildlife (scat, dens, nests, tracks, etc.) within 120m of project components. | July 11, 2012<br>08:00 - 15:30<br>15 hours | Temperature: +21 to 28.5°C[i]<br>Wind: 2-9 km/hr[i] | Aerial photography<br>Ecological Land Classification for Southern Ontario: First Approximation and Its Application. 1998 Lee at al.<br>Significant Wildlife Habitat Technical Guide, OMNR 2000<br>Ontario Wetland Evaluation System 3rd Edition. Southern Manual. 1993. OMNR #50254-1 | JCN, VLK |

| Purpose | Location | Summary of Methods (Field notes included in Appendix C) | If investigation was conducted on site | | Sources & Dates of Information Used/Applied | Names of Investigators (see Appendix D for full qualifications) |
|---|---|---|---|---|---|---|
| | | | Date Time Total Hours | Weather | | |
| Species at Risk (Birds) General wildlife/watercourse (W18) | LT 20 Con 1 S of Durham Rd. GLENELG<br>LT 47 CON 2 S of Durham Rd. GLENELG | Investigations of water bodies using an adapted Ontario Streams Assessment Protocol (Stanfield, 2010) to document morphology, substrate, and thermal regime and characterize fish habitat.<br>Species at Risk surveys were conducted in consultation with Midhurst District MNR SAR Biologist. Area searches for evidence of wildlife (scat, dens, nests, tracks, etc.) within 120m of project components. | July 13, 2012<br>06:00 – 11:15<br>10.5 hours | Temperature: +17- 28.5 °C<br>Wind scale 0 (~ 0-2 km/hr)<br>Clear skies | SAR survey protocols as discussed with MNR Midhurst SAR Biologist.<br>Aerial photography<br>Significant Wildlife Habitat Technical Guide, OMNR 2000<br>Adapted Ontario Streams Assessment Protocol (Stanfield, 2010) | AHF, EEB |

| Purpose | Location | Summary of Methods (Field notes included in Appendix C) | If investigation was conducted on site | | Sources & Dates of Information Used/Applied | Names of Investigators (see Appendix D for full qualifications) |
|---|---|---|---|---|---|---|
| | | | Date Time Total Hours | Weather | | |
| ELC, general wildlife and Wetland Evaluation | PT LT 23-25 Con 4 N of Durham Rd. GLENELG<br>LT 43-45 CON 1 S of Durham Rd GLENELG<br>Roadside survey for ELC and plant Species at Risk along County Road 23 from County Road 4 to Concession 4 Road | Documentation of botanical species and classification of vegetation communities using Ecological Land Classification (ELC) for Southern Ontario.<br>Collection of data pertaining to wetland evaluations as per the Ontario Wetland Evaluation System for Southern Ontario. Surveys for basking reptiles and wildlife.<br>Area searches for evidence of wildlife (scat, dens, nests, tracks, etc.) within 120m of project components. | July 18, 2012<br>10:30 – 17:00<br>17 hours | Temperature: +23.5 to 27.5°C[i]<br>Wind: 6-11 km/hr[i] | Aerial photography<br>Ecological Land Classification for Southern Ontario: First Approximation and Its Application. 1998 Lee at al.<br>Ontario Wetland Evaluation System 3rd Edition. Southern Manual. 1993. OMNR #50254-1<br>Significant Wildlife Habitat Technical Guide, OMNR 2000 | JCN, VLK |

| Purpose | Location | Summary of Methods (Field notes included in Appendix C) | If investigation was conducted on site | | Sources & Dates of Information Used/Applied | Names of Investigators (see Appendix D for full qualifications) |
|---|---|---|---|---|---|---|
| | | | Date Time Total Hours | Weather | | |
| ELC, general wildlife and Wetland Evaluation | PT LT 23-25 Con 4 N of Durham Rd. GLENELG<br>LT 43-45 CON 1 S of Durham Rd GLENELG<br>Roadside survey for ELC and plant Species at Risk along County Road 23 from County Road 4 to Concession 4 Road. | Documentation of botanical species and classification of vegetation communities using Ecological Land Classification (ELC) for Southern Ontario.<br>Collection of data pertaining to wetland evaluations as per the Ontario Wetland Evaluation System for Southern Ontario. Surveys for basking reptiles and wildlife.<br>Area searches for evidence of wildlife (scat, dens, nests, tracks, etc.) within 120m of project components. | July 19, 2012<br>08:00 – 16:00<br>16 hours | Temperature: +18.5 to 21.5°C[i]<br>Wind: 11-17 km/hr[i] | Aerial photography<br>Ecological Land Classification for Southern Ontario: First Approximation and Its Application. 1998 Lee at al.<br>Ontario Wetland Evaluation System 3rd Edition. Southern Manual. 1993. OMNR #50254-1<br>Significant Wildlife Habitat Technical Guide, OMNR 2000 | JCN, VLK |
| Species at Risk birds, general wildlife, basking turtles, ponds. | LT 28-30 Con 2 N of Durham Rd. GLENELG<br>LT 39-40; PT LT 37-38 CON 1 N of Durham Rd GLENELG<br>LT 47 CON 2 S of Durham Rd. GLENELG | Species at Risk surveys were conducted in consultation with Midhurst District MNR SAR Biologist. Surveys for basking reptiles and wildlife. | July 24, 2012<br>07:00–11:35<br>9 hours | Temperature: +20 to 22.5°C[i]<br>Wind: 9-20 km/hr[i] | SAR survey protocols as discussed with MNR Midhurst SAR Biologist.<br>Aerial photography<br>Significant Wildlife Habitat Technical Guide, OMNR 2000 | AHF, LKR |

| Purpose | Location | Summary of Methods (Field notes included in Appendix C) | If investigation was conducted on site | | Sources & Dates of Information Used/Applied | Names of Investigators (see Appendix D for full qualifications) |
|---|---|---|---|---|---|---|
| | | | Date Time Total Hours | Weather | | |
| ELC, general wildlife and Wetland Evaluation | LT 35 Con 1 S of Durham Rd. GLENELG<br>LT 47 CON 2 S of Durham Rd. GLENELG | Documentation of botanical species and classification of vegetation communities using Ecological Land Classification (ELC) for Southern Ontario.<br>Collection of data pertaining to wetland evaluations as per the Ontario Wetland Evaluation System for Southern Ontario. Surveys for basking reptiles and wildlife.<br>Area searches for evidence of wildlife (scat, dens, nests, tracks, etc.) within 120m of project components. | July 24, 2012<br>10:30 – 15:00<br>13 hours | Temperature: +21 to 23°C[i]<br>Wind: 15-20 km/hr[i] | Aerial photography<br>Ecological Land Classification for Southern Ontario: First Approximation and Its Application. 1998 Lee at al.<br>Ontario Wetland Evaluation System 3rd Edition. Southern Manual. 1993. OMNR #50254-1<br>Significant Wildlife Habitat Technical Guide, OMNR 2000 | JCN, VLK |

| Purpose | Location | Summary of Methods (Field notes included in Appendix C) | If investigation was conducted on site | | Sources & Dates of Information Used/Applied | Names of Investigators (see Appendix D for full qualifications) |
|---|---|---|---|---|---|---|
| | | | Date Time Total Hours | Weather | | |
| Species at Risk birds, general wildlife, watercourses and associated valleylands | LT 28-30 Con 2 N of Durham Rd. GLENELG Water bodies along County Rd. 4, Southline, Boot Jack Ranch Rd. and Concession 4 Road. | Species at Risk surveys were conducted in consultation with Midhurst District MNR SAR Biologist. Investigations of water bodies using an adapted Ontario Streams Assessment Protocol (Stanfield, 2010) to document morphology, substrate, and thermal regime and characterize fish habitat. Area searches for evidence of wildlife (scat, dens, nests, tracks, etc.) within 120m of project components. | August 1, 2012 06:30 – 10:45 8.5 hours | Temperature: +19 to 23.5°C[i] Wind: 6-13 km/hr[i] | SAR survey protocols as discussed with MNR Midhurst SAR Biologist. Aerial photography Ecological Land Classification for Southern Ontario: First Approximation and Its Application. 1998 Lee at al. Ontario Wetland Evaluation System 3rd Edition. Southern Manual. 1993. OMNR #50254-1 Significant Wildlife Habitat Technical Guide, OMNR 2000 | LKR, AHF |

| Purpose | Location | Summary of Methods (Field notes included in Appendix C) | If investigation was conducted on site | | Sources & Dates of Information Used/Applied | Names of Investigators (see Appendix D for full qualifications) |
|---|---|---|---|---|---|---|
| | | | Date Time Total Hours | Weather | | |
| Alternative Site Investigation of wetland features along Southline, ELC and wetland surveys on other accessible properties. | LT 35 Con 1 S of Durham Rd. GLENELG<br>LT 47 CON 2 S of Durham Rd. GLENELG<br>Roadside survey along Southline at T13, north on Boot Jack Ranch Road to County Road 4 | Documentation of botanical species and classification of vegetation communities using Ecological Land Classification (ELC) for Southern Ontario.<br>Collection of data pertaining to wetland evaluations as per the Ontario Wetland Evaluation System for Southern Ontario. Surveys for basking reptiles and wildlife.<br>Area searches for evidence of wildlife (scat, dens, nests, tracks, etc.) within 120m of project components. | August 8, 2012<br>10:30 – 18:00<br>15 hours | Temperature: +22.5 to 26°C[i]<br>Wind: 9-13 km/hr[i] | Aerial photography<br>Ecological Land Classification for Southern Ontario: First Approximation and Its Application. 1998 Lee at al.<br>Significant Wildlife Habitat Technical Guide, OMNR 2000 | JCN, VLK |

| Purpose | Location | Summary of Methods (Field notes included in Appendix C) | If investigation was conducted on site | | Sources & Dates of Information Used/Applied | Names of Investigators (see Appendix D for full qualifications) |
|---|---|---|---|---|---|---|
| | | | Date<br>Time<br>Total Hours | Weather | | |
| Species at Risk, ELC, general wildlife and wetland evaluations | LT 21-22 Con 2 N of Durham Rd. GLENELG<br>PT LT 23-25 Con 4 N of Durham Rd. GLENELG<br>LT 28-30 Con 2 N of Durham Rd. GLENELG<br>LT 43-45 CON 1 S of Durham Rd GLENELG | Systematic walking search looking for plant Species at Risk within 25 m of project components.<br>Documentation of wildlife use (area searches) and classification of vegetation communities using Ecological Land Classification (ELC) for Southern Ontario.<br>Collection of data pertaining to wetland evaluations as per the Ontario Wetland Evaluation System for Southern Ontario. Surveys for basking reptiles and wildlife.<br>Area searches for evidence of wildlife (scat, dens, nests, tracks, etc.) within 120m of project components. | August 9, 2012<br>08:00 – 15:30<br>15 hours | Temperature: +16 to 18.5°C[i]<br>Wind: 2-9 km/hr[i] | Aerial photography<br>Ecological Land Classification for Southern Ontario: First Approximation and Its Application. 1998 Lee at al.<br>Significant Wildlife Habitat Technical Guide, OMNR 2000.<br>Ontario Wetland Evaluation System 3rd Edition. Southern Manual. 1993. OMNR #50254-1 | JCN, VLK |

| Purpose | Location | Summary of Methods (Field notes included in Appendix C) | If investigation was conducted on site | | Sources & Dates of Information Used/Applied | Names of Investigators (see Appendix D for full qualifications) |
|---|---|---|---|---|---|---|
| | | | Date Time Total Hours | Weather | | |
| Alternative Site Investigation of wetland features along Concession 4 Road | Roadside survey along Concession 4 Road from County Road 23 to T15 property. | Documentation of botanical species and classification of vegetation communities using Ecological Land Classification (ELC) for Southern Ontario by roadside survey. Surveys for basking reptiles and wildlife. | August 10, 2012<br>07:00 – 15:00<br>16 hours | Temperature: +16 to 20°C[i]<br>Wind: 14-19 km/hr[i] | Aerial photography<br>Ecological Land Classification for Southern Ontario: First Approximation and Its Application. 1998 Lee at al.<br>Significant Wildlife Habitat Technical Guide, OMNR 2000 | JCN, VLK |

Notes: i) Data obtained from Environment Canada website (www.climate.weatheroffice.gc.ca), Historical Weather Data-Mount Forest Station and field notes (Appendix B).
ii) Personnel codes for LGL Staff ( see Appendix C for full list of qualifications):

| | |
|---|---|
| AHF | Allison Featherstone |
| DTS | Dana Summach |
| EEB | Erin Blenkhorn |
| GH | Geoff Hughes |
| JCN | Jennifer Nöel |
| JV | Judson Venier |
| LKR | Lynette Renzetti |
| MJO | Martin O'Halloran |
| VLK | Victoria Kennedy |

| Project Component | Lot and Concession Number of Associated Parcels | Project Component | Lot and Concession Number of Associated Parcels |
|---|---|---|---|
| Substation | LT 46 Con 1 N of Durham Rd. GLENELG | Turbine 8 and access road | LT 39-40; PT LT 37-38 CON 1 N of Durham Rd GLENELG |
| Laydown Construction Area | LT 46 Con 1 N of Durham Rd. GLENELG | Turbine 10 and access road | LT 20 Con 1 S of Durham Rd. GLENELG |
| Turbine 1 and access road | LT 21-22 Con 2 N of Durham Rd. GLENELG | Turbine 11 and access road | LT 35 Con 1 S of Durham Rd. GLENELG |
| Turbine 2 and access road | LT 28-30 Con 2 N of Durham Rd. GLENELG | Turbines 12, 14, and 15 and access roads | PT LT 23-25 Con 4 N of Durham Rd. GLENELG |
| Turbines 3, 4, and 5 and access roads | Pt LT 21-27 Con 1 N of Durham Rd. GLENELG | Turbine 13 and access road | LT 47 CON 2 S of Durham Rd. GLENELG |
| Turbine 6 and access road | PT LT 31-33 Con 1 N of Durham Rd. GLENELG | Turbines 16 and 17 and access roads | LT 43-45 CON 1 S of Durham Rd GLENELG |
| Turbine 7 and access road | PT LT 34 CON 1 N of Durham Rd GLENELG | | |

## 3.2 RESULTS OF SITE INVESTIGATION

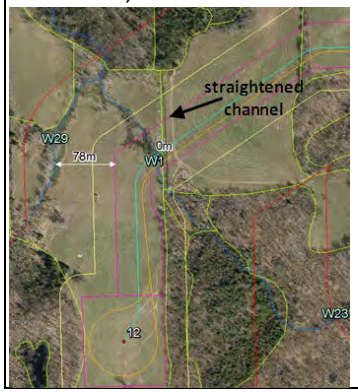
A broader area was initially surveyed in site investigation as the layout for the Project had not yet been finalized. For this reason some of the water features initially surveyed were determined later in this stage to be greater than 120m from the Project Location; and not carried forward for further investigation. The results of site investigation are provided in Table 5 for all features identified through records review and site investigation. Table 5 provides mapping of the location and distance of each feature to the project location. As well, data pertaining to land and water conditions, dates of the surveys conducted, photographic record of accessible features, and the rationale of whether or not a feature was determined to fit the description of a water body under O. Reg. 359/09 are included. Water features determined to fit the description of any of the following were not further considered in the Water Body Report:

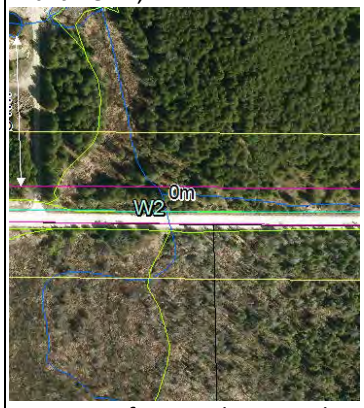
- grassed waterways;
- temporary channels for surface drainage, such as furrows or shallow channels that can be tilled and driven through;
- rock chutes and spillways;
- roadside ditches that do not contain a permanent or intermittent stream;
- temporarily ponded areas that are normally farmed;
- dugout ponds;
- 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; or,
- channels/features dominated by plant communities that require or prefer the presence of water or continuously saturated soil to survive.

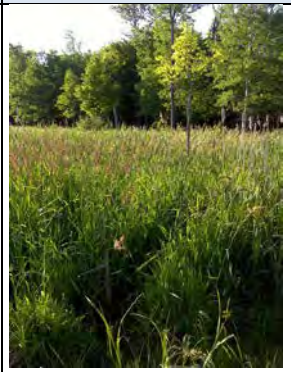
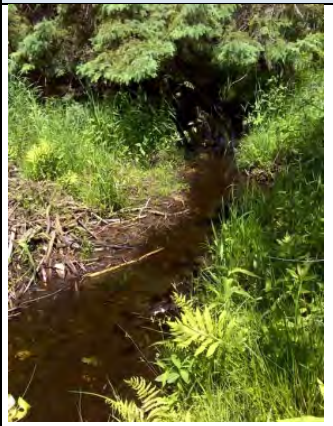
Many of the features included in Table 5 were also considered within the NHA. Where this was the case, reference to the ELC unit is included and an indication of how the feature was further addressed in the NHA is provided.

A total of 52 water features were identified through Records Review and Site Investigation and the results of surveys determined that 33 of those did not meet the definition of a water body under the REA regulation. Those features determined not to comply with the water body definition were dugout ponds, agricultural swales under active tillage and wetland features dominated by hydrophytic vegetation. A total of 13 intermittent or permanents streams, 5 seepage areas, and 3 natural ponds were identified and further addressed within the Water Body Report. In two cases features were determined to be both areas of seepage and permanent streams (W2 and W17).

**Table 5: Results of Site Investigations of Water Features**

| Feature ID & Distance to Project Component (refer to Figures 4-7 for location of each water feature) | Description of Water Feature (ELC units shown on Figures a-c in Appendix B) | Date of Field Investigation (field notes in Appendix C0 | Photographic Records from Field Investigation | | Type of REA Water Body Feature (as defined by O. Reg. 359/09) |
|---|---|---|---|---|---|
| | | | Upstream | Downstream | |
| Feature ID (source of information) | W1, W2, W23, W29 (NRVIS data layer (MNR), aerial photography) | | | | |
|  W23 – 99m from turbine 15 and associated access road and underground electrical collection;  | Three separate locations (W1, W2, and W29) along the same unnamed tributary to the Saugeen River were investigated based on information obtained through Records Review. No property access was provided north of Concession 4 Road and for that reason the survey of the downstream portion of W2 was conducted from roadside.<br><br>According to NRVIS data this feature originates at W23 which was determined through site investigation to be a willow thicket and red maple swamp (ELC unit 120) and continues through a deciduous swamp feature (ELC unit 118) dominated by Red Maple to cross an existing farm lane at W1. NRVIS data indicates that the feature continues in a northwest direction through the agricultural field (W29) to a tamarack balsam fir coniferous swamp feature (ELC unit 242). | May 15, 2012<br>June 14, 2012<br>June 15, 2012<br>July 5, 2012 |  ELC unit 120 (W23) – photo: May 15, 2012<br><br>  W1 has been replaced with a staightened, grassed channel in agricultural field of tilled crop and pasture. Approximately 5cm of water was pooled in the channel on May 15, 2012. On following visits the channel was dry. |  W2 - Water pooling on upstream of Concession 4 Road at W2 (photo: June 14, 2012). | W1= not carried forward as a water body **W2= permanent stream and seepage area** W23= not carried forward as a water body W29= not carried forward as a water body |

| Feature ID & Distance to Project Component (refer to Figures 4-7 for location of each water feature) | Description of Water Feature (ELC units shown on Figures a-c in Appendix B) | Date of Field Investigation (field notes in Appendix C0 | Photographic Records from Field Investigation | | Type of REA Water Body Feature (as defined by O. Reg. 359/09) |
|---|---|---|---|---|---|
| | | | Upstream | Downstream | |
| W1 - 0m from underground collection and access road; W29 - 78m from underground collection and access road to Turbine 12;<br>  <br>W2 - 0m from underground collection line in existing road right of way. | Site investigation determined that W1 as it appeared on LIO mapping had been replaced with an artificially straightened, grassed channel through an active agricultural field between two low lying wetland features (ELC units 118 and 242). No flow was detected at the time of survey; approximately 5 cm of standing water was documented within the grassed channel in May 2012. Channel was dry on subsequent visits (June/July 2012).<br><br>W23 was determined to be a significant wetland feature and was addressed as such in the NHA; W1 was determined to be a grassed channel under agricultural use, and at W29 although soils were documented as saturated, no standing or flowing water was observed during site investigation, such that W29 was determined to be a temporary drainage area during high flow events that was being used agriculturally as part of a tilled fields and as grazing pasture. W1, W23 and W29 | | Photo taken facing north from W1.<br>  <br>  <br>Existing farm land crossing of W1 - water collecting in grassy vegetation on north west (downstream) side of existing farm lane crossing on May 15, 2012 (top); channel dry on July 5, 2012 (bottom). |  <br>W2 - Downstream side (North) of Concession 4 Road channel narrows and flows into a white cedar coniferous swamp (photo: June 14, 2012). | |

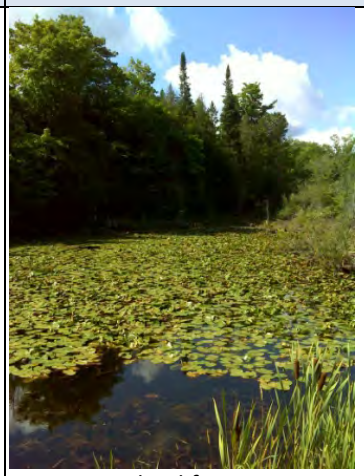
| Feature ID & Distance to Project Component (refer to Figures 4-7 for location of each water feature) | Description of Water Feature (ELC units shown on Figures a-c in Appendix B) | Date of Field Investigation (field notes in Appendix C0 | Photographic Records from Field Investigation | | Type of REA Water Body Feature (as defined by O. Reg. 359/09) |
|---|---|---|---|---|---|
| | | | Upstream | Downstream | |
| | were determined not to conform to the definition of a 'water body' as outlined in O. Reg. 359/09.<br><br>W2 was documented during site investigation as a permanent stream flowing through a culvert under Concession 4 Rd. from an upstream tamarack/ balsam fir coniferous swamp (ELC unit 272) and willow swamp thicket (ELC unit 297) to a white cedar coniferous swamp on the north side of the road. The channel is undefined and water pools upstream of Concession 4 Road at W2. North of the road the watercourse continues as a defined channel. Riparian vegetation at road crossing of W2 is limited to shrubby vegetation including willow and dogwood that provides little stream cover. Downstream of W2 stream cover is more pronounced with cedar as the dominant vegetation.<br>The following describes the water feature at W2:<br>Upstream:<br>Water pools upstream of Conc. | |  <br>South side of W1 – grasses and cattail vegetation on upstream side of farm lane at W1. Feature identified as a red maple deciduous swamp and treated as a significant wetland within the NHA (photo: June 15, 2012). |  <br>W2 Channel narrows and becomes more defined downstream of Concession 4 Road (photo: June 14, 2012) | |

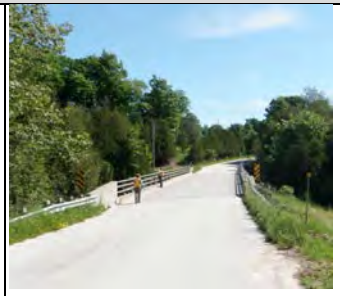
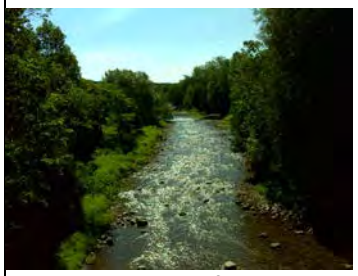
| Feature ID & Distance to Project Component (refer to Figures 4-7 for location of each water feature) | Description of Water Feature (ELC units shown on Figures a-c in Appendix B) | Date of Field Investigation (field notes in Appendix C0 | Photographic Records from Field Investigation | | Type of REA Water Body Feature (as defined by O. Reg. 359/09) |
|---|---|---|---|---|---|
| | | | Upstream | Downstream | |
| | 4 Rd. (bankfull width =4m) and has an oily sheen; substrate shows iron staining (interpreted as evidence of groundwater seepage).<br>Downstream :<br>Wetted width = 0.8m<br>Bankfull width (at roadside) = 1.2m<br>Wetted depth = 0.06m<br>Predominantly fine, organic substrate.<br>Woody debris is the only form of cover at roadside, vegetation provides additional cover downstream.<br>Water temperature = 17C (June 14, 20120)<br>Several mink frog, green frog, and leopard frog, also 1 minnow observed.<br>No detectable flow at time of survey.<br><br>W2 was classified as a permanent stream and seepage area. | |  <br>W29 on July 5, 2012 – under agricultural use as pasture. Soils moist but no standing water.<br>  <br>Looking south from ELC unit 115 to W29 on July 5, 2012 – under agricultural use as pasture. Evidence of wet soils in spring, no open water feature. | | |

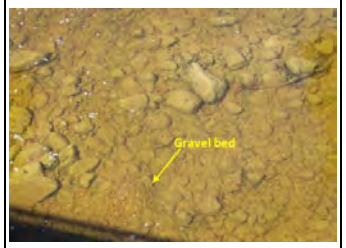
| Feature ID & Distance to Project Component (refer to Figures 4-7 for location of each water feature) | Description of Water Feature (ELC units shown on Figures a-c in Appendix B) | Date of Field Investigation (field notes in Appendix C0 | Photographic Records from Field Investigation | | Type of REA Water Body Feature (as defined by O. Reg. 359/09) |
|---|---|---|---|---|---|
| | | | Upstream | Downstream | |
| Feature ID (source of information) | W3, W33 (NRVIS data layer (MNR), aerial photography) | | | | |
|  W3 - 0m from underground collection line in existing road right of way;<br>W33 – 10m from underground collection line in existing road right of way. | Two features along the same watercourse were identified through Records Review and investigated further: a pond (W33) and stream feature (W3). Property access was not provided for these features; and, therefore site investigation was conducted from roadside.<br><br>No surface water feature was found at W33,; this feature was documented as part of a willow swamp thicket (ELC unit 294) during site investigation. A culvert was documented at W3 during site investigation. The culvert was buried and dry; grasses were growing adjacent to the culvert on the north side of the road; some evidence that water may collect on south side of road during periods of spring melt. This culvert crossing appears to provide for pooling of precipitation and meltwater at roadside and connects to willow swamp thicket on south side of road (ELC unit 294). W33 was treated as wetland | June 14, 2012 |  Buried culvert on north side of Concession 4 Road at W3 (photo: June 14, 2012).<br>  No defined channel or pond feature found at W33. This feature is part of ELC unit 294 (SWT2-2) and was addressed as a wetland feature in the NHA for the Project (photo: June 14, 2012). |  Culvert somewhat buried and dry on south side of Concession 4 Road. Grasses in channel suggest pooling of water under spring melt conditions (photo: June 14, 2012).<br>  No defined channel on north side of Concession 4 Road at W3 (photo: June 14, 2012). | W3= not carried forward as a water body<br>W33= not carried forward as a water body |

| Feature ID & Distance to Project Component (refer to Figures 4-7 for location of each water feature) | Description of Water Feature (ELC units shown on Figures a-c in Appendix B) | Date of Field Investigation (field notes in Appendix C0 | Photographic Records from Field Investigation | | Type of REA Water Body Feature (as defined by O. Reg. 359/09) |
|---|---|---|---|---|---|
| | | | Upstream | Downstream | |
| | feature and addressed within the NHA for the Project. W3 and W33 were determined not to conform to the definition of a 'water body' as outlined in O. Reg. 359/09. | | | | |

| Feature ID & Distance to Project Component (refer to Figures 4-7 for location of each water feature) | Description of Water Feature (ELC units shown on Figures a-c in Appendix B) | Date of Field Investigation (field notes in Appendix C0 | Photographic Records from Field Investigation | | Type of REA Water Body Feature (as defined by O. Reg. 359/09) |
|---|---|---|---|---|---|
| | | | Upstream | Downstream | |
| Feature ID (source of information) | W4, W30 (NRVIS data layer (MNR), aerial photography) | | | | |
|  W4 - 0m from underground electrical collection in existing road right of way;<br>W30 - 0m from underground electrical collection in existing road right of way. | Two features along the same watercourse were identified through Records Review and investigated further: a pond (W30) and stream feature (W4). Property access was not provided for the properties where these features were located and for that reason a roadside survey was conducted.<br><br>W30 was located on the upstream side of Concession 4 Rd. The feature was documented during ELC surveys as unit 288 – a forb shallow marsh. The open water portion of the feature is dominated by bull-head pond lily (Nuphar variegate) with occasional broad-leaved cattails. Pussy willow, Lance-leaved aster, and spotted joe-pye weed are found along the edges. Approximately 90% of the surface area of W30 was covered with lily pads. This feature was treated as a wetland feature and addressed within the NHA for the Project. W30 was determined not to | June 14, 2012<br>August 1, 2012 |  Roadside channel on south side of Concession 4 Road just upstream of W4 crossing – dominated by emergent vegetation (photo: August 1, 2012).<br>  Culvert (W4) conveys water from wetland on south side of road to wetland on north side of road (photo: June 14, 2012). |  Wetland feature (ELC unit 286) on north side of Concession 4 Road (photo: June 14, 2012).<br>  W4 – culvert on north side conveys water to wetland feature. | **W4= intermittent stream**<br>W30= not carried forward as a water body |

| Feature ID & Distance to Project Component (refer to Figures 4-7 for location of each water feature) | Description of Water Feature (ELC units shown on Figures a-c in Appendix B) | Date of Field Investigation (field notes in Appendix C0 | Photographic Records from Field Investigation | | Type of REA Water Body Feature (as defined by O. Reg. 359/09) |
|---|---|---|---|---|---|
| | | | Upstream | Downstream | |
| | conform to the definition of a 'water body' as outlined in O. Reg. 359/09.<br>A culvert (W4) conveys water from W30 to an ill-defined channel within a tamarack balsam fir coniferous swamp on the north side of Concession 4 Road. The portion of channel visible on the north side of the road was poorly defined, approximately 10cm deep with riparian vegetation consiting of grasses with a canopy of tamarack, balsam fir, and occaisional red maple and black ash. Fry and tadpoles were observed in the channel during June 14, 2012 site investigation. Bankfull width at roadside 2m, narrows to approximately 0.4m downstrem. Water temperature was 18C (June 14, 2012). This feature was treated as a significant wetland feature and addressed within the NHA for the Project. W4 was also characterized as an intermittent stream. | |  <br>W30 – wetland feature (photo: August 1, 2012). |  <br>W4 –culvert sits high in water, perched under low flow conditions creating barrier to fish movement. | |

| Feature ID & Distance to Project Component (refer to Figures 4-7 for location of each water feature) | Description of Water Feature (ELC units shown on Figures a-c in Appendix B) | Date of Field Investigation (field notes in Appendix C0 | Photographic Records from Field Investigation | | Type of REA Water Body Feature (as defined by O. Reg. 359/09) |
|---|---|---|---|---|---|
| | | | Upstream | Downstream | |
| Feature ID (source of information) | W5, W21, W22 (Records Review, NRVIS data layer (MNR), aerial photography) | | | | |
|  W5 - 0m from underground collection line within existing road right of way (installed through attachment to bridge structure or directional drilling);<br>  W21 – 34m from underground electrical collection line within existing road right of way; | 3 locations along the Upper Saugeen River were identified through Records Review to be within 120m of the Project Location and investigated further: W5, W21 and W22. Property access was not provided for the properties where W5 and W21 were located; however, crossings of the Saugeen exist at both of these sites in the form of road and bridge structures. The assessment of these water features was conducted within the road right of way at the existing bridge crossings.<br><br>The following details were documented:<br>W5: bankfull width = 16-17 m<br>Bankfull depth = 1-1.5m<br>Banks are stable (include riprap at the bridge crossing);<br>substrate is comprised mostly of cobble and boulder; little instream cover in the form of vegetation is available;<br>combination of riffle, run and flats. Undercut bank of | June 14, 2012<br>June 27, 2012<br>July 5, 2012 |  W5 – existing bridge structure (photo: June 14, 2012).<br><br>  W5 – upstream of bridge on Concession 4 Road (photo: June 14, 2012). |  W5 – Saugeen River downstream of bridge on Concession 4 Road (photo: June 14, 2012).<br>  W5 – limestone bank on downstream side of crossing (photo: July 5, 2012) | **W5 – permanent stream**<br>**W21 – permanent stream**<br>**W22 – permanent stream** |

| Feature ID & Distance to Project Component (refer to Figures 4-7 for location of each water feature) | Description of Water Feature (ELC units shown on Figures a-c in Appendix B) | Date of Field Investigation (field notes in Appendix C0 | Photographic Records from Field Investigation | | Type of REA Water Body Feature (as defined by O. Reg. 359/09) |
|---|---|---|---|---|---|
| | | | Upstream | Downstream | |
|  W22 –80m from construction disturbance of Turbine 7 and associated access road and underground electrical collection line. | limestone on downstream side of bridge provides instream cover. Riparian vegetation is limited on the west side of the river as land use includes the manicured grounds of a church and cemetery. A narrow band of coniferous forest present on the upstream side of the bridge (ELC unit 404) on the west bank, is dominated by Eastern white cedar with canopy cover that varies from no understory or ground cover to meadow species within the gaps. Similarly, the riparian vegetation on the east side of the river is a narrow band of coniferous forest (ELC unit 277/275) with the canopy and subcanopy layers dominated by white cedar, and a thin understory including choke cherry, common lilac, dotted hawthorn, and downy serviceberry. Groundcover is sparse and includes riverbank grape, Canada goldenrod, and violets.<br>MNR identifies the Saugeen as a cold water system.<br>Water temperature = 17C (June 14, 2012), 22C (July 5, 2012) | |  W21 - existing bridge structure (photo: June 14, 2012).<br>  W21- upstream of bridge on County Rd 23 (photo: June 14, 2012). |  W21- downstream of bridge on County Rd 23 (photo: June 14, 2012).<br>  W21 – – typical substrate (bolder/cobble mix) with two gravel beds observed on downstream side of bridge (photo: June 14, 2012) | |

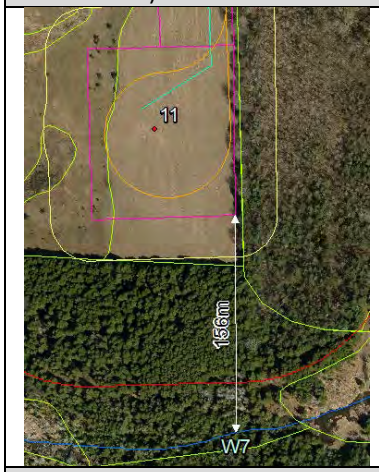
| Feature ID & Distance to Project Component (refer to Figures 4-7 for location of each water feature) | Description of Water Feature (ELC units shown on Figures a-c in Appendix B) | Date of Field Investigation (field notes in Appendix C0 | Photographic Records from Field Investigation | | Type of REA Water Body Feature (as defined by O. Reg. 359/09) |
|---|---|---|---|---|---|
| | | | Upstream | Downstream | |
| | W21: bankfull width = 18 m<br>Bankfull depth = 2m<br>Banks are stable (include riprap at the bridge crossing); substrate is comprised mostly of cobble and boulder; little instream cover in the form of vegetation is available; combination of riffle and flats. Blacknose Dace, sucker and pinhead fry observed in channel at time of survey. Gravel beds were present on the downstream side of the bridge, possibly used for spawning (photo). Riparian vegetation communities include deciduous swamp (ELC unit 425) and coniferous forest (ELC units 274, 275 and 426). White cedar is the dominant tree species within the riparian canopy, with Manitoba maple (Acer negundo), white elm, and black cherry less frequent. The swamp community is dominated by balsam poplar, with white cedar and balsam fir scattered within. Typical swamp species like ferns, sedges, and grasses dominate the ground layer.<br>MNR identifies the Saugeen as a | |  <br>W22 – upstream condition June 27, 2012 |  <br>W22 – downstream condition June 27, 2012 | |

| Feature ID & Distance to Project Component (refer to Figures 4-7 for location of each water feature) | Description of Water Feature (ELC units shown on Figures a-c in Appendix B) | Date of Field Investigation (field notes in Appendix C0 | Photographic Records from Field Investigation | | Type of REA Water Body Feature (as defined by O. Reg. 359/09) |
|---|---|---|---|---|---|
| | | | Upstream | Downstream | |
| | cold water system.<br>Water temperature = 17C (June 14, 2012)<br><br>W22: bankfull width = 10-14 m<br>Bankfull depth = 0.7-0.9 m<br>Banks are stable; substrate is comprised mostly of cobble and boulder; little instream cover in the form of vegetation is available; combination of riffle, pool, run and flats. Blacknose Dace young of year observed in channel at time of survey.<br>Riparian vegetation includes joe pyeweed, grasses, bluets, ostrich fern and mint with alternate leaved dogwood and willow. Tree canopy includes willow, green and white ash, Eastern white cedar, sugar maple and white elm.<br>MNR identifies the Saugeen as a cold water system.<br><br>MNR fisheries records document Brook Trout and Brown Trout in the Saugeen River upstream of Hanover. | | | | |

| Feature ID & Distance to Project Component (refer to Figures 4-7 for location of each water feature) | Description of Water Feature (ELC units shown on Figures a-c in Appendix B) | Date of Field Investigation (field notes in Appendix C0 | Photographic Records from Field Investigation | | Type of REA Water Body Feature (as defined by O. Reg. 359/09) |
|---|---|---|---|---|---|
| | | | Upstream | Downstream | |
| Feature ID (source of information) | W6, W8 (NRVIS data layer (MNR), aerial photography) | | | | |
|  W6 - 0m from underground collection line in existing road right of way and 79m from access road and underground collection into Turbine 13.  | Two features along the same watercourse were identified through Records Review and investigated further: W6 and W8. Property access was not provided for the property downstream (north) of W6 and for that reason a roadside survey was conducted.<br><br>W6 – On the south side of the road water pools in areas within a white elm deciduous swamp with species composition dominated by elm followed by a few red maples within the light canopy, abundant willows in the understory and reed-canary grass as the dominant ground cover. On the north side of Southline road is a balsam poplar deciduous swamp/forb meadow marsh with white elm, balsam poplar, and trembling aspen as the common species | May 15, 2012<br>Aug. 1, 2012 |  W6 - South side of Southline Rd. – water pools in grassy areas throughout ELC unit 250 (SWD4-2) a white elm deciduous swamp. |  W6 - Water ponding at roadside in May 2012, no flow detected, riparian edge comprised of grasses.  W6 – no water on north side of Southline (photo: May 15, 2012) | W6 - not carried forward as a water body<br>W8 - not carried forward as a water body |

| Feature ID & Distance to Project Component (refer to Figures 4-7 for location of each water feature) | Description of Water Feature (ELC units shown on Figures a-c in Appendix B) | Date of Field Investigation (field notes in Appendix C0 | Photographic Records from Field Investigation | | Type of REA Water Body Feature (as defined by O. Reg. 359/09) |
|---|---|---|---|---|---|
| | | | Upstream | Downstream | |
| W8 – 85m from underground collection and access road to Turbine 13 | within the canopy and a few tamarack and white cedar mixed throughout. Lance-leaved aster, sedges, spotted joe-pye weed, reed-canary grass, and rough-leaved goldenrod are dominant within the ground layer.<br>W6- Pooling water was evident in Spring (May 15, 2012) but not in Summer (August 1, 2012). W6 allows water from both wetland features to collect under the road crossing under Spring conditions. This feature was treated as part of a significant wetland feature identified within the NHA for the Project (see Appendix B for mapping). W6 was determined not to conform to the definition of a 'water body' as it was dominated by hydrophytic vegetation.<br>W8 - This feature was | |  <br>W6 upstream - August 1, 2012, feature dominated by wetland vegetation (ELC unit 250) |  <br>W6 – August 1, 2012, no flow.<br>  <br>W6 downstream – August 1, 2012, feature dominated by wetland vegetation (ELC unit 248) | |

| Feature ID & Distance to Project Component (refer to Figures 4-7 for location of each water feature) | Description of Water Feature (ELC units shown on Figures a-c in Appendix B) | Date of Field Investigation (field notes in Appendix C0 | Photographic Records from Field Investigation | | Type of REA Water Body Feature (as defined by O. Reg. 359/09) |
|---|---|---|---|---|---|
| | | | Upstream | Downstream | |
| | characterized as a wetland feature (ELC units 108 and 234) a willow swamp thicket and balsam poplar deciduous swamp/forb meadow marsh). This feature was treated as a significant wetland feature and addressed within the NHA for the Project. W8 was determined not to conform to the definition of a 'water body' as outlined in O. Reg. 359/09. | |  W8 – feature dominated by wetland vegetation(photo: May 15, 2012) | | |

| Feature ID & Distance to Project Component (refer to Figures 4-7 for location of each water feature) | Description of Water Feature (ELC units shown on Figures a-c in Appendix B) | Date of Field Investigation (field notes in Appendix C0 | Photographic Records from Field Investigation | | Type of REA Water Body Feature (as defined by O. Reg. 359/09) |
|---|---|---|---|---|---|
| | | | Upstream | Downstream | |
| Feature ID (source of information) | W7(NRVIS data layer (MNR), aerial photography) | | | | |
|  | This feature was identified in Records Review and investigated; however, a change to the project layout in June 2012 meant the feature was no longer within 120m of the project location. | May 16, 2012 | n/a | | W7 removed from list of water bodies because >120m from Project Location. |
| Feature ID (source of information) | W9 (NRVIS data layer (MNR), aerial photography) | | | | |
|  W9 - 0m from underground collection line in existing road right of way. | Property access was not provided for the property where this feature was located and for that reason a roadside survey was conducted.<br><br>Water in channel was pooling close to the road such that the bankfull width was approximately 1m, and bankfull depth approximately 0.5m. Upstream of the road crossing the channel was much narrower (20-30cm) with a grassy riparian | May 15, 2012<br>August 1, 2012 |  W9- South side of Southline Rd (photo: May 15, 2012) |  W9 - North side of Southline Rd - (photo: May 15, 2012) | **W9 – permanent stream** |

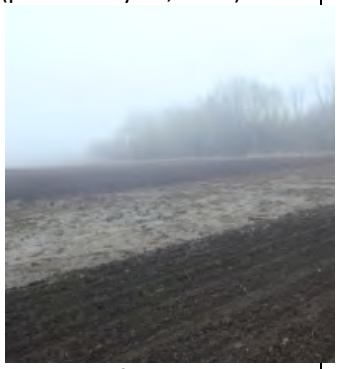
| Feature ID & Distance to Project Component (refer to Figures 4-7 for location of each water feature) | Description of Water Feature (ELC units shown on Figures a-c in Appendix B) | Date of Field Investigation (field notes in Appendix C0 | Photographic Records from Field Investigation | | Type of REA Water Body Feature (as defined by O. Reg. 359/09) |
|---|---|---|---|---|---|
| | | | Upstream | Downstream | |
| | edge. Abundant algal mats were present in May. Feature conveys water between two red maple deciduous swamps (ELC units 256 and 400). The riparian edge is predominantly Lake-bank sedge (Carex lacustris) with occasional red-osier dogwood, narrow-leaved cattail, and white cedar. Little in the way of instream or riparian cover available. No fish observed in channel. Substrate predominantly gravel. Water temperature = 20C on May 15, 2012 | | | | |

| Feature ID & Distance to Project Component (refer to Figures 4-7 for location of each water feature) | Description of Water Feature (ELC units shown on Figures a-c in Appendix B) | Date of Field Investigation (field notes in Appendix C0 | Photographic Records from Field Investigation | | Type of REA Water Body Feature (as defined by O. Reg. 359/09) |
|---|---|---|---|---|---|
| | | | Upstream | Downstream | |
| Feature ID (source) | W10 (NRVIS data layer (MNR), aerial photography) | | | | |
|  W10 - 0m from underground collection line in existing road right of way. | Property access was not provided for the property where this feature was located and for that reason a roadside survey was conducted. Feature is characterized as part of red maple deciduous swamp (ELC units 258/411/413) comprised of slender willow, chokeberry, and narrow-leaved cattail as understory and common milkweed, spotted joe-pye weed, timothy grass, water parsnip and reed-canary grass as the dominant species within the groundcover; and coniferous forest (ELC unit 259) dominated by eastern white cedar. Hydrophytic vegetation was dominant within the feature; therefore it was treated as a wetland and addressed within the NHA. Parts of W10 are within the boundary of Beaver Meadow PSW and the remainder of the feature was treated as a significant wetland. W10 was determined not to meet the definition of a 'water body' as outlined in O. Reg. 359/09. | May 15, 2012<br>August 1, 2012 |  Pooling of water on upstream (south) side of Southline Road on May 15, 2012.<br>  Same area as above(Aug 1/12)<br>  W10 on east side of Boot Jack Ranch Road (photo: May 15, 2012) |  W10 on west side of Boot Jack Ranch Road (photo: May 15, 2012)<br>  W10 on west side of Boot Jack Ranch Road (photo: August 1, 2012) | W10 - not carried forward as a water body |

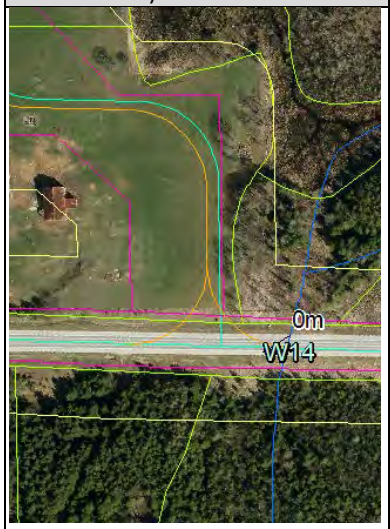
| Feature ID & Distance to Project Component (refer to Figures 4-7 for location of each water feature) | Description of Water Feature (ELC units shown on Figures a-c in Appendix B) | Date of Field Investigation (field notes in Appendix C0 | Photographic Records from Field Investigation | | Type of REA Water Body Feature (as defined by O. Reg. 359/09) |
|---|---|---|---|---|---|
| | | | Upstream | Downstream | |
| Feature ID (source of information) | W11 W45, W51 (NRVIS data layer (MNR), aerial photography) | | | | |
|  W11 - 0m from underground collection line in existing road right of way.<br>W45 – 4m from underground collection line in existing road right of way.<br>W51 – 72m from underground collection line in existing road right of way. | Property access was not provided for the property where these features were located and for that reason a roadside survey was conducted.<br><br>W11 provides seasonal conveyance of water through an intermittent channel from upstream agricultural fields and dugout pond (W51) to a meadow marsh (ELC unit 260) on the downstream side of Boot Jack Ranch Road. At the time of survey less than 5 cm of standing water was documented on the upstream side of the road and no water was observed in the channel downstream of the culvert.<br>No fish were observed.<br>Bankfull width= 0.5m (approx.)<br>Water temperature=24C (May 15, 2012).<br><br>No open water feature was found at W45. This feature was determined during ELC surveys to be part of ELC unit 413 (red maple deciduous swamp). Parts | May 15, 2012 |  May 15, 2012 – east side of Boot Jack Ranch Road. Conveys water seasonally from agricultural field and dugout pond on east side of the road to wetland on west side of road. |  May 15, 2012 – grassy channel downstream of road. | **W11 – intermittent stream**<br>W45 - not carried forward as a water body<br>W51 - not carried forward as a water body |

| Feature ID & Distance to Project Component (refer to Figures 4-7 for location of each water feature) | Description of Water Feature (ELC units shown on Figures a-c in Appendix B) | Date of Field Investigation (field notes in Appendix C0 | Photographic Records from Field Investigation | | Type of REA Water Body Feature (as defined by O. Reg. 359/09) |
|---|---|---|---|---|---|
| | | | Upstream | Downstream | |
| | of W45 are within the boundary of Beaver Meadow PSW and was addressed as a significant wetland in the NHA for the project. W45 was dominated by hydrophytic vegetation and determined not to conform to the definition of a 'water body' as outlined in O. Reg. 359/09.<br><br>W51 was investigated through the use of aerial photography and determined to be a dugout pond within an agriculural field. Investigation at roadside for feature W11 suggests the hydrological connection from the pond is limited to providing seasonal conveyance of water to the wetland feature on the west side of Boot Jack Ranch Road. | | | | |

| Feature ID & Distance to Project Component (refer to Figures 4-7 for location of each water feature) | Description of Water Feature (ELC units shown on Figures a-c in Appendix B) | Date of Field Investigation (field notes in Appendix C0 | Photographic Records from Field Investigation | | Type of REA Water Body Feature (as defined by O. Reg. 359/09) |
|---|---|---|---|---|---|
| | | | Upstream | Downstream | |
| Feature ID (source of information) | W12 (NRVIS data layer (MNR), aerial photography) | | | | |
|  W12 - 0m from underground collection line in existing road right of way. | Property access was not provided for the property where this feature was located and for that reason a roadside survey was conducted.<br><br>W12 provides seasonal pooling of water in a culvert crossing of Boot Jack Ranch Road between a deciduous swamp (ELC unit 266 ) on the east side of the road and a small area dominated by hydrophytic vegetation on the west side of the road. Standing water was documented in the channel during survey; no flow was detected through the culvert. This area was treated as a significant wetland feature in the NHA for the Project. W12 was determined to be a grassed channel on the upstream side of the road and dominated by emergent and hydrophytic vegetation on the downstream side. This feature did not to conform to the definition of a 'water body' as outlined in O. Reg. 359/09. | May 15, 2012 |  W12 - Culvert buried half way on upstream side – grassed channel suggests channel doesn't hold water on a regular basis (photo: May 15, 2012).<br>  ELC unit 266 – balsam poplar and red maple deciduous swamp on the east side of the road. Water feature dominated by hydrophytic plants; treated as wetland. |  W12 on west side of Boot Jack Ranch Road where vegetation is predominantly hydrophytic in nature (photo: May 15, 2012) | W12 - not carried forward as a water body |

| Feature ID & Distance to Project Component (refer to Figures 4-7 for location of each water feature) | Description of Water Feature (ELC units shown on Figures a-c in Appendix B) | Date of Field Investigation (field notes in Appendix C0 | Photographic Records from Field Investigation | | Type of REA Water Body Feature (as defined by O. Reg. 359/09) |
|---|---|---|---|---|---|
| | | | Upstream | Downstream | |
| Feature ID (source of information) | W13, W24, W40 (NRVIS data layer (MNR), aerial photography, site investigation) | | | | |
|  <br>W13 – 0m from underground collection line in existing road right of way.<br>W24 - 0m from underground collection line in existing road right of way.<br>W40 – 218m from underground collection line in existing road right of way. | Two features along the same watercourse were identified through Records Review and investigated further: W13 (crossing of County Rd. 4) and W24 (within an agricultural field on the south side of County Rd. 4). W40, a pond feature in the vicinity of these water features was identified during Site Investigation, but later determined to be > 120m from the Project Location.<br><br>Property access was not provided for the property on the north side of County Rd. 4 and for that reason a roadside survey was conducted of the downstream portion of W13.<br><br>W13 – saturated soils suggest culvert holds water seasonally during spring melt from agricultural field on the south side of County Rd. 4 and the cattail marsh (ELC unit 88) on north side of the road. At the time of survey standing water was documented witihin the | May 16, 2012 |  <br>Culvert on south side of County Rd. 4 drains into agricultural field. Standing water in culvert at time of survey – no detectable flow (photo: May 16, 2012).<br>  <br>Looking south from County 4 Rd to W24 May 16, 2012 – no agricultural swale/drainage evident. |  <br>North side of County Rd. 4 – no surface water feature or flow in roadside ditch, some standing water in agricultural field below (photo: May 16, 2012).<br>  <br>Evidence of saturated soils in field; however, tilled through as part of agricultural field. | W13 - not carried forward as a water body<br>W24 - not carried forward as a water body<br>W40 >120m from project location and not studied further |

| Feature ID & Distance to Project Component (refer to Figures 4-7 for location of each water feature) | Description of Water Feature (ELC units shown on Figures a-c in Appendix B) | Date of Field Investigation (field notes in Appendix C0 | Photographic Records from Field Investigation | | Type of REA Water Body Feature (as defined by O. Reg. 359/09) |
|---|---|---|---|---|---|
| | | | Upstream | Downstream | |
| | culvert; however, grassy roadside ditch on either side of culvert was free of water. No open water component was documented. W13 was determined not to meet the definition of a 'water body' as outlined in O. Reg. 359/09.<br><br>W24 – This area was determined to be under active agriculture and although there was evidence of saturated soils this field was fully tilled and planted throughout the season. | |  <br>Looking north toward W13 and W24 – no swale evident tilled agricultural field (photo: May 16, 2012) | | |

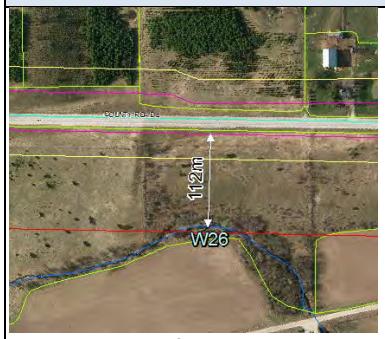
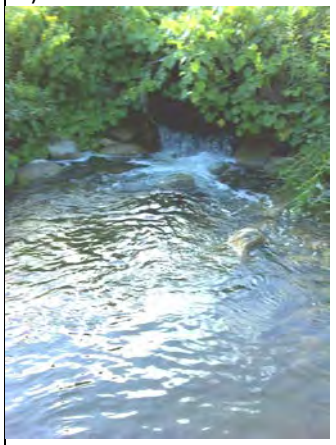
| Feature ID & Distance to Project Component (refer to Figures 4-7 for location of each water feature) | Description of Water Feature (ELC units shown on Figures a-c in Appendix B) | Date of Field Investigation (field notes in Appendix C0 | Photographic Records from Field Investigation | | Type of REA Water Body Feature (as defined by O. Reg. 359/09) |
|---|---|---|---|---|---|
| | | | Upstream | Downstream | |
| Feature ID (source of information) | W14 (NRVIS data layer (MNR), aerial photography) | | | | |
|  W14 – 0m from underground collection line in existing road right of way. | Property access was not provided for the property on the south side of the road and for that reason a roadside survey was conducted of the upstream portion.<br><br>W14 functions to provide seasonal conveyance of water from one wetland feature to another. ELC unit 85 (a tamarack coniferous swamp) is located on the south side of County Road 4, and ELC unit 62 (a white cedar coniferous swamp) is located on the north side of the road. Both of these features are dominated by wetland species and are within the boundary of Beaver Meadow PSW. These features were addressed as significant wetlands through the NHA and determined not to meet the definition of a 'water body' under O.Reg. 359/09. | |  Culvert on south side of County Rd. 4 at ELC unit 85 (photo: August 1, 2012). |  Culvert on north side of County Rd. 4 at ELC unit 62 (photo: August 1, 2012). | W14 - not carried forward as a water body |

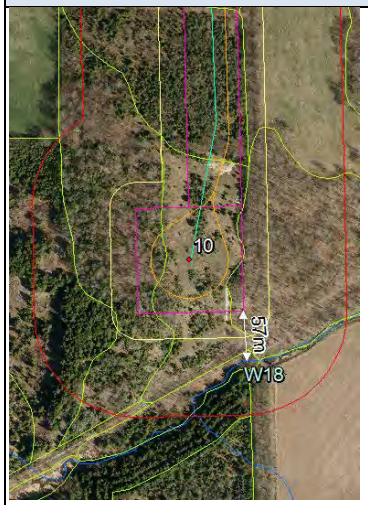
| Feature ID & Distance to Project Component (refer to Figures 4-7 for location of each water feature) | Description of Water Feature (ELC units shown on Figures a-c in Appendix B) | Date of Field Investigation (field notes in Appendix C0 | Photographic Records from Field Investigation | | Type of REA Water Body Feature (as defined by O. Reg. 359/09) |
|---|---|---|---|---|---|
| | | | Upstream | Downstream | |
| Feature ID (source of information) | W15, W16, W18, W26, W28 (NRVIS data layer (MNR), aerial photography) | | | | |
|  W15 – 5m from underground electrical collection line in road right of way;<br>W16 - underground electrical collection line in road right of way crosses the feature (0m); | Property access was not provided for the property where these features were located and for that reason a roadside survey was conducted.<br>NRVIS data indicated a connection between W16 (furthest upstream )and flow continuing from there to W15, to W28, to W26, and to W18.<br>Mapping obtained from SSWPC (2011) classifies these sites as a cold water stream.<br><br>Description of feature at W16 :<br>Pool at culvert = 0.37m deep<br>Bankfull width = 1.5m; channel wider upstream (approximately 3m) with fast riffle (0.15m deep)<br>Substrate was a mix of cobble/gravel/boulder.<br>Instream cover was available in the form of willow.<br>Banks were stable.<br>No fish were observed at the time of survey.<br>Water temperature = 16C (May 15, 2012), 18C (Aug. 1, 2012)<br>Immediate riparian vegetation is mostly manicured lawn, with | May 15, 2012<br>Aug. 1, 2012 |  W16 as it passes under old railway line. Large boulder and cobble substrate. (photo: Aug. 1, 2012 |  W16 as it approaches culvert at County Rd. 4 (photo: May 15, 2012) | **W16 – part of permanent stream** |

| Feature ID & Distance to Project Component (refer to Figures 4-7 for location of each water feature) | Description of Water Feature (ELC units shown on Figures a-c in Appendix B) | Date of Field Investigation (field notes in Appendix C0 | Photographic Records from Field Investigation | | Type of REA Water Body Feature (as defined by O. Reg. 359/09) |
|---|---|---|---|---|---|
| | | | Upstream | Downstream | |
| | birch and cedar, adjacent land use is transportation and agricultural.<br>Feature is highly altered as it passes under 2 structures within 20m; a metal culvert under County Rd. 4 and an old concrete bridge for rail line (no longer in use). Upstream of this location the stream isin its natural form and part of a wetland feature treated as significant in the NHA for the project. | | | | |
| | Description of feature at W15 :<br>This is an artificially straightened channel that runs along the north side of County Rd. 4. Substrate is predominantly boulder interspersed with cobble.<br>Channel is riffle throughout most of the roadside portion.<br>Pool depth at culvert = 0.20-0.25m.<br>Bankfull width = 2.3m<br>Water temperature = 18C (Aug. 1, 2012)<br>Banks are stable.<br>Lots of cover available in the form of overhanging vegetation and woody debris. | May 15, 2012<br>August 1, 2012 |  <br>W15 as it begins at the culvert after crossing the road and continues along the north side of County 4Rd. (photo: August 1, 2012) |  <br>W15 continues through a series of culverts along the roadside until it crosses back over to the south side of County Rd. 4 (photo: August 1, 2012) | **W15 – part of permanent stream** |

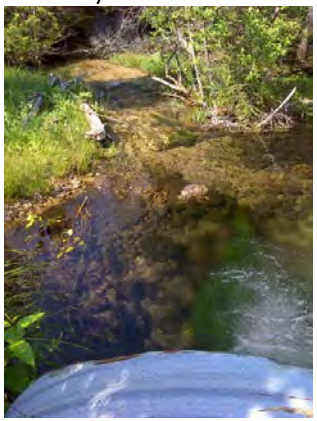
| Feature ID & Distance to Project Component (refer to Figures 4-7 for location of each water feature) | Description of Water Feature (ELC units shown on Figures a-c in Appendix B) | Date of Field Investigation (field notes in Appendix C0 | Photographic Records from Field Investigation | | Type of REA Water Body Feature (as defined by O. Reg. 359/09) |
|---|---|---|---|---|---|
| | | | Upstream | Downstream | |
| | No fish observed at time of survey<br>Riparian vegetation limited to manicured roadside ditch and narrow dogwood thicket, adjacent landuse is agricultural and transportation. | | | | |
|  <br>W28 – 0m from underground electrical collection line in road right of way | Description of feature at W28:<br>This feature passes under County Rd. 4 and under The Glen Road. No property access was provided, therefore survey was conducted from crossing at the Glen Road.<br>Upstream of The Glen Road:<br>Wetted depth at roadside = 0.43m<br>Bankfull width = 1.5 – 2m<br>Greater than 95% of substrate is fines/silt with random dispersal of cobble (<5%).<br>Young of year fish and green frog observed.<br>In stream cover provided by emergent vegetation.<br>Overhanging vegetation upstream provides additional cover. Little cover available at roadside.<br>Banks are stable.<br>Narrow riparian (<5m) | August 1, 2012 |  <br>W28 - Channel on upstream side (north) of The Glen Road. With riparian vegetation primarily meadow species at roadside with ash and maple upstream (photo: August 1, 2012) |  <br>W28 – 0.8m perched culvert has created a plunge pool on south (downstream) side of Glen Road. Channel in this area is 3m wide and 0.5-0.7m deep; beyond plunge pool watercourse becomes shallower and narrower (photo: August 1, 2012). | **W28 – part of permanent stream** |

| Feature ID & Distance to Project Component (refer to Figures 4-7 for location of each water feature) | Description of Water Feature (ELC units shown on Figures a-c in Appendix B) | Date of Field Investigation (field notes in Appendix C0 | Photographic Records from Field Investigation | | Type of REA Water Body Feature (as defined by O. Reg. 359/09) |
|---|---|---|---|---|---|
| | | | Upstream | Downstream | |
| | comprised of meadow plants, ash and maple; adjacent land use is agricultural.<br>Downstream of The Glen Road:<br>Bankfull width = 5m at roadside, 3m in channel<br>Wetted width = 3m at roadside<br>Wetted depth = 0.15m<br>Substrate 80% cobble, 20% gravel. Large number of minnows observed. Perched culvert under low flow conditions obstructs fish movement. Narrow riparian (<10m) of meadow plants, ash and maple; adjacent land use is agricultural. Banks are stable.<br>Water temperature = 20C (Aug 1, 2012) | |  <br>W28 - Channel on upstream side (north) of The Glen Road. (photo: August 1, 2012) |  <br>W28 – downstream of The Glen Road, channel wide at roadside and narrow downstream (photo: August 1, 2012) | |

| Feature ID & Distance to Project Component (refer to Figures 4-7 for location of each water feature) | Description of Water Feature (ELC units shown on Figures a-c in Appendix B) | Date of Field Investigation (field notes in Appendix C0 | Photographic Records from Field Investigation | | Type of REA Water Body Feature (as defined by O. Reg. 359/09) |
|---|---|---|---|---|---|
| | | | Upstream | Downstream | |
|  W26 – 112m from underground electrical collection line in road right of way; | Description of feature at W26:<br>Upstream (south side of The Glen Road):<br>Culvert buried<br>Pool at roadside = 0.35m deep<br>Wetted width = 2m<br>Bankfull width = 6m<br>Riparian comprised of cedar, ash, poplar and willow, (5-10m wide); adjacent landuse is agricultural.<br>Young of year fish observed in channel.<br>Banks are stable.<br>Downstream (north side of The Glen Road):<br>Bankfull width = 2.5m<br>Substrate predominantly fines (80%), 10% boulder and 10% gravel.<br>Perched culvert is barrier to fish movement under low flow condition.<br>Green frog, tadpoles, young of year fish observed.<br>Limited cover provided by overhanging vegetation.<br>Water temperature = 20C (August 1, 2012) | August 1, 2012 |  W26 on upstream side (south) of The Glen Road – riparian vegetation is limited (photo: August 1, 2012). |  W26 – facing downstream (north toward County Rd. 4).<br>  W26 – perched culvert on downstream side of road creates a wide pool at roadside; channel narrows downstream. | **W26 – part of permanent stream** |

| Feature ID & Distance to Project Component (refer to Figures 4-7 for location of each water feature) | Description of Water Feature (ELC units shown on Figures a-c in Appendix B) | Date of Field Investigation (field notes in Appendix C0 | Photographic Records from Field Investigation | | Type of REA Water Body Feature (as defined by O. Reg. 359/09) |
|---|---|---|---|---|---|
| | | | Upstream | Downstream | |
|  W18 – 57m from turbine 10 and associated access road and underground electrical collection | Description of feature at W18: Located adjacent to an old railway line in a valley. Steep slope from north to access the stream below. Stream is crossed by an unmaintained road with double culverts.<br>Upstream:<br>No property access was provided to portion of W18 upstream of the road crossing such that data was collected from roadside.<br>Large pool (10m wide) on upstream side of farm lane.<br>Fine substrates.<br>Immediately adjacent to agricultural field. Riparian edge is restricted to sedges and occaisional mature trees.<br>Instream cover limited - available in vicinity of the crossing as thickety vegetation overhanging culverts.<br>No fish observed.<br>Downstream:<br>Riparian vegetation is primarily Norway spruce plantation on the south side and sugar maple deciduous forest to the north.<br>Downstream of the farmlane immediate riparian is restricted primarily to sedge species. | May 16, 2012 |  Existing crossing of stream at W18 – unmaintained dirt road extends from Glen Road to Southline.<br>  W18 - May 16/12 – upstream pool adjacent to agricultural field.<br>  W18 - Thicket at roadside and edges of upstream portion of stream. |  W18 - Double culverts convey water under road crossing downstream to sugar maple forest and forb meadow marsh.<br>  W18- -Culverts are perched; plunge pool has formed.<br>  W18 - Substrates are a mix of cobble and gravel in channel. | **W18 – part of permanent stream** |

| Feature ID & Distance to Project Component (refer to Figures 4-7 for location of each water feature) | Description of Water Feature (ELC units shown on Figures a-c in Appendix B) | Date of Field Investigation (field notes in Appendix C0 | Photographic Records from Field Investigation | | Type of REA Water Body Feature (as defined by O. Reg. 359/09) |
|---|---|---|---|---|---|
| | | | Upstream | Downstream | |
| | Instream cover available in immediate vicinity of crossing in the form of instream vegetation and woody debris; however, cover downstream is limited.<br>Perched culvert is barrier to fish movement.<br>Substrate is a mix of cobble and gravel.<br>No fish observed at time of survey. | | |  <br>W18 - Channel narrows downstream of crossing and riparian vegetation and in-stream cover becomes more limited approaching marsh (photo: May 16, 2012). | |
| Feature ID (source of | W17 (NRVIS data layer (MNR), aerial photography) | | | | |

| Feature ID & Distance to Project Component (refer to Figures 4-7 for location of each water feature) | Description of Water Feature (ELC units shown on Figures a-c in Appendix B) | Date of Field Investigation (field notes in Appendix C0 | Photographic Records from Field Investigation | | Type of REA Water Body Feature (as defined by O. Reg. 359/09) |
|---|---|---|---|---|---|
| | | | Upstream | Downstream | |
| information) | | | | | |
|  W17 - 0m from underground electrical collection line in road right of way | Property access was not provided for the property where this feature was located and for that reason a roadside survey was conducted.<br><br>Description of feature at W17: This feature is part of Durham Creek and is a permanent cold water streamthat conveys water through a Coniferous swamp (dominated by tamarack and balsam fir with occasional black ash and red maple). Watercress was observed in the channel as evidence of groundwater seepage. Substrate mix of cobble and boulder. Large (>1m wide), deep plunge pool on downstream side resulting from perched culvert. Visible portion of channel beyond pool is riffle. Upstream is predominantly riffle.<br>Wide riparian buffer that functions as a wildlife corridor. Abundant in-stream cover in the form of emergent vegetation and woody debris. Banks stable.<br>Water temperature= 11C | May 15, 2012<br>July 5, 2012 |  May 15, 2012 – upstream of County Rd. 23<br>  July 5, 2012 – upstream of County Rd. 23 |  May 15, 2012 – downstream of County Rd. 23.<br>  July 5, 2012 – downstream of County Rd. 23, plunge pool at roadside flowing into riffle. | **W17 – permanent stream and seepage area** |

| Feature ID & Distance to Project Component (refer to Figures 4-7 for location of each water feature) | Description of Water Feature (ELC units shown on Figures a-c in Appendix B) | Date of Field Investigation (field notes in Appendix C0 | Photographic Records from Field Investigation | | Type of REA Water Body Feature (as defined by O. Reg. 359/09) |
|---|---|---|---|---|---|
| | | | Upstream | Downstream | |
| | (May15, 2012), 11C (July 5, 2012). MNR fisheries records document Central Mudminnow, Brook Trout and Slimy Sculpin. Wetted width = 8m (May 15) Bankfull width = 10m Wetted depth = 0.3m (approx.) | | | | |

| Feature ID & Distance to Project Component (refer to Figures 4-7 for location of each water feature) | Description of Water Feature (ELC units shown on Figures a-c in Appendix B) | Date of Field Investigation (field notes in Appendix C0 | Photographic Records from Field Investigation | | Type of REA Water Body Feature (as defined by O. Reg. 359/09) |
|---|---|---|---|---|---|
| | | | Upstream | Downstream | |
| Feature ID (source of information) | W19 (site investigation) | | | | |
|  W19 – 0m from underground electrical collection line in road right of way | Low spot in agricultural field with some cattail and other hydrophytic vegetation investigated during field surveys was determined not to meet the definition of a water body under O. Reg. 359/09.<br><br>Water temperaures (9C) and vegetation suggest seepage on north side of road. | May 16, 2012 |  W19 – on south side of road surrounded by cattail vegetation (photo: May 16, 2012). |  W19 – culvert ends at cattail vegetation on north side of Road with dugout pond beyond in agricultural field (photo: May 16, 2012).<br><br>  W19 – evidence of seepage at culvert on north side of road in form of vegetation and water temperature of 9C (May 16, 2012). | **W19 – seepage area** |