Ministry of
Natural Resources

Ministère des
Richesses naturelles

Ontario

Kemptville District

10 Campus Drive,
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Tel: (613)-258-8204
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April 1, 2011

Max Frable
Penn Energy Renewables Ltd,
620 Righters Ferry Road,
Bala Cynwyd, PA
19004

To Max Frable,

In accordance with the Ministry of the Environment's (MOE's) Renewable Energy Approvals (REA) Regulation (O.Reg.359/09), the Ministry of Natural Resources (MNR) has reviewed the natural heritage assessment and environmental impact study for S. Glengarry_St. Lawrence-1 Solar Energy Facility in the Township of South Glengarry submitted by Penn Energy Renewables Ltd.

In accordance with Section 28(2) and 38(2)(b) of the REA regulation, MNR provides the following confirmations following review of the natural heritage assessment:

1. The MNR confirms that the determination of the existence of natural features and the boundaries of natural features was made using applicable evaluation criteria or procedures established or accepted by MNR.
2. The MNR confirms that the site investigation and records review were conducted using applicable evaluation criteria or procedures established or accepted by MNR, if no natural features were identified.
3. The MNR confirms that the evaluation of the significance or provincial significance of the natural features was conducted using applicable evaluation criteria or procedures established or accepted by MNR (if required).
4. The MNR confirms that the project location is not in a provincial park or conservation reserve.
5. The MNR confirms that the environmental impact assessment report has been prepared in accordance with procedures established by the MNR.

This confirmation letter is valid for the project as proposed in the natural heritage assessment and environmental impact study, including those sections describing the

Environmental Effects Monitoring Plan and Construction Plan Report. Should any changes be made to the proposed project that would alter the NHA, MNR may need to undertake additional review of the NHA.

Where specific commitments have been made by the applicant in the NHA with respect to project design, construction, rehabilitation, operation, mitigation, or monitoring, MNR expects that these commitments will be considered in MOE's Renewable Energy Approval decision and, if approved, be implemented by the applicant.

In accordance with S.12 (1) of the Renewable Energy Approvals Regulation, this letter must be included as part of your application submitted to the MOE for a Renewable Energy Approval.

If you wish to discuss any part of this confirmation or additional comments provided, please contact Heather Zurbrigg at Heather.Zurbrigg@ontario.ca or at (613)-258-8366.

Sincerely,

Ken Durst
District Manager
Kemptville District MNR

cc. Jim Beal, Renewable Energy Provincial Field Program Coordinator, Regional Operations Division, MNR
Narren Santos, Environmental Assessment and Approvals Branch, MOE

Ministry of Natural Resources

Southern Region
Planning Unit
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Ontario

June 21, 2013

Mr. Victor Contract
South Glengarry Solar Farm Partnership
1 Young Street
Suite 1801
Toronto ON
M5E 1W7

RE: Modifications to South Glengarry_St. Lawrence-1 Solar Energy Facility

Dear Mr. Contract,

The Ministry of Natural Resources (MNR) has received the document dated June 5, 2013 that describes modifications to the South Glengarry_St. Lawrence-1 Solar Energy Facility made subsequent to MNR's letter confirming the Natural Heritage Assessment in respect of the project.

Upon review of the modifications, MNR is satisfied that the Natural Heritage Assessment requirements of Ontario Regulation 359/09 have been met. Please add this letter as an addendum to the confirmation letter issued April 1, 2011 for the South Glengarry_St. Lawrence-1 Solar Energy Facility.

If you wish to discuss this matter further, please contact Eric R. Prevost at Eric.Prevost@Ontario.ca or 705-755-3134.

Sincerely,

Kathy Woeller
Regional Land Use Planning Supervisor
Southern Region MNR

cc Max Frable, Penn Energy Renewables Ltd.
Andrea Fleishauer, Southern Region Renewable Energy Coordinator, MNR
Ken Durst, Kemptville District Manager, MNR
Narren Santos, Environmental Approvals Access & Service Integration Branch, MOE
Zeljko Romic, Environmental Approvals Access & Service Integration Branch, MOE

Penn Energy – S. Glengarry_St. Lawrence-1
SOLAR ENERGY FACILITY

in the

TOWNSHIP OF SOUTH GLENGARRY

FIT Contract No. F-000627-SPV-130-505
FIT Application No. FIT-F3AP3XM
COD: April 2012

Natural Heritage Assessment

DRAFT

Prepared for:
Penn Energy Renewables Ltd.
620 Righters Ferry Road, Bala Cynwyd, PA 19004

Prepared by:
Bowfin Environmental Consulting
168 Montreal Road, Cornwall, ON K6H 1B3

February 2011
(Revised March 2011)

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1.0 INTRODUCTION

Penn Energy Renewables, Ltd. (Penn) has executed a FIT contract with the Ontario Power Authority (OPA) for the construction of a 10 MW solar energy facility north of Cornwall, near the village of Martintown, Ontario. The subject lands are located in part of Lots 1-3 Concession 5IL (or part of Lots 40, 41 & 41a of Plan 107), in the Township of South Glengarry, geographic Township of Charlottenburgh (Figure 1). The proposed Renewable Energy Generation Facility (REGF) would consist of a collection of solar photovoltaic (PV) modules (each approximately 1.00 m x 1.67 m in dimension) that are grouped into arrays tilted and facing south. These stationary arrays are strung together forming a series of rows oriented east to west. The Environmental Protection Act (EPA) administered by the Ministry of the Environment (MOE) regulates Renewable Energy Approvals under Part V.0.1 of the act, pursuant to Ontario Regulation 359/09. As part of this act, a Natural Heritage Assessment (NHA) is required in order to identify potential impacts to the natural area. Bowfin Environmental Consulting Inc. (Bowfin) has been retained by Penn to conduct the NHA.

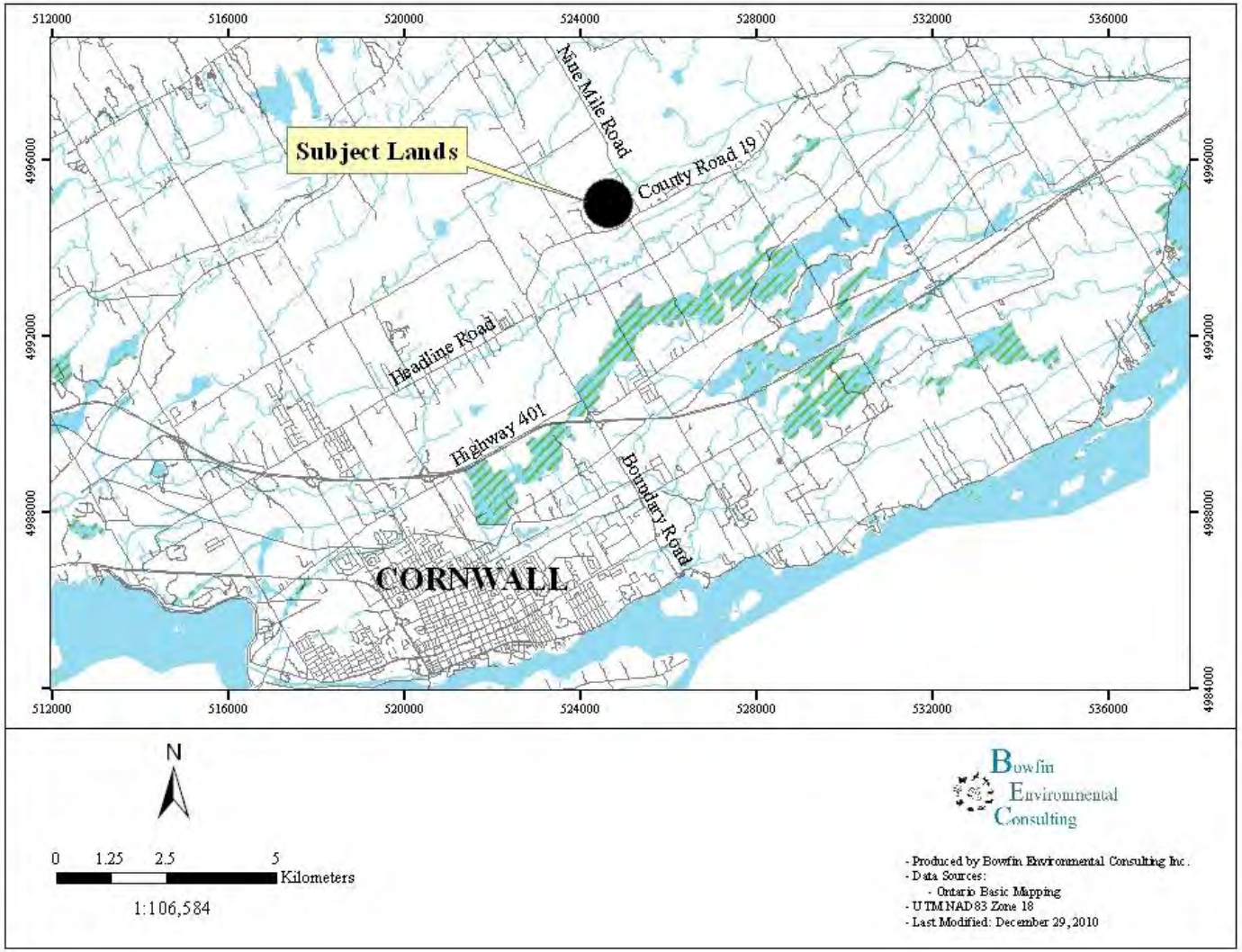
A NHA study includes three activities: a review of records (background information), a site investigation and an evaluation of the significance of each natural feature identified. The decisions on the significance of the natural feature are based on methods accepted by the Ontario Ministry of Natural Resources (OMNR). The background review includes the identification of the presence of natural features on or up to 120 m (depending on the feature) from the REGF project location. These features would include:

- areas of natural and scientific interest (ANSI) (earth or life science);
- wetlands (coastal, northern, southern);
- valleylands;
- wildlife habitat;
- woodlands;
- certain additional Natural features in the Oak Ridges Moraine Conservation Plan Area;
- certain additional Natural features in the Greenbelt Plan's Protected Countryside;
- provincial parks; and
- conservation reserves.

Should any significant natural features be found within the REGF project location or the appropriate adjacent lands to the feature, then an Environmental Impact Study (EIS) is required to identify and assess the potential environmental effects of the project on the natural feature, Provincial Park or conservation reserve.

The following report provides a summary of the records review, site investigations and an evaluation of the significance of the natural features identified, followed by an EIS where required.

Figure 1 Location of the Subject Lands



2.0 METHODOLOGY

2.1 Records Review

Preliminary mapping of the vegetation communities was completed through the use of satellite imaging. The records review was conducted in order to identify potential environmental concerns and included identifying natural heritage features within the study area. The natural heritage features which were examined for were: wetlands, areas of natural and scientific interest (ANSIs), woodlands, valleylands and wildlife habitat. This would include the identification of sand barrens, savannah, tallgrass prairie and alvars. Background information that was requested from the Kemptville District of the Ontario Ministry of Natural Resources (OMNR) and Raisin Region Conservation Authority (RRCA) was provided to Bowfin by Penn (Appendix A). Numerous records related to provincial parks, conservation reserves and natural features were searched and analyzed, including those maintained by OMNR, and the Crown in right of Canada, such as: Natural Heritage Information Centre (NHIC) (Appendix B), Land Information Ontario (LIO), Ontario Crown Land Use Atlas, Ontario Renewable Resource Atlas, Conservation Ontario, United Counties of Stormont, Glengarry and Dundas Official Plan (OP), Niagara Escarpment Plan, *Ontario Breeding Bird Atlas* (OBBA) (2005) (Appendix C) and the Ontario herpetofaunal summary atlas. This study area is not located within the jurisdiction of any planning boards, municipal planning authority, local roads boards, local services board or the Niagara Escarpment Plan. Information on the fish habitat and communities are provided in a separate Water Assessment Report submitted to the Ministry of the Environment (MOE). It is also noted that species and/or their habitats that are protected under the Provincial *Endangered Species Act* are dealt with in a separate report.

2.2 Site Investigation

The study area for this proposed solar facility includes only the portion of subject lands where any construction activities, including support facilities and staging areas, would take place (~~–~~REGF Project Location") as well as all adjacent lands within 120 m of the project location (collectively ~~–~~the Study Area") (Figure 2). It should be noted that the initial investigations occurred over a larger area which included <u>all</u> of the subject lands (the entire extent of the two parcels involved) and the adjacent lands within 120 m. For clarity, the larger area is called the ~~–~~initial surveyed area" and information collected on flora and fauna species within this area is included in the site investigation section of this report (Figure 2). A substantial reduction of the project area was made by the proponent in direct response to findings, very early in the life of this project that identified natural features which would likely be considered significant, in an effort to proactively avoid negative impacts on them.

Preliminary mapping completed during the records review was corrected through ground truthing during the site investigation. Site investigations were completed on: June 21st and 22nd and July 5th, August 10th, and October 12th and 22nd 2010 (Table 1). A total of 63.5 man hours were spent on site.

Resumes for key personnel are provided in Appendix G. Field notes are included in Appendix H.

Table 1 Summary of Dates, Times of Site Investigations

Date	Start time	End time	Staff	Total No. of Staff Hours	Air Temperature (min-max) °C	Comments
June 21, 2010	0600	1000	S. St. Pierre M. Lavictoire	8	20.8 (15.0-26.5)	sunny, no wind
June 22, 2010	0500	1000		10	21.0 (15.0-27.0)	sunny, no wind
July 5, 2010	0900	1430		11	27.0 (20.5-33.5)	sunny, few clouds
July 23, 2010	0730	1130	S. St. Pierre	4	21.5 (18.0-25.0)	overcast with sunny periods
August 10, 2010	0830	1430		12	24.8 (21.0-28.5)	sunny with scattered clouds
October 12, 2010	0930	1500	S. St. Pierre M. Lavictoire	11	5.7 (-0.2-11.6)	sunny with scattered clouds
October 22, 2010	0900	1245		7.5	2.7 (-0.1-5.5)	overcast with sunny periods

S. St. Pierre – Shaun St. Pierre - B. Sc and Fisheries and Wildlife Technologist
M. Lavictoire – Michelle (Nunas) Lavictoire – M. Sc.

Resumes for key personnel are provided in Appendix G.

Min-Max Temp taken from: Environment Canada. 2010. National Climate Data and Information Archive - [Online] Available: http://www.climate.weatheroffice.gc.ca [November 23, 2010].

2.2.1 Habitat Description and Flora Observations

The habitat descriptions were completed by systematically cruising the study area. Specific habitat types identified during the preliminary mapping exercise were also targeted for community description. Habitat descriptions were based on the appropriate methodologies such as: *Ontario Wetland Evaluation System, Southern Manual* (OWES) for wetland habitats and the *Ecological Land Classification for Southern Ontario* (ELC) for terrestrial habitats. The minimum community size described was 0.5 ha. Smaller habitats were only described if they

contained rare vegetation communities. Sufficient level of detail was collected in order to provide a general habitat description and identify the presence/absence of any of the natural environmental features.

Representative plant species were recorded within the communities and a running list of plants observed within the study area was kept. Specific attention was paid to locating species of conservation value[1] listed as potentially occurring within the study area. Any species of conservation value observed was photographed and its coordinates were recorded on a hand held GPS using NAD83. Plants that could not be identified in the field were collected for a more detailed examination in the laboratory. Nomenclature used in this report follows the Southern Ontario Plant List (Bradley, 2007) for both common and scientific names which are based on Newmaster *et al.* (1998). Authorities for scientific names are given in Newmaster *et al.* (1998).

2.2.2. Breeding Bird Surveys

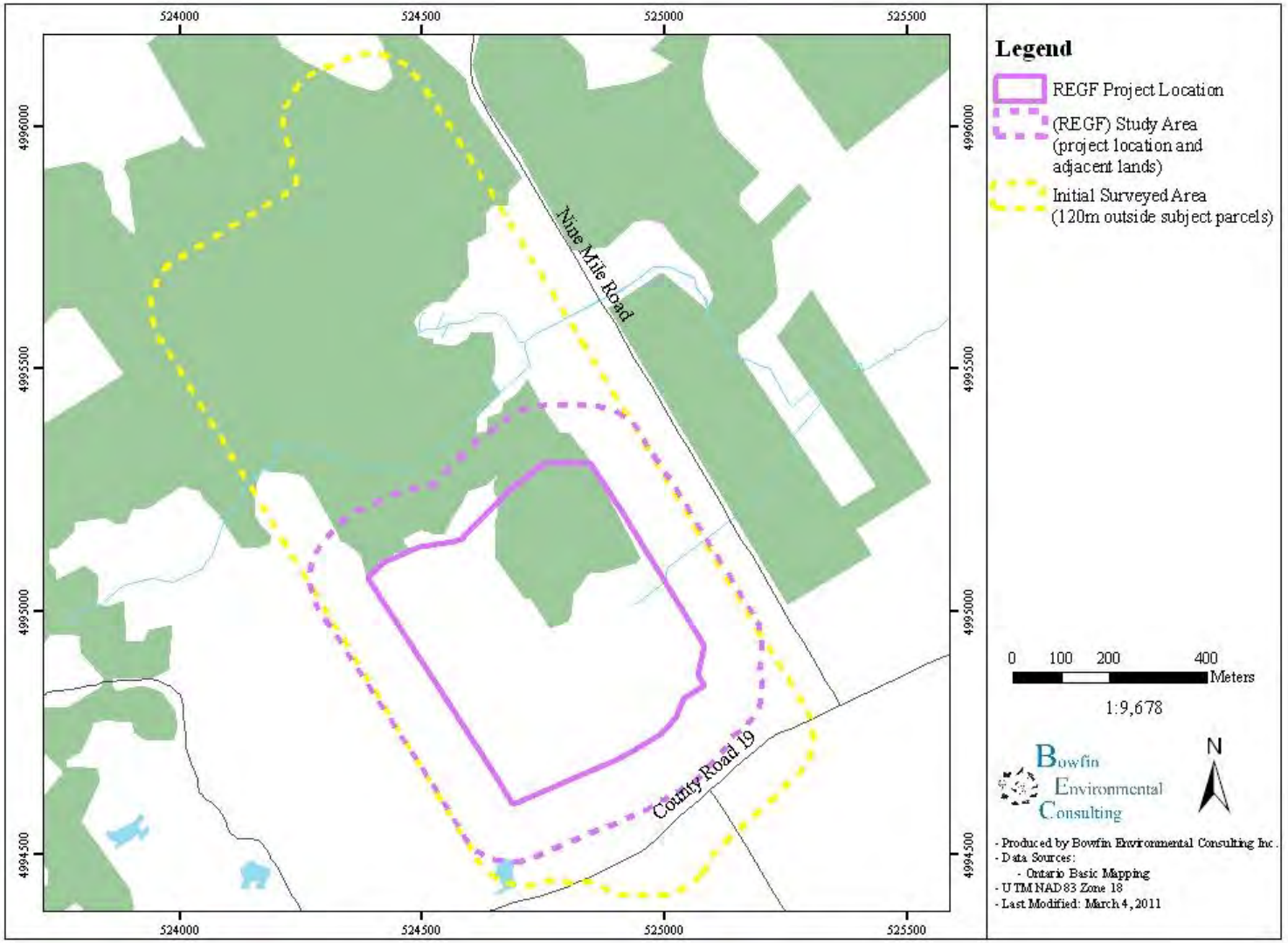
Bird surveys were completed during the morning beginning by 0500-0600 hours and terminating before the afternoon (in response the decrease in the amount of singing). A focused effort to observe birds was made on June 21st and 22nd by Michelle Lavictoire. The morning visits were completed on days with little wind. Breeding bird surveys were completed by travelling through the area by foot and stopping for periods of 5 minutes to listen and observe. Birds were identified by sound and/or sight. These surveys were completed within the entire initial surveyed area (Figure 2). A search for raptor nests was completed by looking for evidence of nesting (such as stick nests, food caches, whitewashing of branches and foliage, accumulation of feathers/fur or prey remains on the ground or in shrubs as per the *Significant Wildlife Habitat Technical* Guide (SWHTG) Appendix O) as well as the raptors themselves. While walking the site special attention was paid at identifying flushed grassland species and/or their nests. This site was visited on eight additional occasions between June 21st and October 22nd and any incidental sightings were recorded.

2.2.3 Incidental Fauna Observations

During all site visits any wildlife observations were recorded. Incidental observations included observations of an individual, its tracks, burrows, feces and/or kill sights. Special attention was paid to wetted areas, rocky habitats and potential nesting sites which may provide habitat for amphibians and reptiles. Within the wetted areas searches for eggs, larvae and adult amphibians were made. Logs and stones were overturned for salamanders and reptiles.

[1] "Species of conservation value" are those species listed as S1-S3 or as Special Concern (provincially or federally) or endangered or threatened federal species that are not listed as endangered or threatened provincially.

Figure 2 REGF study area (including a 120m buffer for each area)



2.3 Evaluation of Significance

The evaluation of the significance of the natural heritage features was completed using methods developed by OMNR such as the Appendix C - Wetland Characteristics and ecological functions Assessment for Renewable Energy Projects from the Natural Heritage Assessment guide for Renewable Energy Projects (OMNR 2010) for the evaluation of wetlands and the PPS for the evaluation of valleylands and woodlands. Note that the January 1, 2011 amended REA definition of a woodland was followed. The significance of wildlife habitat (SWH) was determined through the use of several references including the PPS, *Natural Heritage Reference Manual* (NHRM), SWHTG and the *Draft Significant Wildlife Habitat Ecoregion Criteria Schedules* published by OMNR. The habitat descriptions gathered during the site investigations (following the ELC) were used to cross-reference with the habitat requirements of the species listed in Appendices G and Q of the SWTHG as well as those species of conservation concern listed as potentially occurring within the study area. The following items were looked for:

- Seasonal concentrations of animals;
- Rare vegetation communities or specialized habitats for wildlife;
- Habitats of species of conservation concern; and
- Wildlife movement corridors.

It is noted that species and/or their habitats that are protected under the Provincial *Endangered Species Act* are dealt with in a separate report.

3.0 RECORDS REVIEW

The proposed REGF site is located in the township of South Glengarry to the northeast of the city of Cornwall and to the southwest of the village of Martintown. It is located outside of the Oak Ridges Moraine, the Greenbelt Protected Countryside and the Niagara Escarpment. There are no planning boards, municipal planning authority, local roads boards or local services boards within this study area. The project location is not in (nor within 120 m of) a provincial park or conservation reserve. The site is bordered to the north by natural features; to the south by County Road #19, agricultural lands and rural residences; to the east by rural residences, agricultural uses and natural areas; and to the west by natural areas and agricultural uses. The habitat within the study area consisted primarily of crop land, existing and old grazing pastureland, plantations, wetlands and wooded areas. Aquatic features included two dug-out ponds (one is used for cattle). There are ATV trails located throughout the study area and evidence of logging. The land use designation of the subject lands is Rural District (OP Schedule A6). The constraints mapping from the OP indicates the presences of woodlands and the aquatic feature Wood Municipal Drain (OP Schedule B6).

3.1 Natural Heritage Features

A summary of the records review results pertaining to the presence of known and candidate natural heritage features in the study area is provided in Table 2 (Figure 3). Those natural heritage features that occur within the study area require a natural heritage evaluation of significance.

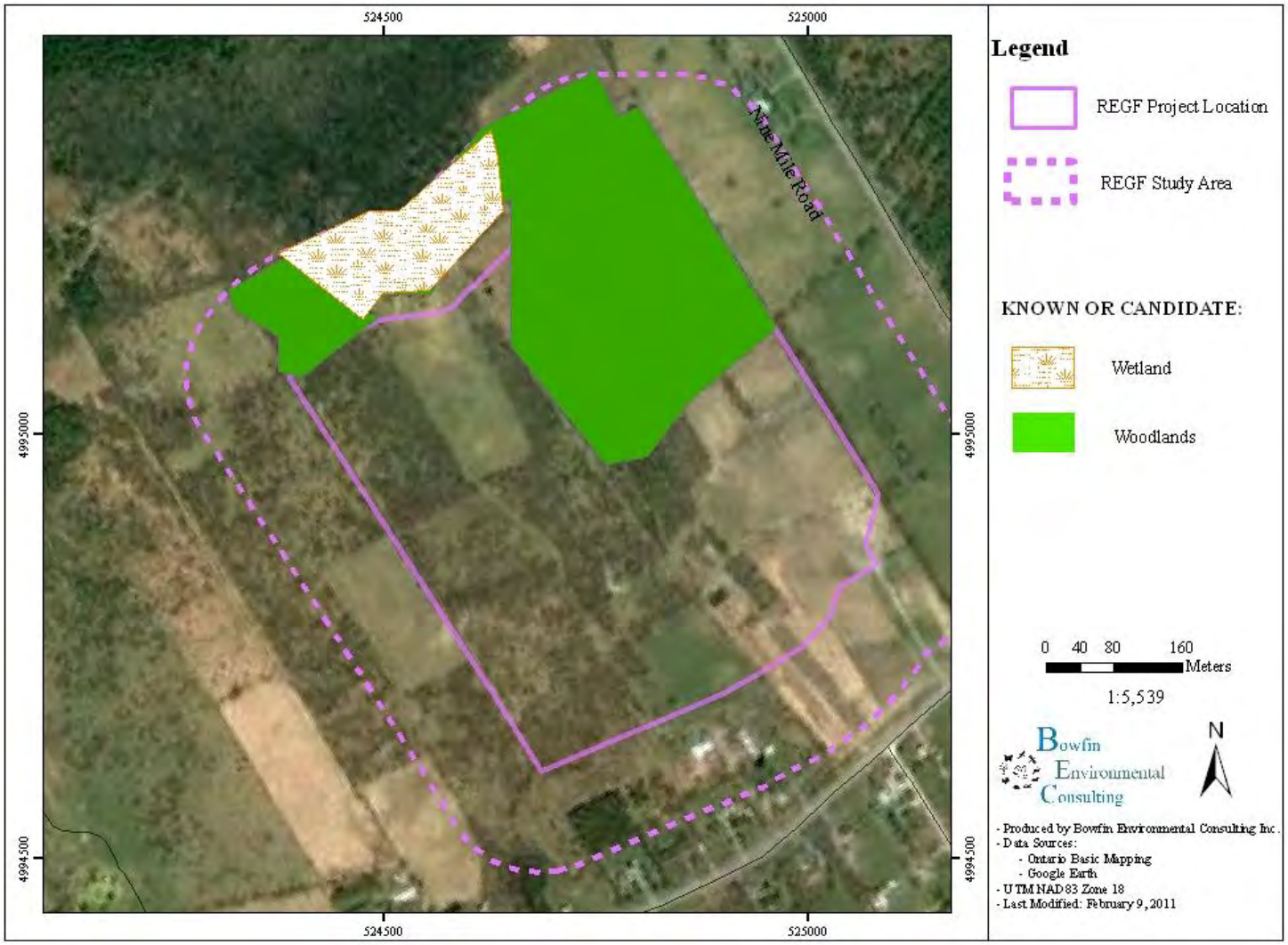
Table 2 Summary of Known and Candidate Significant Natural Features Located within the REGF Project Location or the Adjacent Lands (based on the records review)

Natural Heritage Feature	In or within 120 m of the Project Location?	Records Review Findings
Wetlands	Yes (Figure 3)	♦ No PSW are identified within the study area on the OP. ♦ An unevaluated wetland located within 120 m to the north of the REGF project location was identified during the OMNR records review. ♦ Satellite imaging also indicates that wetlands are located within the study area.
Woodlands	Yes (Figure 3)	♦ OP lists a woodland as occurring north and west of the study area. ♦ OMNR records review identified that there are unevaluated woodlands located within the initial study area. ♦ RRCA indicated presence of significant

Natural Heritage Feature	In or within 120 m of the Project Location?	Records Review Findings
		woodlands north of the municipal drain • Satellite imaging also indicates that woodlands occur within the study area.
Valleylands	No	• No significant valleylands are listed as occurring within the initial subject lands or the surrounding 120 m on the OP or by OMNR. • No valleylands can be observed on the satellite imaging of the study area.
ANSIs – Earth Science	No	• No significant ANSIs are listed as occurring within the initial subject lands or the surrounding 50 m on the OP or by OMNR (letter dated May 27, 2010 and addressed to Mr. Bob Gary of Penn Energy) • None were identified as occurring in the analysis of the on-line databases.
ANSIs – Life Science	No	• No significant ANSIs are listed as occurring within the initial subject lands or the surrounding 120 m on the OP or by OMNR (letter dated May 27, 2010 and addressed to Mr. Bob Gary of Penn Energy) • None were identified as occurring in the analysis of the on-line databases.
Wildlife Habitat	Unknown	• None were listed identified as occurring during the analysis of the on-line databases. • More information in required in order to assess the potential for significant wildlife habitat to occur. This is addressed in sections 4.1 and 5.3 of this report.
Sand Barrens, Savannah, Tallgrass Prairie and/or Alvars	Unknown	• None were identified during the records review. • The presence/absence of these features was addressed during the site investigations.

OP = Official Plan of the United Counties Township of Stormont, Dundas and Glengarry Official Plan

Figure 3 Known and Candidate Significant Natural Features (based on Records Review)

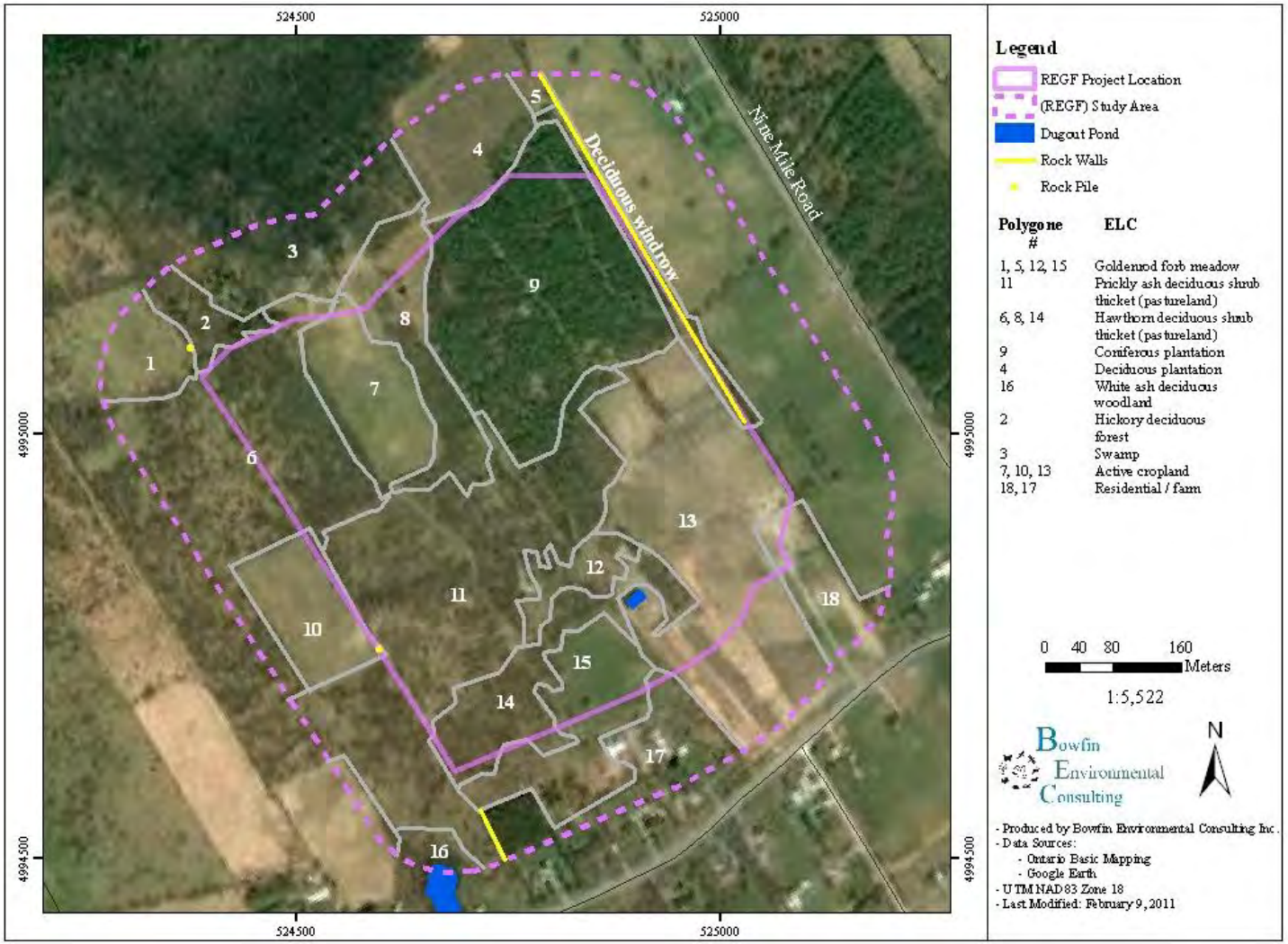


4.0 SITE INVESTIGATIONS

4.1 Habitat Descriptions

The site investigations confirmed that the habitat consisted of agricultural grazing lands and croplands, poplar and pine plantations, deciduous windrows, hawthorn thicket, treed swamp and deciduous forest habitat. These areas were classified, at a minimum, to the ELC Community Series or Ecosite level for the upland habitats or using OWES for the wetland habitats (Figure 4). A description of each ecosite, series or vegetation type is provided below outlining the canopy cover, dominant species in the different layers and any species of conservation value that were observed. These descriptions are based on observations completed following leaf-out. Candidate significant natural features are listed under the heading within each community description. A photograph is included for each polygon. Additional information on the wetland habitats (within and outside of the study area) is provided in section 4.1.1 of this report.

Figure 4 Habitat Mapping of Study Area



4.1.1 Wetland Communities

Treed Swamps *(polygon #3, measuring 12.9 ha)*
Candidate significant: wetland, woodland, wildlife movement corridor, amphibian breeding habitat, forest area-sensitive species

Within the study area, the treed swamp consisted primarily of two vegetative communities; black ash and red/silver-red hybrid. Both communities contained a large number of vernal pools; however the majority were dry by the June 22nd site visit. No amphibian concentrations, eggs or larvae were observed.

Black Ash Treed Swamp
The deciduous dominated treed swamp also included coniferous trees, tall shrubs, low shrubs, ground cover and moss layers (as defined by OWES) polygon was located on the north edge of the study area. This site was dominated by black ash and sugar maple in the tree layer, black ash, balsam poplar and ironwood in the tall shrub layer, and sensitive fern, lady fern, lakebank sedge and enchanter's nightshade in the herbaceous layer. Some portions of the polygon had a more open canopy than others. This polygon was associated with the fish bearing watercourse Wood Municipal Drain. Within this section of the watercourse, there was no aquatic vegetation, the watercourse was very shallow.

Photo 1 – Black ash treed swamp, July 5, 2010

Photo 2 – Maple swamp, July 5, 2010

Red and Silver/Red Hybrid Maple Treed Swamp
This treed swamp also had a tall shrub, low shrub, ground cover, and moss layer (as defined by OWES). The polygon was located in the north central end of the study area. The treed layer was dominated by the red and red/silver hybrid followed by trembling aspen, black ash and some white ash. The tall shrub layer was dominated by black ash followed by white ash and American elm. The ground layer was predominantly sensitive fern, lady fern, ostrich fern and horsetail. There were also ATV trails within this area. Fallen trees had a DBH of 2-10cm and were common.

4.1.2 Upland Communities

Goldenrod Forb Meadow *(polygons 1 (1.0 ha), 5 (0.3 ha), 12 (0.8 ha) & 15 (2.5 ha))*

Candidate significant: grassland area-sensitive species, reptile hibernacula (polygons 1, 5), habitat of special concern species (monarch) (polygons 1, 5, 12, & 15)

Photo 3 –Meadow habitat, July 5, 2010

As indicated above, there were four meadow polygons located within the study area. These areas consisted primarily of fallow fields and grazed areas within the pasturelands. By definition the meadow habitat contained less than 25% tree and shrub cover. The forb meadow designation signifies that the vegetation is dominated by broadleaf species, in these cases goldenrods.

Polygon 1, located in the northwest corner of the project area was slightly different than the other polygons in that is was located near a drain and contained slightly different species. This site was dominated by early goldenrod, cow vetch, wild parsnip, common yarrow and spotted-Joe-pie weed. The tree layer provided less than 5% cover and consisted of American elm, white ash, white oak and American basswood (tree height up to 8 m). The shrub layer provided 10% cover and consisted of hawthorn (2-4 m). There was the rare standing dead tree. A small rock pile was observed at polygon 1 (Figure 4). No snakes or snake skins were observed.

The remaining sites were all similar and tended to include a 10 m tall canopy layer consisting of American elm which was greater than white ash (5% cover), 2-3 m tall understory layer dominated by pussy willow, American elm, white ash, hawthorn and narrow-leaved meadowsweet (<5% cover), ground layer that was 1-1.5 m tall and dominated by late goldenrod, branching goldenrod, timothy, Bebb's sedge, cow vetch, brome, common milkweed.

Dry Fresh Deciduous Thickets – Used to varying degree for cattle grazing

Candidate significant: shrub/early successional bird breeding habitat. It is noted that the potential for these polygons to provide habitat for species covered by the Endangered Species Act is dealt with in a separate document.

Thickets are those areas where the shrub species provide more than 25% cover and tree species <25% cover. The thicket habitats within the study area consisted primarily of old and active pasturelands. These polygons varied from having almost 100% shrub cover to areas that contained a patch work of shrub and meadow habitats combined. The entire thicket habitats

encountered consisted of deciduous species. In addition to the disturbances caused by cattle, there were also farm lanes within this habitat.

Hawthorn Deciduous Shrub Thicket (polygons 6 (5.6 ha), 8 (2.2 ha) and 14 (2.3 ha)

Three of the thicket communities were dominated by hawthorns (polygons 8, 10 & 16). Some such as those located in the eastern half of polygon 7 and in polygon 9 consisted of sites with a 4-6 m tall shrub layer dominated by hawthorn which was much greater than prickly ash, American elm and white oak (70% to 100% cover). The ground layer was represented by early goldenrod, Canada goldenrod, yarrow, red clover, wild parsnip and strawberry. The other polygons varied from 35-90% hawthorn cover intermixed with open meadow habitats.

Photo 4 – Hawthorn community with 90% canopy cover, August 10, 2010.

Prickly Ash Deciduous Shrub Thicket (polygon 11 measuring 8.9 ha)

The prickly ash thicket was dominated by 1-3 m tall prickly ash which was greater than hawthorn (the canopy cover was 80%). The understory was dominated by early goldenrod, Canada goldenrod, red clover and wild parsnip. Some portions of the prickly ash polygon included a 4-6 m tall hawthorn and apple layer (10% cover) and a 1-2 m prickly ash and hawthorn layer (50%) with Canada goldenrod and timothy dominating the ground cover. This habitat was located along the edge and the density of prickly ash increased to 80% in the interior.

Photo 5 - Prickly ash community, August 10, 2010

White Pine Plantation *(polygon 9 measuring 6.8 ha)* Photo 6

Candidate significant: woodland, habitat for forest area-sensitive species

A large white pine plantation was located on the eastern side of the project area. This site contained 8-12 m tall white pines with apple in the canopy (cover 90%). The understory contained hawthorns and prickly ash (<5% cover). The ground layer was abundant in open areas but almost none in the closed areas. The ground layer included wild parsnip, Canada goldenrod, common dandelion, and moneywort. The white pine plantation was planted in 1988 (pers. comm. landowners).

Photo 6 - White pine plantation, August 10, 2010.

Poplar Plantation *(polygon 4 measuring 1.7 ha)* Photo 7

Candidate significant: woodland, habitat for forest area-sensitive species, wildlife movement corridor

A poplar plantation was located on the northeast corner of the study area. This site contained 8-12 m tall poplar (75% cover), 4-6m tall white ash which was much greater than Manitoba maple which was greater than choke cherry and white oak (60% cover); 1-2m tall understory dominated by chock cherry which was greater than white ash and sugar maple (15% cover). The ground layer less than 0.50 m tall dominated by chock cherry which was much greater than Virginia creeper and early goldenrod (45% cover). The poplar plantation was planted in 1986 and harvested in 1999 (pers. comm. landowners).

Photo 7 – Poplar plantation, July 5, 2010

Woodland

A woodland, under the ELC, consists of an area with treed cover that is between 35% and 60%. This area is typically associated with cultural sites. One woodland polygon was located within the study area, white ash deciduous woodland.

White Ash Deciduous Woodland (polygon 16 measuring 0.4 ha) – heavily used by cattle
Candidate significant: woodland, bullfrog concentration area, amphibian breeding habitat

Photo 8 – White ash woodland, August 10, 2010

The white ash community was located in the southwest corner of the study area, adjacent to the cattle watering hole (dug-out pond identified in polygon 16, see Photo 9). This area is managed and consisted of 18-20 m tall white ash with a shrub and ground cover layers. The shrub layer was 0.5-2.0 m tall and consisted of meadowsweet which was more than hawthorn which was equal to black current and nannyberry. The ground layer included grasses. The ground layer was grazed and the site was heavily trampled. Some species that were identified included green sedge, elaphantane, common speedwell, blue vervain, timothy and red clover. Painted turtles were observed within the pond, but no amphibian concentrations were found. Although this dug-out pond could provide overwintering habitat for turtles, the vast majority of it is over 120 m form the REGF project location.

Photo 9 – Cattle watering pond, August 10, 2010.

Deciduous Forest

Deciduous forests are areas with more than 60% tree cover and where the tree cover consisted of more than 75% deciduous species. There was one deciduous forest polygon, hickory deciduous forest. This polygon was located on the small hill immediately adjacent to the treed swamp.

Hickory Deciduous Forest (polygon 2 measuring 0.7 ha)

Candidate significant: woodland, wildlife movement corridor, forest area sensitive species

Photo 10 – Bitternut hickory deciduous forest, July 5, 2010

The bitternut hickory dominated forest polygon was located on the northwest side of the study area. This site was dominated by 20-25m tall bitternut hickory which was much greater than ironwood which was greater than basswood (70% cover). The sub-canopy was 8-10m tall consisted of ironwood which was greater than bitternut hickory (45% cover). The understory consisted of 1-2m tall ironwood which was much greater than sugar maple (10% cover). The ground layer was up to 0.50 m tall and was represented by lettuce, wood nettle, gooseberry and grasses (75% cover).

4.2. Birds

Bird species were recorded as described in section 2.2.2 of this report. A total of 45 bird species were observed within the study area (Appendix D). The majority of the sightings included singing males on one or more occasions. The few area-sensitive species that were observed (species requiring ≥10 ha based on habitat requirements outlined in Appendix G of the SWHTG) are listed below (Table 3). <u>All species observed are considered to be common species within the general area</u>.

Table 3 List of Area Sensitive Bird Species (requiring more than 10 ha), their requirements and Location where they were observed

Species	Min. Area Required (ha) (SWHTG)	Preferred Habitat	Observed			Comments
			REGF Project Location (polygon number if available)	REGF Study Area	Initial Surveyed Area	
American redstart	>100	deciduous or mixed woods with closed canopy.	✓ (8)			Observed calling June 21 visit only, in young deciduous trees in polygon 8. No nests observed.
barred owl	100-400	coniferous or mixed forests with little understory, heavily wooded swamps			✓	Observed and photographed within a large deciduous forest with little understory on June 22nd
Pileated woodpecker	40-260	mature, mixed forests	✓ (13)			flying overhead
Red-breasted nuthatch	10	coniferous or mixed forests			✓	heard calling during June 22nd visit
white-breasted nuthatch	10	deciduous or mixed forests	✓ (7)			several observed feeding in standing dead trees
veery	10	cool, moist mixed coniferous forests		✓		heard calling during June 21st visit
ovenbird	>70	undisturbed open mature deciduous mixed forests			✓	heard calling in distance
savannah sparrow	>50	grasslands (hay fields, pastures, or meadows) that have dense ground vegetation	✓ (13)			heard calling during June 21st visit
bobolink	>50	open grasslands (hayfields, meadows, marshes) with dense ground cover	✓ (13)			only heard during June 21st visit. none were heard or flushed during subsequent visits.

4.3. Plants

The plant species data was collected as outlined in section 2.2.1 of this report. A list of plant species that were recorded within the REGF study area is provided in Appendix E. A total of 164 species were identified of which 70% were native and all but two was ranked at a value higher than S4. The butternut is a S3? ranked species. Wild leek is a S1? ranked species. (Note that the question mark indicates that the ranking is uncertain). It is noted that the wild leek was located within the initial surveyed area but none were located within 120 m of the REGF project location. The butternut specimen is dealt with in a separate document on Species at Risk. The number of native species can be considered as indicative of an average site in terms of disturbances (sites with more than 70% native species are generally considered to be less disturbed). Disturbances which were observed within the study area consisted of: selective logging (polygons 2 and 3), ATV trails (polygons 2, 3, 11, 8, and 9), grazing (polygons 6, 8, 11, 14 and 16), and active agricultural fields (polygons 7, 10 and 13). The Co-efficient of Conservatism (CC) of the species recorded provides information on the species' tolerance to disturbance; those species with a high CC (maximum of 10) are highly sensitive. The average CC for this site was 4.12 which would place it in the moderate side of the sensitivity. The majority of the species had a CC value of 6 or lower (90%). One species or less than 1% of the plants had a CC value of 8 or higher. Thise species was true wood-sorrel and was not located within the REGF project location. The plant species found indicated that the vegetation communities consisted of common communities for the area. No remnants of rare vegetation communities were observed.

4.4. Incidental Fauna Observations

The methods used to record incidental fauna observations are provided in section 2.2.3 of this report. A list of wildlife observations (other than bird species) for the initial surveyed area is located in Appendix F. The list includes 15 species: 7 insects, 4 amphibians, 1 reptile and 3 mammals. The monarch butterfly is considered a species of conservation value, however it is also commonly observed in the general area. No concentrations of monarchs or monarch caterpillars were observed. All species were observed are considered to be common species.

4.5 Site Investigation Conclusions

The site investigation confirmed the absence of valleylands, sand barrens, savannah, tallgrass prairie and alvars. It also confirmed the presence of unevaluated wetlands, woodlands and potential wildlife habitat (Table 4). A description of each feature is included within Section 3.2.1.

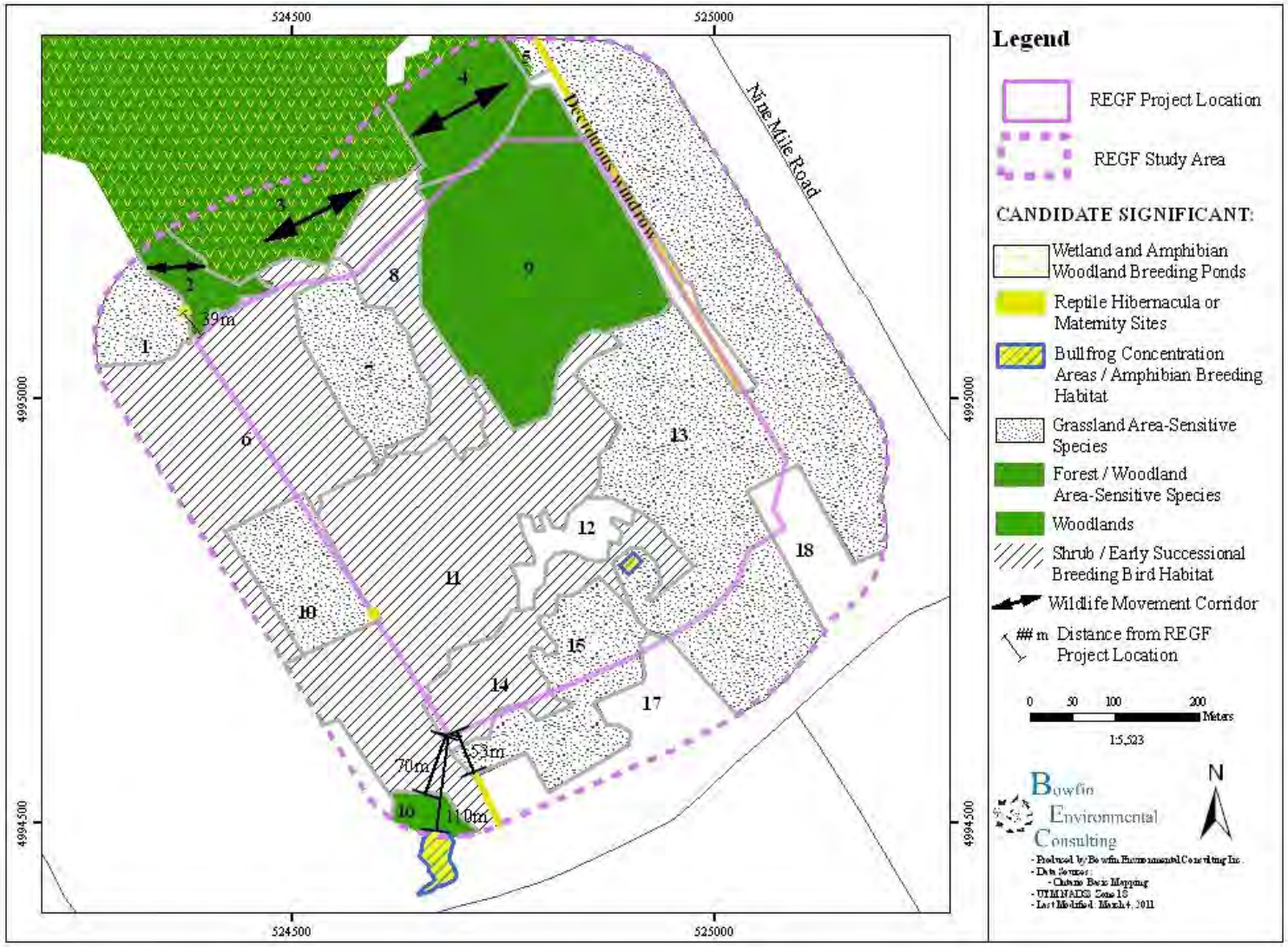
Table 4 Summary of Candidate Significant Natural Features Located within the REGF Project Location or the Adjacent Lands (based on the site investigations)

Candidate Significant Natural Heritage Feature	FINDINGS		Corrections to Records Review and Additional Natural Features	In or within 120 m of the Project Location?
	Records Review	Site Investigations		
Wetlands	• No PSW are identified within the study area on the OP. • An unevaluated wetland located within 120 m to the north of the REGF project location was identified during the OMNR records review. • Satellite imaging also indicates that wetlands are located within the study area.	• Confirmed the presence of the wetland located to the north of the REGF project location. • a description of this feature is provided below and its significance is discussed in Section 5.1.	no change	**Yes (Figure 5, polygon 3)**
Woodlands	• OP lists a woodland as occurring north and west of the study area. • OMNR records review identified that there are unevaluated woodlands located within the initial study area. • RRCA indicated presence of significant woodlands north of the municipal drain • Satellite imaging also indicates that woodlands occur within the study area.	• Woodlands were confirmed within the study area. • A description of these features is provided below and their significance is discussed in Section 5.2 of this report.	no change	**Yes (Figure 5, polygons 2, 3, 4, 9 & 16)**
Valleylands	• No significant valleylands are listed as occurring within the initial subject lands or the surrounding 120 m on the OP or by	• Confirmed the lack of valleylands.	no change	No

Candidate Significant Natural Heritage Feature	FINDINGS		Corrections to Records Review and Additional Natural Features	In or within 120 m of the Project Location?
	Records Review	Site Investigations		
	OMNR. ♦ No valleylands can be observed on the satellite imaging of the study area.			
ANSIs – Earth Science	♦ No significant ANSIs are listed as occurring within the initial subject lands or the surrounding 50 m on the OP or by OMNR (letter dated May 27, 2010 and addressed to Mr. Bob Gary of Penn Energy) ♦ None were identified as occurring in the analysis of the on-line databases.	♦ Confirmed.	no change	no
ANSIs – Life Science	♦ No significant ANSIs are listed as occurring within the initial subject lands or the surrounding 50 m on the OP or by OMNR (letter dated May 27, 2010 and addressed to Mr. Bob Gary of Penn Energy) ♦ None were identified as occurring in the analysis of the on-line databases.	♦ Confirmed.	no change	no
Wildlife Habitat	♦ None were listed identified as occurring during the analysis of the on-line databases. ♦ More information in required in order to assess the potential for significant wildlife habitat to occur.	♦ The majority of the study area provided wildlife habitat including deciduous woodlands, deciduous and coniferous plantations, thicket pasturelands, meadows and	♦ Much of the study area was added as candidate	**Yes (Figure 5)**

Candidate Significant Natural Heritage Feature	FINDINGS		Corrections to Records Review and Additional Natural Features	In or within 120 m of the Project Location?
	Records Review	Site Investigations		
		wetlands. • The significance of these features is addressed in Section 5.3 of this report.	wildlife habitat	
Sand Barrens, Savannah, Tallgrass Prairie and/or Alvars	• None were identified during the records review. • The presence/absence of these features was addressed during the site investigations.	• Confirmed.	no change	no

Figure 5 Location of Candidate Significant Natural Features (based on Site Investigations)



5.0 EVALUATION OF SIGNIFICANCE

The records review (section 3.1. of this report) indicated that there was insufficient information to determine the significance of three features: an unevaluated woodland, an unevaluated wetland and wildlife habitat. During the multiple site investigations particular attention was paid at gathering additional information in order to comment on these natural features as well as documenting the presence of any additional features. Site investigations confirmed the presence of the three candidate significant features within the study area (wetland, woodland, and wildlife habitat). The site investigations confirmed that there were no sand barrens, savannah, tallgrass prairie, alvars or valleylands within or adjacent to the subject lands. The study area is also located outside of the Oak Ridges Moraine, the Greenbelt Protected Countryside and the Niagara Escarpment. The following section provides an evaluation of the natural features documented as occurring within the study area during the site investigations. A site concept plan which shows the location of the solar modules, perimeter fence and maintained grass area is provided in Appendix I. The locations of the significant natural features (i.e. wetlands, woodland, and wildlife habitat) are shown on Figure 8 of this report. Evaluation of significance was completed by Michelle Lavictoire who is certified by OMNR to conduct wetland evaluations and ecological land classifications. The evaluation of significance was completed during the site investigations, specific dates, where applicable, are indicated in the sections below. The EOS was completed between December 2010 and March 2011.

5.1 Wetlands

Ontario Regulation 359/09 defines a wetland as:

> *"Land such as a swamp, marsh, bog or fen, other than land that is being used for agricultural purposes and no longer exhibits wetland characteristics, that,*
>
> *a) is seasonally or permanently covered by shallow water or has the water table close to or at the surface, and*
>
> *b) has hydric soils and vegetation dominated by hydrophytic or water-tolerant plants.*

The information provided by the OP indicated that there are no provincially significant wetlands identified on or within 120 m of the REGF Project Location. This was supported by the information obtained from OMNR, but they indicated that there is an unevaluated wetland within the study area. During the desktop review of the ~~in~~itial surveyed area", it was identified that the wetland included some of the lands within the study area as well as those outside of the study area (and outside of the initial surveyed area). In the summary of the terrestrial environment habitats in Section 4.1 of this report, the black ash treed swamp and red and hybrid maple treed swamps form part of the wetland (polygon 3 in Figure 4). As such the potential for significant wetlands to occur in or within 120 m of the REGF project location needed to be evaluated.

A full OWES evaluation of a wetland requires land access to all parts of the wetland, including those areas located outside of the study area. A search of the land registry was completed by Penn Energy in order to provide information on the land owners. Bowfin contacted each land owner in person (between October 5th and 8th) (with the exception of one parcel that does not include a residence, this land owner was contacted by phone). Two land owners granted site permission, the remainder declined. It is noted that one of the land owners did not grant permission until October 17th, and as such the site visit was delayed. Since land access was not granted to the whole wetland, the *Appendix C - Wetland Characteristics and ecological functions Assessment for Renewable Energy Projects from the Natural Heritage Assessment guide for Renewable Energy Projects* (OMNR 2010) was followed. This method is based on OWES and was completed by Michelle Lavictoire who is certified by the OMNR to conduct wetland evaluations. The wetland within the ~~–in~~itial surveyed area" was visited on several occasions, and the delineation of the boundaries was completed on August 10th, October 12th and 22nd. It is noted that while the leaves had changed colour, they were still present on the trees during the October 12th visit. Only one site visit to the east of Nine Mile Road was completed as this area was outside of the study area and land owner permission was required prior to the site visit. The delineation of the communities and outer boundary of this portion of the wetland was more difficult as the leaves were completely off of the trees during this site visit.

Based on OWES a wetland habitat is characterized as:

> *"Lands that are seasonally or permanently flooded by shallow water as well as lands where the water table is close to the surface; in either case the presence of abundant water has caused the formation of hydric soils and has favoured the dominance of either hydrophytic or water tolerant plants".*

OWES defines the wetland boundary as the location where over 50% of the plant community consists of upland species with the woody vegetation layer (trees and shrubs) taking precedence over the herbaceous layer (OMNR 2002). Furthermore, the presence of large numbers of obligate upland species requires an upland classification.

The following summary is based on the desktop analysis and site investigations. This wetland is located in the headwaters of Wood Municipal Drain. The wetland is roughly 41.1 ha in size and is composed of a single wetland. The presence of Wood Municipal Drain running through the wetland (albeit with very little, but continuous, flow in the summer) results in this wetland being designated as a riverine wetland. There were two wetland types identified: swamp and marsh. The vegetation communities contained 2-5 forms (total of 10 communities) (Figure 6, Table 5). The most dominant vegetation form was deciduous treed dominated swamps which covered 62% of the wetland area followed by coniferous treed swamp (6.8%), tall shrub swamp (5.1%), and narrow leaved emergent marsh (3.1%). The surrounding habitat contained a variety of habitats including row crops, pasture, abandoned agricultural fields (fallow fields), deciduous forest, coniferous forest, mixed forest, and fence rows. There were no other wetlands within 1 km of the site. The little open water habitat was limited to Wood Municipal Drain which was a shallow slow moving system dominated by submergent vegetation, primarily stonewort. The deciduous and coniferous treed swamps associated with the forest would provide value for wood products and forage fish were observed in the drain. One snapping turtle was observed during the October

12th visit (note that the snapping turtle habitat was located outside of the study area). Three furbearers were either observed directly or their tracks or huts were identified; these were raccoon, beaver and red squirrel. The site is used for deer hunting. The entire wetland is located on private property. The presence of butternuts and snapping turtles, which were observed well outside of the study area, within the wetland give the special features the maximum score (250 points).

Table 5 Summary of Wetland Communities

Code	Forms	Dominant Species
S1	h, ts, gc	h, *Acer X freemanii*, *Fraxinus nigra*; ts, *Acer X freemanii*, *Thuja occidentalis, Fraxinus nigra*; gc, *Carex lacustris*, *Solidago gigantea*
S2	h, ts, ls, gc	h, *Acer X freemanii*, *Quercus alba*, *Fraxinus nigra*; ts, *Ostrya virginiana*, *Thuja occidentalis*, *Viburnum lentago*, *Fraxinus nigra*; ls, *Cornus stolonifera, Viburnum lentago*, *Cornus foemina ssp. racemosa*, *Rubus allegheniensis*; gc, *Carex lacustris*, *Fragaria virginiana ssp. virginiana*, *Eupatorium perfoliatum*
S3	h, ts, gc	h, *Fraxinus nigra*, *Acer X freemanii*, *Ulmus americana*; ts, *Salix petiolaris*, *Spiraea alba*, *Cornus foemina ssp. racemosa*; gc, *Phalaris arundinacea*
S4	ts, gc	ts, *Salix petiolaris*, *Cornus stolonifera*, *Spiraea alba*, *Viburnum lentago*; gc, *Phalaris arundinacea*
S5	ts, h, ls, gc, m	ts, *Thuja occidentalis*, *Fraxinus nigra*; h, *Acer X freemanii*, *Quercus alba*, *Fraxinus nigra*; ls, *Thuja occidentalis*, *Cornus stolonifera*; gc, grass sp., *Solidago gigantea*, *Eupatorium perfoliatum*; m; moss sp.
S6	h, c, ts, ls	h, *Acer X freemanii*, *Fraxinus pennsylvanica*, *Ulmus americana*, *Fraxinus nigra*; c, *Thuja occidentalis*; ts, *Acer X freemanii*, *Cornus stolonifera*, *Thuja occidentalis*, *Carpinus caroliniana*; ls, *Thuja occidentalis*, *Acer X freemanii*, *Cornus stolonifera*, *Ribes cynosbati*; gc, *Carex lacustris*, *Fragaria virginiana ssp. virginiana*, *Anemone quinquefolia*
S7	h, c, ts, ls, gc,	h, *Acer X freemanii*, *Betula alleghaniensis*; c, *Abies balsamea*, *Picea glauca*; ts, *Thuja occidentalis*, *Viburnum lentago*, *Zanthoxylum americanum*; ls, *Thuja occidentalis*, *Cornus stolonifera*; gc, *Carex lacustris*, *Galeopsis hederacea*, *Anemone quinquefolia*
S8	c, ts, ls, m	c, *Abies balsamea*, *Thuja occidentalis*; ts, *Abies balsamea*, *Ostrya virginiana*, *Thuja occidentalis*; ls, *Cornus stolonifera*, *Acer X freemanii*, *Ribes americanum*, *Abies balsamea*; m, moss sp.
S9	ts, ne, gc, su	ts, *Salix petiolaris*, *Salix discolor*, *Cornus stolonifera*, *Spiraea alba*; ne, grass sp., sedge sp., *Carex lacustris*; gc, *Solidago gigantea*, *Eupatorium perfoliatum*, *Eupatorium maculatum ssp. maculatum*, *Impatiens capensis*; su, chara sp., *Ceratophyllum demersum*
M1	ne, gc, su	ne, grass sp., *Carex lacustris*, sedge sp.; gc, *Solidago gigantea*, *Erigeron annuus*, *Eupatorium perfoliatum*

Figure 6 Nine Mile Road Swamp Wetland Mapping

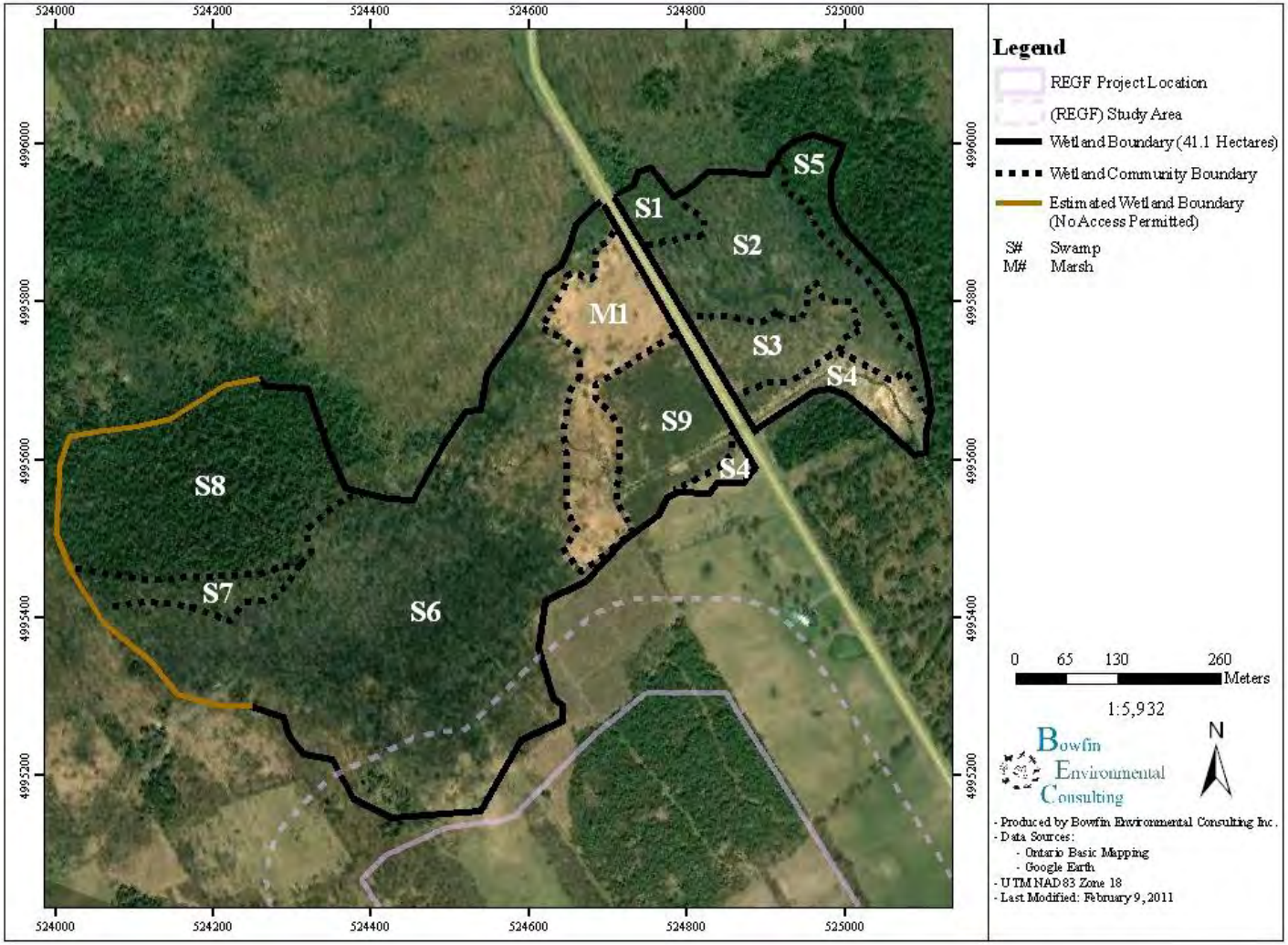


Table 6 Summary of Evaluation Result

Component	Score
Biological	101
Social	98
Hydrological	197
Special Feature	250
Total	**646**

This wetland has a score of 645 points which would make it significant (600 points required to be listed as significant). Furthermore, the score of 250 points in the special features component would have made this wetland a provincially significant wetland regardless of the total number points. The wetland received high points for begin located in the headwaters thus serving as the primary means of flood attenuation as well as for the presence of provincially important species.

This wetland should be considered significant and is brought forward.

5.2 Woodlands

The confirmation/documentation of woodlands was completed by Michelle Lavictoire (certified by OMNR to conduct Ecological Land Classifications) during the June, July and August visits. The O. Reg 359/09 (amended January 1, 2011) defines woodlands as:

> *"treed area, woodlot or forested area, other than a cultivated fruit or nut orchard or plantation established for the purpose of producing Christmas trees…"*

The woodland habitats encountered included those that are identified as plantation (polygons 4 & 9), white ash deciduous woodland (polygon 16), hickory deciduous forest (polygon 2) and treed swamp (polygon 3) (Figure 4). Of these polygons only polygon 9 (white pine plantation) falls within the REGF project location. Polygons 2, 3, and 4 are located within 30 m from the REGF project location. Polygon 16 is located 75 m from the REGF project location. The white ash woodland (polygon 16) is only 0.4 ha in size and is isolated from all other woodlands. Polygon 16 is heavily disturbed by cattle trampling, is not considered a significant woodland and will not be brought forward. The potential for polygons 2, 3, 4, & 9 to be designated as significant woodlands is evaluated below.

The woodlands within the Township of South Glengarry have been evaluated using the Eastern Ontario Model Forest system (EOMFS) (Rowsell 2003) (RRCA 2006). A desktop exercise was used in which the satellite imaging and the Ontario Base Mapping (OBM) data were combined to locate the extent of the forest patch. The delineation of the woodland patches was was conducted as a desktop exercise. The EOMFS does not provide criteria to determine if the forest should be considered significant or insignificant, but uses a ranking system to help prioritize woodlands within a jurisdiction. The scoring system based on the patch size, forest interior,

proximity to woodlands, proximity to water, slope and islands. A score of 3 indicates a high value and a score of 0 or 1 a low value.

The RRCA has indicated that 36% forest cover is present within its jurisdiction and specifically 44% cover within the Raisin River sub-watershed (RRCA 2006). This woodland should be considered significant.

Patch Size
The forest patch to which the study area belongs is located north of County Road 19 and extends east and west of the study area. Based on desktop exercise using satellite imaging, this large forest patch is approximately 631.4 ha (Figure 7). The land use is considered rural. As such the patch size score would be 3 (>200 ha).

Forest Interior
The score for the forest interior is based on the amount of interior habitat that is available if 100, 150 or 200 m of edge habitat is removed. For this portion of the forest patch approximately 9 ha of interior habitat remains after an edge of 200 m is removed. This gives a score of 3 (≥4 ha remaining after 200 m edge removed).

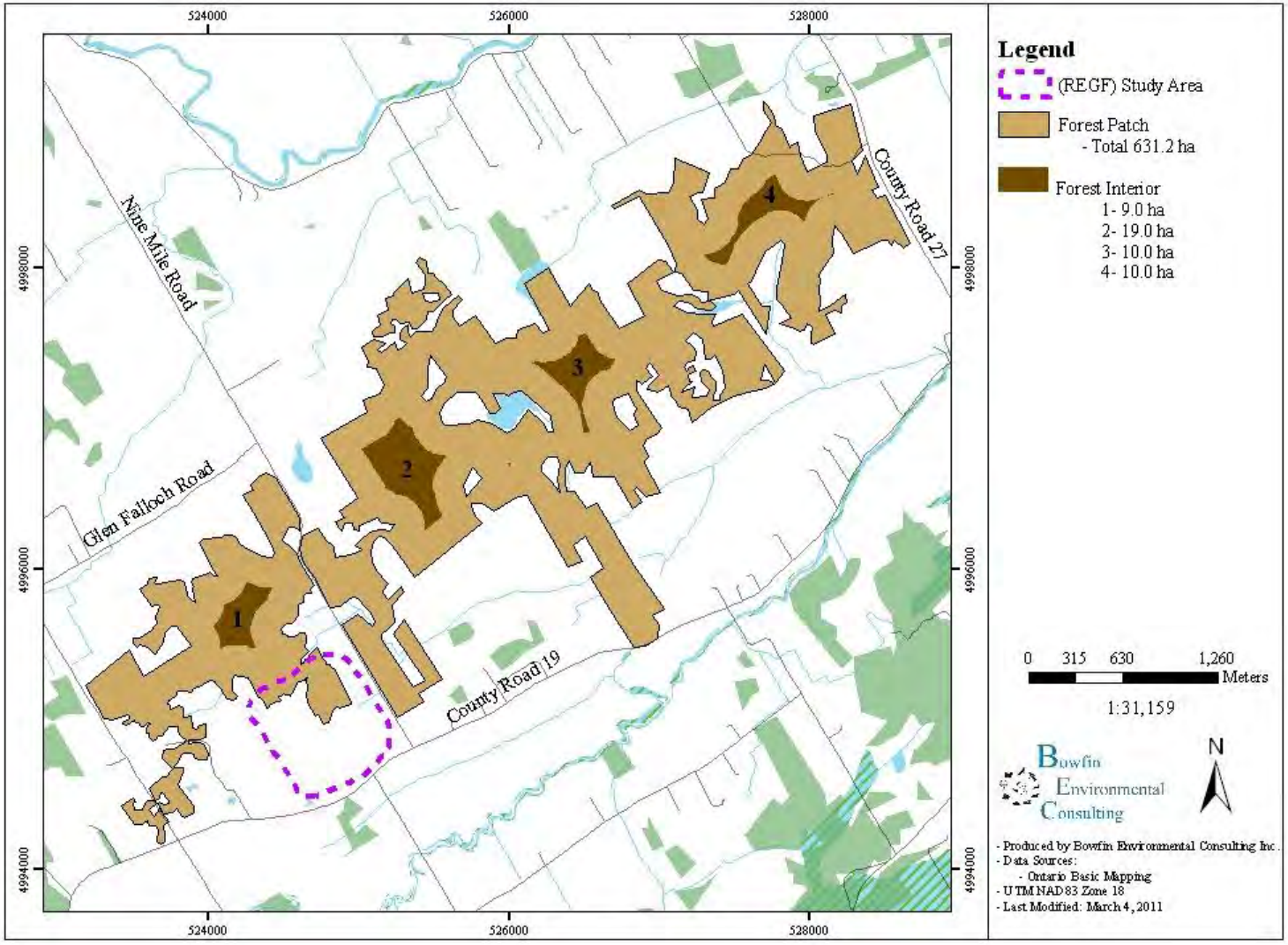
Proximity to Woodlands
This criterion gives value to those woodlands which are located in close proximity to other woodlands. This forest patch is located near to several patches one to the west of County Road 20, another to the east of county Road 27 as well as several patches to the north; this gives the patch a score of 3 (closest edge between patches ≤ 100 m).

Proximity to Water
Wood Municipal Drain is located within the forest patch and as such its score is 3 (inside or < 30 m from a water feature's shore).

Slope
The slope scores a 1 (≤15% slope).

Islands
This forest patch is not considered to be an island; score of 0.

Figure 7 Delineation of Forest Patch (based on Site Investigations and desktop exercise)



EOMF Results Summary
This forest consists of a very large patch (approximately 631 ha) that includes treed swamp, plantations, coniferous and deciduous forests. While there are some minor disturbances (clearing for ATV trails and logging purposes) woodland patch, to which polygons 2, 3, 4 and 9 belong, is considered to be significant based on its overall size, proximity to water, other woodlands and the size of its interior forest (Figure 8). It is noted that large forest patches are not uncommon within this general area.

5.3 Wildlife Habitat

Wildlife habitat is defined in REA (O. Reg. 359/09) as:

> *"…where plants, animals and other organisms live, and find adequate amounts of food, water, shelter and space needed to sustain their populations. Specific wildlife habitats of concern may include areas where species concentrate at a vulnerable point in their annual or life cycle; and areas which are important to migratory of non-migratory species."*

OMNR recommends that the significant wildlife habitat be evaluated based on information available in the SWHTG and the *Draft Significant Wildlife Habitat Ecoregion Criteria Schedules* (January 2009) both created by OMNR. A summary of the habitat types discussed in the SWHTG guides and their presence/absence from the subject lands (REGF Project Location) and the adjacent lands (120 m from subject lands) is provided in the table below. The table is organized by the following four categories:

1. seasonal concentrations of animals
2. rare vegetation communities or specialized wildlife habitat
3. habitat of species of conservation concern
4. wildlife movement corridors

The habitat within the study area consisted primarily of thickets, plantations, pasturelands, fallow fields, and swamps. The agricultural fields were primarily hay field and row crops (polygons 7, 10 and 13). These areas are under active management and are not considered to provide significant wildlife habitat. Rock piles were observed along the deciduous windrow to the east of the REGF project location, another to the southwest (near polygon 16) (Figure 4). There were also two rock piles observed one on the edge of polygon 1 and the other on the edge of polygon 10 (Figure 4). The site contains a large amount of ATV trails and selective logging. There were also several depressional areas within the treed swamps which could serve as vernal pools.

Based on the available habitat and guidelines regarding species specific requirements (Appendices G and Q of SWHTG and *Draft Significant Wildlife Habitat Ecoregion Criteria Schedules* (January 2009)) the only significant wildlife habitat within the study area is wildlife movement corridor (Table 7).

Table 7 Potential for the Presence/Absence of Significant Wildlife Habitat

Feature	Potential Presence? Project Location	Potential Presence? Adjacent Lands	Comments	Brought Forward (yes/no)
Seasonal Concentrations of Animals				
White-tailed deer wintering habitats			No deer wintering habitats were identified by OMNR. Potential deer overwintering habitat is present outside of the study area in a balsam fir and hemlock forest located north and northeast of the study area and in the pine plantation to the east of Nine Mile Road. These areas have been acknowledged under the wildlife movement corridor. The pine trees on the property are young and do not provide good cover. Communications with the landowners have confirmed that there are no winter concentrations of deer on their property.	no
Moose late winter habitat			No significant numbers of moose are known to occur within this general area.	no
Colonial bird nesting sites			Site was visited three times before July 10th. Typically applies to bird species such as gulls, terns, cormorants. These species nest on islands, shoals, peninsulas and shorelines. None of these habitats are present. Other types of colonial nesters include swallows. The list of colonial species in Appendix G of the SWHTG was compared to the observed bird species list for the initial surveyed area. No colonial nesters other than red-winged black birds were observed. The red-wing blackbirds were observed within the marsh habitat of the wetland which is located outside of the study area.	no

Feature	Potential Presence? Project Location	Potential Presence? Adjacent Lands	Comments	Brought Forward (yes/no)
Waterfowl habitat (sites known and mapped, sites not mapped and based on population status, sites not mapped and based on landform type)			Tend to require large wetlands and water bodies with emergent vegetation and grassy/shrubby areas for nesting. The aquatic features and wetlands within this area are marginal in terms of habitat. No waterfowl or their nests were observed utilizing any of the study area. Also use cultural meadows and thickets during the spring which are flooded from the spring melt. No large flooding of the fields were observed.	no
Waterfowl stopover and staging areas				
Waterfowl nesting				
Shorebird migratory stopover area			No shorebirds were observed within the study area. The only aquatic habitat within the study area consisted of a small (<0.02 ha) dug-out pond with very steep banks. There shorelines within the study area provide little habitat to attract shorebirds. The cattle watering dug-out pond associated with polygon 16 is located on the very edge of the study area. No mud flats or shorebirds were observed at this location.	no
Landbird migratory stopover area			Study area is not located within 5 km of the Great Lakes. Local birding club does not report large numbers of birds at this location (pers. obs.).	no
Raptor winter feeding and roosting areas			The study area does not contain any large trees for roosting and the land-use consists of young dense plantations, very dense hawthorn/prickly ash thickets and some fields. No raptor feeding has been observed (this site on located to roads used daily by Bowfin staff).	no

Feature	Potential Presence? Project Location	Potential Presence? Adjacent Lands	Comments	Brought Forward (yes/no)
Wild turkey winter range			A wild turkey was observed in the study area during the site investigations however, no seeps were found and no evidence of wild turkeys utilizing the site in the winter have been noticed (this site on located to roads used daily by Bowfin staff)	no
Turkey vulture summer roosting areas			No turkey vulture roosting areas have been observed.	no
Reptile hibernacula and maternity sites		✓	Reptile hibernaculas can include those utilized by snakes and turtles. The maternity sites refer primarily to snakes. Site visits were completed between June and mid-October 2010. While no hibernaculas or maternity sites were observed, the documentation of use is notoriously difficult and as such the potential for hibernacula sites to occur remain possible. It has been noted that snakes can utilize a wide variety of habitats as hibernation or maternity sites ranging from rotting logs, sand piles, compost, boards, old building, foundations and rock walls. Old rock wall and piles were observed on the outer edge of the REGF project location (Figure 5). The south rock pile and the portions of the eastern rock wall showed signs of recent disturbance (i.e. fresh rocks or soil disturbance). No snakes or their shedded skins were observed during any of the site visits. No snakes were observed on the roads within the general area during any of the site visits or at any other time (this site is located along roads that are driven daily by Bowfin staff). No congregations of 5 or more individuals or 2 or more species of snakes were observed anywhere within the study area. The lack of snakes and/or evidence of snakes would indicate that no significant reptile hibernaculas or maternity sites were present.	no

Feature	Potential Presence? Project Location	Potential Presence? Adjacent Lands	Comments	Brought Forward (yes/no)
			Turtles: Again site visits were completed during the appropriate time period (between June and mid-October 2010). Both the cattle watering pond (located on the edge of the study area) and the smaller dug-out pond in (polygon 13) could provide habitat (Figure 5). Painted turtles were noted within the study area however, never anymore than 2 individuals were observed and no evidence of breeding (no nests, no young individuals). No other turtle species were observed within the study area. These habitats do not meet the requirements of the *Draft Significant Wildlife Habitat Ecoregion Criteria Schedules* (OMNR 2009). No significant turtle overwintering sites or nesting sites were present.	
Bats hibernacula sites			No caves were observed.	no
Bullfrog concentration areas			No bullfrogs were observed within the study area. The only aquatic water body within the study area was the small dug-out pond (0.2 ha) with very steep banks. The pond located in polygon 16 was on the edge of the study area. Despite frequent site visits no bullfrogs, eggs or tadpole were observed at either of these features.	no
Migratory butterfly stopover areas			Study area is not located within 5km of Lakes Ontario, Erie or Huron.	no

Feature	Potential Presence? Project Location	Potential Presence? Adjacent Lands	Comments	Brought Forward (yes/no)
Rare Vegetation Communities				
Alvars			These habitats were not observed during the site investigations.	no
Savannahs				
Rare forest types				
Talus slopes				
Rock barrens				
Sand barrens				
Tall-grass prairies			not applicable	no
Great lakes sand dunes				
Rare Vegetation Communities or Specialized Wildlife Habitats				
Habitat for area-sensitive species -forest breeding bird habitat - grassland/open country breeding bird habitat - shrub/early successional breeding bird habitat	✓	✓	During the site investigations a list of species observed was recorded of which nine were considered to be area sensitive species based on the information in the SWHTG (Table 3). Of these species only three were located within the study area (or within polygons/vegetative communities which touched the study area): savannah sparrow, bobolink and American redstart. ***Forest:*** The average DBH were 10-20 cm (with the rare specimen of 30-35 cm, trembling aspen, hybrid maple). This is a young forest that does not meet the minimum of 60 years old identified in the *Draft Significant Wildlife Habitat Ecoregion Criteria Schedules* (January 2009) as a requirement to be considered candidate significant for forest area-sensitive species (age based on Swiecki and Bernhardt 2001). This will not be brought forward.	no

Feature	Potential Presence? Project Location	Potential Presence? Adjacent Lands	Comments	Brought Forward (yes/no)
			Open country/grassland: The savannah sparrow, a grassland area sensitive species, was heard calling on one occasion. No nests were observed. The largest field/meadow polygon located within the study area is <18 ha and this species needs 50 ha of grassland habitat (SWHTG). No area sensitive grassland habitat is considered to be present for the following reasons: lack of continued sightings of the individuals (especially the bobolink which is a very visible and vocal species), lack of nests, small available meadow habitat and the actively cropped fields within the surrounding area (outside of the study area). ***Shrub/early successional:*** The American redstart is considered as an area-sensitive species in some areas, however, this species is a generalist in that it can inhabit many types of habitats such as deciduous forests, young forests with dense shrubs, alder or willow thickets, fencerows, and mixed forests (Sherry and Holmes 1997). While a male was seen and heard singing in June, no nest was found. There is abundant habitat located throughout the area, including the study area (forest patch is approximately 630 ha in size, portions of the wetland thicket would also provide suitable habitat. Note that the forest patch is discussed below). This species could be found within any polygon (as it can inhabit edge habitats and windrows). This species is considered an S5 species and is considered a common and widespread species. This species' habitat will not be carried through to the Environmental Impact Statement (EIS) section as it is not considered significant habitat.	

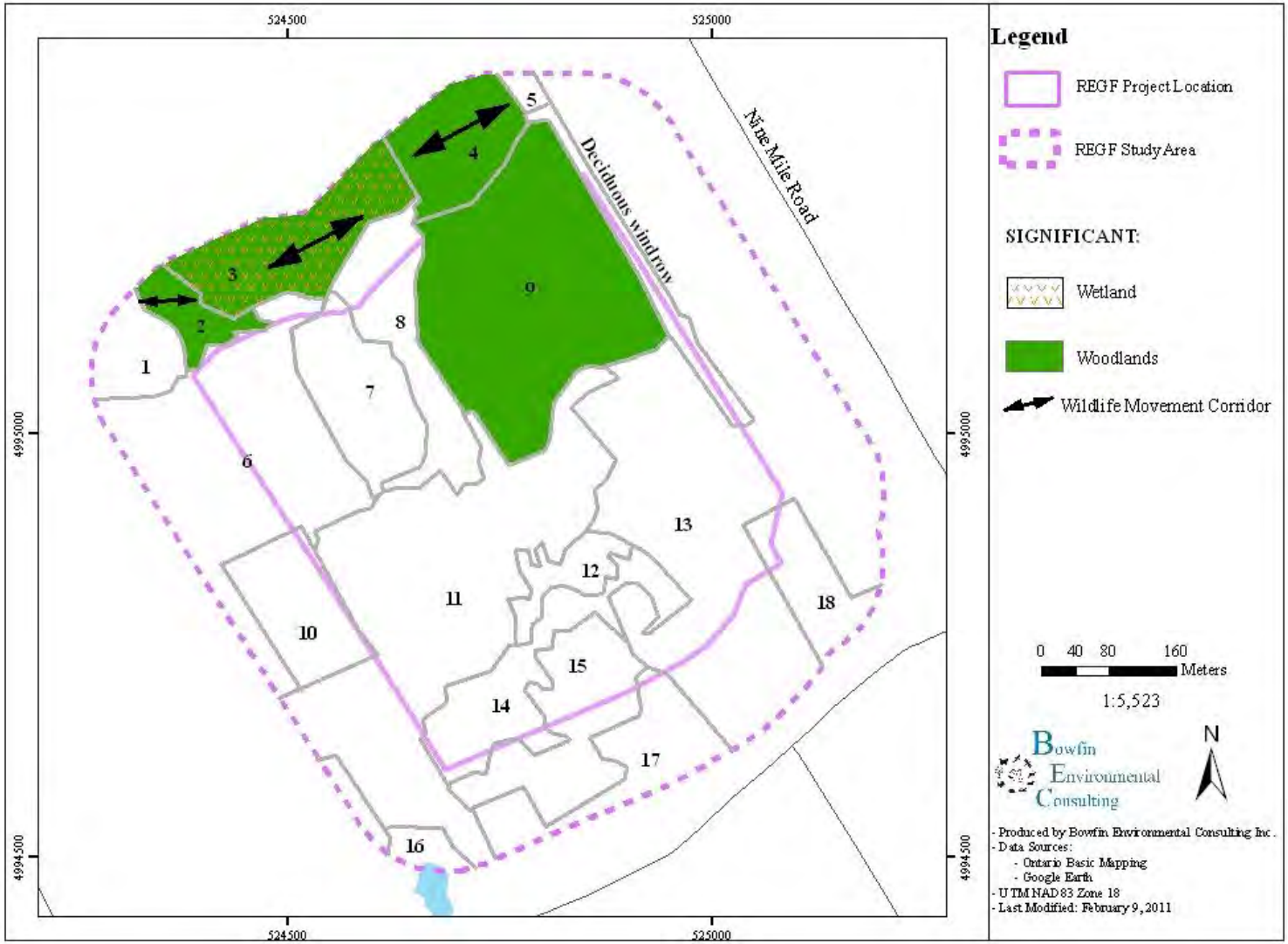
Feature	Potential Presence? Project Location	Potential Presence? Adjacent Lands	Comments	Brought Forward (yes/no)
Forests providing a high diversity of habitats			Plantations are not considered to provide high diversity. Polygons 2 and 3 forms part of a much larger forest. There were no rare communities observed. Both polygons were young (DBH <35 cm). With the exception of the 9.0 ha interior habitat, no specialized habitats were present. There were no large cavities or large trees and the site is selectively logged. Also note that the interior habitat of this forest patch is located outside of the study area.	no
Old-growth or mature forest stands			Woodlands were young.	no
Foraging areas with abundant mast			Polygon 2 contained hickories. The total size of the polygon was 2.1 ha (of which 0.7 ha was located within the project area).	no
Amphibian woodland breeding ponds		✓	The treed swamp located outside of the REGF project location but within the adjacent lands contained a high amount of potential woodland breeding ponds. These ponds would typically provide good or significant habitat for amphibians if permanent ponds are present until mid-July. Site visits were completed between June and October. The ponds located within the adjacent lands were dry during June and do not meet this requirement. Some water was observed within the ruts of a few ATV trails. These areas were walked repeatedly and no egg masses, large concentrations or larvae were observed. These habitats do not meet the requirements of the *Draft Significant Wildlife Habitat Ecoregion Criteria Schedules* (OMNR 2009). The woodland ponds located within the study area are not considered significant wildlife habitat.	no

Feature	Potential Presence? Project Location	Potential Presence? Adjacent Lands	Comments	Brought Forward (yes/no)
Turtle nesting habitat			Painted turtles were observed within the small dug-out pond. No nest sites were observed. No suitable nest sites were located within the study area. The nearest nesting habitat would consist of the gravel shoulders on County Road 19 and Nile Mile Road.	no
Specialized raptor nesting habitat			Site was visited multiple times, including during the fall after the leaves had fallen. No raptor nests (abandoned or in use) were observed.	no
Moose calving areas			not applicable	no
Moose feeding areas				
Mineral licks				
Mink, otter, marten and fisher denning sites			No evidence of use observed (no individuals, tracks, feces, dens).	no
Cliffs			None observed.	no
Seeps and springs				
Habitats of Species of Conservation Concern (excluding habitat of provincially endangered and threatened species)				
Habitat of species of conservation concern			No species of conservation concern were observed. Appendix B provides a list of potential species for the general area. With the exception of the monarch the fauna species and many of the flora species on the list require aquatic, wetland or prairie habitats which were not present. None of the flora species were observed.	no
Habitat of species with a large percentage of their global range in Ontario			The monarch butterfly which was observed was found	

Feature	Potential Presence? Project Location	Potential Presence? Adjacent Lands	Comments	Brought Forward (yes/no)
			along Wood Municipal Drain, outside of the study area. No concentrations of butterflies were observed. Meadow habitats within the study area are all fallow fields, hayfields or actively cropped. The fallow fields were greatly dominated by goldenrod (no concentrations of milkweeds	
Wildlife Movement Corridors				
Wildlife movement corridors		✓	The wildlife corridor consists of a portion of a woodland patch that is roughly 630 ha in size. Included as part of this area is treed swamp and Wood Municipal Drain and adjacent habitats include marsh and tall shrub habitats. Based on desktop review, there is a potential for a winter deer yard to occur to the north and to the east of the study area. The corridor is crossed by several ATV trails as well as County Roads. The size and the combination of wetland and water features located within this corridor, relative low number of wide gaps (>20 m), potential use by deer to travel to winter deer yards (that are located outside of the study area) and very small patch of hickory (1.2 ha) increase its potential to be considered significant. Discussion with the land owners have indicated that deer populations have been low over the past 5 years and they have not observed concentrations of animals on their property. Based on the available cedar and balsam fir forest located outside of the study area and the lack of information stating otherwise, this wildlife movement corridor should be considered significant.	**yes (Figure 8)**

✓ Indicates presence or potential to occur

Figure 8 Significant Natural Features Located within the Study Area



5.4 Summary of the Evaluation of Significance

Based on the accepted methods for determining significance of natural features (i.e. PPS, SWTHG, NHRM, OWES), the candidate significant natural heritage features – in or within 120m of the REGF project location – that were found to be significant were wetlands, woodlands and wildlife habitat (Table 8). These features require an Environmental Impact Study (EIS) which is provided in the following section (Section 6.0).

Table 8 Summary of Significant of Natural Heritage Features Identified within the Study area

Natural Heritage Feature	Present in or within 120 m of Project Location?	Significant? (yes/no)	EIS Required (yes/no)
Wetlands	Yes (polygon 3)	♦ Yes	♦ Yes
Woodlands	Yes (polygons 2, 3, 4, 9)	♦ Yes	♦ Yes
Wildlife Habitat	Yes (wildlife movement corridor – polygons 2, 3, 4, 5)	♦ Yes	♦ Yes

6.0 ENVIRONMENTAL IMPACT STUDY (EIS) REPORT

Pursuant to O.Reg 359/09 section 38, the applicant must prepare an Environmental Impact Study report if they wish to construct, install or expand a renewable energy generation facility in or within 120 m of any of the following locations (among others that are not applicable to this project):

- A provincially significant wetland;
- A significant woodland; or
- A significant wildlife habitat (wildlife movement corridor).

The records review (section 3.1 of this report) indicated that there was insufficient information to determine the significance of three natural features an unevaluated wetland, woodland, and wildlife habitat. During the site investigation particular attention was paid at gathering additional information in order to comment on these natural features. The site investigations confirmed that there were no sand barrens, savannah, tallgrass prairie, alvars or valleylands within or adjacent to the subject lands. The study area is also located outside of the Oak Ridges Moraine, the Greenbelt Protected Countryside and the Niagara Escarpment. The site investigations found that the REGF project location consisted of thickets, plantations, pasturelands, and active fields. The agricultural fields were primarily hay field and row crops (polygons 7, 10 and 13). These areas are under active management and are not considered to provide significant wildlife habitat. Outside of the REGF project location but within the study area other types of habitat included tall shrub and treed swamps. The study area contains a large amount of ATV trails and selective logging/clearing. The evaluation of significance (section 5.0 of this report) found that there was a significant wetland, woodland, and wildlife habitat (wildlife movement corridor). The boundaries of these features are identified in Figure 8. The site concept plan of the proposed REGF which shows the location of the solar modules, perimeter fence, landscaped setback and maintained grass areas is provided in Appendix I. The evaluation of these natural heritage features was completed by Michelle Lavictoire (resume is provided in Appenidx G).

This section provides a description of the proposed solar facility and its construction methods, operation and decommissioning phases. This is followed by an evaluation the three significant natural heritage features (wetlands, woodland, and wildlife habitat) found within the study area. The features are discussed in terms of their significance, the proposed REGF's potential impact the feature, any re-design which was completed as part of the site plan development process, recommended mitigation measures and residual impacts (following re-design and mitigation measures). Similar to the information provided in this EIS, a Construction Plan Report will also be available to address the potential negative environmental effects that may result from construction or installation activities on the wetland, woodland and significant wildlife habitat. The Construction Plan Report also addresses the mitigation measures described in this EIS.

When negative environmental effects of a project on the significant natural features are identified, then the EIS report needs to describe how the Environmental Effects Monitoring Plan addresses them. A description of the potential impacts, re-design, mitigation measures and residual impacts are provided in the sections below. For this project, the potential to impact natural features has been minimized or eliminated through re-design (i.e. moving the project

away from significant features). The level of impact to the significant wetlands, prior to mitigations, are local, short-term and minor; to the woodlands to local, short-term and negligible and to the significant wildlife habitat, local, permanent and negligible. Following mitigations, all impacts have been reduced to negligible. An Environmental Effects Monitoring Plan will be created by Penn and will include the mitigation measures outlined in this EIS. No monitoring is required.

6.1 Solar Facility Project Description and Anticipated Potential Impacts

The REGF's potential to impact the natural environment was evaluated for the construction, operation and decommissioning phases. The proposed REGF would consist of a collection of solar photovoltaic (PV) modules (each approximately 1.00 m x 1.67m in dimension) that are grouped into arrays, tilted and facing south. These stationary arrays are strung together forming a series of rows oriented east to west. Electricity collection and distribution lines would link the PV modules to a collection house with inverter and transformer equipment. For this size of operation 10-15 collection houses are anticipated. Laneways would provide access to each collection house. The entire operation (solar modules, collection houses and access lanes) would be fenced in order to provide for safety and security, in accordance with applicable requirements. The fence will be designed according to applicable legislations (such as Ontario Energy Board). A perimeter lane would be constructed immediately inside of the fence. The access lanes (perimeter lane and laneways to collection houses) would consist of a typical farm lane. These activities would require clearing of vegetation and re-grading. The solar modules are placed above the ground and as such allow for low growing herbaceous vegetation to be planted underneath. The foundation system for the arrays would be completed by pile driving or core drilling pipes into the ground. The exact methods will be decided following geotechnical investigations. The construction period would take approximately 6 months to complete. The expected lifespan of the solar modules is 20-30 years.

It should be noted that as the project's design has evolved the REGF layout has been modified substantially. Each time significant natural features were identified, setbacks/buffers were established and the project footprint was pulled-back from those features in an effort to minimize or avoid any negative effects on approximately 36.4 ha of woodlands, wetlands, municipal drain and wildlife corridor. The clearing of land has been confined to plantations, grazing lands, crop lands and fallow fields. A 30 m setback has been established around the surveyed outer boundary of the wetland feature, which is the southern-most NHF and closest to the REGF project location. It is noted that many of the rock features (rock walls and rock piles) are located outside of the area to be disturbed but those within the project location will likely be removed.

During the operation of the solar facility, routine maintenance would include regular mowing, as frequently as weekly, within the facility and the landscaped areas outside the perimeter fence along the southern boundary. An area that is a maximum of 5 m wide on the outside of the perimeter fence on the western, northern and eastern boundaries will also be mowed regularly to ensure that no woody vegetation would become established where it could cause damage to the fence or shade the solar modules.

The decommissioning of the site would include the removal of the modules, collection house and the pipes used to secure the modules in place. The site could then be reverted back into agricultural use or natural features, or allowed to naturalize on its own.

The potential impacts are discussed in the sections below (sections 6.2, 6.3 and 65.4). The significance of the potential impacts is measured using three different criteria: area affected, duration of impacts and magnitude. The area affected may be local in extent signifying that they will only be impacted within the study area or regional signifying that they may impact an area outside the immediate study area. The duration of the impact may be rated as short term (1-2 years), medium term (2-4 years) or long term (>4 years). The magnitude of the impact may be negligible signifying that the impact is not noticeable, minor signifying that the project's impacts are perceivable and suggests minor mitigations, moderate signifying that the project's impacts are perceivable and require mitigations as well as monitoring and/or compensations and major signifying that the project's impacts would destroy the environmental component within the study area.

6.2 Wetlands

The wetland evaluation found that this wetland would be considered a provincially significant wetland. The components of the evaluation which provided the highest scores included the hydrological and special features components. This wetland consists of a swamp and marsh type within an area that is relatively flat. The special features associated with the wetland were located outside of the REGF project location (380-550 m from the REGF project location). The proposed facility's activities will be located at a minimum of 30 m from the delineated wetland boundary. This type of wetland (swamp and marsh) is not sensitive to changes in temperature or nutrient input. Although the proposed project involves some re-grading, it will not result in any increase in sedimentation or any changes to the hydrology of the wetland. As such the potential to affect the form or function of this wetland would only be through indirect impacts during construction, operation and decommissioning phases.

Initial Impact Analysis

As previously noted the footprint of the REGF project location was moved to the south following the identification of the wetland feature and a 30 m buffer between the delineated wetland boundary and the REGF project location was established. These re-design measures eliminated the potential for direct impact to the wetland feature. The potential for indirect impacts, prior to mitigation, could arise from construction and decommissioning. Potential impacts include:

- sedimentation during construction and decommissioning; and
- change in overland flow following grading during construction.

No impacts are anticipated during the operation as the only activity located within 30 m of the wetland would be the occasional mowing, as needed, of a 5m wide area located immediately adjacent to the perimeter fence (i.e. located 25-28 m from the wetland boundary). This activity would not result in any changes to grade, and would not cause exposed soil.

Prior to implementing any mitigation measures, the potential impacts to the wetland during construction and decommissioning are considered to be local, short-term and minor.

Mitigation Measures

The potential impacts identified above may be minimized and/or eliminated through the use of the following mitigation measures:

During Construction

- Establish a 30 m buffer between the wetland and the perimeter fence in order to protect the root structure and to minimize hazards from falling edge trees;
- Clearly delineate the limits/perimeter of the area to be cleared to prevent the loss of vegetation not intended for removal;
- No removal of woody vegetation (trees or shrubs) between April 15th and July 31st, inclusive, unless a biologist has walked the site no earlier than five days prior to the planned clearing and has indicated that no nesting activity is occurring within the area to be cleared;
- Establish a clearly delineated 5 m allowance outside of the perimeter fence;
- Utilize small machinery (such as small tractor) outside of perimeter fence during all activities to minimize harm to the root system of trees not intended for removal;
- All stockpiling or infilling activities will be confined to within the fenced in area and will not extend more than 5 m of the outside of the fence in order to minimize potential to damage root systems of trees not intended for removal and to prevent sedimentation from entering the wetland;
- All topsoil removal will be confined to within the fenced area and will not extend more than 5 m outside of the fence to minimize potential to damage root systems of trees not intended for removal and to prevent sedimentation from entering the wetland;
- The perimeter lane will be left as a farm lane (i.e. unpaved, gravel or dirt road) to allow rainwater to infiltrate the soil;
- Minimize grading of land in vicinity of wetland to reduce impacts to its hydrology;
- Ensure that any grading that occurs does not change the direction or quantity of overland flow which is currently entering the wetland;
- Sediment control strategies will be implemented. These will include the use of keyed in sediment fencing (i.e. geotextile fabric held up with stakes around any activities that will disturb the soil that is within 30 m of the wetland). The bottom of the fabric needs to be buried into the ground in order to prevent the rain water from going under the fabric. Sediment fencing would will be installed around any fill as well as on the down slope side of any area to be cleared of vegetation or excavated within 30 m of the wetland; and
- Sediment fencing will also be maintained (i.e. holes repaired) throughout the construction phase.

During Decommissioning

- Utilize small machinery (such as small backhoe) within 30 m of wetland when removing the fencing in order to minimize potential damage to root systems of trees not intended for removal and to reduce soil compaction;

- No backfilling within 30 m of the wetland to minimize potential damage of root systems and to ensure that the overland flow continues to flow towards the wetland; and
- Depending on the proposed land-use following decommissioning, the site could be reverted back to agricultural use, naturalized with native trees, shrubs or grasses or allowed to naturalize on its own.

Residual Impact
Provided that the mitigation measures are implemented and that best practices are utilized during construction, the potential impacts to the wetland during all phases are considered to be negligible.

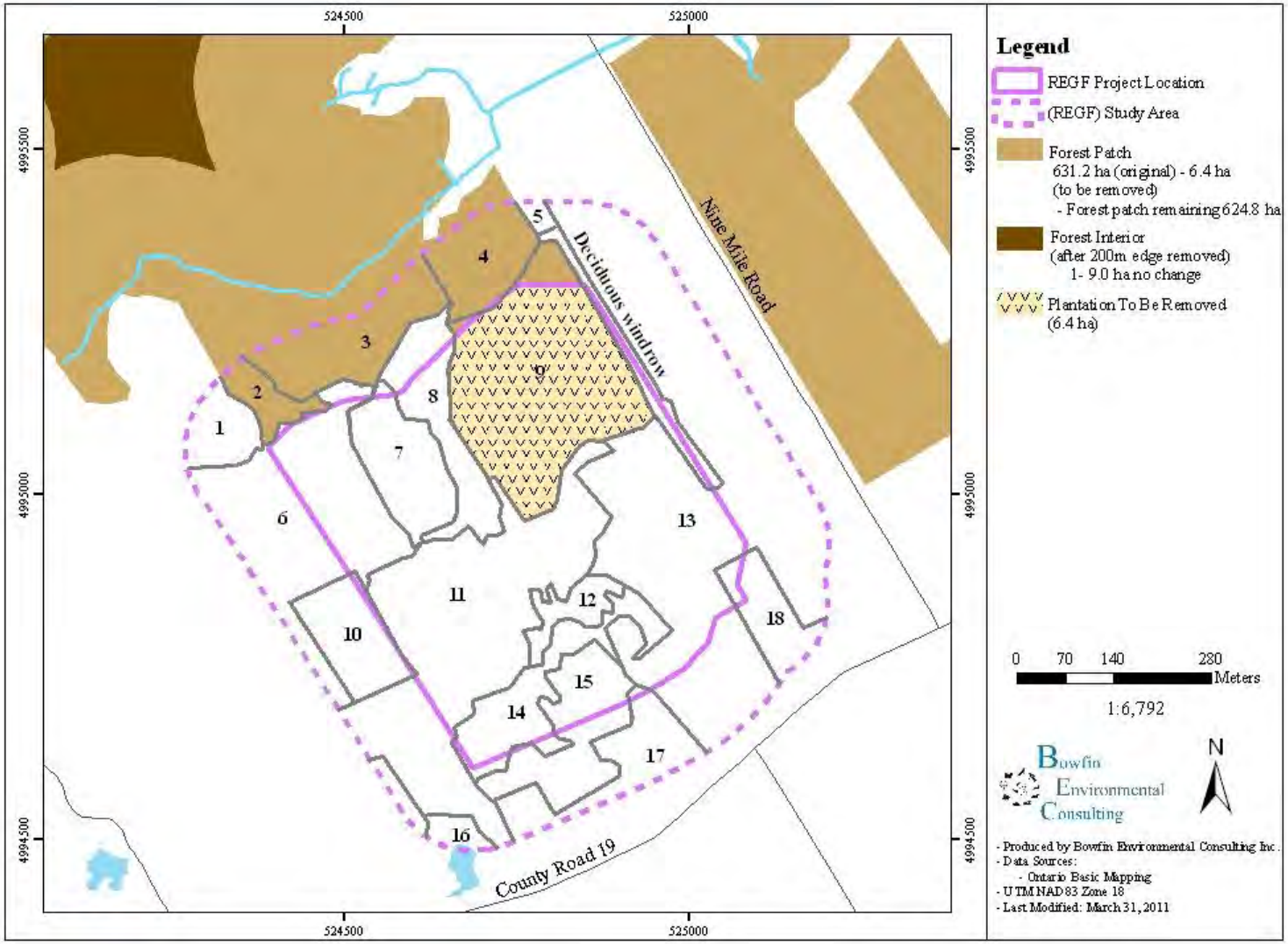
6.3 Woodlands

The evaluation of significance found that there were significant woodlands located within the study area of which 6.4 ha is located within the REGF project location (Figure 9). This small portion of the woodland to be removed consisted of the white pine plantation (polygon 11). With the exception of polygons 2 and 4, a buffer from all woodland areas of at least 30 m is proposed. The loss of the pine plantation will not affect the woodlands in terms of the size, interior habitat, proximity to woodlands, proximity to water, slope or islands (Figure 9). Nor will its loss be measurable in the overall percent of woodland within this municipality. It is noted that the study area is located within the St. Lawrence River (Cornwall) Area of Concern (AOC). This AOC has a goal of obtaining 30% forest cover within each sub-watershed (Hickey 2002). As stated previously the RRCA has indicated that 36% forest cover is present within its jurisdiction and specifically 44% cover within the Raisin River sub-watershed (RRCA 2006). As such the removal of the 6.4 ha of forest will not affect this goal. This woodland should be considered significant.The potential impacts to the forest polygons would be direct loss of the white pine plantation and potential indirect harm to trees not intended for removal if their roots (drip line) are located within the construction area. The loss of the white pine plantation would occur during the construction phase. The potential for the indirect impacts could occur during the construction, operation and decommission phases of the project.

Initial Impact Analysis

Direct Impacts - Construction
The direct impact of the loss of the white pine plantation is considered to be local, long term (permanent) and minor. It must be acknowledged that the proponent originally planned to remove a large portion of the treed swamp until they became aware of the significance of features therein. As such the project layout was altered substantially in order to avoid removal of the more valuable woodlands and to protect the wetland. The white pine plantation does not provide any significant habitat. The removal of this portion of the woodland patch will not lessen the significance of the woodland feature.

Figure 9 Forest Patch Located within the Study Area



Indirect Impacts - Construction, Operation and Decommissioning Phases

The indirect impacts, prior to mitigation, from construction and decommissioning are considered to be local, short-term and negligible. Those impacts associated with operation (the maintenance activities) are local, repetitive and negligible. The potential indirect impacts to the woodland associated with this project include harm to trees not intended for removal. Harm could occur during any of the three stages of the project. During construction the activities which could inadvertently harm additional trees include clearing, grubbing, grading, installation of fencing and the perimeter lane. During operation the potential to cause impacts to the woodland would be limited to maintenance activities such as repairs to the fence or lane as well the regular mowing, as often as weekly, of the narrow area outside (maximum 5 m) of the perimeter fence. This mowing is required to ensure that no woody growth damages the fence and to provide accessibility for inspection and maintenance of the fence. During the decommissioning phase, the fence will be removed; the machinery used for this activity has the potential to harm the woodland.

Mitigation Measures

The potential impacts identified above may be minimized and/or eliminated through the use of the following mitigation measures and monitoring:

During Construction

- Clearly delineate the limits of the area to be cleared to prevent the loss of woody vegetation not intended for removal;
- No removal of woody vegetation (trees or shrubs) between April 15th and July 31st, inclusive, unless a biologist has walked the site no earlier than five days prior to the planned clearing and has indicated that no nesting activity is occurring within the area to be cleared;
- Establish a maximum 5 m allowance between the location of the perimeter fence and the edge of the woodland to remain;
- Utilize small machinery, such as a small backhoe, within 25 m of woodlands not intended for removal to minimize harm to the root system of trees not intended for removal;
- All stockpiling or infilling activities will be confined to within the fenced in area and will not extend more than 5 m of the outside of the fence in order to minimize potential to damage root systems of trees not intended for removal and to prevent sedimentation from entering the wetland;
- All topsoil removal will be confined to within the fenced area and will not extend more than 5 m outside of the fence to minimize potential to damage root systems of trees not intended for removal and to prevent sedimentation from entering the wetland;
- The perimeter lane will be left as a farm lane (i.e. unpaved, gravel or dirt road) to allow rainwater to infiltrate the soil;

During Operation and Maintenance

- Initial mowing will commence before April 15th or after July 31st, unless a biologist has walked the site no earlier than five days prior to the planned clearing and has indicated that no nesting activity is occurring within the area to be cleared;

- Clearly indicate limits/perimeter of area to be mowed around the perimeter fence to prevent impacts to the woodland feature;
- While mowing, operator will visual scan the area for wildlife to minimize harm; and
- Utilize small machinery (such as a lawn tractor) within 25 m of woodlands when repairing any damage to the fence or perimeter lane to minimize potential damage to root systems of trees not intended for removal.

During Decommissioning

- Utilize small machinery (such as a small backhoe) within 25 m of woodlands when removing the fencing in order to minimize potential damage to root systems of trees not intended for removal and to reduce soil compaction;
- No backfilling within the dripline of the woodland to minimize potential damage of root systems; and
- Depending on the proposed land-use following decommissioning, the site could be reverted back to agricultural use, naturalized with native trees and shrubs or allowed to naturalize on its own.

Residual Impact

Although the initial project design would have eliminated approximately 42 ha of significant woodlands, the footprint has been relocated so that there will be a loss of only 6.5 ha of white pine plantation as a result of this project. This removal of woodland will not affect the significance of this woodland patch. Provided that the mitigation measures are implemented and that best practices are utilized, the potential impacts to the woodland during all phases are considered to be negligible.

6.4 Potentially Significant Wildlife Habitat

The woodlands and wetlands located within the study area are considered to provide wildlife movement corridors. With the exception of the white pine plantation, these features will not be impacted by the proposed project. The 30 m buffer created between the fence and the natural features will continue to allow wildlife movement between habitats. The fence location will not block wildlife movements into any significant habitat.

Initial Impact Analysis

Again it is noted that considerable changes to the concept plan were undertaken in order to protect the wetland, woodland and wildlife movement corridor. Following the new design, but prior to mitigation the potential impacts associated with the construction phase are considered to be local, permanent and negligible to minor. The maintenance activities are local, repetitive and negligible.

Mitigation Measures

The potential to impact significant wildlife habitat has been greatly reduced through avoidance of much of the woodlands and wetlands. The remaining potential impacts may be further minimized and/or eliminated through the use of the following mitigation measures and monitoring:

During Construction

- Implement mitigation measures outlined in the wetland and woodland sections above;
- Ensure that properly operating mufflers (i.e. standard OEM, or similar) are used on all project machinery and vehicles to minimize noise impacts; and
- Conduct construction activities during daylight hours whenever possible to minimize light impacts to wildlife.

During Operation and Maintenance

- Implement the mitigation measures outlined in the wetland and woodland sections above;
- Should wildlife be observed within the fenced in area, the gate will be left open to allow them to leave; and
- Ensure that properly operating mufflers are used on all project machinery and vehicles to minimize noise impacts.

During Decommissioning

- Implement the mitigation measures outlined in the wetland and woodland sections above;
- Depending on the proposed use of the land following decommissioning, the site could be reverted back to agricultural use, naturalized with native trees and shrubs or allowed to naturalize on its own
- Ensure that properly operating mufflers are used on all project machinery and vehicles to minimize noise impacts; and
- Complete decommissioning activities during daylight hours whenever possible to minimize light impacts to wildlife.

Residual Impact

Following the construction of the proposed solar facility, the significant wildlife features within the project subject lands will continue to be present provided that the mitigation measures are properly implemented and that best practices are utilized the potential impacts to the significant wildlife habitat are considered to be local, long-term, and negligible.

6.5 Conclusions and Recommendations

The study area includes several natural features that were evaluated and determined to be significant: wetland, woodlands, and wildlife habitat. The footprint of the proposed REGF has been re-designed to take into account the sensitive nature of each feature and buffers have been established. As the proposed REGF facility will avoid the majority of the woodland and the wetland entirely and is designed to avoid impacting the wildlife movement corridor, it is anticipated that none of the project's phases (construction, operation or decommissioning) will have a measurable negative impact provided that the above mitigation measures are properly implemented. No monitoring is required for this project unless construction occurs within the breeding bird timing window (as indicated within the above mitigation measures).

7.0 ADDITIONAL MEASURES AND BEST MANAGEMENT PRACTICES

The following section provides suggestions that are above and beyond the requirements of the EIS.

Table 9 Summary of Additional Enhancement and Mitigation Measures to be Implemented during Construction and Decommissioning and Residual Effect

Natural Feature	Potential Project – Environmental Interactions	Mitigation Measures	Residual Effect
Wildlife Habitat Potential reptile hibernation sites (rock walls polygon 1, 11 and deciduous windrow) Potential turtle habitat (dug-outs in polygons 13 and 16) Breeding bird habitat (all polygons except those	The herbaceous and woody vegetation within the REGF project location will be removed. The rock walls located within polygon 11 and the deciduous windrow) may be impacted during clearing and grading activities (as these are located on the edge of the project location). The construction activities Potential impacts would be: • loss of vegetation • Disruption of potential nesting activities • Disruption to species as a result of noise or	Minimize the removal of vegetation (only clear vegetation where needed). Clearly delineate the boundaries of areas not intended for clearing and/or grading on the construction plans and in the field. Re-seed any exposed soil and allow the vegetation to grow BEFORE removing the sediment fence. Use small machinery outside of perimeter fence within 30 m of outer edge of work area. Where possible, do not disturb rock walls or rock piles. Removal of rock walls should occur outside of the hibernation period, preferably between late May and September.	Negligible

Natural Feature	Potential Project – Environmental Interactions	Mitigation Measures	Residual Effect
being actively cropped)	light from project activities	In-filling of small dug-out pond should occur outside of turtle hibernation period (usually between October and April). In-filling should occur slowly to allow wildlife to leave the dug-out. No clearing of vegetation between April 15th and July 31st, inclusive, unless a biologist has walked the site no earlier than five days prior to the planned clearing and has indicated that no nesting activity is occurring within the area to be cleared. Ensure that properly operating mufflers (i.e. standard OEM or similar) are used on all project machinery and vehicles to minimize noise impacts. Conduct construction activities during daylight hours whenever possible to minimize light impacts to wildlife. **Enhancement Measures:** During the clearing activities several trees will be cleared. The surrounding woodlands can be enhanced for reptile habitat by placing portions or all of the trunk and/or stumps within the woodlands. Woody material would be scattered within the forested areas, away from the perimeter lane.	

Natural Feature	Potential Project – Environmental Interactions	Mitigation Measures	Residual Effect
Accidents or Malfunctions	• Spills from project machinery	All machinery would remain a minimum distance of 30 m from the wetlands (with exception of small machinery, such as a lawn tractor, for the mowing of the perimeter land). Fueling and maintenance activities would occur within an area where sediment erosion control measures and all precautions have been made to prevent oil, grease, antifreeze or other materials from inadvertently entering the ground or the surface water flow. This area should be at a minimum 30 m away from the wetlands. Monitor area for leakage, in the unlikely event of spillage halt all construction activities and corrective measures must be implemented. Any spills must be immediately reported to the MOE Spills Action Centre (1.800. 268.6060)	Considered unlikely to occur

Table 10 Summary of Additional Mitigation Measures to be Implemented during Operation and Residual Effect

Natural Feature	Potential Project – Environmental Interactions	Mitigation Measures	Residual Effect
Wetland (polygon 3) Wildlife and Wildlife Habitat (all areas outside of perimeter land)	During operation regular maintenance of the vegetation adjacent to the perimeter lane and within the REGF project location will be required. • Reduced growth of vegetation	Ensure that mowing activities only occur in designated areas (i.e. inside REGF project location and within the 5 m perimeter apron located outside of the fencing). Use small machinery outside of the fenced area. Initial mowing would commence before April 15th or after July 31st, inclusive, unless a biologist has walked the site no earlier than five days prior to the planned clearing and has indicated that no nesting activity is occurring within the area to be cleared. Ensure that properly operating mufflers (i.e. standard OEM or similar) are used on all project machinery and vehicles to minimize noise impacts. Conduct construction activities during daylight hours whenever possible to minimize light impacts to wildlife.	Negligible
Accidents or Malfunctions	• Spills from project machinery	All machinery would remain at a minimum distance of 30 m from polygon 3 (with exception of small machinery for the mowing of the perimeter land). Fueling and maintenance activities should occur within an area where sediment erosion control	Considered unlikely to occur

Natural Feature	Potential Project – Environmental Interactions	Mitigation Measures	Residual Effect
		measures and all precautions have been made to prevent oil, grease, antifreeze or other materials from inadvertently entering the ground or the surface water flow. This area should be at a minimum 30 m away from the wetland. Monitor area for leakage, in the unlikely event of spillage halt all construction activities and corrective measures must be implemented. Any spills must be immediately reported to the MOE Spills Action Centre (1.800. 268.6060)	

8.0 REFERENCES

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APPENDIX A – Correspondence

Ontario

Ministry of Natural Resources

Kemptville District
P.O. Box 2002
10 Campus Drive
Kemptville, ON K0G 1J0

Tel.: (613) 258-8470
Fax.: (613) 258-3920

Ministère des Richesses naturelles

District de Kemptville
CP 2002
10 Campus Drive
Kemptville, ON K0G 1J0

Tél.: (613) 258-8470
Téléc.: (613) 258-3920

May 27, 2010

Penn Energy Trust
620 Righters Ferry Road
Bala Cynwyd, PA 19004
United States

Attention: Bob Gray

RE: Information Request – Solar Project – Charlottenburgh, South Glengarry
Our File No.: 2010_CHA-874

Dear Mr. Gray,

The Ministry of Natural Resources (MNR) Kemptville District has carried out a review of the area in order to identify any potential natural resource and natural heritage values in the area of the identified sites – Lot 1-3, Concession 5, Charlottenburgh geographic township.

The MNR must clearly indicate that this is an initial records review and does not form part of the MNR review and confirmation process.

Our records review indicates that there are portions of the lots which are wooded. As such, there is the potential for these woodlands to be Significant Woodlands. Under the Provincial Policy Statement (PPS) and the Planning Act, the identification and delineation of significant woodlands is a responsibility of the Municipality. The MNR recommends that you contact the municipality and review their Official plan to determine if they have identified this area as such. The identification of Significant Woodlands by a municipality must conform to MNR standards prior to its use for the Natural Heritage Assessment. If Significant Woodlands are not identified in the Official Plan, the proponent is required to evaluate the significance of the feature in accordance with MNR guidance if works are proposed within the feature or the setback distance (120 meters). Furthermore, it is important to note in this particular area that the Cornwall Remedial Action Plan covers the area identified by these sites. This plan has a focus on woodland protection in this particular area and should be canvassed for further information as this may further support information gathering and future Natural Heritage Assessments.

There is unevaluated wetland identified on the property. If development is proposed within 120 meters of this wetland, a wetland evaluation as per the Ontario Wetland Evaluation System must be carried out to establish significance. Furthermore, this wetland and the watercourse located on site may also serve as fish and/or wildlife habitat and thus a determination of significance in this regard would also be required. With respect to fisheries and fish habitat information, the local Conservation Authority and the Department of Fisheries and Oceans may have additional data and information that pertains to this site, which should be referenced.

Our review of various other values and features shows no known MNR records for the following:

- Areas of Natural and Scientific Interest

- Nesting Sites
- Fish spawning areas
- Fish nursery areas
- Wintering areas – wildlife
- Staging areas - wildlife

The MNR would like to note that based on a review of air photos, it appears that there is agricultural land located on part of the site. The MNR recommends that it be determined what agricultural land classification this area is deemed to be so as to avoid development on Class 1 and Class 2, prime agricultural lands. For further information regarding agriculture, please contact the Ontario Ministry of Agriculture, Food and Rural Affairs.

Lastly, the MNR oversees the provincial Endangered Species Act (2007) and thus following a review of the information obtained from Natural Heritage Information Centre (NHIC) and a search of SAR records which exist at the MNR Kemptville District office, the MNR can advise that there is a high potential for **Butternut (Endangered), and Loggerhead Shrike (Endangered)** and provincially tracked rare species Halbered-leaved Tearthumb, Brainerd's Hawthorn and Caughuawaga Hawthorn. While provincially tracked rare species are not protected by the Endangered Species Act, under the PPS, the identification of Significant Wildlife Habitat is (like Significant Woodlands) a delegated responsibility of the municipality. As such, if Significant Wildlife Habitat is not identified by the Municipality, the proponent is required to evaluate the significance of the feature.

Although this data represents the MNR's best current available information, it is important to note that a lack of occurrence at a site does not mean that there are no Natural Heritage Values and/or Species at Risk (SAR) at the location. MNR must note further, that there may not be any records currently held for newly listed Endangered and Threatened species and therefore for both above mentioned reasons, the MNR continues to encourage ecological site assessments to determine the potential for other SAR occurrences, while requiring the assessment of the site, to determine the presence of previously unknown Natural Heritage features and values. When a SAR does occur on a proposed site, it is recommended that the proponent contact the MNR for technical advice and to discuss what activities can occur without contravention of the Act. If an activity is proposed that will contravene the Act (such as Section 9 or 10), the proponent must contact the MNR to discuss the potential for application of certain permits (Section 17) or agreement (Regulation 242/08). For specific questions regarding the Endangered Species Act (2007) or species at risk, please contact Species at Risk Biologist, Paula Norlock at paula.norlock@ontario.ca . Not only is the ecological site assessment vital for assessing those Species at Risk on and adjacent to the site, however, it can also serve as the foundation for evaluating Significant Habitat of Endangered and Threatened species within the identified study area.

For the purposes of the required Natural Heritage Assessment report, the MNR recommends the following sources of direction and information as areas by which to begin the desktop portion of your review:

- Natural Heritage Reference Manual (2010) – the newly published NHRM is a key document for understanding the importance of and the criteria for evaluating the various Natural Heritage Values on the landscape (including Significant Woodlands). This document can be accessed via: http://www.mnr.gov.on.ca/en/Business/LUEPS/Publication/249081.html
- Significant Wildlife Habitat Technical Guide (1999) – this document provides further technical direction and information as it relates to Significant Wildlife Habitat: http://www.mnr.gov.on.ca/en/Business/FW/Publication/MNR_E001285P.html

- Ontario Wetland Evaluation System:
  http://www.mnr.gov.on.ca/en/Business/Biodiversity/2ColumnSubPage/STEL02_176756.html

If you have any questions, please do not hesitate to contact me.

Sincerely,

Laura Melvin
A/ District Planner
Resource Management Planner
laura.melvin@ontario.ca

Max Frable

From: Kim MacDonald [kim.macdonald@rrca.on.ca]
Sent: Friday, 19 February, 2010 4:37 PM
To: 'Joanne Haley'; 'Dwane Crawford'; Bob Gray
Subject: 18461 CNTY RD 19 (Jeff Cashion property)
Attachments: SKMBT_C35110021916340.pdf

Here is the data I have on record pertaining to the above noted property. Dwane and Joanne, I believe you have a meeting with Bob Gray this upcoming week.

According to our information, Significant Woodlands and the watercourse (Woods Drain - Class C fish habitat, meaning warm water & baitfish species) are the only natural heritage features located on the subject property. No floodplain data, organic soils or wetlands were observed.

I also took the liberty of examining the woodland data and the results are listed in my previous e-mail to Bob (attached below).

According to our staff forester, hard maple, spruce and black ash species are relatively significant. In addition, once you get into 90 year old species, the age is relatively significant. According to the information, the Conservation Authority would prefer to see the north portion of the subject property remain, as well as the riparian vegetation along Woods Drain.

Any work in or around the drain would require a fishery review under S. 35 of the Federal Fisheries Act. Our office has a level 2 Agreement with the Department of Fisheries and Oceans to conduct the fishery reviews on their behalf. I don't believe the Green Energy Act supersedes the Federal Fisheries Act. I'm also in the process of verifying our O. Reg. 175/06 implications in relation to Green Energy projects to ensure I'm not missing anything. Regardless, please note that O. Reg. 175/06 does not deal with vegetation removal.

If all the work is to take place south of Woods Drain, the RRCA would have no adverse comments or concerns other than maintaining a vegetated buffer adjacent the drain. A 15 to 30 m setback from the drain for any site alterations and development would be preferable.

As a final note, please note that butternut species are protected under the Species at Risk legislation and butternut species should not be cut or removed from the subject property. In that instance, the Ministry of Natural Resources should be contacted for more information. Butternut species tend to be present in the vicinity of hardwood, and hardwood species are located on the north portion of the subject property.

Should you have any questions, please feel free to give me a call.

Regards,

Kimberley MacDonald
Watershed Planner & Regulations Officer
The Raisin Region Conservation Authority
P.O. Box 429
18045 County Road 2
Cornwall, Ontario
K6H 5T2
Tel: (613) 938-3611
Fax: (613) 938-3221
email: kim.macdonald@rrca.on.ca

APPENDIX B – Potential Species of Conservation Value (based on records review)

Common Name	Scientific Name	SRANK	Status*	Preferred Habitat
Dragonflies				
green-striped darner	*Aeshna verticalis*	S3		Spring-fed ponds and marshy meadows and marshy or swampy lakes, ponds and slow streams.
ebony boghaunter	*Williamsonia fletcheri*	S2		Sphagnum bogs.
Butterflies				
bog elfin	*Callophrys lanoraieensis*	S1		Usually restricted to spruce-tamarack bogs.
gorgone crescentspot	*Chlosyne gorgone*	S2		Open habitat, abandoned fields, dry roadsides. Prefers sandy soil over limestone.
monarch	*Danaus plexippus*	S4B, S2N	SC	Old fields, meadows, roadsides.
Reptiles				
northern map turtle	*Graptemys geographica*	S3	SC	Large waterbodies.
eastern ribbonsnake	Thamnophis sauritus	S1	SC	Prefers meadows or forest edge, often around permanent waterbodies
common five-lined skink (Southern Shield population)	*Plestiodon fasciatus pop. 2*	S3	SC	rocky outcrops in mixed forests
Birds				
black tern	*Chlidonias niger*	S3B	SC	Breed in freshwater marshes
yellow rail	*Coturnicops noveboracensis*	S4B	SC	Grassy marshes and wet meadows.
yellow palm warbler	*Dendroica palmarum hypochrysea*	S1B		Forested borders of muskegs.
Mammals				
northern long-eared bat	*Myotis septentrionalis*	S3?		Found in treed or shrubbed habitat near water.
Plants				
A Moss	*Astomum muehlenbergianum*	S2		Thin soil over outcrops and in open prairie.

Common Name	Scientific Name	SRANK	Status*	Preferred Habitat
bog fern	*Thelypteris simulata*	S1		Wooded swamps, with moist and acidic soils.
rhodora	*Rhododendron canadense*	S1		Wet areas, shorelines of stream and swamp habitats
bee-balm	*Monarda didyma*	S3		Moist open woods, thickets, and stream banks.
twin-stemmed bladderwort	Utricularia geminiscapa	S3?		Free-floating aquatic plant.
halberd-leaved tearthumb	*Polygonum arifolium*	S3		Shaded swamps, ponds, tidal marshes along rivers, wet ravines in forests.
Brainerd's Hawthorn	*Crataegus brainerdii*	S2		Dry ground in open woodland, along sandy roadsides, bluffs, river banks, fields, and pastures
Caughuawaga Hawthorn	*Crataegus suborbiculata*	S1		Pastures, fields, roadsides, and on the edge of forests.
Atlantic sedge	*Carex atlantica*	S1		Wetland with acidic soils.
Northern long sedge	*Carex folliculata*	S3		Along shorelines, wetlands.
Slender Bulrush	*Schoenoplectus heterochaetus*	S3		Marshes and lakes.
Smith's Bulrush	*Schoenoplectus smithii*	S3		Sandy or muddy shores, beaches, interdunal swales, and mudflats.
puttyroot	*Aplectrum hyemale*	S2		Rich forest, such as upland beech-maple and more swampy woods.
ram's-head lady's-slipper	*Cypripedium arietinum*	S3		Dunes, along shores, or inland under Jake pine and oak and also in coniferous swamps.
Southern twayblade	*Listera australis*	S1		Bog and fen.

(Brownell and Catling 2000, Dunkle 2000, eFlora 2009, Farrar 1995, Hughes 2001, Layberry et al. 1998, MacCulloch 2002, NatureServe 2009, Peterson 1980, Scott and Crossman 1998, Voss 1985)

* For the purposes of this report the status includes species designated as special concern provincially or are listed as endangered, threatened or special concern federally AND not listed as endangered or threatened provincially.

Updated: January 17, 2011

SRANK DEFINITIONS

S1 Critically Imperiled, Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.

S2 Imperiled, Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.
S3 Vulnerable, Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S#S# Range Rank, A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
SAB Breeding accidental.
SAN Non-breeding accidental.
SZB Breeding migrants/vagrants.
SZN Non-breeding migrants/vagrants.

SARO STATUS DEFINITIONS
SC Special Concern: A species with characteristics that make it sensitive to human activities or natural events.

APPENDIX C – OBBA Bird List

Common Name	Scientific Name	OBBA Category	Status*	SRank
Green Heron	*Butorides virescens*	possible		S4B
American Bittern	*Botaurus lentiginosus*	possible		S4B
Canada Goose	*Branta canadensis*	possible		S5
Mallard	*Anas platyrhynchos*	possible		S5
Red-tailed Hawk	*Buteo jamaicensis*	probable		S5
Northern Harrier	*Circus cyaneus*	possible		S4B
American Kestrel	*Falco sparverius*	probable		S4
Ruffed Grouse	*Bonasa umbellus*	confirmed		S4
Wild Turkey	*Meleagris gallopava*	possible		S5
Virginia Rail	*Rallus limicola*	probable		S5B
Killdeer	*Charadrius vociferus*	probable		S5B, S5N
Spotted Sandpiper	*Actitis macularia*	probable		S5
American Woodcock	*Scolopax minor*	probable		S4B
Common Tern	*Sterna hirundo*	confirmed		S4B
Rock Pigeon	*Columba livia*	possible		SNA
Mourning Dove	*Zenaida macroura*	confirmed		S5
Yellow-billed Cuckoo	*Coccyzus americanus*	possible		S4B
Black-billed Cuckoo	*Coccyzus erythropthalmus*	possible		S5B
Eastern Screech-Owl	*Megascops asio*	probable		S4
Chimney Swift	*Chaetura pelagica*	probable		S4B, S4N
Ruby-throated Hummingbird	*Archilochus colubris*	probable		S5B
Belted Kingfisher	*Ceryle alcyon*	possible		S4B
Northern Flicker	*Colaptes auratus*	probable		S4B
Yellow-bellied Sapsucker	*Sphyrapicus varius*	probable		S5B
Hairy Woodpecker	*Picoides villosus*	confirmed		S5
Downy Woodpecker	*Picoides pubescens*	confirmed		S5
Pileated Woodpecker	*Dryocopus pileatus*	probable		S5
Eastern Kingbird	*Tyrannus tyrannus*	probable		S4B
Great Crested Flycatcher	*Myiarchus crinitus*	probable		S4B
Eastern Phoebe	*Sayornis phoebe*	probable		S5B
Willow Flycatcher	*Empidonax traillii*	possible		S5B

Common Name	Scientific Name	OBBA Category	Status*	SRank
Alder Flycatcher	*Empidonax alnorum*	possible		S5B
Least Flycatcher	*Empidonax minimus*	confirmed		S4B
Eastern Wood-Pewee	*Contopus virens*	confirmed		S4B
Horned Lark	*Eremophila alpestris*	possible		S5B
Tree Swallow	*Tachycineta bicolor*	possible		S4B
Bank Swallow	*Riparia riparia*	possible		S4B
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	confirmed		S4B
Barn Swallow	*Hirundo rustica*	confirmed		S4B
Cliff Swallow	*Petrochelidon pyrrhonota*	possible		S4B
Blue Jay	*Cyanocitta cristata*	confirmed		S5
American Crow	*Corvus brachyrhynchos*	possible		S5B
Black-capped Chickadee	*Poecile atricapilla*	confirmed		S5
White-breasted Nuthatch	*Sitta carolinensis*	possible		S5
Red-breasted Nuthatch	*Sitta canadensis*	possible		S5
House Wren	*Troglodytes aedon*	confirmed		S5B
Marsh Wren	*Cistothorus palustris*	possible		S4B
Gray Catbird	*Dumetella carolinensis*	probable		S4B
Brown Thrasher	*Toxostoma rufum*	confirmed		S4B
American Robin	*Turdus migratorius*	confirmed		S5B
Wood Thrush	*Hylocichla mustelina*	probable		S4B
Veery	*Catharus fuscescens*	probable		S4B
Golden-crowned Kinglet	*Regulus satrapa*	probable		S5B
Cedar Waxwing	*Bombycilla cedrorum*	confirmed		S5B
European Starling	*Sturnus vulgaris*	confirmed		SNA
Red-eyed Vireo	*Vireo olivaceus*	confirmed		S5B
Warbling Vireo	*Vireo gilvus*	probable		S5B
Black-and-white Warbler	*Mniotilta varia*	possible		S5B
Nashville Warbler	*Vermivora ruficapilla*	possible		S5B
Yellow Warbler	*Dendroica petechia*	confirmed		S5B
Magnolia Warbler	*Dendroica magnolia*	probable		S5B
Yellow-rumped Warbler	*Dendroica coronata*	probable		S5B
Black-throated Green Warbler	*Dendroica virens*	possible		S5B
Blackburnian Warbler	*Dendroica fusca*	possible		S5B

Common Name	Scientific Name	OBBA Category	Status*	SRank
Chestnut-sided Warbler	*Dendroica pensylvanica*	confirmed		S5B
Ovenbird	*Seiurus aurocapillus*	probable		S4B
Northern Waterthrush	*Seiurus noveboracensis*	confirmed		S5B
Common Yellowthroat	*Geothlypis trichas*	confirmed		S5B
American Redstart	*Setophaga ruticilla*	probable		S5B
House Sparrow	*Passer domesticus*	confirmed		SNA
Bobolink	*Dolichonyx oryzivorus*	probable		S4B
Eastern Meadowlark	*Sturnella magna*	confirmed		S4B
Red-winged Blackbird	*Agelaius phoeniceus*	confirmed		S4
Baltimore Oriole	*Icterus galbula*	confirmed		S4B
Common Grackle	*Quiscalus quiscula*	confirmed		S5B
Scarlet Tanager	*Piranga olivacea*	possible		S4B
Brown-headed Cowbird	*Molothrus ater*	probable		S4B
Northern Cardinal	*Cardinalis cardinalis*	probable		S5
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	confirmed		S4B
Indigo Bunting	*Passerina cyanea*	probable		S4B
Purple Finch	*Carpodacus purpureus*	confirmed		S4B
American Goldfinch	*Carduelis tristis*	probable		S5B
Savannah Sparrow	*Passerculus sandwichensis*	confirmed		S4B
Vesper Sparrow	*Pooecetes gramineus*	possible		S4B
Chipping Sparrow	*Spizella passerina*	confirmed		S5B
White-throated Sparrow	*Zonotrichia albicollis*	confirmed		S5B
Swamp Sparrow	*Melospiza georgiana*	confirmed		S5B
Song Sparrow	*Melospiza melodia*	confirmed		S5B

* For the purposes of this report the status includes species designated as special concern provincially or are listed as endangered, threatened or special concern federally AND not listed as endangered or threatened provincially.

SRANK DEFINITIONS

S3: **Vulnerable**—Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4: **Apparently Secure**—Uncommon but not rare; some cause for long-term concern due to declines or other factors.

S5: **Secure**—Common, widespread, and abundant in the nation or state/province.
SNA: **Not Applicable** —A conservation status rank is not applicable because the species is not a suitable target for conservation activities.

S#S#: **Range Rank** —A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
S?: **Not Ranked Yet**; or if following a ranking, Rank Uncertain (e.g. S3?). S? species have not had a rank assigned.
SZB : **Breeding migrants/vagrants.**
SZN**: Non-breeding migrants.**

SARA STATUS DEFINITIONS
Threatened (THR) – A species that may become endangered in Ontario if limiting factors are not reversed.

APPENDIX D – List of Bird Species Observed Within The Project Area (observations made by Michelle Lavictoire)

Common Name	Scientific Name	Status *	SRANK	GRANK
Turkey Vulture	*Cathartes aura*		S5B	G5
Red-tailed Hawk	*Buteo jamaicensis*		S5	G5
Ruffed Grouse	*Bonasa umbellus*		S4	G5
Wild Turkey	*Meleagris gallopava*		S5	G5
Mourning Dove	*Zenaida macroura*		S5	G5
Barred Owl	*Strix varia*		S5	G5
Yellow-bellied Sapsucker	*Sphyrapicus varius*		S5B	G5
Downy Woodpecker	*Picoides pubescens*		S5	G5
Hairy Woodpecker	*Picoides villosus*		S5	G5
Northern Flicker	*Colaptes auratus*		S4B	G5
Pileated Woodpecker	*Dryocopus pileatus*		S5	G5
Eastern Wood-Pewee	*Contopus virens*		S4B	G5
Eastern Phoebe	*Sayornis phoebe*		S5B	G5
Great Crested Flycatcher	*Myiarchus crinitus*		S4B	G5
Eastern Kingbird	*Tyrannus tyrannus*		S4B	G5
Red-eyed Vireo	*Vireo olivaceus*		S5B	G5
Blue Jay	*Cyanocitta cristata*		S5	G5
American Crow	*Corvus brachyrhynchos*		S5B	G5
Tree Swallow	*Tachycineta bicolor*		S4B	G5
Black-capped Chickadee	*Poecile atricapilla*		S5	G5
Red-breasted Nuthatch	*Sitta canadensis*		S5	G5
White-breasted Nuthatch	*Sitta carolinensis*		S5	G5
House Wren	*Troglodytes aedon*		S5B	G5
Veery	*Catharus fuscescens*		S4B	G5
American Robin	*Turdus migratorius*		S5B	G5
Gray Catbird	*Dumetella carolinensis*		S4B	G5
Brown Thrasher	*Toxostoma rufum*		S4B	G5
European Starling	*Sturnus vulgaris*		SNA	G5
Cedar Waxwing	*Bombycilla cedrorum*		S5B	G5
Yellow Warbler	*Dendroica petechia*		S5B	G5
Chestnut-sided Warbler	*Dendroica pensylvanica*		S5B	G5
American Redstart	*Setophaga ruticilla*		S5B	G5
Ovenbird	*Seiurus aurocapillus*		S4B	G5
Common Yellowthroat	*Geothlypis trichas*		S5B	G5
Chipping Sparrow	*Spizella passerina*		S5B	G5
Field Sparrow	*Spizella pusilla*		S4B	G5
Savannah Sparrow	*Passerculus sandwichensis*		S4B	G5
Swamp Sparrow	*Melospiza georgiana*		S5B	G5
White-throated Sparrow	*Zonotrichia albicollis*		S5B	G5
Dark-eyed Junco	*Junco hyemalis*		S5B	G5
Bobolink	*Dolichonyx oryzivorus*		S4B	G5
Red-winged Blackbird	*Agelaius phoeniceus*		S4	G5

Common Grackle	*Quiscalus quiscula*	S5B	G5
Baltimore Oriole	*Icterus galbula*	S4B	G5
American Goldfinch	*Carduelis tristis*	S5B	G5

* For the purposes of this report the status includes species designated as special concern provincially or are listed as endangered, threatened or special concern federally AND not listed as endangered or threatened provincially.

SRANK DEFINITIONS

S4: **Apparently Secure**—Uncommon but not rare; some cause for long-term concern due to declines or other factors.

S5: **Secure**—Common, widespread, and abundant in the nation or state/province.

SNA: **Not Applicable** —A conservation status rank is not applicable because the species is not a suitable target for conservation activities.

S#S#: **Range Rank** —A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).

S?: **Not Ranked Yet**; or if following a ranking, Rank Uncertain (e.g. S3?). S? species have not had a rank assigned.

SZB : **Breeding migrants/vagrants.**

SZN**: Non-breeding migrants.**

APPENDIX E – List of Flora Observed Within The Project Area

(observations made by Michelle Lavictoire and Shaun St. Pierre)

Common Name	Scientific Name	Status *	SRANK	GRANK
Eastern Bracken Fern	*Pteridium aquilinum var. latiusculum*		S5	G5
Northern Lady Fern	*Athyrium filix-femina var. angustum*		S5	G5T5
Ostrich Fern	*Matteuccia struthiopteris*		S5	G5
Sensitive Fern	*Onoclea sensibilis*		S5	G5
Christmas Fern	*Polystichum acrostichoides*		S5	G5
Field Horsetail	*Equisetum arvense*		S5	G5
Wood Horsetail	*Equisetum sylvaticum*		S5	G5
Royal Fern	*Osmunda regalis var. spectabilis*		S5	G5
Northern Maidenhair Fern	*Adiantum pedatum*		S5	G5
Eastern White Cedar	*Thuja occidentalis*		S5	G5
Balsam Fir	*Abies balsamea*		S5	G5
White Spruce	*Picea glauca*		S5	G5
White Pine	*Pinus strobus*		S5	G5
Eastern Hemlock	*Tsuga canadensis*		S5	G5
American Yew	*Taxus canadensis*		S5	G4G5
Manitoba Maple	*Acer negundo*		S5	G5
Striped Maple	*Acer pensylvanicum*		S5	G5
Red Maple	*Acer rubrum*		S5	G5
Silver Maple	*Acer saccharinum*		S5	G5
Sugar Maple	*Acer saccharum*		S5	G5T5
Black Maple	*Acer nigrum*		S4?	G5
Freeman's Maple	*Acer X freemanii*		SNA	GNR
Western Poison-ivy	*Rhus radicans ssp. rydbergii*		S5	G5T5
Staghorn Sumac	*Rhus typhina*		S5	G5
Wild Carrot	*Daucus carota*		SNA	GNR
Wild Parsnip	*Pastinaca sativa*		SNA	GNR
Sarsaparilla	*Aralia nudicaulis*		S5	G5
Swamp Milkweed	*Asclepias incarnata ssp. incarnata*		S5	G5
Common Milkweed	*Asclepias syriaca*		S5	G5
Common Yarrow	*Achillea millefolium ssp. millefolium*		SNA	G5T5?
Common Burdock	*Arctium minus ssp. minus*		SNA	GNRTNR
Devil's Beggar-ticks	*Bidens frondosa*		S5	G5
Brown Knapweed	*Centaurea jacea*		SNA	GNR
Ox-eye Daisy	*Chrysanthemum leucanthemum*		SNA	GNR
Bull Thistle	*Cirsium vulgare*		SNA	GNR
Daisy Fleabane	*Erigeron annuus*		S5	G5
Common Boneset	*Eupatorium perfoliatum*		S5	G5
Spotted Joe-pye-weed	*Eupatorium maculatum ssp. maculatum*		S5	G5TNR
Tall White Lettuce	*Prenanthes altissima*		S5	G5?
Black-eyed Susan	*Rudbeckia hirta*		S5	G5

Goldenrod sp.	*Solidago sp.*		
Canada Goldenrod	*Solidago canadensis*	S5	G5T5
Late Goldenrod	*Solidago gigantea*	S5	G5
Early Goldenrod	*Solidago juncea*	S5	G5
Common Sow-thistle	*Sonchus oleraceus*	SNA	GNR
Common Tansy	*Tanacetum vulgare*	SNA	GNR
Common Dandelion	*Taraxacum officinale*	SNA	G5
Meadow Goat's-beard	*Tragopogon pratensis ssp. pratensis*	SNA	GNR
Coltsfoot	*Tussilago farfara*	SNA	GNR
Spotted Jewel-weed	*Impatiens capensis*	S5	G5
Blue Cohosh	*Caulophyllum thalictroides*	S5	G4G5
Speckled Alder	*Alnus incana spp. rugosa*	S5	G5
Yellow Birch	*Betula alleghaniensis*	S5	G5
White Birch	*Betula papyrifera*	S5	G5
Blue Beech	*Carpinus caroliniana ssp. Virginiana*	S5	G5
Ironwood	*Ostrya virginiana*	S5	G5
Viper's Bugloss	*Echium vulgare*	SNA	GNR
Field Mustard	*Brassica rapa*	SNA	GNR
Field Penny-cress	*Thlaspi arvense*	SNA	GNR
Tartarian Honeysuckle	*Lonicera tatarica*	SNA	GNR
Common Elderberry	*Sambucus canadensis*	S5	G5T5
Maple-leaved Viburnum	*Viburnum acerifolium*	S5	G5
Nannyberry	*Viburnum lentago*	S5	G5
Bladder Campion	*Silene latifolia*	SNA	GNR
Common Coontail	*Ceratophyllum demersum*	S5	G5
Field Bindweed	*Convolvulus arvensis*	SNA	GNR
Alternate-leaved Dogwood	*Cornus alternifolia*	S5	G5
Bunchberry	*Cornus canadensis*	S5	G5
Gray Dogwood	*Cornus foemina ssp. racemosa*	S5	G5?
Red-osier Dogwood	*Cornus stolonifera*	S5	G5
Hog Peanut	*Amphicarpaea bracteata*	S5	G5
Bird's-foot Trefoil	*Lotus corniculatus*	SNA	GNR
Black Medick	*Medicago lupulina*	SNA	GNR
White Sweet-clover	*Melilotus alba*	SNA	G5
Yellow Sweet-clover	*Melilotus officinalis*	SNA	GNR
Black Locust	*Robinia pseudo-acacia*	SNA	G5
Red Clover	*Trifolium pratense*	SNA	GNR
White Clover	*Trifolium repens*	SNA	GNR
Cow Vetch	*Vicia cracca*	SNA	GNR
American Beech	*Fagus grandifolia*	S4	G5
White Oak	*Quercus alba*	S5	G5
Bur Oak	*Quercus macrocarpa*	S5	G5
Herb-robert	*Geranium robertianum*	SNA	G5
Wild Black Currant	*Ribes americanum*	S5	G5
Prickly Gooseberry	*Ribes cynosbati*	S5	G5
Bitternut hickory	*Carya cordiformis*	S5	G5

Butternut	*Juglans cinerea*	END	S3?	G4
Ground Ivy	*Galeopsis hederacea*		SNA	GNR
Common Motherwort	*Leonurus cardiaca ssp. cardiaca*		SNA	GNR
Cut-leaved Water-horehound	*Lycopus americanus*		S5	G5
American Wild Mint	*Mentha arvensis*		S5	G5
Catnip	*Nepeta cataria*		SNA	GNR
Purple Loosestrife	*Lythrum salicaria*		SNA	G5
Indian-pipe	*Monotropa uniflora*		S5	G5
White Ash	*Fraxinus americana*		S5	G5
Black Ash	*Fraxinus nigra*		S5	G5
Red Ash	*Fraxinus pennsylvanica*		S5	G5
Canada Enchanter's Nightshade	*Circaea lutetiana ssp. canadensis*		S5	G5
True Wood-sorrel	*Oxalis acetosella ssp. montana*		S5	G5
Bloodroot	*Sanguinaria canadensis*		S5	G5
Common Plantain	*Plantago major*		SNA	G5
Pale Smartweed	*Polygonum lapathifolium*		S5	G5
Great Water Dock	*Rumex orbiculatus*		S4S5	G5
Moneywort	*Lysimachia nummularia*		SNA	GNR
Starflower	*Trientalis borealis ssp. borealis*		S5	G5
White Baneberry	*Actaea pachypoda*		S5	G5
Red Baneberry	*Actaea rubra*		S5	G5
Canada Anemone	*Anemone canadensis*		S5	G5
Wood Anemone	*Anemone quinquefolia var. quinquefolia*		S5	G5
Marsh Marigold	*Caltha palustris*		S5	G5
Virgin's Bower	*Clematis virginiana*		S5	G5
Tall Buttercup	*Ranunculus acris*		SNA	G5
Tall Meadow-rue	*Thalictrum pubescens*		S5	G5
Common Buckthorn	*Rhamnus cathartica*		SNA	GNR
Hawthorn sp.	*Crataegus sp.*			
Large-fruited Thorn	*Crataegus punctata*		S5	G5
Long-spined Thorn	*Crataegus succulenta*		S4S5	G4G5
Common Strawberry	*Fragaria virginiana ssp. virginiana*		S5	G5
Malus sp.	*Apple species*			
Rough-fruited Cinquefoil	*Potentilla recta*		SNA	GNR
Choke Cherry	*Prunus virginiana ssp. virginiana*		S5	G5
Common Blackberry	*Rubus allegheniensis*		S5	G5
Wild Red Raspberry	*Rubus idaeus*		S5	G5T5
Sparse-flowered Thimbleberry	*Rubus parviflorus*		S4	G5
Dwarf Raspberry	*Rubus pubescens*		S5	G5
Narrow-leaved Meadowsweet	*Spiraea alba*		S5	G5
Barren Strawberry	*Waldsteinia fragarioides*		S5	G5
Rough Bedstraw	*Galium asprellum*		S5	G5
Smooth Bedstraw	*Galium mollugo*		SNA	GNR

Frangrant Bedstraw	*Galium triflorum*	S5	G5
Prickly-ash	*Zanthoxylum americanum*	S5	G5
Balsam Poplar	*Populus balsamifera ssp. balsamifera*	S5	G5
Eastern Cottonwood	*Populus deltoides ssp. deltoides*	SU	G5T5
Largetooth Aspen	*Populus grandidentata*	S5	G5
Trembling Aspen	*Populus tremuloides*	S5	G5
Pussy Willow	*Salix discolor*	S5	G5
Slender Willow	*Salix petiolaris*	S5	G5
Common Speedwell	*Veronica officinalis*	SNA	G5
Turtlehead	*Chelone glabra*	S5	G5
Common Mullein	*Verbascum thapsus*	SNA	GNR
Bittersweet Nightshade	*Solanum dulcamara*	SNA	GNR
American Basswood	*Tilia americana*	S5	G5
American Elm	*Ulmus americana*	S5	G5?
False Nettle	*Boehmeria cylindrica*	S5	G5
Wood Nettle	*Laportea canadensis*	S5	G5
European Stinging Nettle	*Urtica dioica ssp. dioica*	SNA	G5T5?
Blue Vervain	*Verbena hastata*	S5	G5
Violet sp.	*Viola sp.*		
Virginia-creeper	*Parthenocissus inserta*	S5	G5
Riverbank Grape	*Vitis riparia*	S5	G5
Jack-in-the-pulpit	*Arisaema triphyllum ssp. triphyllum*	S5	G5
Sedge sp.	*Carex sp.*		
Bebb's Sedge	*Carex bebbii*	S5	G5
Bladder Sedge	*Carex intumescens*	S5	G5
Lakebank Sedge	*Carex lacustris*	S5	G5
Hop Sedge	*Carex lupulina*	S5	G5
Awl-fruited Sedge	*Carex stipata*	S5	G5
Hardstem Bulrush	Scirpus acutus	SNR	G5T5
Black Bulrush	Scirpus atrovirens	S5	G5?
Wool-grass	Scirpus cyperinus	S5	G5
Softstem Bulrush	Scirpus validus	S5	G5
Northern Blue-flag	Iris versicolor	S5	G5
Path Rush	Juncus tenuis	S5	G5
Wild Leek	Allium burdickii	S1?	G4G5
Asparagus	Asparagus officinalis	SNA	G5?
False Solomon's Seal	Maianthemum racemosum ssp. racemosum	S5	G5
Trillium sp.	Trillium sp.		
Red Trillium	Trillium erectum	S5	G5
Grass	Poaceae		
Brome Sp.	Bromus sp.		
Fowl Glyceria	Glyceria striata	S4S5	G5T5
Reed Canary Grass	Phalaris arundinacea	S5	G5
Timothy	Phleum pratense	SNA	GNR
Common Reed	Phragmites australis	S5	G5
Broad-leaved Cattail	Typha latifolia	S5	G5

* For the purposes of this report the status includes species designated as special concern provincially or are listed as endangered, threatened or special concern federally AND not listed as endangered or threatened provincially.

SRANK DEFINITIONS

S3: **Vulnerable**—Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4: **Apparently Secure**—Uncommon but not rare; some cause for long-term concern due to declines or other factors.

S5: **Secure**—Common, widespread, and abundant in the nation or state/province.

SNR: **Unranked**—Nation or state/province conservation status not yet assessed.
SNA: **Not Applicable** —A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
S#S#: **Range Rank** —A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).

S?: **Not Ranked Yet**; or if following a ranking, Rank Uncertain (e.g. S3?). S? species have not had a rank assigned.

SARA STATUS DEFINITIONS

Special Concern (SC) - A species that may become threatened or endangered because of a combination of biological characteristics and identified threats.

APPENDIX F – List of Incidental Wildlife Sightings (Excluding Birds) Within the Project Area (observations made by Michelle Lavictoire and Shaun St. Pierre)

Common Name	Scientific Name	Status*	SRANK	GRANK
BUTTERFLIES				
European Cabbage White	*Pieris rapae*		SNA	G5
Great Spangled Fritillary	*Speyeria cybele*		S5	G5
White Admiral	*Limenitis arthemis*		S5	G5
Northern Pearly Eye	*Enodia anthedon*		S5	G4
Clouded Sulphur	*Colias philodice*		S5	G5
Black Swallowtail	*Papilio polyxenes*		S5	G5
Monarch	*Danaus plexippus*	SC	S2N, S4B	G5
DRAGONFLIES				
Common Whitetail	*Libellula lydia*		S5	G5
Twelve-Spotted Skimmer	*Libellula pulchella*		S5	G5
AMPHIBIANS				
American Toad	*Bufo americanus*		S5	G5
Green Frog	*Rana clamitans*		S5	G5
Wood Frog	*Rana sylvatica*		S5	G5
Northern Leopard Frog	*Rana pipiens*		S5	G5
REPTILES				
Midland Painted Turtle	*Chrysemys picta marginata*		S5	G5T5
BIRDS				
Turkey Vulture	*Cathartes aura*		S5B	G5
Red-tailed Hawk	*Buteo jamaicensis*		S5	G5
Ruffed Grouse	*Bonasa umbellus*		S4	G5
Wild Turkey	*Meleagris gallopava*		S5	G5
Mourning Dove	*Zenaida macroura*		S5	G5
Barred Owl	*Strix varia*		S5	G5
Yellow-bellied Sapsucker	*Sphyrapicus varius*		S5B	G5
Downy Woodpecker	*Picoides pubescens*		S5	G5
Hairy Woodpecker	*Picoides villosus*		S5	G5
Northern Flicker	*Colaptes auratus*		S4B	G5
Pileated Woodpecker	*Dryocopus pileatus*		S5	G5
Eastern Wood-Pewee	*Contopus virens*		S4B	G5
Eastern Phoebe	*Sayornis phoebe*		S5B	G5
Great Crested Flycatcher	*Myiarchus crinitus*		S4B	G5
Eastern Kingbird	*Tyrannus tyrannus*		S4B	G5
Red-eyed Vireo	*Vireo olivaceus*		S5B	G5
Blue Jay	*Cyanocitta cristata*		S5	G5
American Crow	*Corvus brachyrhynchos*		S5B	G5
Tree Swallow	*Tachycineta bicolor*		S4B	G5
Black-capped Chickadee	*Poecile atricapilla*		S5	G5
Red-breasted Nuthatch	*Sitta canadensis*		S5	G5

Common Name	Scientific Name	Status*	SRANK	GRANK
White-breasted Nuthatch	*Sitta carolinensis*		S5	G5
House Wren	*Troglodytes aedon*		S5B	G5
Veery	*Catharus fuscescens*		S4B	G5
American Robin	*Turdus migratorius*		S5B	G5
Gray Catbird	*Dumetella carolinensis*		S4B	G5
Brown Thrasher	*Toxostoma rufum*		S4B	G5
European Starling	*Sturnus vulgaris*		SNA	G5
Cedar Waxwing	*Bombycilla cedrorum*		S5B	G5
Yellow Warbler	*Dendroica petechia*		S5B	G5
Chestnut-sided Warbler	*Dendroica pensylvanica*		S5B	G5
American Redstart	*Setophaga ruticilla*		S5B	G5
Ovenbird	*Seiurus aurocapillus*		S4B	G5
Common Yellowthroat	*Geothlypis trichas*		S5B	G5
Chipping Sparrow	*Spizella passerina*		S5B	G5
Field Sparrow	*Spizella pusilla*		S4B	G5
Savannah Sparrow	*Passerculus sandwichensis*		S4B	G5
Swamp Sparrow	*Melospiza georgiana*		S5B	G5
White-throated Sparrow	*Zonotrichia albicollis*		S5B	G5
Dark-eyed Junco	*Junco hyemalis*		S5B	G5
Bobolink	*Dolichonyx oryzivorus*		S4B	G5
Red-winged Blackbird	*Agelaius phoeniceus*		S4	G5
Common Grackle	*Quiscalus quiscula*		S5B	G5
Baltimore Oriole	*Icterus galbula*		S4B	G5
American Goldfinch	*Carduelis tristis*		S5B	G5
MAMMALS				
Eastern Chipmunk	*Tamias striatus*		S5	G5
Red Squirrel	*Tamiasciurus hudsonicus*		S5	G5
White-tailed Deer	*Odocoileus virginianus*		S5	G5

* For the purposes of this report the status includes species designated as special concern provincially or are listed as endangered, threatened or special concern federally AND not listed as endangered or threatened provincially.

SRANK DEFINITIONS

S2: **Imperiled**—Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.
S4: **Apparently Secure**—Uncommon but not rare; some cause for long-term concern due to declines or other factors.

S5: **Secure**—Common, widespread, and abundant in the nation or state/province.
S#S#: **Range Rank** —A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).

Additional older Sranks being replaced in 2006
S?: **Not Ranked Yet**; or if following a ranking, Rank Uncertain (e.g. S3?). S? species have not had a rank assigned.

SZB : **Breeding migrants/vagrants.**

SZN: **Non-breeding migrants/vagrants.**

SARA STATUS DEFINITIONS

Endangered (END) - A species facing imminent extirpation or extinction.
Special Concern (SC) - A species that may become threatened or endangered because of a combination of biological characteristics and identified threats.

APPENDIX G – Resumes

MICHELLE L. (NUNAS) LAVICTOIRE, M. Sc.

EDUCATION

M.Sc. Natural Resources, Environmental Assessment of Best Management Practices for Cattle Pasturing near Small Streams, Macdonald Campus, McGill University – Supervisor Dr. Curtis
B.Sc. Wildlife Biology, Macdonald Campus, McGill University, 1997

LANGUAGES

Fluent in English, French, Spanish and novice Indonesian.

PROFESSIONAL AFFILIATIONS

American Fisheries Society (AFS), Ontario Association of Certified Engineering Technicians and Technologists (O.A.C.E.T.T.), Association Québécoise pour l'évaluation d'impacts (AQEI), International Association for Impact Assessment (AIAI), World Sturgeon Conservation Society.

POSITIONS HELD

2002-:	Bowfin Environmental Consulting Inc., Principal/Biologist
2000-2002:	Self-employed, Biologist
1999-2000	Tera Environmental Consultants, Calgary, AB, Environmental Planner
1998-1999:	Enviroconsult Inc. Calgary, AB, Biologist
1998:	Golder Associates Ltd., Calgary, AB, Contract Technician
1997-1998:	Envirowest Consultants Ltd., Prince George, BC, Biologist
1996:	Heritage Laurentien, Montreal, PQ, Naturalist
1996:	Martineau-Walker, Montreal, PQ, Naturalist
1995:	Ottawa-Carleton Wildlife Centre, Ottawa, ON, Wildlife Intern

CERTIFICATIONS/COURSES

OACETT rcjii Graduate Technologist, Class 1 WSC Electroshocking Certification, first aid, CPR, PADI Instructor, marine radio operator, Pleasure Craft Operator Card. Ontario Fishes course offered by the Centre for Biodiversity and Conservation Biology at the Royal Ontario Museum. Ontario Freshwater Mussel Identification Workshop, Ontario Wetland Evaluation Training, Ecological Land Classification, Butternut Health Assessor. MTO R.A.Q.S. Fisheries Assessment, Environmental Inspection during Construction and Fisheries Compliance during Contracts

EXPERIENCE

Experience in environmental assessments, peer reviews, terrestrial habitat assessment, freshwater and marine habitat assessment, route selection, watershed studies and terrestrial and fisheries inventories including habitat mapping, stream classification, underwater surveys, electroshocking, and development of mitigation and compensation measures, including obtaining extensions to OMNR in-water timing constraints and DFO Authorizations and DFO Permits for Killing Fish by Means other than Fishing.

Aquatic and Terrestrial Environmental Impact Assessments

- Completed EIS for proposed WPCP expansion in the Town of Greater Napanee, ON
- Currently working on a terrestrial and aquatic component for the evaluation of proposed small hydroelectric options for a Cree community in northern Quebec.
- Currently responsible for the aquatic component for the Cataraqui Bridge Crossing, Kingston, ON.
- Currently completing the aquatic and terrestrial assessments for the proposed Clear Point small hydroelectric facility in Renfrew, ON.
- Currently completing the aquatic and terrestrial assessments for three proposed solar farms located in Port Hope, Prescott and Martintown.
- Currently working on an aquatic assessment for a proposed quarry near Rockland, ON.
- Completed aquatic environmental impact assessment for proposed sand pit operations in Greely and Bourget.
- Completed an environmental assessment for a proposed development along Heb Gordon Drain, Manotick, ON.
- Evaluated wetland boundaries for Doran Creek Wetland following OWES, Iroquois Ontario.
- Evaluated wetland boundary and significant woodland features for several single lot developments in the United Counties of SD&G and City of Ottawa.
- Completed the Environmental Impact Statement for the route selection and the Environmental Impact Assessment for the preferred option for the Caron Street Expansion in Rockland, ON.
- Completed the aquatic impact assessment and terrestrial species at risk evaluation for a proposed expansion to a small hydroelectric facility in Douglas, ON.
- Completed terrestrial EIS for proposed WTTP expansion in Iroquois, ON.
- Completed a terrestrial and aquatic route selection assessment for the Simcoe WPCP.
- Completed a Level 1 and Level 2 aquatic and terrestrial assessments for a proposed quarry expansion near Cornwall, ON
- Completed Level 2 fisheries report for Gagne Pit expansion near Rockland, Ontario.
- Completed wetland assessment following OWES for the proposed Morrisburg Industrial Park
- Completed aquatic impact assessment for PTTW, Apple Hill Quarry.
- Currently working on Aquatic and Terrestrial Environmental Impact Assessments for First Chute small hydroelectric facility projects on the Bonnechere River, ON.
- Completed the aquatic habitat and community assessment for a permit to take water for the Amberwood Golf Course, Ottawa ON
- Complete fish community and habitat impact assessment for the Morrisburg Waste water tunnel
- Prepared aquatic impact assessment for the construction of the Clarkson WWTP outfall, Lake Ontario.
- Created artificial reef design for the Town of Saugeen Shores WPP.
- Conducted assessment of fish habitat use and determined potential impacts for the Town of Saugeen Shores WPP.
- Developed and conducted a study to assess fish kills within the Town of Saugeen Shores WWP.
- Fish habitat assessment along Stagecoach Road, Ottawa ON.
- Complete aquatic habitat and community impact assessment for a permit to take water for the Summersheights Golf Course.
- Prepared impact assessment and monitoring plan for the Burloak Water Purification Tunnel project (Burlington, ON).
- Completed aquatic habitat and community assessments for the permit to take water for the Riverbend Golf Course, Ottawa ON
- Conducted aquatic field assessments and reports for EA for vermiculite Canada project near

Bobcaygeon.
- Terrestrial screening level habitat assessment of Ferguson Lake development.
- Designed fish habitat compensation and monitoring plans for Cataraqui River Drilling Project.
- Assessed fish habitat within the Ottawa River near L'Orignal for the Wastewater treatment plant environmental screening report.
- Assessed fish habitat within Lake St. Lawrence (St. Lawrence River) near Morrisburgh for the wastewater treatment plant environmental screening report.
- Conducted level 1 terrestrial impact assessment for Vermiculite Canada project near Bobcaygeon.
- Conducted Environmental Screening Report for South Dundas between Morrisburg and Iroquois.
- Fish habitat assessment Foster Drain, Jock River, Ottawa ON
- Fish habitat assessment on drains on HWY 417 in Casselmen, ON
- Conducted fisheries habitat assessment and designed artificial embayments and fish habitat enhancements for the Chat Falls Boat By-pass.
- Conducted environmental assessment for the proposed South River Hydroelectric Facility including an assessment of impacts on aquatic and terrestrial habitats and communities.
- Wrote Environmental Screening Report and conducted environmental inspections for Cataraqui River Drilling Project.
- Conducted Alexandria Wastewater treatment Plant Expansion Environmental Impact Study.
- Conducted Westley's Point terrestrial and Aquatic Environmental Screening Report for a sewer and watermain.
- Fish habitat assessment on Poole Creek near Stittsville, ON.
- Conducted field work for the environmental screening for the Harbour Front Trunk Sewer Overflow Control – Environmental Assessment.
- Fish habitat assessment Sawmill Creek, Cahill Tributary and Brown's Inlet, Ottawa ON
- Conducted fish habitat assessment and prepared environmental impact statement investigating the potential impacts of a lowering and realignment on the aquatic habitat on Spratt Municipal Drain.
- Conducted terrestrial and aquatic field assessment and wrote Environmental Screening Report for a development project on Loughborough Lake.
- Identified and mitigated potential fish habitat impacts as a result of a proposed increase in water level of the Garry River System, Alexandria, Ontario.
- Fish habitat assessment of Hosaic Creek within the Dupont Nature Reserve, Morrisburg ON.
- Assisted with terrestrial environmental impact assessments, in identification of environmental features to identify constraints and opportunities in support of a proposed Official Plan amendment in Tatlock, Ontario.
- Conducted the marine aquatic impact assessment for the Strait of Georgia Pipeline Crossing, BC.
- Assisted with environmental impact assessments, environmental field reports and fieldwork for various pipeline projects in Alberta.
- Wrote Environmental Overview for Tanglewood Residential Development in Calgary.
- Wrote Environmental Overview for Creekside Mills Residential Development in Calgary.
- Wrote Environmental Overview and Environmental Protection Plan for Beddington Trail, Calgary.
- Wrote Environmental Overview for Elbow Valleye Environmental Protection Plan in Calgary.

Aquatic Inventories

- Completed fish community sampling for the Third Crossing on the Cataraqui River (boat electrofishing and seine netting).

- Completed fish community sampling on Lafontaine drain in Rockland for a proposed subdivision.
- Completed backpack electrofishing and minnow trapping on watercourses at proposed sand pit expansions in Greely, and Bourget Ontario.
- Completed backpack electrofishing and minnow trapping on tributaries to Brook Creek in Port Hope, on a tributary to the St. Lawrence River near Prescott and Wood Drain in South Glengarry for proposed solar farms.
- Completed walleye spawning monitoring (night surveys and egg traps) in and around the chute between Lakes Opemisca and Barlow in northern Quebec.
- Completed a fish kill monitoring of the recently upgraded water treatment facility in Southampton, ON.
- Completed fish community sampling on a tributary to Gray's Creek in Cornwall, Ontario for a proposed subdivision.
- Conducted young-of-the-year walleye monitoring on the Raisin River and Lake St. Francis using boat electrofishing, Cornwall ON.
- Conducted boat electrofishing sampling on the Cataraqui River for a proposed dredging program, Kingston ON.
- Completed boat elecrofishing and habitat mapping for Port of Prescott proposed expansion.
- Conducted fish community sampling within an unnamed drain in Russell, ON.
- Conducted fish community sampling within Feedmill Creek for a proposed development Ottawa, ON.
- Conducted fish community sampling within a tributary to the St. Lawrence River, Brockville, ON.
- Conducted fish community sampling and pike monitoring on the Eastman Drain, Cornwall ON.
- Conducted fish community monitoring and pike surveys on the Heb Gordon Drain, Manotick, ON.
- Conducted fish community sampling on tributaries to Shirley's Creek Kanata, ON.
- Conducted fish community sampling on Foster Drain, Ottawa ON.
- Designed and conducted walleye larvae survey of Hoople Creek and Raisin River (neuston net).
- Collected and analyzed fish and benthic macroinvertebrates from Pattingale and Hoople Creeks for a comparison study of impacted and non-impacted sites for the Raisin Region Conservation Authority.
- Developed and conducted first year of sampling for a benthic macroinvertebrate monitoring program for PTTW, Riverbend Golf Course, near Ottawa, ON.
- Completed R.I.N. (OMNR) gill netting protocol on Reach 1 of the Bonnechere River, Renfrew ON.
- Collected fish community and benthic macroinvertebrate information within tributaries to Clarence Creek for a proposed subdivision, Rockland, ON.
- Collected fish community and benthic macroinvertebrate information within tributaries to Lafontaine Creek for a proposed subdivision, Rockland, ON.
- Collected fish community information from two tributaries to the Ottawa River, Wendover, ON.
- Sampled fish communities within Adams Pond (Ottawa, ON).
- Completed first year of fish community monitoring for the Poole Creek re-alignment at Huntmar Road, Ottawa (backpack electrofishing multi-season)
- Completed the first year of a three year monitoring project for the Cataraqui Utilities Crossing project within the Cataraqui River (boat shocking, seine netting, habitat assessment)
- Completed a three year monitoring project of the new wetland channel created in the Little

Cataraqui River, Kingston ON (seine netting).
- Assessment of benthic macroinvertebrates and fish communities within tributaries of the Bonnechere River (Renfrew ON) (seine netting, gill netting, backpack electrofishing, minnow trapping, multi-season).
- Conducted fish removal on a tributary to Trout Lake for Cruickshank on HWY 60
- Conducted young-of-the-year muskie seining within the Ganonoque area for Muskies Canada and OMNR (seine netting)
- Fish community sampling Mosquito Creek, Carp River and its tributaries. Ottawa, ON (backpack shocking)
- Provided fish removal services for Poole Creek at Huntmar, Kanata Ontario.
- Conducted young-of-the-year muskie and walleye seining within Lake St. Francis (Cornwall, ON).
- Assisted the City of Ottawa in locating and identifying potential walleye spawning grounds in the Rideau River.
- Conducted boat electrofishing on the Cataraqui River (Kingston, ON).
- Collected and analyzed walleye eggs from the spawning grounds at on the Raisin River and Hoople Creek.
- Conducted shoreline boat and beach seining along Lake St. Francis for the Lake St. Francis Fish Habitat Plan.
- Conducted and analyzed data from a stream assessment project of Hoople, Hoasic and Sutherland Creeks (OSAP protocol).
- Conducted boat electrofishing along the shoreline of Lake St. Francis and Raisin River, Cornwall ON with the RRCA.
- Designed, collected and analyzed the results for benthic macroinvetebrate community surveys on several watercourses within Ontario including: South River (Village of South River), tributary to the Beaudette River (Alexandria), Hoasic and Hoople Creeks (Morrisburgh), Sutherland Creek and Raisin River (Cornwall), Jock River (Ottawa) and a tributary to Feedmill Creek (Ottawa).
- Collected information on aquatic habitat, including inventory of fish communities and spawning survey to support proposed water taking from the Tay River (backpack shocking).
- Conducted boat electrofishing along the shoreline of Raisin River, Cornwall ON.
- Lake St. Francis (Cornwall, ON) and on the Cataraqui River (Kingston, ON).
- Developed and conducted fish habitat and community study on the Lower Raisin River (backpack shocking, seine netting, boat eletrofishing multi-season).
- Developed, organized and conducted marine field work, gathered environmental information, located contacts and assisted in writing the draft report for the Strait of Georgia Pipeline Crossing.
- Developed and conducted a fish survey on West Nose Creek, Alberta.
- Assisted in a fry monitoring project at the NOVA pump house on Red Deer River, Alberta. Responsibilities included setting and monitoring fry traps, and data collection.
- Conducted FRBC stream inventorying for Lakeland Mills, British-Columbia.
- Project Director: Realized, developed and presented a population study on the host sea anemones and anemonefishes in Sulawesi, Indonesia in cooperation with McGill University, Ecosurveys Ltd (UK) and Newman Biomarine Pte Ltd (Singapore). The study involved coral habitat mapping and fish surveys.

Environmental and Fisheries Inspections

- Completed inspections during construction and fish salvage on Meade Creek at HWY 7, near Peterborough, ON.
- Designed fish salvage operations for a small hydro facility in Ontario.

- Clarkson's wastewater tunnel inspection design and quality control
- Burloak water purification tunnel blasting fish kill monitoring design and implementation
- Burloak water purification tunnel suspended sediments inspection design and implementation
- Provided environmental and fisheries inspections for the construction of the Poole Creek Re-alignment/Huntmar Drive Crossing.
- Conducted fish removal for MTO project on HWY 125.
- Provided fish removal services on the Trans-Northern Pipeline near Cornwall
- Provided fish removal services for a culvert replacement on Green's Creek near Maynooth, ON.
- Provide environmental and fisheries inspections for MTO projects in Napanee and Vankleek Hill, Lancaster and Ottawa Ontario.
- Conducted Environmental inspection of the dewatering process for the Elbow Valley Residential sanitary sewer system, Calgary Alberta.

Species at Risk Inventories

- Completed SAR assessment for the Colborne Effluent forcemain.
- Completed Protection of SAR assessment for MTO Contract 2010-4028 near Perth, ON.
- Completed butternut assessments in Port Hope, Prescott, and Martintown for proposed solar farms.
- Completed butternut assessments for a proposed sand pit expansion near Bourget, ON.
- Completed butternut assessment for proposed quarry near Moose Creek, ON.
- Completed SAR habitat assessment and search for butternut and American ginseng inventories along Thorps-Ellis Drain, S, D & G
- Completed SAR habitat assessment for proposed WPCP expansion in Greater Napanee, ON.
- Completed butternut assessment on butternuts located on a proposed property to be subdivided in Stittsville.
- Completed butternut inventory for the proposed Clear Point Hydroelectric facility, Renfrew, ON.
- Completed visual surveys for turtle species at risk along the Bonnechere River, Renfrew, ON.
- Completed visual survey for Eastern musk turtle near Kemptville, ON

Other

- Currently co-authoring the Walleye Management Plan for Lake St. Francis with the Raisin Region Conservation Authority and OMNR.
- Assisted in the peer review of the Talston Hydroelectric project, NWT Canada.
- Presented a talk on monitoring walleye larvae and BMPs at the IAGLR Conference, May 2006.
- Presented *How to Develop a Monitoring Program for BMPs* at the Great Lakes Sustainability Non Point Source Symposium, March 2006
- Co-authored Lake St. Francis Fish Habitat Plan for Raisin Region Conservation Authority.
- Coordinated the 2003 Strategic Habitat Restoration Working Group workshop for the Raisin Region Conservation Authority.
- Co-authored a paper on the Effects of Marine Pipelines on the Benthic Environment, presented at the 7th International Symposium on Environmental Concerns in Right-of-Way Management.
- Created and conducted environmental education programs in French for children and the general public.

SHAUN M. ST.PIERRE, B.Sc.

EDUCATION
B.Sc. Biology, Trent University 2007
Fisheries and Wildlife Technology, Frost Campus, Sir Sandford Fleming College, 2005
Fisheries and Wildlife Technician, Frost Campus, Sir Sandford Fleming College, 2004

LANGUAGES
Fluent in French and English

POSITIONS HELD

2006-:	Bowfin Environmental Consulting Inc., Field Assistant/Environmental Site Inspector
2005:	St. Lawrence River Institute of Environmental Sciences, Field Research Assistant
2004:	MNR Kawartha Lakes, Field Research Assistant
2003:	DFO- Experimental Lake Area, Field Research Assistant
2001:	Resource Stewardship S, D &G, Stewardship Ranger

CERTIFICATIONS
Ontario Benthos Biomonitoring Network, Ontario Stream Assessment Protocol, Butternut Health Assessor, Class 2 Electroshocking, first aid, CPR, Pleasure Craft Operator Card, Marine Radio Operator, WHMIS, All Terrain Vehicle Riders Course (issued by the Manitoba Safety Council), Water Safety Training (Bronze Cross), Ontario Trapping Course and Snowmobile Licenses.

EXPERIENCE
Experience assisting in environmental monitoring, environmental assessments, terrestrial habitat assessment, freshwater habitat assessment, fish behavioral studies, winter bat hibernaculum inventories and fisheries inventories including habitat mapping, electroshocking, FWIN and RIN. Other experience include GIS.

Aquatic Inventories
- Assisted with boat electrofishing along the shoreline of the Cataraqui River (Kingston, ON), South Nation River (Casselman, ON), Raisin River (Lancaster, ON), and Lake St.Francis (South Lancaster, ON).
- Assisted in collecting and data entry for benthic macroinvetebrate community surveys on several watercourses within Ontario including: Bonnechere River (Renfrew, ON), tributaries of the Bonnechere River (Renfrew, ON), the Jock River (Ottawa, ON) and tributary to the Beaudette River (Alexandria, ON).
- Assisted in collecting and data entry for several fish community surveys using backpack electrofisher including: Bonnechere River (Renfrew and Douglas, ON), tributaries of the Bonnechere River (Renfrew, ON), tributary to the Beaudette River (Alexandria, ON), tributaries to the South Nation River (Jessup Falls, ON), Butler's Creek (Brockville, ON), Black Creek (Westminster, ON) and Lac Opemisca (Ouje-Bougoumou, QC).
- Mapped fish habitat in many watercourses including: tributaries to the South Nation River (Jessup Falls, ON), Butler's Creek (Brockville, ON), Black Creek (Westminster, ON).

- Assisted in YOY sampling on the Raisin River (Lancaster, ON).
- Assisted in conducting riverine index netting on the Bonnechere River (Renfrew, ON).
- Assisted in conducting larvae surveys on Hoople Creek, Raisin River and the Bonnechere River.
- Assisted in collecting walleye eggs from the spawning grounds on the Raisin River and Hoople Creek.
- Assisted in the monitoring of a new wetland channel created in the Little Cataraqui River.
- Marsh monitoring program breeding amphibian survey at Hoople Creek and the Bonnechere River.
- Assisted in conducting fall walleye index netting for the MNR in Kawartha Lakes

Species at Risk Inventories

- Butternut survey and assessment for proposed development (Brockville, ON).
- Butternut survey and assessment for proposed development (South Lancaster, ON).
- Butternut survey and assessment for quarry expansion (Moosecreek, ON).
- Butternut survey and assessment for quarry expansion (Westminster, ON).
- Butternut survey along the Bonnechere River near Renfrew Ontario.
- American Eel survey on the South Nation River (Casselman, ON)
- American Ginseng survey for proposed development (South Lancaster, ON).
- American Ginseng survey along the Bonnechere River near Renfrew Ontario.

Terrestrial Inventories

- Plant community inventories for proposed development (Ouje-Bougoumou, QC)
- Plant community inventories for proposed development (Brockville, ON)
- Plant community inventories for proposed development (Hamilton, ON)
- Plant community inventories for proposed development (Simcoe, ON)
- Plant community inventories for proposed development (South Lancaster, ON).
- Plant community inventories for quarry expansion (Moosecreek, ON).
- Plant community inventories for quarry expansion (Westminster, ON).
- Plant community inventories along the Bonnechere River (Renfrew)
- Plant community inventories for the Caron street extension (Rockland)

Environmental and Fisheries Inspections

- Conducted environmental inspections for the construction of the Clarkson WWTP outfall, Lake Ontario.
- Assisted in providing environmental and fisheries inspections for the blasting and drilling operation for the Burloak Water Purification Tunnel project (Burlington, ON).
- Assisted in providing environmental and fisheries inspections for the construction of the Poole Creek Re-alignment/Huntmar Drive Crossing.

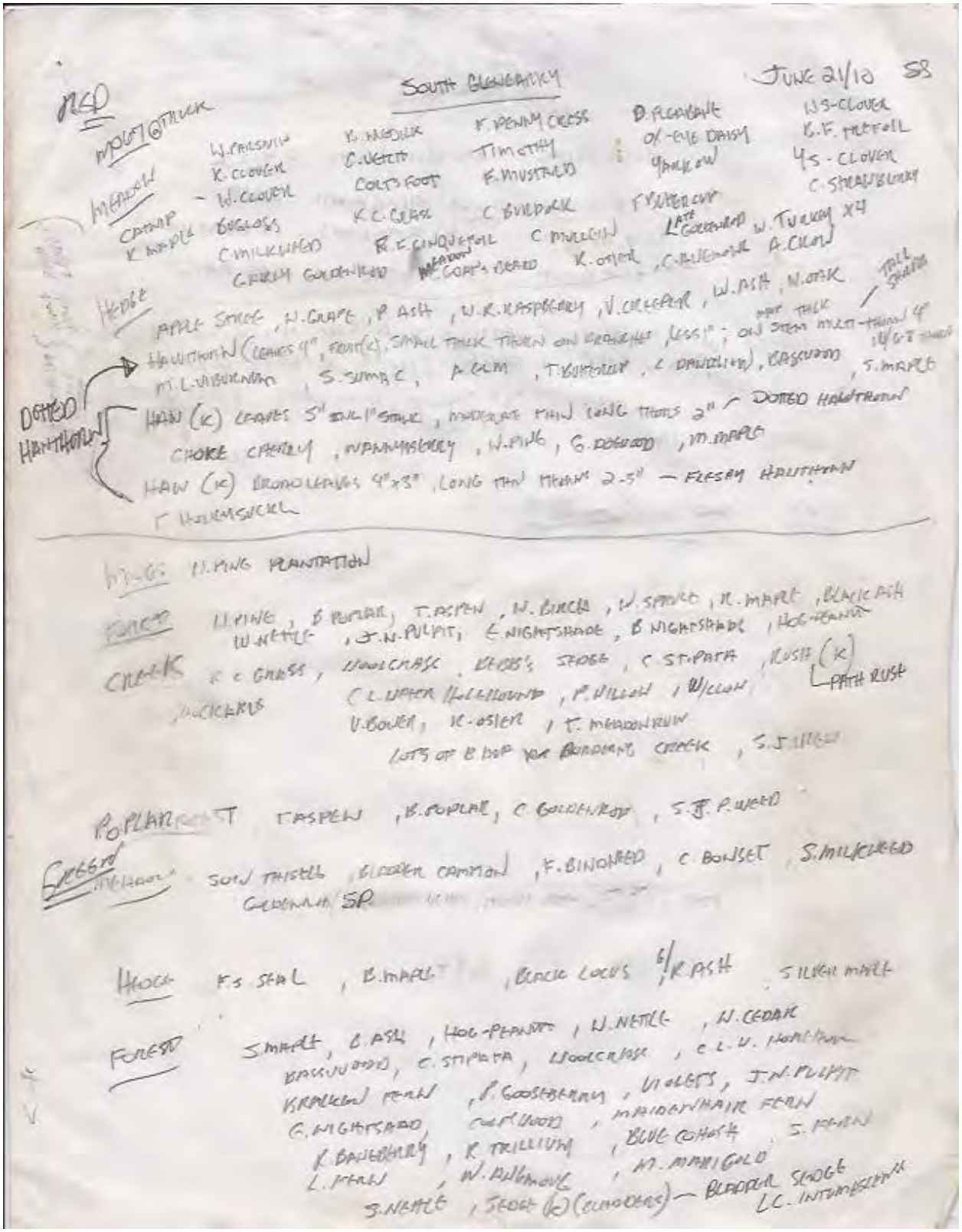
Aquatic Habitat Mapping for Municipal, City Roads and Provincial Highways

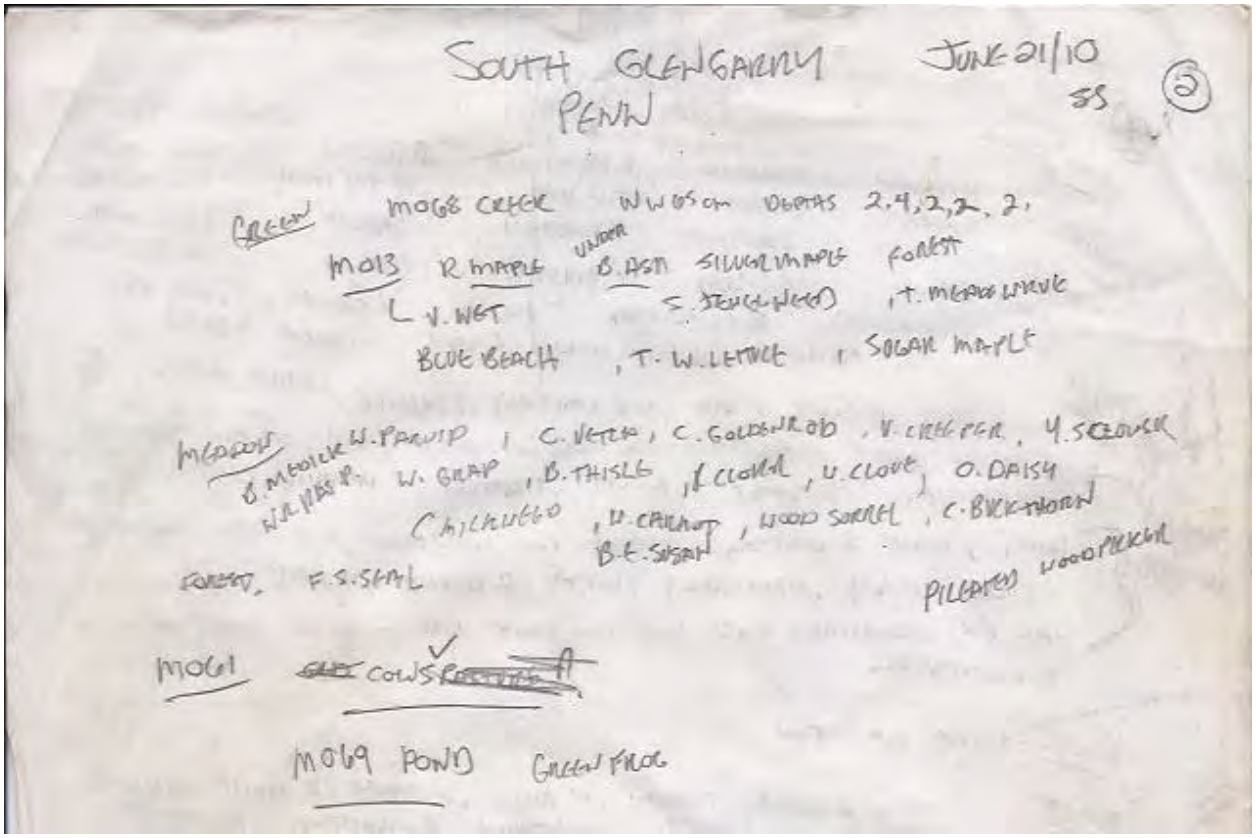
- Conducted MTO habitat assessments at Prince of Wales, Fernbank road, Fallowfield road, HWY 115, Arbuckle drain, the Carp river, tributaries to the Carp river and tributaries to Mud creek.

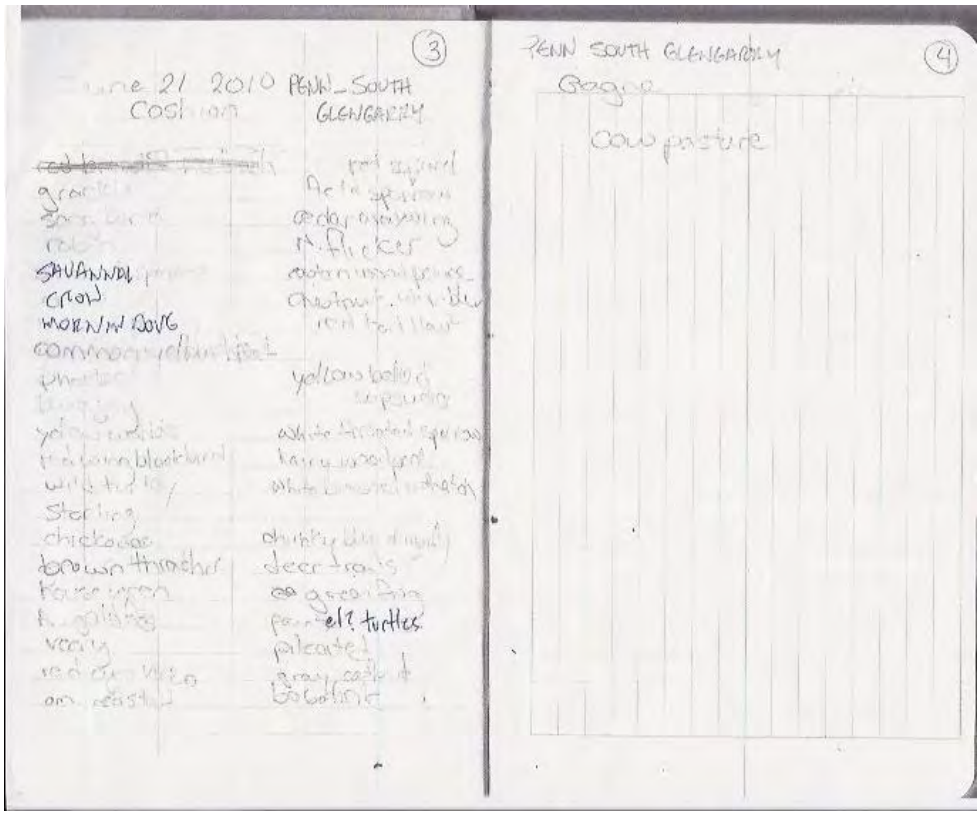
Other

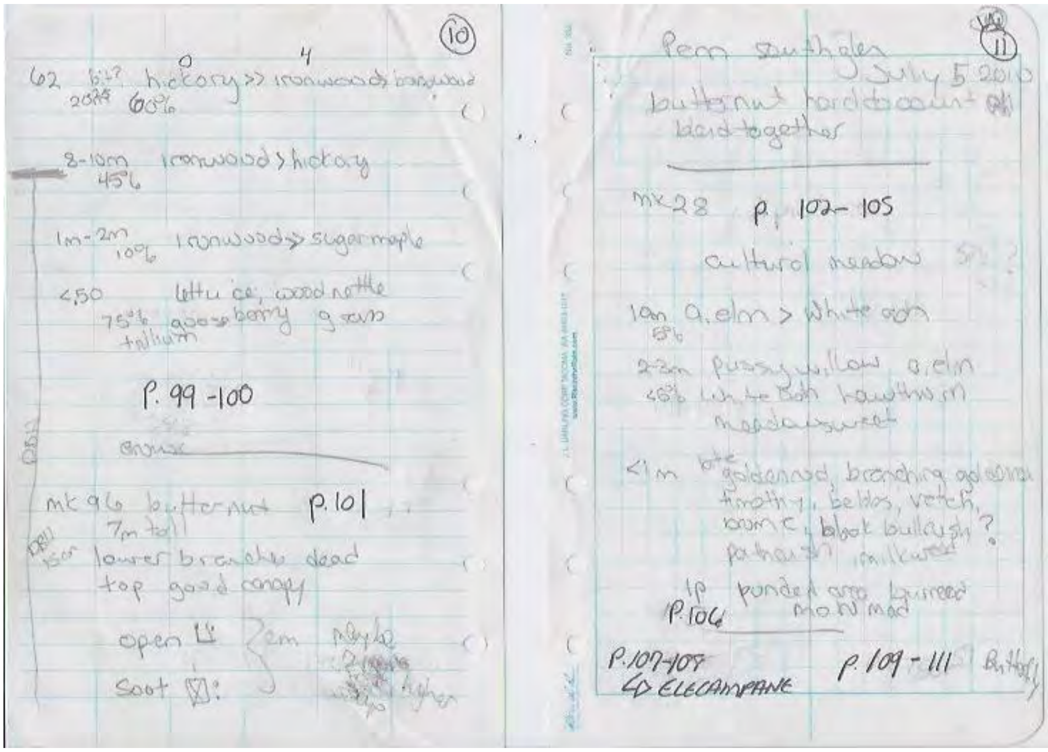
- Assisted in conducting a winter bat hibernaculum inventory (Plantagenet)
- Field research assistant for the Metalicuus study and EDC study (Experimental Lakes Area)
- Captured, pit tagged and tracked Northern Pike (Experimental Lakes Area)
- Construction and maintenance of nature trail (the Cornwall Outdoor Recreational Area)
- Conducted frog deformities surveys (Glengarry)

APPENDIX H – Field Notes




SOUTH GLENGARRY
PENN
JUNE 21/10
55
(2)
MOGS CREEK
MO13
R. MAPLE
L V. WET
BLUE BEECH
T. W. LETTUCE
SUGAR MAPLE
MEADOW
C. VETCH
C. GOLDENROD
V. CREEPER
Y. SCLOVER
W. GRAPE
B. THISTLE
CLOVER
O. DAISY
CHICKWEED
WOOD SORREL
C. BUCKTHORN
FOREST
F.S. SPARL
MO61
COWS
MO69 POND
GREEN FROG


(3)
June 21 2010 PENN_SOUTH GLENGARRY
Cashman
SWAMP
CROW
MOURNING DOVE
(4)
PENN SOUTH GLENGARRY
Gagne
Cow pasture



(10)

62 6.1? 0 4
20?? hickory >> ironwood > basswood
60%

8-10m ironwood > hickory
45%

1m-2m ironwood > sugar maple
10%

<.50 lettuce, wood nettle
75% gooseberry grass
trillium

P. 99-100

grass

mk 96 butternut P. 101
7m tall
lower branches dead
top good canopy

open
Soot ?

(11)

Penn southglen
July 5 2010

butternut hard to count all
bend together

mk 28 P. 102-105

cultural meadow

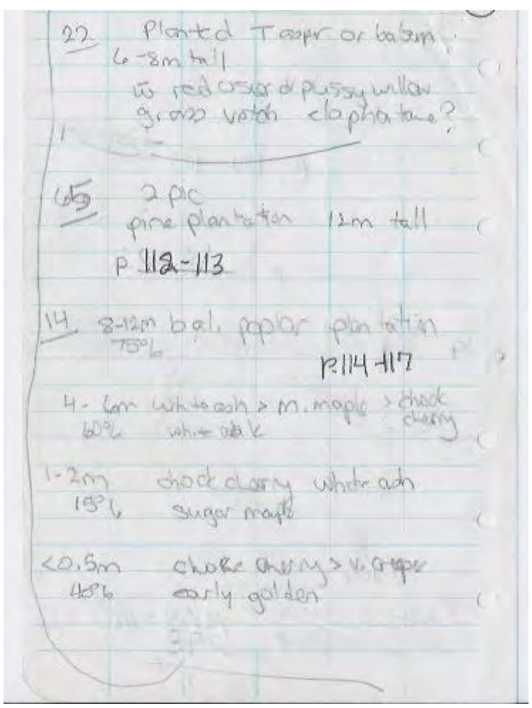
10m a.elm > white ash
5%

2-3m pussy willow a.elm
<5% white ash hawthorn
meadowsweet

<1m goldenrod, branching aster
timothy, bedstraw, vetch,
brome, black bulrush?
parsnip, milkweed

P. 106 ponded area burreed
Mo N Mad

P. 107-108 P. 109-111
ELECAMPANE



22 Planted T aspen or balsam
6-8m tall
w red osier & pussy willow
grass vetch elaphatae?

65 2 pic
pine plantation 12m tall
p 112-113

14 8-12m bal. poplar plantation
75%
P. 114-117

4-6m white ash > m.maple > choke cherry
60% white oak

1-2m choke cherry white ash
15% sugar maple

<0.5m choke cherry > v.grape
45% early golden

SOUTH GLENGARRY PENN (3)

JULY 5/10

~~[illegible]~~ MEADOW → GOLDENROD (x2 K)
· S.J.P. [illegible]

BLACK MAPLE
P. ASH

M001 EARLY GOLDENROD
W. AVENS
W.R. RASPBERRY
W. PARSNIP
YARROW
OX-DAISY
ST. JOHN'S WORT
TIMOTHY
C. GOLDENROD
C. VETCH
C. [illegible]

M062 HICKORY (7-9 CAPLETS) (DBA 35, AUG 15)
(NOT SHAGGY BARK
BASSWOOD (DBA AUG 25)
BAYBERRY
F.S. SEAL
TRILLIUM
W. NETTLE
SUGAR MAPLE
+ W. LETTUCE

M060 + 028
A. ELM (DBA 5)
R. O. DOGWOOD
GLENPLANTAIN (PICS) U. ASH
A. STEM
PUSSY WILLOW
BONESET
TIMOTHY
BEBB'S SEDGE
C. SNIPARIA
GOLDENROD (BRANCH)
PATH RUSH
BULRUSH (K)
SOW THISTLE
M026 OUTCROP
R. GRASS [illegible]
M. SPIKERUSH
+ [illegible]
W. PLANTAIN

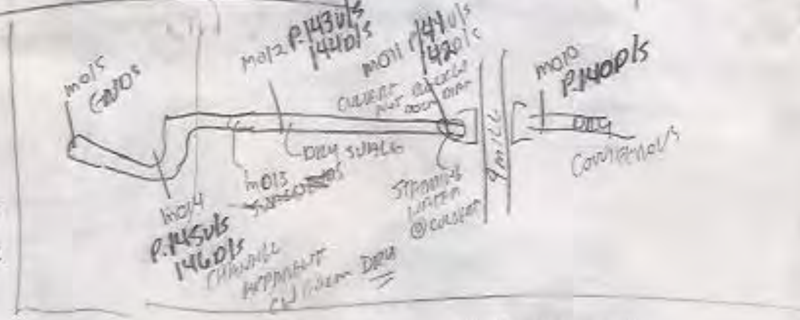
M034 ACTIVE FIELD

M 023 + ASPEN BOGG
M022 BALSAM POP. (K)
C. VETCH
PUSSY WILLOW
C. PARSNIP
TIMOTHY

M065 W. PINE PLANTATION
+ M019, 52*, 031

M014 B. POPLAR (DBA AUG 15 10 26)
M. MAPLE
W. ASH
C. CHERRY
S. MAPLE
V. CREEPER
R. CURRANT
EARLY GOLDENROD

S. GLEN PENN JULY 23/10 ②

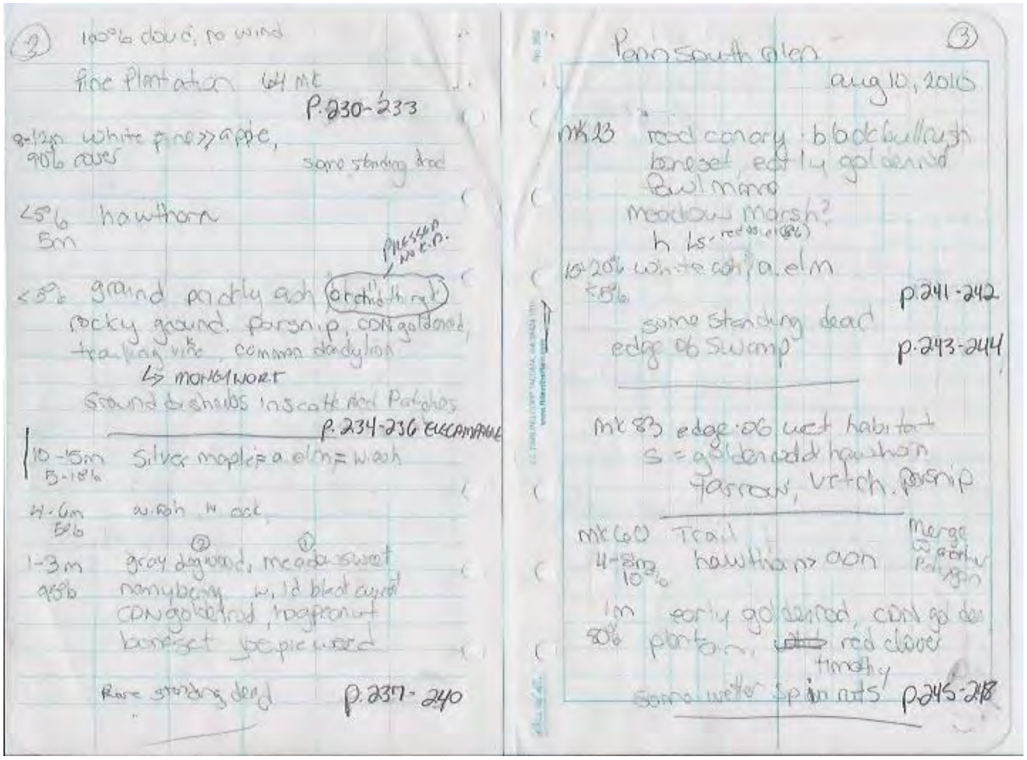


HAWTHORN com
EDGE mo16 P.147-149
EDGE mo17 P.150-152
EDGE mo18 P.153-155
TN mo19 P.156-159
GD mo20 P.160-162
" mo21 P.163-165
TN mo22 P.166-169
TN mo23 P.170-173
" mo24 P.174-177
mo25 ROCK FENCE P.178
TN mo26 P.179-182
EDGE mo27 P.183-185
" mo28 P.186-189
" mo29 P.190-193
TN mo30 P.194-197
GD mo31 P.198-200
mo32 ROCK FENCE P.201
GD mo33 P.202-204
TN mo34 P.205-208
TN mo35 P.209-212

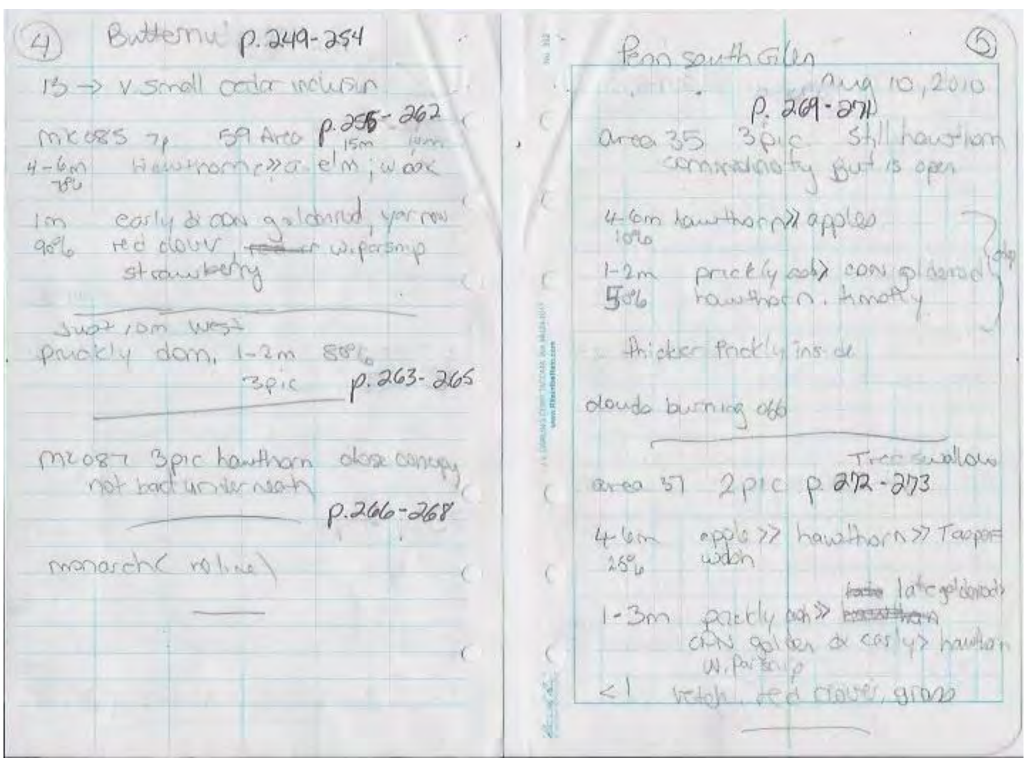
GD mo36 P.213-216
TN mo37 P.217-220
mo38 POND 5m wide 10m long
P.221 GRFLIM 0% cc B.V. 100
AV 100%
GD mo39 P.222-224
mo40 P.225 POND 10m wide 10-15m long
APPEARS SHALLOW
ALGAE
NO CANOPY COVER
B.V. 00%

NO BUTTERNUT OBSERVED

Penn South Glen ①
aug 10, 2010
mt30 = dec. Windrow
15m tall tree white ash
basswood
3-6m tall shrub & elm
hawthorn, apple, sumac, prickly ash
0.5-2m wild red rasp, white ash,
honeysuckle
ground layer - v creeper ①, prickly ash,
② white ash, sugar maple,
tree stand on old rock wall throughout
windrow also east west on S side
of pine plantation
p. 226-229


(2) 100% cloud, no wind
Pine Plantation 64 MT
P.230-233
8-12m white pine >> apple, 90% cover
some standing dead
<5% hawthorn 5m
<5% ground prickly ash (orchid thing)
rocky ground. parsnip, CAN goldenrod, trailing vine, common dandylion
→ MONEYWORT
Ground & shrubs in scattered patches
P.234-236 ELECAMPANE
10-15m 5-18% silver maple = a elm = w ash
4-6m 5% w ash, H ock
1-3m 95% gray dogwood, meadowsweet, nannyberry, wild black currant, CAN goldenrod, ragwort, boneset, joepieweed
Rare standing dead p.237-240

(3) Penn South Glen
aug 10, 2010
MK23 reed canary, black bullrush, boneset, early goldenrod, Bulrush
meadow marsh?
10-20% white ash, a elm <5%
p.241-242
some standing dead
edge of swamp p.243-244
MK 83 edge of wet habitat
S = goldenrod hawthorn, yarrow, vetch, parsnip
MK 60 Trail
4-8m 10% hawthorn >> ash
Merge
1m 80% early goldenrod, CAN goldenrod, plantain, red clover, timothy
some wetter spots
p.245-248


(4) Butternut p.249-254
13 → v small cedar inclusion
MK085 7p 59 Area p.255-262
4-6m 75% Hawthorn >> a elm ; w oak
1m 90% early & CAN goldenrod, yarrow, red clover, w. parsnip, strawberry
Just 10m west
prickly ash, 1-2m 80% 3pic p.263-265
MK087 3pic hawthorn close canopy not bad underneath
p.266-268
monarch (roline)

(5) Penn South Glen
aug 10, 2010
p.269-271
Area 35 3pic. Still hawthorn commonality but is open
4-6m 10% hawthorn >> apples
1-2m 50% prickly ash >> CAN goldenrod, hawthorn, timothy
thicker prickly inside
clouds burning off
Tree swallow
area 57 2pic p.272-273
4-6m 25% apple >> hawthorn >> Taspor, w ash
1-3m prickly ash >> late goldenrod, CAN golden & early > hawthorn, W. Parsnip
<1 vetch, red clover, grass

(6)

area 51 - 2 pic P. 274-275
4-6m hawthorn thicket >> elm
75%
1-3m prickly ash
50%
same type of community
as last one ~~(struck)~~ apple replaced
with hawthorn

area 3 ~~58~~ 5~~8~~ - 3 pic P. 276-278
large boulders
18-20m white ash green frog
0.5-2m meadowsweet > hawthorn =
25% white black currant > nannyberry
ground
grasses;
grazed; reed canary
pressed not sure I.D. green sedges ← PROBABLY BLADDER SEDGE
~~alaphonimo~~ common
speedwell, blue vervain, timothy
red clover

(7)

Penn energy South Glen
aug 10, 2010
4 pic at pond P. 279-282
area 54 is same but drier with more
thistle; "burger mt inv sp"
hairy ↳ BROWN KNAPWEED
turkey vulture

mccoss 2 p. meadow
goldenrod, wild carrot, W SWEET
clover, vetch, grass
P. 283-284
area 43 2 p meadow
combine with mccoss
P. 285-286
area 63 P. 287-288
Hawthorn thicket w
meadow inliers

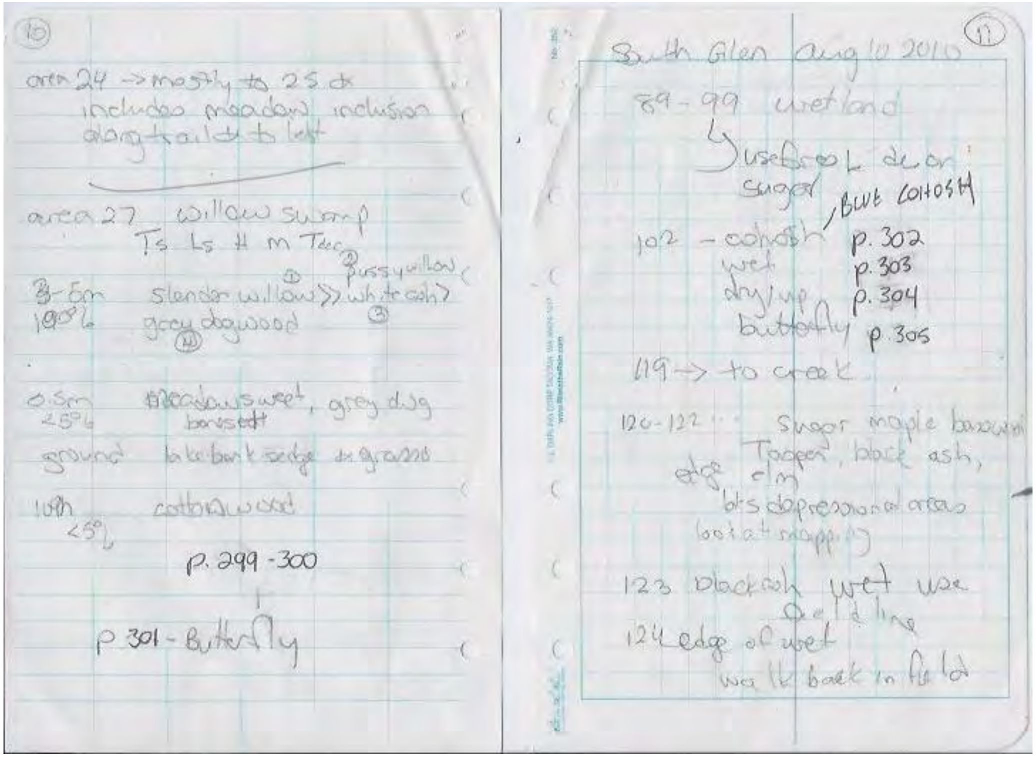
(8)

4-6m Hawthorn >> apple
80% canopy when present
0.5-2m Prickly ash >> hawthorn >> white ash
10%
ground strawberry, dandelion,
68% smooth bedstraw
(100% in meadow, typical meadow
sp from other sites)
area 31 more prickly ash than hawthorn
3 pic
P. 289-291
hill, rocks
area 32 P. 292-293
4-8m hawthorn >> apple > a. elm
40% prickly ash
1-3m prickly ash > hawthorn <
20% early goldenrod
ground timothy > vetch >> red clover
90%
some standing dead elm

(9)

Penn south glen
aug 10, 2010
area 33 back to tall hawthorn
community
4-6m hawthorn >> apple
95%
1-3m white ash nannyberry
< 8%
ground layer bedstraw > V. creeper
strawberry
P. 294-295

area 25 5-10m P. 296-296
2-5m hawthorn >> elm = apple
25%
0-5m meadowsweet, CDN goldenrod
ground brome, vetch, thistle


(10)

area 24 → mostly to 25 dc
includes meadow inclusion
along trail to left

area 27 willow swamp
Ts Ls H m Tec

3-5m slender willow >> pussy willow white ash?
100% grey dogwood

0.5m meadowsweet, grey dwg
<25% boneset

ground lake bank sedge & grass

10th cottonwood
<5%

p. 299-300

p 301 - Butterfly

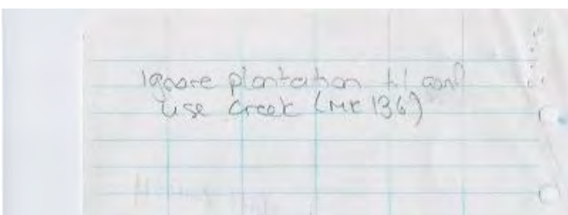
(11)
South Glen aug 10 2010

89-99 wetland
useful de on
sugar / BLUE COHOSH
102 - cohosh p. 302
wet p. 303
dry/up p. 304
butterfly p. 305

119 → to creek

120-122 sugar maple basswood
edge Tooper, black ash,
elm
bts depressional areas
look at mapping

123 black ash wet use
field line
124 edge of wet
walk back in field


Ignore plantation til and
use Creek (Mt 136)

S. GLEN PENN

AUG 10/10 SS ML

AREA 030
MO82 ROCK FENCE 1-1-2
W. ASH (DBH 15) W.R. RASP K. GRAPE W. PARSNIP S. SUMAC
HAWTHORN C. BURDOCK APPLE A. ELM SUGAR MAPLE
T. HONEYSUCKLE S. MAPLE BASSWOOD BASSWOOD V. CREEPER
P. ASH F.S. SEAL, BLOODROOT, ASPARAGUS STARFLOWER
C. STRAW. P. GOOSEBERRY, W. ANEMONE, GRASS (K) I.D.?

AREA 064 PINE PLANTATION
W. PINE (DBH 5-15, AUG 10) P. ASH C. MILKWEED
APPLE (DBH 10) ORCHID (K) PRESS I.D.? C. DANDELION
BASSWOOD (DBH 20) W. OAK W.R. RASP
W. ASH MOTHERWORT (K) NANNYBERRY
W. PARSNIP C. STRAW C. GOLDENROD
W. MINT C. BURDOCK

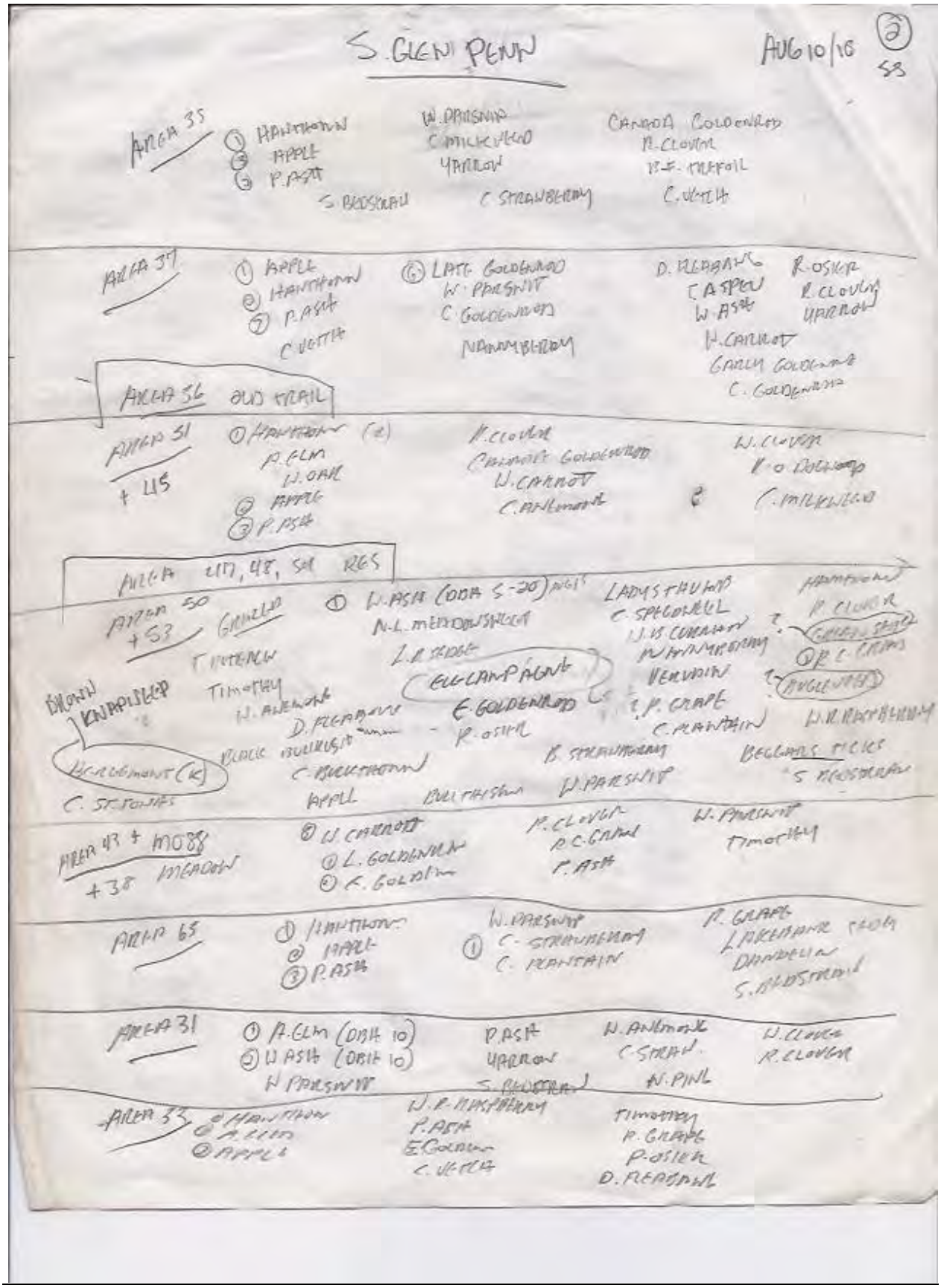
AREA 22
ELECAMPAGNE
SILVER MAPLE (DBH 10-20) W. OAK S.J. WEED
W. ASH (DBH 20) V. CREEPER
A. ELM (DBH 15) NANNYBERRY
C. GOLDENROD BONESET G. DOGWOOD
HOG-PEANUT V. CREEPER N.L. MEADOWSWEET
W.B. CURRANT

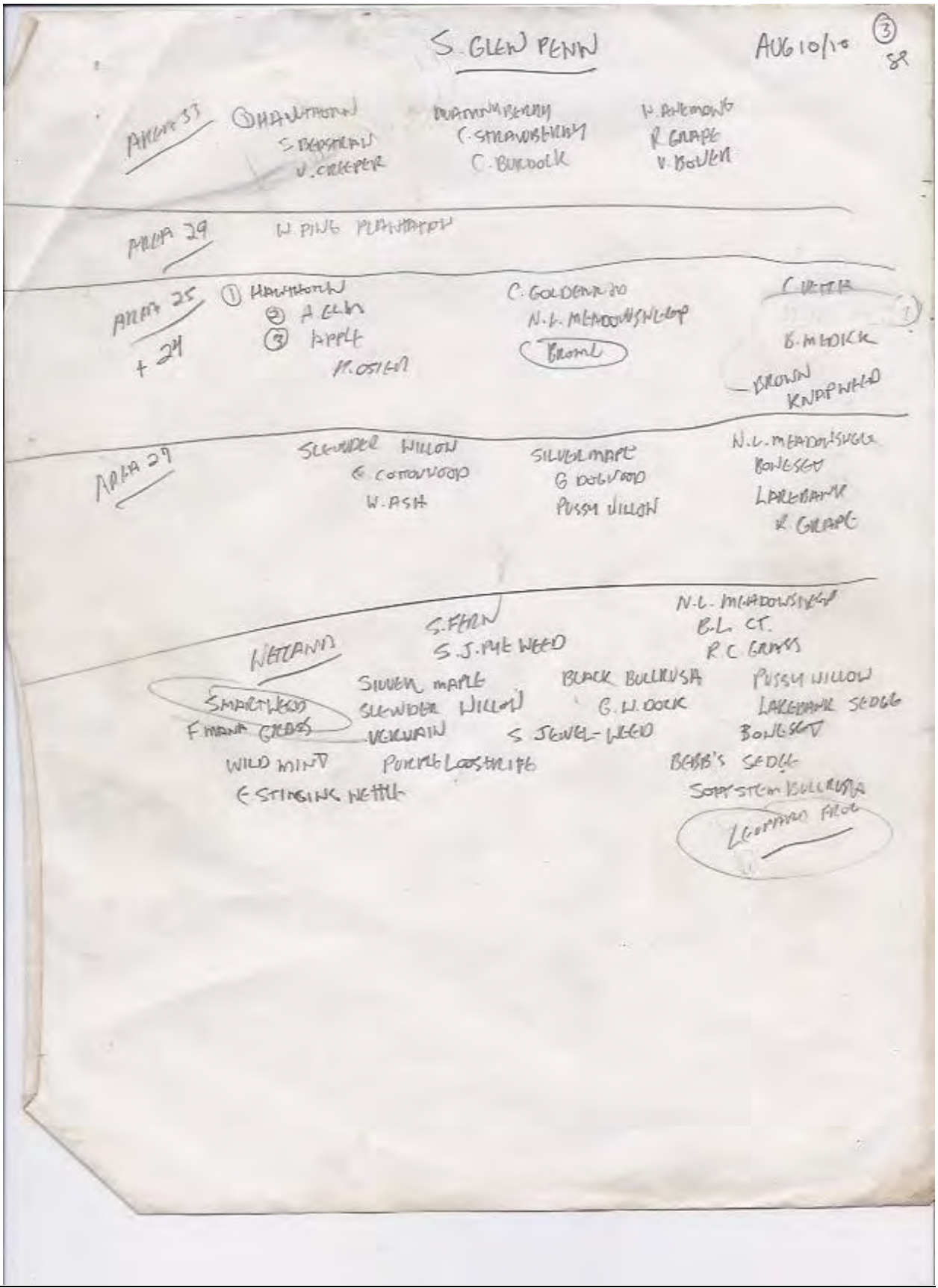
AREA 27 + 28
K.C. GRASS A. ELM (DBH 10-20) R. OSIER
B. BULRUSH W. ASH (DBH 10-20) MEADOWSWEET
G. GOLDENROD C. VETCH VERVAIN
BONESET F. MANNA GRASS HAWTHORN (REGEN)
LAKEBANK SEDGE
MO83 EDGE OF WET AREA

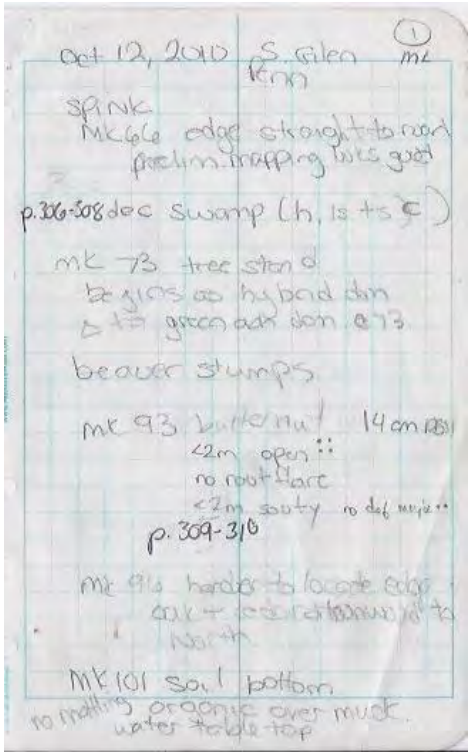
AREA 60
HAWTHORNE R. CLOVER CANADA GOLDENROD
W. ASH (DBH 10) TIMOTHY FABLEY
W. OAK C. PLANTAIN MULLEIN I.D.?
A. ELM (DBH 10) LAKEBANK SEDGE B. BULRUSH
APPLE YARROW C. SPEEDWELL

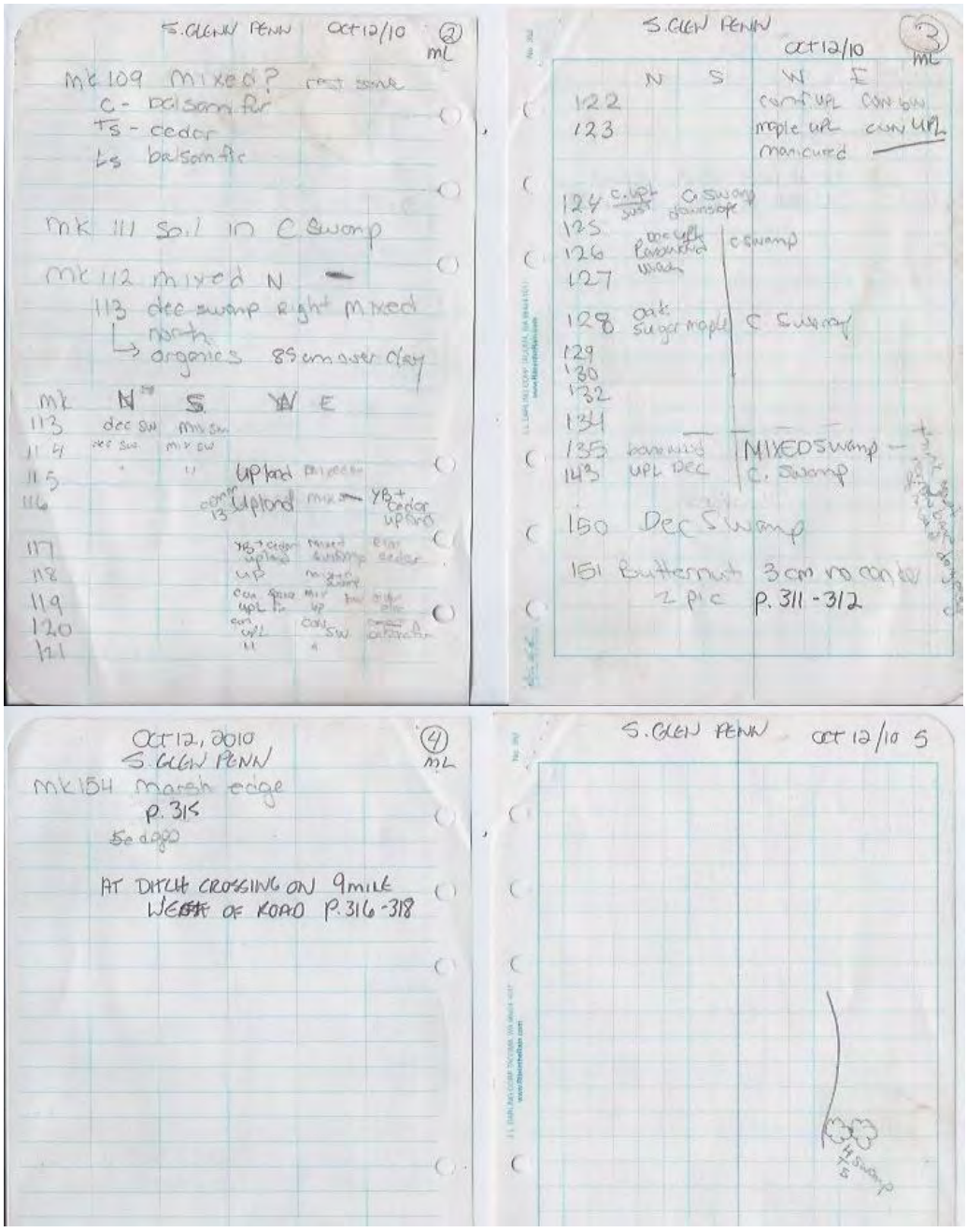
MO84 #1 BUMSTEAD

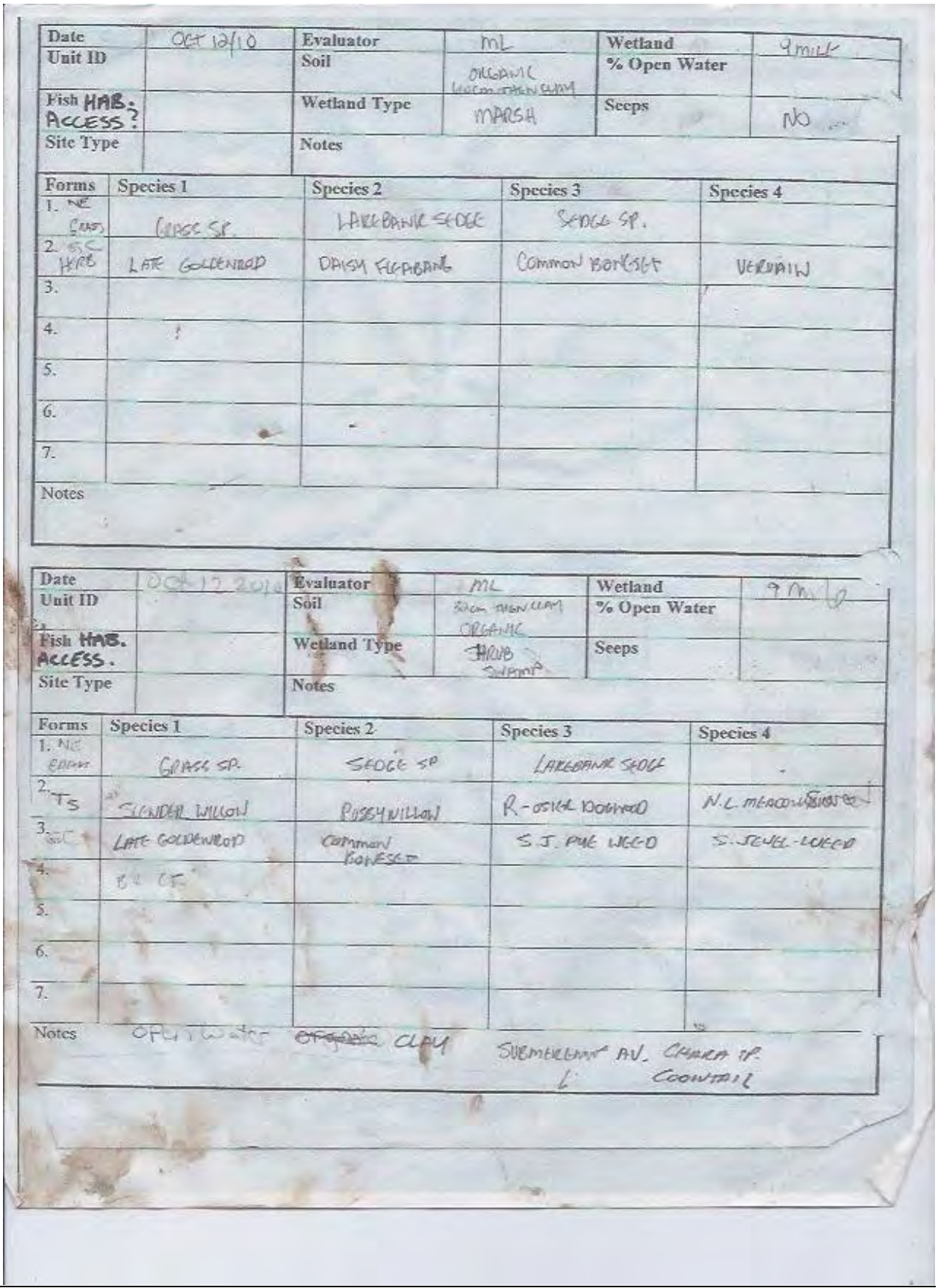
AREA 59 MO85
MO86
HAWTHORN C. GOLDENROD V. CREEPER
W. OAK (DBH 10) CANADA GOLDENROD C. MILKWEED
A. ELM (DBH 20) YARROW C. VETCH
D. BLUEGRASS R. CLOVER K. GRAPE
W. PARSNIP W. STRAW APPLE
W. CLOVER W.R. RASP
BUCKTHORN P. ASH


S. GLEN PENN
AUG 10/10
AREA 35
AREA 37
AREA 36 OLD TRAIL
AREA 51
AREA 43 + M088
AREA 65
AREA 31
AREA 33


S. GLEN PENN
AUG 10/10
3
88
AREA 33
1 HAWTHORN
S RASPBERRY
V. CREEPER
DOGWOOD PENNY
C. STRAWBERRY
C. BURDOCK
W. RASPBERRY
R. GRAPE
V. BOWER
AREA 29
W. PINE PLANTATION
AREA 25
+ 24
1 HAWTHORN
2 ASH
3 APPLE
M. OSIER
C. GOLDENROD
N.L. MEADOWSWEET
BROME
C. VETCH
1
B. MEDICK
BROWN KNAPWEED
AREA 29
SLENDER WILLOW
& COTTONWOOD
W. ASH
SILVER MAPLE
& DOGWOOD
PUSSY WILLOW
N.L. MEADOWSWEET
BONESET
LAKEBANK
R. GRAPE
WETLAND
S. FERN
S. J. PUSSY WEED
N.L. MEADOWSWEET
B.L. CT.
R.C. GRASS
SMARTWEED
F. MANNA GRASS
SILVER MAPLE
SLENDER WILLOW
WATERCRESS
BLACK BULLRUSH
G.W. DOCK
S. JEWEL-WEED
PUSSY WILLOW
LAKEBANK SEDGE
BONESET
WILD MINT
& STINGING NETTLE
PURPLE LOOSESTRIFE
BEBB'S SEDGE
SOFTSTEM BULLRUSH
LEOPARD FROG


Oct 12, 2010 S. Glen
Kenn
SPINK
MK66 edge straight to road
prelim. trapping looks good
p. 306-308 doc swamp (h, is ts c)
MK 73 tree stand
beaver stumps
MK 93 butternut 14cm DBH
<2m open
no root flare
<2m souty
p. 309-310
MK 96 harder to locate edge
MK 101 soil bottom
to mottling organic over muck
water table top


S.GLEN PENN Oct 12/10
mk 109 mixed?
C - balsam fir
Ts - cedar
Ts balsam fir
mk 111 soil in C Swamp
mk 112 mixed N
113 dec swamp right mixed
north
organics 85 cm over clay
mk N S W E
113 dec SW mix SW
114 dec SW mix SW
115 upland
116 upland mix YB+ cedar upland
117
118
119
120
121
S.GLEN PENN
Oct 12/10
N S W E
122 cont upl con bsh
123 maple upl con upl
manicured
124 c. upl c. swamp
125
126 dec upl c swamp
127
128 oak sugar maple c swamp
129
130
132
134
135 MIXED swamp
143 upl dec c. swamp
150 Dec Swamp
151 Buttermilk 3 cm rd con
2 pic p. 311-312
Oct 12, 2010
S GLEN PENN
mk 154 marsh edge
p. 315
AT DITCH CROSSING ON 9mile
WEST OF ROAD p. 316-318
S.GLEN PENN Oct 12/10 5
Ts Swamp



Date	OCT 12/10	Evaluator	ML	Wetland	9 mile
Unit ID		Soil	ORGANIC	% Open Water	
Fish HAB. ACCESS?		Wetland Type	MARSH	Seeps	NO
Site Type		Notes			

Forms	Species 1	Species 2	Species 3	Species 4
1. NE EMRG	GRASS SP.	LAKEBANK SEDGE	SEDGE SP.	
2. SS HERB	LATE GOLDENROD	DRAIN FLEABANE	COMMON BURDOCK	VERBAIN
3.				
4.				
5.				
6.				
7.				
Notes				

Date	OCT 12 2010	Evaluator	ML	Wetland	9 Mile
Unit ID		Soil	SOME MEDIUM ORGANIC	% Open Water	
Fish HAB. ACCESS.		Wetland Type	SHRUB SWAMP	Seeps	
Site Type		Notes			

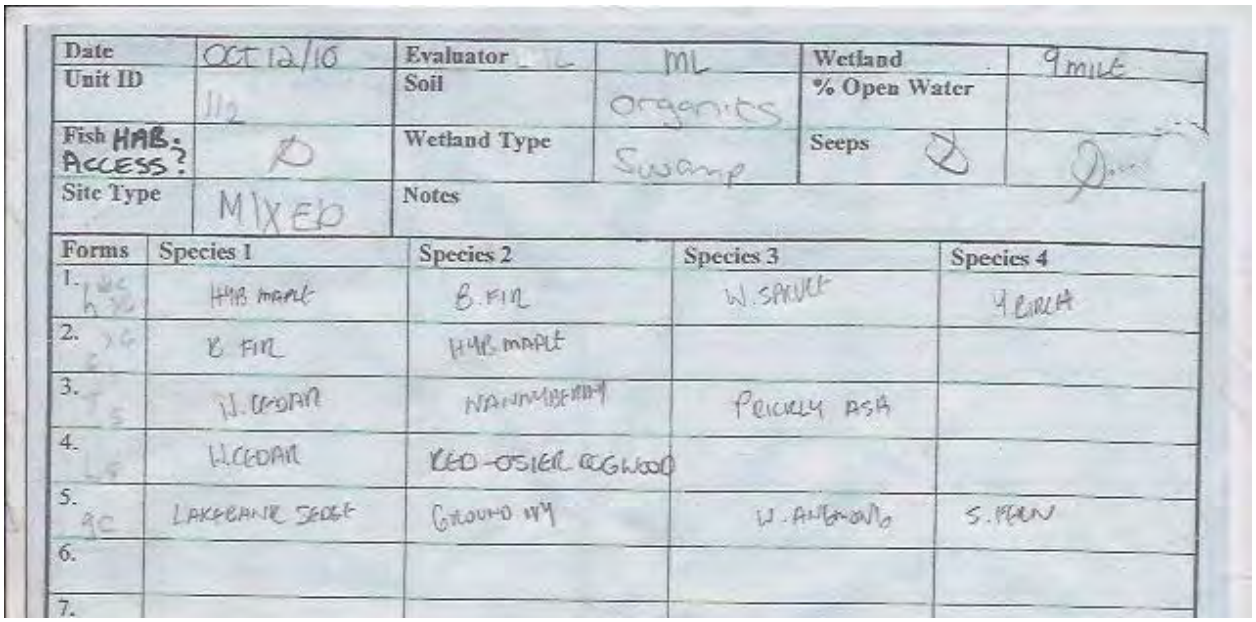
Forms	Species 1	Species 2	Species 3	Species 4
1. NE EMRG	GRASS SP.	SEDGE SP	LAKEBANK SEDGE	
2. TS	SLENDER WILLOW	PUSSY WILLOW	R-OSIER DOGWOOD	N.L. MEADOWSWEET
3. SS	LATE GOLDENROD	COMMON BONESET	S.J. PUE WEED	S. STEEL-LEAVED
4.	B. CF.			
5.				
6.				
7.				
Notes	OPEN WATER ~~ORGANIC~~ CLAY		SUBMERGENT AV. CHARA SP. L. COONTAIL	

Date	Oct 12 2010	Evaluator	ML	Wetland	9 mile
Unit ID	666	Soil	Organic	% Open Water	Ø
Fish HAB. ACCESS?	NO	Wetland Type	Swamp	Seeps	Ø
Site Type	DEC	Notes			

Forms	Species 1	Species 2	Species 3	Species 4
1. h	hybrid maple	GREEN ASH	A ELM / B.ASH	BUR OAK
2. Ls	cedars	HYB. MAPLE	RED-OSIER DOGWOOD	P. GOOSEBERRY
3. Ts	HYB MAPLE	RED-OSIER DOGWOOD	W. CEDAR	BLUE BEECH NANNYBERRY
4. gc	LAKE BANK SEDGE	COMMON STRAWBERRY	WOOD ANEMONE	LATE GOLDENROD
5. c	W. CEDAR			
6.				
7.				
Notes				

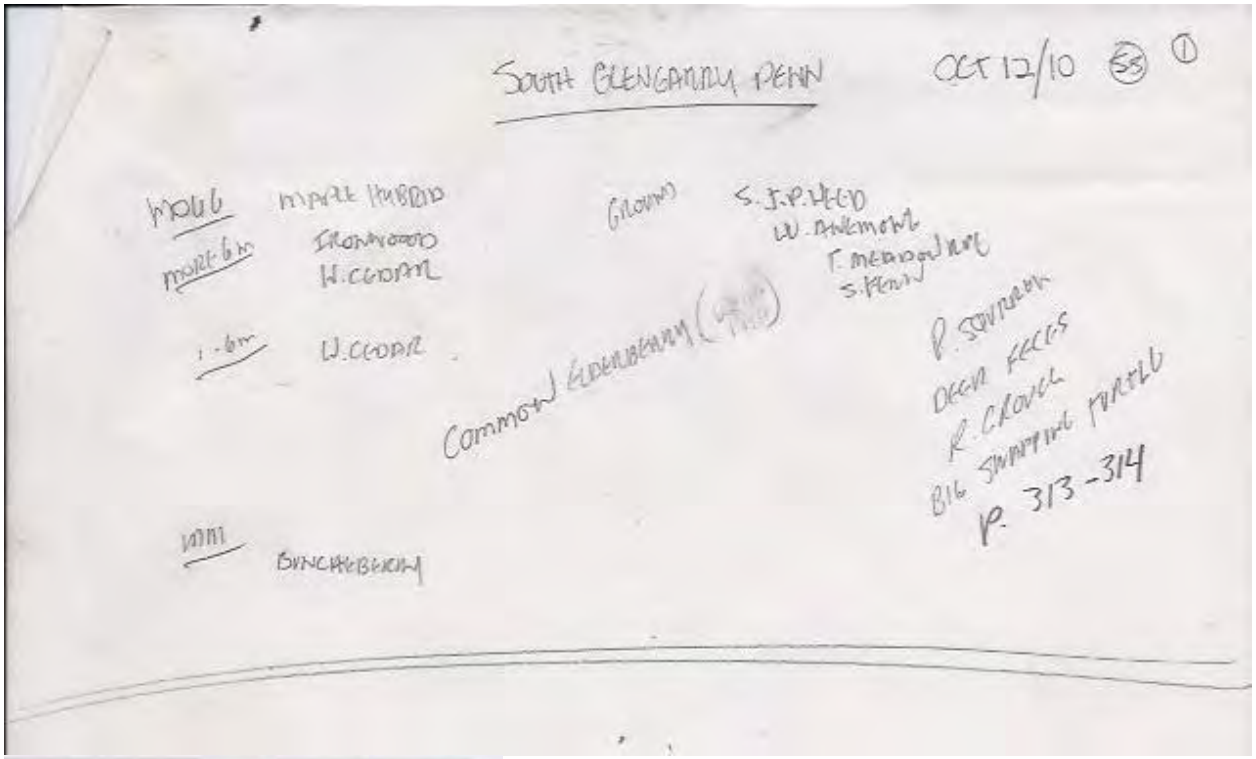
Date	OCT 12/10	Evaluator	ML	Wetland	9 MILE
Unit ID	TO 111	Soil loam over clay	Organic	% Open Water	Ø
Fish HAB. ACCESS.	Ø	Wetland Type	Swamp.	Seeps	Ø
Site Type	CON	Notes			

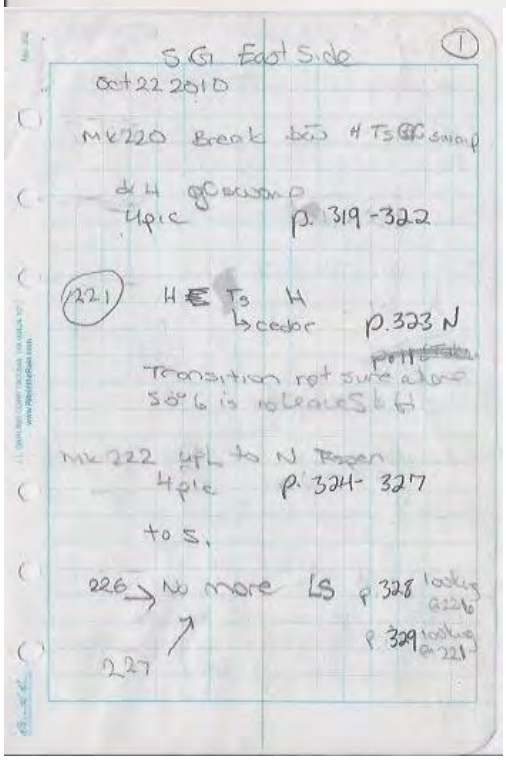
Forms	Species 1	Species 2	Species 3	Species 4
1. C	B FIR	W. CEDAR		W SPRUCE (RARE)
2. Ls	RED-OSIER DOGWOOD	HYB MAPLE REGEN / SUGAR MAPLE	W-B CURRANT	B FIR
3. mess				
4. Ts	B FIR	DEADWOOD	W CEDAR	
5.				
6.				
7.				
Notes				



Date	OCT 12/10	Evaluator	ML	Wetland	9 mile
Unit ID	112	Soil	organics	% Open Water	
Fish HAB. ACCESS?	D	Wetland Type	Swamp	Seeps	D
Site Type	MIXED	Notes			

Forms	Species 1	Species 2	Species 3	Species 4
1.	HAB MAPLE	B. FIR	W. SPRUCE	YELLOW BIRCH
2.	B FIR	HAB. MAPLE		
3.	W. CEDAR	MANNAGRASS	PRICKLY ASH	
4.	W. CEDAR	RED OSIER DOGWOOD		
5.	LAKEBANK SEDGE	GROUND IVY	W. AMBROSIA	S. FERN
6.				
7.				


SOUTH GLENGARRY, PENN
OCT 12/10
MAPLE
MAPLE
IRONWOOD
W. CEDAR
W. CEDAR
GROUND
S. J. P. HEAD
W. ANEMONE
T. MEADOWRUE
S. PENN
P. SOLOMON
DEER SEEDS
R. CLOVER
BIG SWAMP PURPLE
P. 313-314
BIRCH/BEECH


S.G. East Side
Oct 22 2010
MK220 Break
4pic
P. 319-322
H E T S H
beech
P. 323 N
Transition not sure where
SOG is no leaves both
MK222 yPL to N Beech
4pic
P. 324-327
to S.
226 No more LS
P. 328
P. 329
227

(2) S. GLENGARRY Oct 22/10

in 226 to 227 p 330 tractor ruts

logging
Aspen 228 - 234 wet?

mk 235 edge? Aspen N
ced South
p. 331 - 332
Conf swamp

mk 236 H Ts Ls Gc M
edge p 333, 334
b/w cedar
decid conf swamp

mk 237 edge grey dogwood
white ash Hawthorn
p. 335 - 336

238 upland Hemlock
Soil silt clay over sandy clay
cedar p. 337

(3) S.G East side Oct 22 2010

mk 240 edge E Aspen Birch,
hemlock

W = cedar elm ash

244
mk 245 } back in 236
246
246 to 250
edge

251 butternut dead?

256 cedar back in Ts bys

~~p. 20 - Beaver lout~~
~~p 21 MK 263 SE~~
~~p 22 MK 262 NW~~

S. GLENGARRY Oct 22/10

MK 260 Ts Gc

261 P. 338 looking E MK 266
P. 339 looking NE upl
white pine
p. 340 looking toward
NW MK 221

Soil
20cm org
over
clay

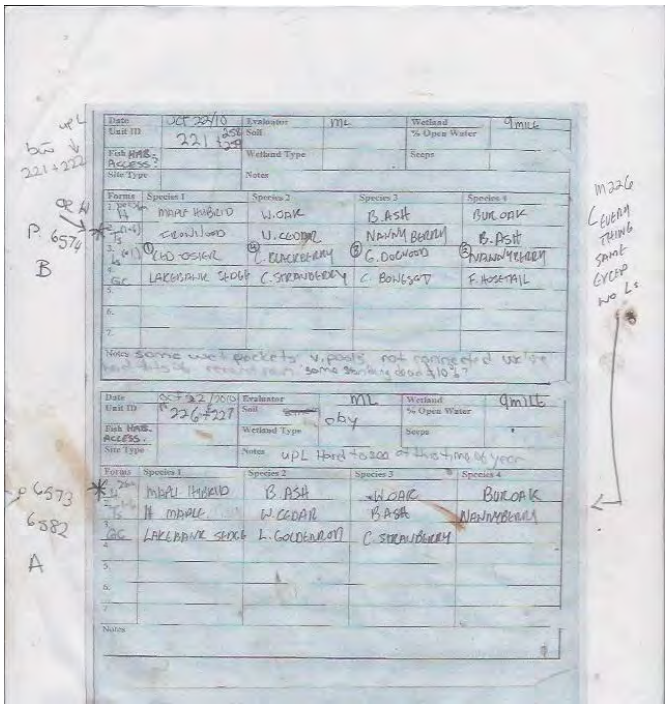
beaver
262 p. 341 W P 24E
ditch

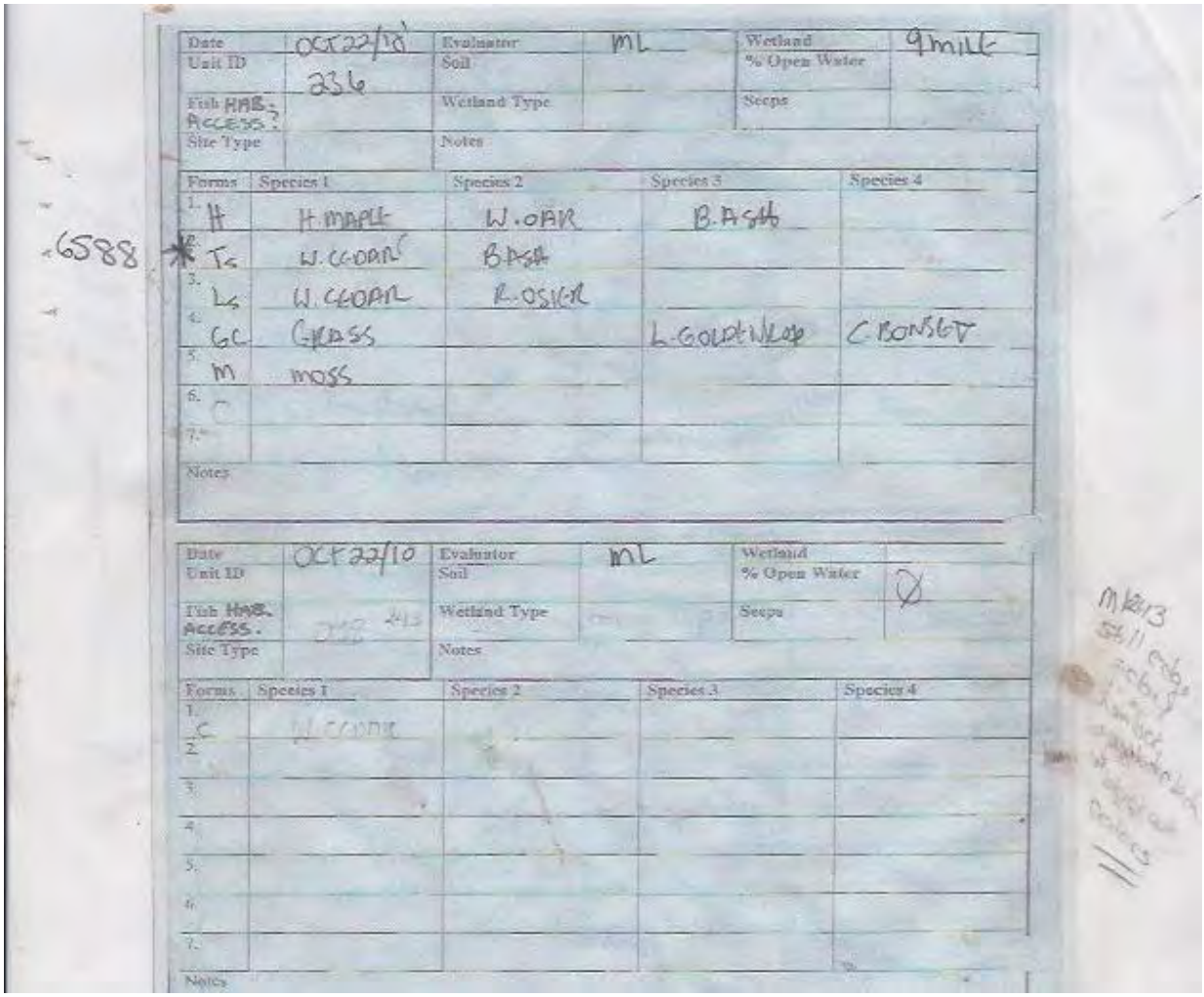
p. 342, 343, 344 other side

Shallow o/w was flooded
by beavers
substrate muck - 55cm
iron seep over
clay

P. 345
346 SE 347 NW 263

mk 264 edge of comm 221
mk 265 p 348 W
p 349 N H Ts Gs
mk 266 p 350, 351
p. 352 - 354
At 9 mile





Date	OCT 22/10	Evaluator	ML	Wetland	9mile
Unit ID	236	Soil		% Open Water	
Fish HAB. ACCESS?		Wetland Type		Seeps	
Site Type		Notes			

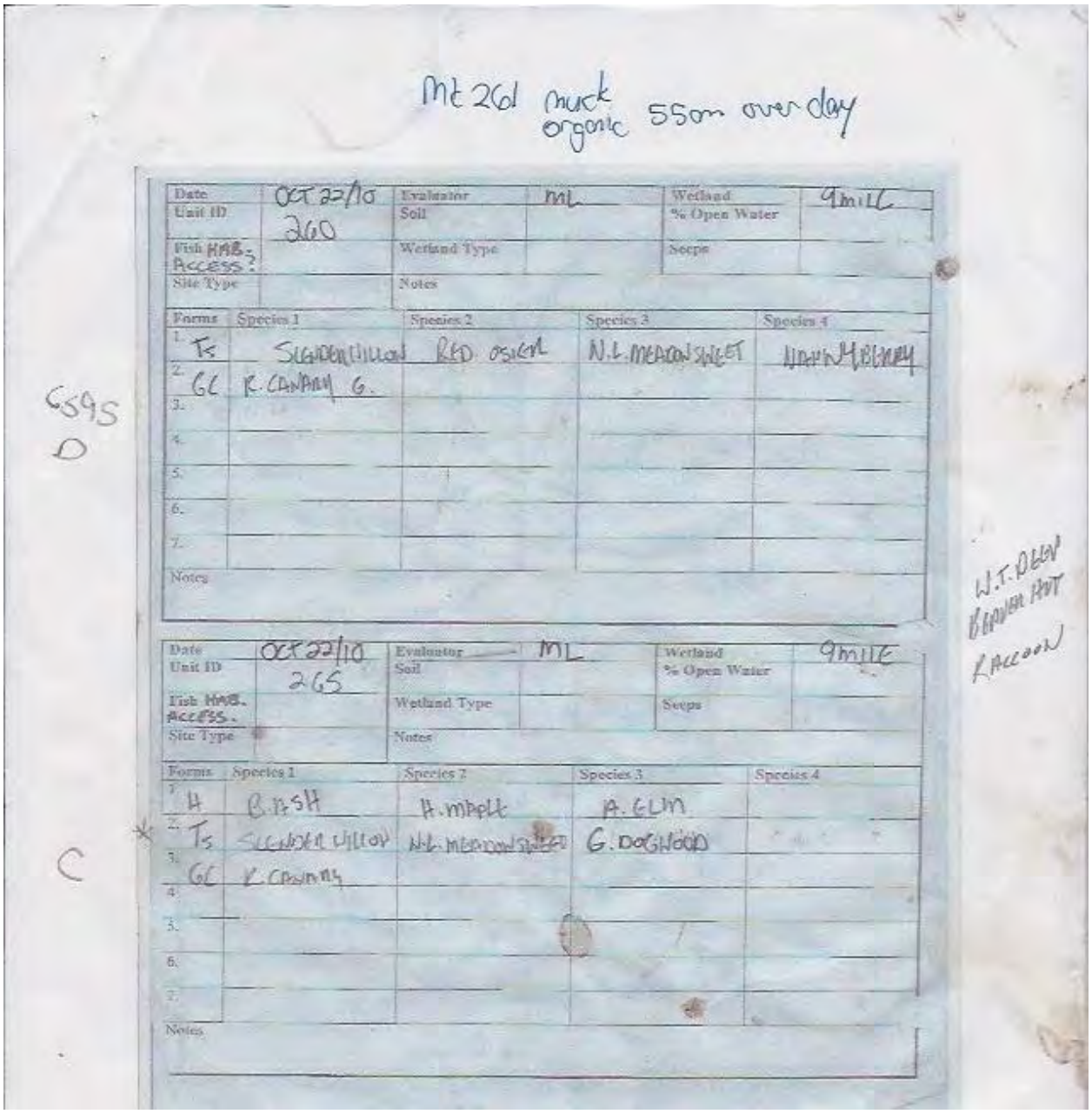
Forms	Species 1	Species 2	Species 3	Species 4
1. H	H. MAPLE	W. OAK	B. ASH	
2. TC	W. CEDAR	BASH		
3. LS	W. CEDAR	R. OSIER		
4. GC	GRASS		L. GOLDENROD	C BONSET
5. M	MOSS			
6. C				
7.				

Notes

Date	OCT 22/10	Evaluator	ML	Wetland	
Unit ID		Soil		% Open Water	0
Fish HAB. ACCESS.		Wetland Type		Seeps	
Site Type		Notes			

Forms	Species 1	Species 2	Species 3	Species 4
1. C	W. CEDAR			
2.				
3.				
4.				
5.				
6.				
7.				

Notes



Mt 261 muck organic 55cm over clay

Date	OCT 22/10	Evaluator	ML	Wetland	9mile
Unit ID	260	Soil		% Open Water	
Fish Hab. Access?		Wetland Type		Seeps	
Site Type		Notes			

Forms	Species 1	Species 2	Species 3	Species 4
1. Ts	Slender willow	Red osier	N.L. meadowsweet	Marsh Mallow
2. Gc	K. Canary G.			
3.				
4.				
5.				
6.				
7.				

Notes

Date	OCT 22/10	Evaluator	ML	Wetland	9mile
Unit ID	265	Soil		% Open Water	
Fish Hab. Access.		Wetland Type		Seeps	
Site Type		Notes			

Forms	Species 1	Species 2	Species 3	Species 4
1. H	Bush	A. maple	A. elm	
2. Ts	Slender willow	N.L. meadowsweet	G. dogwood	
3. Gc	K. Canary			
4.				
5.				
6.				
7.				

Notes

6595 D

C

W.T. Yellow Common Yellow Throat Raccoon

Southern Ontario Wetland Evaluation, Score Summary March 1993

WETLAND EVALUATION SCORING RECORD

WETLAND NAME AND/OR NUMBER 9 Mile rd

1.0 BIOLOGICAL COMPONENT

1.1 PRODUCTIVITY

1.1.1 Growing Degree-Days/Soils	14
1.1.2 Wetland Type	8
1.1.3 Site Type	4
Total for Productivity	26

1.2 BIODIVERSITY

1.2.1 Number of Wetland Types	13
1.2.2 Vegetation Communities (maximum 45)	13
1.2.3 Diversity of Surrounding Habitat (maximum 7)	7
1.2.4 Proximity to Other Wetlands	0
1.2.5 Interspersion	24
1.2.6 Open Water Type	8
Total for Biodiversity	65

1.3 SIZE (Biological Component) 10

TOTAL FOR BIOLOGICAL COMPONENT (not to exceed 250) 101

Southern Ontario Wetland Evaluation, Score Summary March 1993

2.0 SOCIAL COMPONENT

2.1 ECONOMICALLY VALUABLE PRODUCTS

2.1.1 Wood Products	6
2.1.2 Wild Rice	0
2.1.3 Commercial Fish	12
2.1.4 Bullfrogs	0
2.1.5 Snapping Turtles	1
2.1.6 Furbearers	9
Total for Economically Valuable Products	28

2.2 RECREATIONAL ACTIVITIES (maximum 80) 20

2.3 LANDSCAPE AESTHETICS

2.3.1 Distinctness	3
2.3.2 Absence of Human Disturbance	4
Total for Landscape Aesthetics	7

2.4 EDUCATION AND PUBLIC AWARENESS

2.4.1 Educational Uses	0
2.4.2 Facilities and Programs	0
2.4.3 Research and Studies	0
Total for Education and Public Awareness	0

2.5 PROXIMITY TO AREAS OF HUMAN SETTLEMENT 26

2.6 OWNERSHIP 4

2.7 SIZE (Social Component) 13

2.8 ABORIGINAL AND CULTURAL VALUES 0

TOTAL FOR SOCIAL COMPONENT (not to exceed 250) 98

Southern Ontario Wetland Evaluation, Score Summary March 1993

3.0 HYDROLOGICAL COMPONENT

3.1 FLOOD ATTENUATION		100
3.2 WATER QUALITY IMPROVEMENT		
3.2.1 Short Term Improvement	38	
3.2.2 Long Term Improvement	10	
3.2.3 Groundwater Discharge (maximum 30)	4	
Total for Water Quality Improvement		52
3.3 CARBON SINK		5
3.4 SHORELINE EROSION CONTROL		15
3.5 GROUNDWATER RECHARGE		
3.5.1 Site Type	20	
3.5.2 Soils	5	
Total for Groundwater Recharge		25
TOTAL FOR HYDROLOGICAL COMPONENT (not to exceed 250)		197

Southern Ontario Wetlands Evaluation, Score Summary — December 2002

4.0 SPECIAL FEATURES

4.1 RARITY

4.1.1 Wetlands

4.1.1.1 Rarity within the Landscape	0
4.1.1.2 Rarity of Wetland Type (maximum 80)	30
Total for Wetland Rarity	30

4.1.2 Species

4.1.2.1 Endangered Species Breed	250 butternut
4.1.2.2 Traditional Use by Endangered or Threatened Species	0
4.1.2.3 Provincially Significant Animals	50 snapping turtle
4.1.2.4 Provincially Significant Plants	50
4.1.2.5 Regionally Significant Species	0
4.1.2.6 Locally Significant Species	0
Total for Species Rarity	350

Hemlock hist? NONE

4.2 SIGNIFICANT FEATURES OR HABITAT

4.2.1 Colonial Waterbirds	0
4.2.2 Winter Cover for Wildlife	10 Deer
4.2.3 Waterfowl Staging and Moulting	0
4.2.4 Waterfowl Breeding	0
4.2.5 Migratory Passerine, Shorebird or Raptor Stopover	0
4.2.6 Fish Habitat	2
Total for Significant Features and Habitat	12

NO

4.3 ECOSYSTEM AGE — 3

4.4 GREAT LAKES COASTAL WETLANDS — 0

TOTAL FOR SPECIAL FEATURES (maximum 250) — 250

Northern Ontario Wetlands Evaluation, Data and Scoring Record March 1993

SUMMARY OF EVALUATION RESULT

Wetland Nine Mile Road

TOTAL FOR 1.0 BIOLOGICAL COMPONENT	101
TOTAL FOR 2.0 SOCIAL COMPONENT	98
TOTAL FOR 3.0 HYDROLOGICAL COMPONENT	197
TOTAL FOR 4.0 SPECIAL FEATURES COMPONENT	250
WETLAND TOTAL	646

INVESTIGATORS

AFFILIATION

DATE

5

Southern Ontario Wetland Evaluation, Data and Scoring Record March 1993

WETLAND DATA AND SCORING RECORD

i) WETLAND NAME: Nine mile road

ii) MNR ADMINISTRATIVE REGION: 6 DISTRICT: Kemptville

AREA OFFICE (if different from District):

iii) CONSERVATION AUTHORITY JURISDICTION: Raisin Region Conservation authority

(If not within a designated CA, check here:____

iv) COUNTY OR REGIONAL MUNICIPALITY: United Counties of Stormont, Dundas Glengarry

v) TOWNSHIP: South Glengarry

vi) LOTS & CONCESSIONS: Lots 24-26 conc 3 South of river aux Raisins
(attach separate sheet if necessary) Lots 1-3 conc 5 & Lots 1-4 conc 6 St. Regis Indian Reserve

vii) MAP AND AIR PHOTO REFERENCES

a) Latitude _____ Longitude: _____

b) UTM grid reference: Zone: 18 Block: _____
Grid: E 524800 N 4995620

c) National Topographic Series:

map name(s) 31 G/2 & 31 B/15

map number(s) _____ edition _____

scale _____

d) Aerial photographs: Date photo taken: _____ Scale: _____

Google Satellite Images

Flight & plate numbers: _____

_____

_____

(attach separate sheet if necessary)

e) Ontario Base Map numbers & scale _____

_____

(attach separate sheets if necessary)

1

Southern Ontario Wetland Evaluation, Data and Scoring Record March 1993

viii) **WETLAND SIZE AND BOUNDARIES**

a) Single contiguous wetland area: 41.1 hectares

b) Wetland complex comprised of ___ individual wetlands:

Wetland Unit Number (for reference)	Size of each wetland unit
Wetland Unit No.1	_____ ha
Wetland Unit No. 2	_____ ha
Wetland Unit No. 3	_____ ha
Wetland Unit No. 4	_____ ha
Wetland Unit No. 5	_____ ha
Wetland Unit No. 6	_____ ha
Wetland Unit No. 7	_____ ha
Wetland Unit No. 8	_____ ha
Wetland Unit No. 9	_____ ha
Wetland Unit No. 10	_____ ha

(Attach additional sheets if necessary)

TOTAL WETLAND SIZE 41.1 ha

c) Brief documentation of reasons for including any areas less than 0.5 ha in size:

_____

_____

_____

(Attach separate sheets if necessary)

2

Southern Ontario Wetland Evaluation, Data and Scoring Record May 1994

1.0 BIOLOGICAL COMPONENT

1.1 PRODUCTIVITY

1.1.1 GROWING DEGREE-DAYS/SOILS

GROWING DEGREE DAYS

(check one)

1) _____ <2800
2) _____ 2800 - 3200
3) ✓ 3200 3600
4) _____ 3600 - 4000
5) _____ >4000

SOILS

Estimated Fractional Area

0.21 clay/loam
_____ silt/marl
_____ limestone
_____ sand
0.79 humic/mesic
_____ fibric
_____ granite

SCORING:

Growing Degree Days	Clay-Loam	Silt-Marl	Lime-stone	Sand	Humic-Mesic	Fibric	Granite
<2800	15	13	11	9	8	7	5
2800-3200	18	15	13	11	9	8	7
→ 3200-3600	22 (5)	18	15	13	11 (9)	9	7
3600-4000	26	21	18	15	13	10	8
>4000	30	25	20	18	15	12	8

(maximum score 30; if wetland contains more than one soil type, evaluate based on the fractional area)

Steps required for evaluation: (maximum score 30 points)

1. Select GDD line in evaluation table applicable to your wetland;
2. Determine fractional area of the wetland for each soil type;
3. Multiply fractional area of each soil type by score;
4. Sum individual soil type scores (round to nearest whole number).

In wetland complexes the evaluator should aim at determining the percentage of area occupied by the categories for the complex as a whole.

Final Score Growing Degree-Days/Soils (maximum 30 points) 14

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1.1.2 WETLAND TYPE (Fractional Area = area of wetland type/total wetland area)

	Fractional Area		Score
Bog	_____	x 3	_____
Fen	_____	x 6	_____
Swamp	0.92	x 8	7
Marsh	0.08	x 15	1

Wetland type score (maximum 15 points) 8

1.1.3 SITE TYPE (Fractional Area = area of site type/total wetland area)

	Fractional Area		Score
Isolated	_____	x 1 =	_____
Palustrine (permanent or intermittent flow)	_____	x 2 =	_____
→ Riverine	1	x 4 =	4
Riverine (at rivermouth)	_____	x 5 =	_____
Lacustrine (at rivermouth	_____	x 5 =	_____
Lacustrine (on enclosed bay, with barrier beach)	_____	x 3 =	_____
Lacustrine (exposed to lake)	_____	x 2 =	_____

Just meets cpt6. drain was wet all year

Site Type Score (maximum 5 points) 4

1.2 BIODIVERSITY

1.2.1 NUMBER OF WETLAND TYPES

(Check only one)		Score
1) ___	one	9 points
2) ✓	two	13
3) ___	three	20
4) ___	four	30

swamp marsh

Number of Wetland Types Score (maximum 30 points) 13

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1.2.2 VEGETATION COMMUNITIES

Attach a separate sheet listing community (map) codes, vegetation forms and dominant species. Use the form on the following page to record percent area by dominant vegetation form. This information will be used in other parts of the evaluation.

Communities should be grouped by number of forms. For example, 2 form communities might appear as follows:

2 forms

Code	Forms	Dominant Species
M6	re, ff	re, *Typha latifolia*; ff, *Lemna minor, Wolffia*
S1	ts, gc	ts, *Salix discolor*; gc, *Impatiens capensis, Thelypteris palustris*

Note that the dominant species for each form are separated by a semicolon. The dominant species (maximum of 2) within a form are separated by commas.

Scoring:

Total # of communities with 1-3 forms	Total # of communities with 4-5 forms	Total # of communities with 6 or more forms
1 = 1.5 points	1 = 2 points	1 = 3 points
2 = 2.5	2 = 3.5	2 = 5
3 = 3.5	3 = 5	3 = 7
4 = 4.5	4 = 6.5	4 = 9
5 = 5	5 = 7.5	5 = 10.5
6 = 5.5	6 = 8.5	6 = 12
7 = 6	7 = 9.5	7 = 13.5
8 = 6.5	8 = 10.5	8 = 15
9 = 7	9 = 11.5	9 = 16.5
10 = 7.5	10 = 12.5	10 = 18
11 = 8	11 = 13	11 = 19
+.5 each additional community = 4.5	+.5 each additional community = 8.5	+1 each additional community = _____

e.g., a wetland with 3 one form communities, 4 two form communities, 12 four form communities and 8 six form communities would score:

6 + 13.5 + 15 = 34.5 = 35 points

Vegetation Communities Score (maximum 45 points) 13

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Wetland Name: 9 mile Rd Swamp

Wetland Size (ha): 41.1

	Vegetation Form	% area in which form is dominant
25.5	h	62
7.4	c	17
	dh	0
	dc	0
5.1	ts	13
	ls	0
	ds	0
	gc	0
	m	0
3.1	ne	8
	bc	0
	re	0
	ff	0
	f	0
	su	0
	u (unvegetated)	0

Total = 100%

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1.2.3 DIVERSITY OF SURROUNDING HABITAT
(Check all appropriate items)

✓	row crop
✓	pasture
✓	abandoned agricultural land
✓	deciduous forest
✓	coniferous forest
✓	mixed forest (at least 25% conifer and 75% deciduous or vice versa)
	abandoned pits and quarries
	open lake or deep river
✓	fence rows with cover, or shelterbelts
	terrain appreciably undulating, hilly, or with ravines
	creek flood plain

Diversity of Surrounding Habitat Score (1 for each, maximum 7 points) 7

1.2.4 PROXIMITY TO OTHER WETLANDS
(Check first appropriate category only)

		Scoring
1)	Hydrologically connected by surface water to other wetlands (different dominant wetland type), or to open lake or deep river within 1.5 km	8 points
2)	Hydrologically connected by surface water to other wetlands (same dominant wetland type) within 0.5 km	8
3)	Hydrologically connected by surface water to other wetlands (different dominant wetland type), or to open lake or deep river from 1.5 to 4 km away	5
4)	Hydrologically connected by surface water to other wetlands (same dominant wetland type) from 0.5 to 1.5 km away	5
5)	Within 0.75 km of other wetlands (different dominant wetland type) or open water body, but not hydrologically connected by surface water	5
6)	Within 1 km of other wetlands, but not hydrologically connected by surface water	2
7) ✓	No wetland within 1 km	0

Proximity to other Wetlands Score (Choose one only, maximum 8 points) 0

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1.2.5 INTERSPERSION

Number of Intersections (Check one)		Score
1) 26 or less	____	3
2) 27 to 40	____	6
3) 41 to 60	____	9
4) 61 to 80	____	12
5) 81 to 100	____	15
6) 101 to 125	____	18
7) 126 to 150	____	21
8) 151 to 175	157	24
9) 176 to 200	____	27
10) >200	____	30

Interspersion Score (Choose one only, maximum 30 points) 24

1.2.6 OPEN WATER TYPES

Permanently flooded: (Check one)		Score
1) ✓	type 1	8
2) ____	type 2	8
3) ____	type 3	14
4) ____	type 4	20
5) ____	type 5	30
6) ____	type 6	8
7) ____	type 7	14
8) ____	type 8	3
9) ____	no open water	0

ditch. w/in road

Open Water Type Score (Choose one only, maximum 30 points) 8

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1.3 SIZE

41.1 hectares

Size Score (Biological Component) (maximum 50 points) 10

Evaluation Table Size Score (Biological Component)

Wetland size (ha)	Total Score for Biodiversity Subcomponent									
	<37	37-48	49-60	61-72	73-84	85-96	97-108	109-120	121-132	>132
<21 ha	1	5	7	8	9	17	25	34	43	50
21-40	5	7	8	9	10	19	28	37	46	50
41-60	6	8	9	10	11	21	31	40	49	50
61-80	7	9	10	11	13	23	34	43	50	50
81-100	8	10	11	13	15	25	37	46	50	50
101-120	9	11	13	15	18	28	40	49	50	50
121-140	10	13	15	17	21	31	43	50	50	50
141-160	11	15	17	19	23	34	46	50	50	50
161-180	13	17	19	21	25	37	49	50	50	50
181-200	15	19	21	23	28	40	50	50	50	50
201-400	17	21	23	25	31	43	50	50	50	50
401-600	19	23	25	28	34	46	50	50	50	50
601-800	21	25	28	31	37	49	50	50	50	50
801-1000	23	28	31	34	40	50	50	50	50	50
1001-1200	25	31	34	37	43	50	50	50	50	50
1201-1400	28	34	37	40	46	50	50	50	50	50
1401-1600	31	37	40	43	49	50	50	50	50	50
1601-1800	34	40	43	46	50	50	50	50	50	50
1801-2000	37	43	47	49	50	50	50	50	50	50
>2000	40	46	50	50	50	50	50	50	50	50

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2.0 SOCIAL COMPONENT

2.1 ECONOMICALLY VALUABLE PRODUCTS

2.1.1 WOOD PRODUCTS

Area of wetland forested (ha), i.e. dominant form is h or c. Note that this is not wetland size. (Check one only)

		Score
1) _____	<5 ha	0
2) _____	5 - 25 ha	3
3) 32.9	26 - 50 ha	6
4) _____	51 - 100 ha	9
5) _____	101 - 200 ha	12
6) _____	>200 ha	18

Source of information: field obsv,

Wood Products Score (Score one only, maximum 18 points) 6

2.1.2 WILD RICE

(Check one)		Score (Choose one)
Present (minimum size 0.5 ha)	1) _____	6 points
Absent	2) ✗	0

Source of information: none obs during summer (June-Aug 2010) visits

Wild Rice Score (maximum 6 points) 0

2.1.3 COMMERCIAL FISH (BAIT FISH AND/OR COARSE FISH)

(Check one)		Score (Choose one)
Present	1) ✓	12 points
Habitat not suitable for fish	2) _____	0

Source of information: backpack electrofish summer 2010 bird banding

Commercial Fish Score (maximum 12 points) 12

2.1.4 BULLFROGS

(Check one)		Score (Choose one)
Present	1) _____	1 points
Absent	2) 0	0

Source of information: none obs during summer (June-aug 2010) visits

Bullfrog Score (maximum 1 point) 0

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2.1.5 SNAPPING TURTLES

(Check one)		Score (Choose one)
Present	1) ✓	1 point
Absent	2)	0

Source of information: one observed on Oct 12 1st

Snapping Turtle Score (maximum 1 point) 1

2.1.6 FURBEARERS
(Consult Appendix 9)

Name of furbearer	Source of information
1) raccoon	tracks
2) beaver	lodges
3) red squirrel	seen
4)	
5)	

Scoring: 3 points for each species, maximum 12

Furbearer Score (maximum 12 points) 9

2.2 RECREATIONAL ACTIVITIES

Type of Wetland-Associated Use			
Intensity of Use	Hunting	Nature Enjoyment/ Ecosystem Study	Fishing
High	40 points	40 points	40 points
Moderate	20	20	20
Low	8	8	8
Not Possible/Not known	0	0	0

(score one level for each of the three wetland uses; scores are cumulative; maximum score 80 points)

Sources of information:

Hunting: obs hunting stands

Nature: private property

Fishing: shallow water; low baitfish density

Recreational Activities Score (maximum 80 points) 20

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2.3 LANDSCAPE AESTHETICS

2.3.1 DISTINCTNESS

(Check one)		Score (Choose one)
Clearly distinct	1) ✓	3 points
Indistinct	2)	0

Landscape Distinctness Score (maximum 3 points) 3

2.3.2 ABSENCE OF HUMAN DISTURBANCE

(Check one)		Score (Choose one)
Human disturbances absent or nearly so	1)	7 points
One or several localized disturbances	2) ✓	4
Moderate disturbance; localized water pollution	3)	2
Wetland intact but impairment of ecosystem quality intense in some areas	4)	1
Extreme ecological degradation, or water pollution severe and widespread	5)	0

Source of information: pers obv. Wetland is ditched & there are several cut trails & some logging

Absence of Human Disturbance Score (maximum 7 points) 4

2.4 EDUCATION AND PUBLIC AWARENESS

2.4.1 EDUCATIONAL USES

(Check one)		Score (Choose one)
Frequent	1)	20 points
Infrequent	2)	12
No visits	3) ✓	0

Source of information: pers. obv. private land

Educational Uses Score (maximum 20 points) 0

2.4.2 FACILITIES AND PROGRAMS

(check one)		Score (Choose one)
Staffed interpretation centre	1)	8 points
No interpretation centre or staff, but a system of self-guiding trails or brochures available	2)	4
Facilities such as maintained paths (e.g., woodchips), boardwalks, boat launches or observation towers but no brochures or other interpretation	3)	2
No facilities or programs	4) ✓	0

Source of information: none, private land

Facilities and Programs Score (maximum 8 points) 0

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2.4.3 RESEARCH AND STUDIES

(check appropriate spaces)		Score
Long term research has been done	____	12 points
Research papers published in refereed scientific journal or as a thesis	____	10
One or more (non-research) reports have been written on some aspect of the wetland's flora, fauna, hydrology, etc.	____	5
No research or reports	0	0

Attach list of known reports by above categories

Research and Studies Score (Score is cumulative, maximum 12 points) 0

2.5 PROXIMITY TO AREAS OF HUMAN SETTLEMENT

Circle the highest applicable score

Distance of wetland from settlement	1) population >10,000	2) population 2,500 - 10,000	3) population <2,500 or cottage community
1) Within or adjoining settlement	40 points	26	16
2) 0.5 to 10 km from settlement	(26)	16	(10)
3) 10 to 60 km from settlement	12	8	4
4) >60 km from settlement	5	2	0

Name of settlement: Manitouana, City of Cornwall

Proximity to Human Settlement Score (maximum 40 points) 26

2.6 OWNERSHIP (FA = fractional area)

	Fractional Area		Score
FA of wetland in public or private ownership, held under contract or in trust for wetland protection	____	x 10 =	____
FA of wetland area in public ownership, not as above	____	x 8 =	____
FA of wetland area in private ownership, not as above	1	x 4 =	4

Source of information: pers. comm. landowner

Ownership Score (maximum 10 points) 4

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2.7 SIZE 41.1 hectares

Evaluation Table for Size Score (Social Component)

Wetland size (ha)	28+20+26 =74 Total for Size Dependent Score									
	<31	31-45	46-60	61-75	76-90	91-105	106-109	121-135	136-150	>150
<2 ha	1	2	4	8	10	12	14	14	14	15
2-4	1	2	4	8	12	13	14	14	15	16
5-8	2	2	5	9	13	14	15	15	16	16
9-12	3	3	6	10	14	15	15	16	17	17
13-17	3	4	7	10	14	15	16	16	17	17
18-28	4	5	8	11	15	16	16	17	17	18
29-37	5	7	10	13	16	17	18	18	19	19
38-49	5	7	10	13	16	17	18	18	19	20
50-62	5	8	11	14	17	17	18	19	20	20
63-81	5	8	11	15	17	18	19	20	20	20
82-105	6	9	11	15	18	18	19	20	20	20
106-137	6	9	12	16	18	19	20	20	20	20
138-178	6	9	13	16	18	19	20	20	20	20
179-233	6	9	13	16	18	20	20	20	20	20
234-302	7	9	13	16	18	20	20	20	20	20
303-393	7	9	14	17	18	20	20	20	20	20
394-511	7	10	14	17	18	20	20	20	20	20
512-665	7	10	14	17	18	20	20	20	20	20
666-863	7	10	14	17	19	20	20	20	20	20
864-1123	8	12	15	17	19	20	20	20	20	20
1124-1460	8	12	15	17	19	20	20	20	20	20
1461-1898	8	13	15	18	19	20	20	20	20	20
1899-2467	8	14	16	18	20	20	20	20	20	20
>2467	8	14	16	18	20	20	20	20	20	20

Total Size Score (Social Component) 13

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2.8 ABORIGINAL AND CULTURAL HERITAGE VALUES

Either or both Aboriginal or Cultural Values may be scored. However, the maximum score permitted for 2.8 is 30 points. Attach documentation.

2.8.1 ABORIGINAL VALUES

Full documentation of sources must be attached to the data record.

1) _____	Significant	=	30 points
2) _____	Not Significant	=	0
3) ✓	Unknown	=	0

2.8.2 CULTURAL HERITAGE

1) _____	Significant	=	30 points
2) _____	Not Significant	=	0
3) ✓	Unknown	=	0

Aboriginal Values/Cultural Heritage Score (maximum 30 points) 0

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3.0 HYDROLOGICAL COMPONENT

3.1 FLOOD ATTENUATION

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

Step 1 Determination of Maximum Score

___ Wetland is located on one of the defined 5 large lakes or 5 major rivers (Go to Step 4).
___ Wetland is entirely isolated (i.e. not part of a complex) (Go to Step 4)
✓ All other wetland types (Go through steps 2, 3, and 4B)

Step 2. Determination of Upstream Detention Factor (DF)

(a)	Wetland area (ha)	41.1
(b)	Total area (ha) of upstream detention areas (include the wetland itself)	Ø
(c)	Ratio of (a):(b)	
(d)	Upstream detention factor: (c) x 2 = (maximum allowable factor = 1)	1

Step 3 Determination of Wetland Attenuation Factor (AF)

(a)	Wetland area (ha)	41.1
(b)	Size of catchment basin (ha) upstream of wetland (include wetland itself in catchment area)	345
(c)	Ratio of (a):(b)	0.12
(d)	Wetland attenuation factor: (c) x 10 = (maximum allowable factor = 1)	1

Step 4. Calculation of final score

(a)	Wetlands on large lakes or major rivers	0
(b)	Wetland entirely isolated	100
(b)	All other wetlands – calculate as follows:	
	Initial score	100*
	Upstream detention factor (DF) (Step 2)	1
	Wetland attenuation factor (AF) (Step 3)	1
	Final score: ((DF + AF)/2) x Initial score =	100

*Unless wetland is a complex with isolated portions (see above).

Flood Attenuation Score (maximum 100 points) 100

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3.2 WATER QUALITY IMPROVEMENT

3.2.1 SHORT TERM WATER QUALITY IMPROVEMENT

Step 1: **Determination of maximum initial score**

___ Wetland on one of the 5 defined large lakes or 5 major rivers (Go to Step 5a)
X All other wetlands (Go through Steps 2, 3, 4, and 5b)

Step 2: **Determination of watershed improvement factor (WIF)**
Calculation of WIF is based on the fractional area (FA) of each site type that makes up the total area of the wetland.

(FA = area of site type/total area of wetland)	Fractional Area	
FA of isolated wetland	___ x 0.5 =	___
FA of riverine wetland	1 x 1.0 =	1
FA of palustrine wetland with no inflow	___ x 0.7 =	___
FA of palustrine wetland with inflows	___ x 1.0 =	
FA of lacustrine on lake shoreline	___ x 0.2 =	___
FA of lacustrine at lake inflow or outflow	___ x 1.0 =	___

Sum (WIF cannot exceed 1.0) 1

Step 3: **Determination of catchment land use factor (LUF)**
(Choose the first category that fits upstream landuse in the catchment.)

1) ___	Over 50% agricultural and/or urban	1.0
2) ✓	Between 30 and 50% agricultural and/or urban	0.8
3) ___	Over 50% forested or other natural vegetation	0.6

LUF (maximum 1.0) 0.8

Step 4: **Determination of pollutant uptake factor (PUT)**

Calculation of PUT is based on the fractional area (FA) of each vegetation type that makes up the total area of the wetland. Base assessment on the dominant vegetation form for each community except where dead trees or shrubs dominate. In that case base assessment on the dominant live vegetation type. (FA = area of vegetation type/total area of wetland)

		Fractional Area	
36.7	FA of wetland with live trees, shrubs, herbs or mosses (c,h,ts,ls,gc,m)	0.92 x 0.75 =	0.69
3.1	FA of wetland with emergent, submergent or floating vegetation (re,be,ne,su,f,ff)	0.08 x 1.0 =	0.08
	FA of wetland with little or no vegetation (u)	Ø x 0.5 =	Ø

Sum (PUT cannot exceed 1.0) 0.8

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Step 5: **Calculation of final score**

(a)	Wetland on large lakes or major rivers	0
(b)	All other wetlands - calculate as follows	
	Initial score	60
	Water quality improvement factor (WQF)	1
	Land use factor (LUF)	0.8
	Pollutant uptake factor (PUT)	0.8

Final score: 60 x WQF x LUF x PUT = 38

Short Term Water Quality Improvement Score (maximum 60 points) 38

3.2.2 LONG TERM NUTRIENT TRAP

Step 1:

____	Wetland on large lakes or 5 major rivers	0 points
____	All other wetlands (Proceed to Step 2)	

Step 2: Choose only one of the following settings that best describes the wetland being evaluated

1) ____	Wetland located in a river mouth	10 points
2) ✓	Wetland is a bog, fen, or swamp with more than 50% of the wetland being covered with organic soil	10
3) ____	Wetland is a bog, fen, or swamp with less than 50% of the wetland being covered with organic soil	3
4) ____	Wetland is a marsh with more than 50% of the wetland covered with organic soil	3
5) ____	None of the above	0

Long Term Nutrient Trap Score (maximum 10 points) 10

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3.2.3 GROUNDWATER DISCHARGE

(Circle the characteristics that best describe the wetland being evaluated and then sum the scores. If the sum exceeds 30 points assign the maximum score of 30.)

Wetland Characteristics	Potential for Discharge		
	None to Little	Some	High
Wetland type	1) Bog = 0	2) Swamp/Marsh = 2	3) Fen = 5
Topography	1) Flat/rolling = 0	2) Hilly = 2	3) Steep = 5
Wetland Area:Upslope Catchment Area	Large (>50%) = 0	Moderate (5-50%) = 2	Small (<5%) = 5
Lagg Development	1) None found = 0	2) Minor = 2	3) Extensive = 5
Seeps	1) None = 0	2) = or < 3 seeps = 2	3) > 3 seeps = 5
Surface marl deposits	1) None = 0	2) = or < 3 sites = 2	3) > 3 sites = 5
Iron precipitates	1) None = 0	2) = or < 3 sites = 2	3) > 3 sites = 5
Located within 1 km of a major aquifer	N/A = 0	N/A = 0	Yes = 10

(Scores are cumulative, maximum score 30 points)

Groundwater Discharge Score (maximum 30 points) 4

3.3 CARBON SINK

Choose only one of the following

1) ✓	Bog, fen or swamp with more than 50% coverage by organic soil	5 points
2) ____	Bog, fen or swamp with between 10 to 49% coverage by organic soil	2
3) ____	Marsh with more than 50% coverage by organic soil	3
4) ____	Wetlands not in one of the above categories	0

Carbon Sink Score (maximum 5 points) 5

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3.4 SHORELINE EROSION CONTROL

Step 1:

	Score
____ Wetland entirely isolated or palustrine	0
____ Any part of the wetland riverine, or lacustrine (proceed to Step 2)	

Step 2:

Choose the one characteristic that best describes the shoreline vegetation (see text for a definition of shoreline)

	Score
1) ✓ Trees and shrubs	15
2) ____ Emergent vegetation	8
3) ____ Submergent vegetation	6
4) ____ Other shoreline vegetation	3
5) ____ No vegetation	0

Shoreline Erosion Control Score (maximum 15 points) 15

3.5 GROUND WATER RECHARGE

3.5.1 WETLAND SITE TYPE

		Score
(a)	Wetland > 50% lacustrine (by area) or located on one of the five major rivers	0
(b)	Wetland not as above. Calculate final score as follows: (FA = area of site type/total area of wetland)	

	Fractional Area	
FA of isolated or palustrine wetland	____ x 50 =	
FA of riverine wetland	1 x 20 =	20
FA of lacustrine wetland (wetland <50% lacustrine)	____ x 0 =	

Ground Water Recharge, Wetland Site Type Component Score (maximum 50 points) 20

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3.5.2 WETLAND SOIL RECHARGE POTENTIAL

(Circle only one choice that best describes the hydrologic soil class of the area surrounding the wetland being evaluated.)

Dominant Wetland Type	1) Sand, loam, gravel, till	2) Clay or bedrock
1) Lacustrine or on a major river	0	0
2) Isolated	10	5
3) Palustrine	7	4
4) Riverine (not a major river)	(5)	2

Ground Water Recharge, Wetland Soil Recharge Potential Score (maximum 10 points) 5

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4.0 SPECIAL FEATURES COMPONENT

4.1 RARITY
4.1.1 WETLANDS

Site District 6-12

Presence of wetland type (check one or more)

- Bog
- Fen
- ✓ Swamp
- ✓ Marsh

Score for rarity within the landscape and rarity of the wetland type. Score for rarity of wetland type is cumulative (maximum 80 points) based on presence or absence.

Site District	Score for Rarity within the Landscape	Score for Rarity of Wetland Type			
		Marsh	Swamp	Fen	Bog
6-1	60	40	0	80	80
6-2	60	40	0	80	80
6-3	40	10	0	40	80
6-4	60	40	0	80	80
6-5	20	40	0	80	80
6-6	40	20	0	80	80
6-7	60	10	0	80	80
6-8	20	20	0	80	80
6-9	0	20	0	80	80
6-10	20	0	20	80	80
6-11	0	30	0	80	80
6-12	0	30	0	60	80
6-13	60	10	0	80	80
6-14	40	20	0	40	80
6-15	40	0	0	80	80
7-1	60	0	60	80	80
7-2	60	0	0	80	80
7-3	60	0	0	80	80
7-4	80	0	0	80	80
7-6	80	30	0	80	80

Rarity within the Landscape Score (maximum 80 points) 80

Rarity of Wetland Type Score (Maximum 80 points) 30

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4.1.2 SPECIES

4.1.2.1 BREEDING HABITAT FOR AN ENDANGERED OR THREATENED SPECIES

Name of species	Source of information
1) buttonut	pers. obs. oct 12, 2010
2)	
3)	

Attach documentation.

Scoring:

For each species 250 points

(Score is cumulative, no maximum score)

Breeding Habitat for Endangered or Threatened Species Score (no maximum) 250

4.1.2.2 TRADITIONAL MIGRATION OR FEEDING HABITAT FOR AN ENDANGERED OR THREATENED SPECIES

Name of species	Source of information
1)	
2)	
3)	

Attach documentation.

Scoring:

For one species 150 points

For each additional species 75

(Score is cumulative, no maximum score)

Traditional Habitat for Endangered or Threatened Species Score (no maximum) Ø

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4.1.2.3 PROVINCIALLY SIGNIFICANT ANIMAL SPECIES

Name of species	Source of information
1) snapping turtle	pers obs. Oct 12 2010
2)	
3)	
4)	
5)	

Attach separate list if necessary; Attach documentation

Scoring:

Number of provincially significant animal species in the wetland:

One species	=	50 points	14 species	=	154
2 species	=	80	15 species	=	156
3 species	=	95	16 species	=	158
4 species	=	105	17 species	=	160
5 species	=	115	18 species	=	162
6 species	=	125	19 species	=	164
7 species	=	130	20 species	=	166
8 species	=	135	21 species	=	168
9 species	=	140	22 species	=	170
10 species	=	143	23 species	=	172
11 species	=	146	24 species	=	174
12 species	=	149	25 species	=	176
13 species	=	152			

Add one point for every species past 25 (for example, 26 species = 177 points, 27 species = 178 points etc.)

(no maximum score)

Provincially Significant Animal Species Score (no maximum) 50

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4.1.2.4 PROVINCIALLY SIGNIFICANT PLANT SPECIES

(Scientific names must be recorded)

	Common Name	Scientific Name	Source of information
1)	butternut		
2)			
3)			
4)			
5)			

Attach separate list if necessary. Attach documentation.

Scoring:

Number of provincially significant plant species in the wetland:

One species	=	50 points	14 species	=	154
2 species	=	80	15 species	=	156
3 species	=	95	16 species	=	158
4 species	=	105	17 species	=	160
5 species	=	115	18 species	=	162
6 species	=	125	19 species	=	164
7 species	=	130	20 species	=	166
8 species	=	135	21 species	=	168
9 species	=	140	22 species	=	170
10 species	=	143	23 species	=	172
11 species	=	146	24 species	=	174
12 species	=	149	25 species	=	176
13 species	=	152			

Add one point for every species past 25 (for example, 26 species = 177 points, 27 species = 178 points etc.)

Provincially Significant Plant Species Score (no maximum) 50

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4.1.2.5 REGIONALLY SIGNIFICANT SPECIES (SITE REGION)

Scientific names must be recorded for plant species. **Lists of significant species must be approved by MNR.**

SIGNIFICANT IN SITE REGION:

	Common Name	Scientific Name	Source of information
1)			
2)			
3)			
4)			
5)			
6)			
7)			
8)			

Attach separate list if necessary. Attach documentation

Scoring:

No. of species significant in Site Region

One species	=	20	6 species	=	55
2 species	=	30	7 species	=	58
3 species	=	40	8 species	=	61
4 species	=	45	9 species	=	64
5 species	=	50	10 species	=	67

Add one point for every species past 10. (No maximum score)

Regionally Significant Species Score (Site Region) (no maximum) 9

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4.2.1.6 LOCALLY SIGNIFICANT SPECIES (SITE DISTRICT)

Scientific names must be recorded for plant species. **Lists of significant species must be approved by MNR.**

Common Name	Scientific Name	Source of information
1)		
2)		
3)		
4)		
5)		
6)		
7)		
8)		
9)		
10)		

Attach separate list if necessary. Attach documentation.

Scoring:

No. of species significant in Site District

One species	=	10	6 species	=	41
2 species	=	17	7 species	=	43
3 species	=	24	8 species	=	45
4 species	=	31	9 species	=	47
5 species	=	38	10 species	=	49

For each significant species over 10 in the wetland, add 1 point.

Locally Significant Species Score(Site District) (no maximum)

9

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4.2 SIGNIFICANT FEATURES AND/OR FISH & WILDLIFE HABITAT

4.2.1 NESTING OF COLONIAL WATERBIRDS

Status	Name of species	Source of Information	Score
1) Currently nesting			50 points
2) Known to have nested within past 5 years			25
3) Active feeding area (Do not include feeding by great blue herons)			15
4) None known			0

Attach documentation (nest locations, etc., if known)

Score highest applicable category only; maximum score 50 points.

Score for Nesting Colonial Waterbirds (maximum 50 points) Ø

4.2.2. WINTER COVER FOR WILDLIFE

(Check only highest level of significance) (one only)		Score
1) _____	Provincially significant	100
2) _____	Significant in Site Region	50
3) _____	Significant in Site District	25
3) ✓	Locally significant	10
4) _____	Little or poor winter cover present	0

Deer are hunted in the bush

Source of information: Pers. Judgement

Winter Cover for Wildlife Score (maximum 100 points) ✓

Suitable for deer: white cedar, balsam fir, hemlock located to N of NW side & to N of E side of wetland. Forms part of a large woodland tract.

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4.2.3 WATERFOWL STAGING AND/OR MOULTING

(Check only highest level of significance for both staging and moulting; score is cumulative across columns, maximum score 150)

	Staging	Score (one only)	Moulting	Score (one only)
1) Nationally significant		150		150
2) Provincially significant		100		100
3) Regionally significant		50		50
4) Known to occur		10		10
5) Not possible	✓	0		0
6) Unknown		0		0

Source of information: pers obs. no open water, sm. drain only

Waterfowl Moulting and Staging Score (maximum 150 points) 0

4.2.4 WATERFOWL BREEDING

(Check only highest level of significance)		Score
1)	Provincially significant	100
2)	Regionally significant	50
3)	Habitat suitable	10
4) ✓	Habitat not suitable	0

Source of information: pers obs shallow drain; no waterfowl obs during June-aug

Waterfowl Breeding Score (maximum 100 points) 0

4.2.5 MIGRATORY PASSERINE, SHOREBIRD OR RAPTOR STOPOVER AREA

(check highest applicable category)

	Score
1) Provincially significant	100
2) Significant in Site Region	50
3) Significant in Site District	10
4) ✓ Not significant	0

Source of information: Omnr communcation

Passerine, Shorebird or Raptor Stopover Score (maximum 100 points) 0

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4.2.7 FISH HABITAT

4.2.7.1 Spawning and Nursery Habitat

Table 5. Area Factors for Low Marsh, High Marsh and Swamp Communities.

No. of ha of Fish Habitat	Area Factor
< 0.5 ha	0.1
0.5 - 4.9	0.2
5.0 - 9.9	0.4
10.0 - 14.9	0.6
15.0 - 19.9	0.8
20.0+ ha	1.0

Step 1:

___ Fish habitat is not present within the wetland (Score = 0)

✓ Fish habitat is present within the wetland (Go to Step 2)

Step 2: Choose only one option

1) ___ Significance of the spawning and nursery habitat within the wetland is known (Go to Step3)

2) ✓ Significance of the spawning and nursery habitat within the wetland is not known (Go through Steps 4, 5, 6, and 7)

Step 3: Select the highest appropriate category below, attach documentation:

1) ___	Significant in Site Region	100 points
2) ___	Significant in Site District	50
3) ___	Locally Significant Habitat (5.0+ ha)	25
4) ___	Locally Significant Habitat (<5.0 ha)	15

Score for Spawning and Nursery Habitat (maximum score 100 points) ____

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Step 4: Proceed to Steps 4 to 7 only if Step 3 was not answered.

(**Low Marsh** marsh area from the existing water line out to the outer boundary of the wetland)

____ Low marsh not present (Continue to Step 5)
✓ Low marsh present (Score as follows)

Scoring for Presence of Key Vegetation Groups

Scoring is based on the one most clearly dominant plant species of the dominant form in each Low Marsh vegetation community. Check the appropriate Vegetation Group (see Appendix 16, Table 16.2) for each Low Marsh community. Sum the areas of the communities assigned to each Vegetation Group and multiply by the appropriate size factor from Table 5.

Vegetation Group Number	Vegetation Group Name	Present as a Dominant Form (check)	Total Area (ha)	Area Factor (see Table 5)	Score	Final Score (area factor x score)
1	Tallgrass				6 pts	
2	Shortgrass-Sedge				11	
3	Cattail-Bulrush-Burreed				5	
4	Arrowhead-Pickerelweed				5	
5	Duckweed				2	
6	Smartweed-Waterwillow				6	
7	Waterlily-Lotus				11	
8	Waterweed-Watercress				9	
9	Ribbongrass				10	
10 ✓	Coontail-Naiad Watermilfoil	✓		0.1	13	1.3
11	Narrowleaf Pondweed				5	
12	Broadleaf Pondweed				8	
	Total Score (maximum 75 points)					1.3

Step 5: (**High Marsh** area from the water line to the inland boundary of marsh wetland type. This is essentially what is commonly referred to as a wet meadow, in that there is insufficient standing water to provide fisheries habitat except during flood or high water conditions.)

____ High marsh not present (Continue to Step 6)
✓ High marsh present (Score as follows)

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Scoring for Presence of Key Vegetation Groups

Scoring is based on the one most clearly dominant plant species of the dominant form in each High 1Marsh vegetation community. Check the appropriate Vegetation Group (see Appendix 16, Table 16-2) for each High Marsh community. Sum the areas of the communities assigned to each Vegetation Group and multiply by the appropriate size factor from Table 5.

Vegetation Group Number	Vegetation Group Name	Present as a Dominant Form (check)	Total Area (ha)	Area Factor (see Table 5)	Score	Final Score (area factor x score)
1	Tallgrass				6 pts	
2 ✓	Shortgrass-Sedge	✓		0.1	11	1.1
3	Cattail-Bulrush-Burreed				5	
4	Arrowhead-Pickerelweed				5	
Total Score (maximum 25 points)						1.1

Step 6: (**Swamp**: Swamp communities containing fish habitat, either seasonally or permanently. Determine the total area of seasonally flooded swamps and permanently flooded swamps containing fish habitat.)

✓ Swamp containing fish habitat not present (Continue to Step 7)
____ Swamp containing fish habitat present (Score as follows)

Swamp containing fish habitat	Present (check)	Total area (ha)	Area Factor (see Table 5)	Score	TOTAL SCORE (factor x score)
seasonally flooded				10	
permanently flooded				10	
SCORE (maximum 20 points)					

Step 7: Calculation of final score

Score for Spawning and Nursery Habitat (Low Marsh) (maximum 75) = 1.3

Score for Spawning and Nursery Habitat (High Marsh) (maximum 25) = 1.1

Score for Swamp Containing Fish Habitat (maximum 20) = 0

Sum (maximum score 100 points) = 2.4 (2)

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4.2.6.2 Migration and Staging Habitat

Step 1:

1) \ Staging or Migration Habitat is not present in the wetland (Score = 0)

2) __ Staging or Migration Habitat is present in the wetland, significance of the habitat is known (Go to Step 2)

3) __ Staging or Migration Habitat is present in the wetland, significance of the habitat is not known (Go to Step 3)

NOTE: Only one of Step 2 or Step 3 is to be scored.

Step 2: Select the highest appropriate category below, attach documentation

			Score
1)	__	Significant in Site Region	25 points
2)	__	Significant in Site District	15
3)	__	Locally Significant	10
4)	__	Fish staging and/or migration habitat present, but not as above	5

Score for Fish Migration and Staging Habitat (maximum score 25 points) _____

Step 3: Select the highest appropriate category below based on **presence** of the designated site type (does not have to be dominant). See Section 1.1.3. Note name of river for 2) and 3).

			Score
1)	__	Wetland is riverine at rivermouth or lacustrine at rivermouth	25 points
2)	__	Wetland is riverine, within 0.75 km of rivermouth	15
3)	__	Wetland is lacustrine, within 0.75 km of rivermouth	10
4)	__	Fish staging and/or migration habitat present, but not as above	0

Score for Staging and Migration Habitat (maximum score 25 points)_____

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4.3 ECOSYSTEM AGE

(Fractional Area = area of wetland/total area of wetland area)

	Fractional Area		Scoring
Bog	_____	x 25	_____
Fen, treed to open on deep soils, floating mats or marl	_____	x 20	_____
Fen, on limestone rock	_____	x 5	_____
Swamp	0.92	x 3	2.76
Marsh	0.08	x 0	0

Ecosystem Age Score (maximum 25 points) 3

4.4 GREAT LAKES COASTAL WETLANDS

Score for coastal (see text for definition) wetlands only

Choose one only

	wetland <10 ha	= 10 points
____	wetland 10-50 ha	= 25
____	wetland 51-100 ha	= 50
____	wetland >100 ha	= 75

Great Lakes Coastal Wetlands Score (maximum 75 points) 0

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5.0 EXTRA INFORMATION

5.1 PURPLE LOOSESTRIFE

___ Absent/Not seen

___ Present

(a) One location in wetland ___
Two to many locations ___

Abundance code
(b) (1) < 20 stems ___
(2) 20-99 stems
(3) 100-999 stems ___
(4) >1000 stems

5.2 SEASONALLY FLOODED AREAS

Indicate length of seasonal flooding

Check one or more

Ephemeral	(less than 2 weeks)	___
Temporal	(2 weeks to 1 month)	✓
Seasonal	(1 to 3 months)	___
Semi-permanent	(>3 months)	___
No seasonal flooding		___

5.3 SPECIES OF SPECIAL SIGNIFICANCE

5.3.1 Osprey

Present and nesting ___
Known to have nested in last 5 yr ___
Feeding area for Osprey ___
Not as above ✓

5.3.2 Common Loon

Nesting in wetland ___
Feeding at edge of wetland ___
Observed or heard on lake or river adjoining the wetland ___
Not as above ✓

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INVESTIGATORS **AFFILIATION**

Michelle Lavictoire Bowfin Env. Consulting

Shawn St-Pierre Bowfin Env. Consulting

DATES WETLAND VISITED

DATE THIS EVALUATION COMPLETED: Feb 2, 2011

ESTIMATED TIME DEVOTED TO COMPLETING THE FIELD SURVEY IN "PERSON HOURS"

WEATHER CONDITIONS

i) at time of field work
(Continue in the space below if necessary)

ii) summer conditions in general

OTHER POTENTIALLY USEFUL INFORMATION:

CHECKLIST OF PLANT AND ANIMAL SPECIES RECORDED IN THE WETLAND:

Attach list of all flora and fauna observed in the wetland.

* Indicate if voucher specimens or photos have been obtained, where located, etc.

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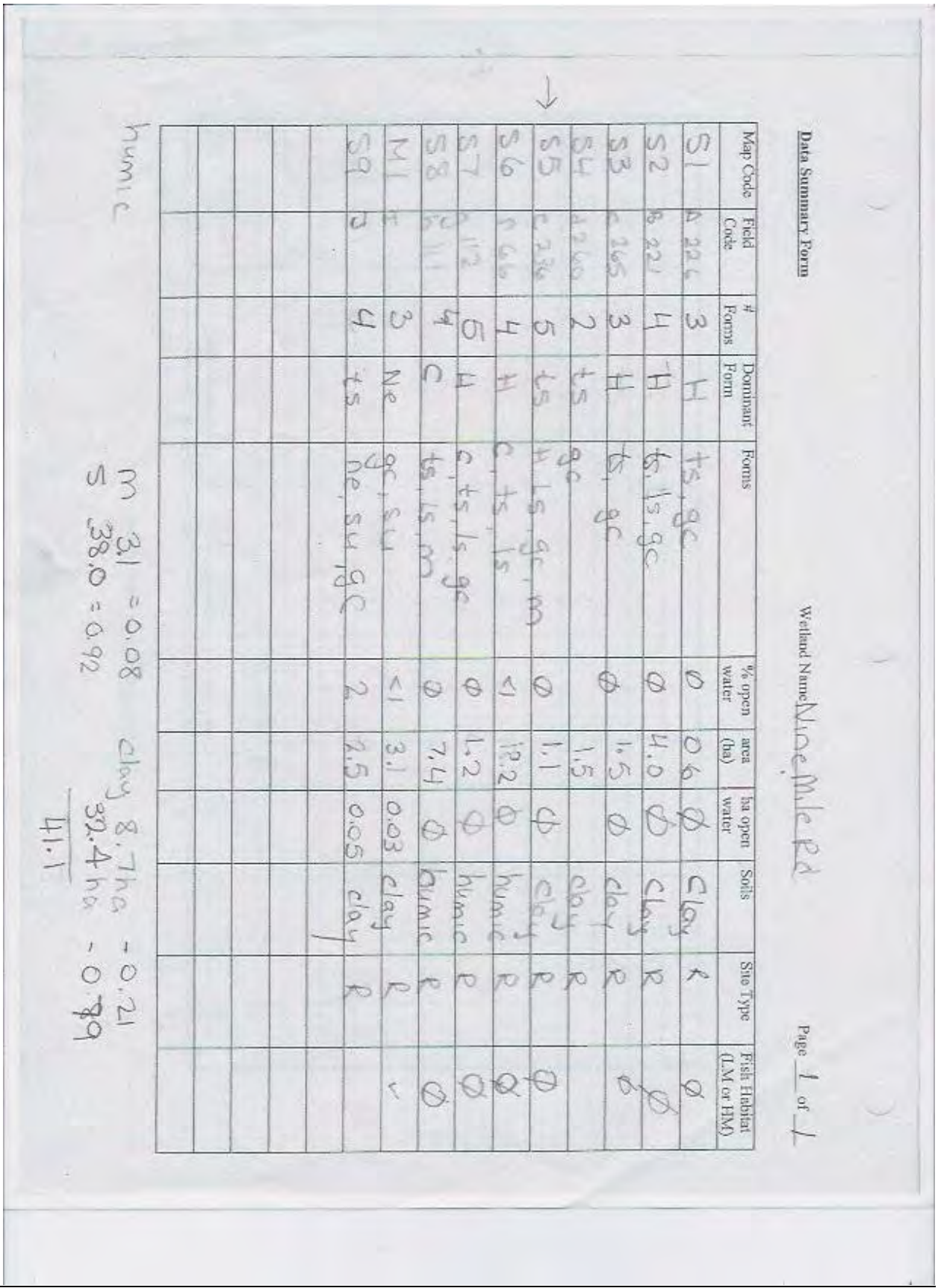

Data Summary Form

Wetland Name Nine Mile Rd

Page 1 of 1

Map Code	Field Code	# Forms	Dominant Form	Forms	% open water	area (ha)	ha open water	Soils	Site Type	Fish Habitat (I,M or HM)
S1	A 224	3	H	ts, gc	0	0.6	0	clay	R	0
S2	B 22	4	H	ts, ls, gc	0	4.0	0	clay	R	0
S3	C 265	3	H	ts, gc	0	1.5	0	clay	R	0
S4	D 260	2	ts	gc		1.5		clay	R	
S5	E 236	5	ts	H, ls, gc, m	0	1.1	0	clay	R	0
S6	D 66	4	H	c, ts, ls	<1	12.2	0	humic	R	0
S7	D 12	5	H	c, ts, ls, gc	0	1.2	0	humic	R	0
S8	C 111	4	C	ts, ls, m	0	7.4	0	humic	R	0
M1	F	3	Ne	gc, su	<1	3.1	0.03	clay	R	v
S9	D	4	ts	ne, su, gc	2	2.5	0.05	clay	R	

humic

M 3.1 = 0.08
S 38.0 = 0.92

clay 8.7ha - 0.21
32.4 ha - 0.79
41.1

APPENDIX I – Site Concept Plans