

# Appendix G

2012 Bat Monitoring Report and  
Environmental Impact Study  
(NRSI, 2012)



***DRAFT***

***GOSHEN WIND ENERGY CENTRE***  
**Bat Monitoring Report and**  
**Environmental Impact Study**

**Prepared for:**  
AECOM  
300 Town Centre Blvd., Suite 300  
Markham, ON L3R 5Z6

Project No. 1076D

Date: August 2012



**NATURAL RESOURCE SOLUTIONS INC.**

Aquatic, Terrestrial and Wetland Biologists



**DRAFT**

**GOSHEN WIND ENERGY CENTRE  
Bat Monitoring Report and Environmental Impact Study**

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Report submitted on August 7, 2012



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## TABLE OF CONTENTS

<b>1.0</b>	<b>Project Description</b>	<b>1</b>
<b>2.0</b>	<b>REA Requirements</b>	<b>5</b>
2.1	Records Review	5
2.2	Site Investigation	5
2.3	Evaluation of Significance	6
2.4	Environmental Impact Study	7
<b>3.0</b>	<b>Records Review</b>	<b>8</b>
3.1	Records Review Methodology	8
3.2	Records Review Results	8
<b>4.0</b>	<b>Site Investigation</b>	<b>11</b>
4.1	Site Investigation Methods	11
4.1.1	Staff Roles	11
4.1.2	Survey Dates	14
4.1.3	Identification of Bat Habitat	17
4.1.4	Identification of Generalized Candidate Significant Bat Habitats	18
4.2	Site Investigation Results	19
4.2.1	Bat Winter Hibernacula	20
4.2.2	Bat Maternity Colony	20
4.3	Site Investigation Summary	31
<b>5.0</b>	<b>Evaluation of Significance</b>	<b>32</b>
5.1	Evaluation of Significance Methods	32
5.1.1	Staff Roles	32
5.1.2	Evaluation Dates	33
5.1.3	Evaluating Bat Maternity Colonies	39
5.1.4	Through-the-Night Acoustic Bat Monitoring	39
5.1.5	Visual Bat Surveys	41
5.2	Evaluation of Significance Results	42
5.2.1	Bat Maternity Colonies	43
5.3	Evaluation of Significance Summary	55
<b>6.0</b>	<b>Environmental Impact Study</b>	<b>59</b>
6.1	Description of the Proposed Undertaking	59
6.2	Potential Impacts to Significant Bat Habitat	60
6.2.1	Habitat Loss	61
6.2.2	Noise Disturbance	62
6.2.3	Operational Bat Mortality	62
6.3	Approach to Impact Assessment	62
6.3.1	Project Location In Significant Bat Habitat	63
6.3.2	Project Location Within 120m of Confirmed Significant Bat Habitat	63

6.3.3	Project Location In, or Within 120m, of Assumed Significant Bat Habitat	.66
6.3.4	Generalized Mitigation Measures	70
<b>6.4</b>	<b>Summary of Commitments</b>	<b>72</b>
6.4.1	Pre-Construction Monitoring Commitments	73
6.4.2	Construction Mitigation Measures	74
6.4.3	Post-Construction Monitoring Commitments	75
<b>7.0</b>	<b>Summary and Conclusions</b>	<b>78</b>
<b>8.0</b>	<b>References</b>	<b>80</b>

## List of Figures

Figure 1.	Project Area and Natural Features – Wind Energy Centre	3
Figure 2.	Project Area and Natural Features – Transmission Line	4
Figure 3.	Locations of Candidate Significant Bat Habitat – Wind Energy Centre	29
Figure 4.	Locations of Candidate Significant Bat Habitat – Transmission Line	30
Figure 5.	Candidate Significant Bat Maternity Colonies: Monitoring Stations	40
Figure 6.	Significant Bat Habitat – Wind Energy Centre	53
Figure 7.	Significant Bat Habitat – Transmission Line	54

## List of Tables

Table 1.	Summary of Records Consulted for the Goshen Wind Energy Centre	8
Table 2.	Summary of Significant Wildlife Habitats Identified Through Records Near the Goshen Wind Energy Centre	9
Table 3.	Site Investigation Survey Dates	15
Table 4.	General Characteristics Used to Identify Candidate Significant Bat Habitats Within the Goshen Wind Energy Centre	17
Table 5.	Summary of Site Investigation Results and Consideration for Candidate Significant Bat Habitats	21
Table 6.	Summary of Identified Candidate Significant Bat Maternity Colonies within 120m of the Goshen Wind Energy Centre	25
Table 7.	Summary of Candidate Bat Habitats within 120m of or overlapped by the Goshen Wind Energy Centre	31
Table 8.	Evaluation of Significance Survey Summary	34
Table 9.	Bat Habitat Evaluation of Significance Criteria	42
Table 10.	Bat Monitoring Results for the Goshen Wind Energy Centre	47
Table 11.	Evaluation of Significance for Bat Habitat within 120m of the Goshen Wind Energy Centre	49
Table 12.	Summary of Significant Bat Habitats within 120m of the Goshen Wind Energy Centre	56
Table 13.	Summary of Potential Impacts to Significant Bat Habitat	60
Table 14.	Potential Impacts, Mitigation Measures, and Survey Methods for Bat Habitats that have been Confirmed Significant	64
Table 15.	Potential Impacts, Mitigation Measures, and Survey Methods for Bat Habitats that have been Presumed Significant	67
Table 16.	Summary of Potential Effects and Mitigation Measures for Generalized Wildlife Habitat during the Construction and Decommissioning Phases of the Goshen Wind Energy Centre	71
Table 17.	Summary of Significant, or Presumed Significant, Bat Maternity Colonies and Proximity to Project Location for the Goshen Wind Energy Centre	72
Table 18.	Summary of Pre-construction Monitoring Commitments for Bat Habitats at the Goshen Wind Energy Centre	73
Table 19.	Summary of Construction Phase Mitigation Measures Recommended for the Goshen Wind Energy Centre	74
Table 20.	Summary of Post-construction Monitoring Commitments at the Goshen Wind Energy Centre	75

## **List of Appendices**

- Appendix I Evaluation of Significance Survey Dates
- Appendix II Site Investigation Field Notes
- Appendix III Pre-Construction Monitoring Methodology



## 1.0 Project Description

Natural Resource Solutions Inc. (NRSI) was retained in June 2010 by AECOM, on behalf of NextEra Energy Inc., to conduct a natural environment resource assessment specific to bats and bat habitat, in accordance with the Renewable Energy Approval (REA) Regulation. This assessment includes a records review, site investigation, and evaluation of significance and impact assessment of any potentially significant bat habitats at a proposed 102MW wind energy facility in Huron County, spanning the Municipalities of Bluewater and South Huron, Ontario.

The Goshen Wind Energy Centre, proposed by NextEra Energy Inc., is located approximately 5km southeast of the Town of Grand Bend. This wind energy generating facility is proposed to be 102MW in size, consisting of up to 71 operational 1.6MW wind turbine generators and 1 operational 1.56MW wind turbine generator (however only 63 turbines will be constructed), as well as supporting infrastructure and development activities. This includes construction areas, temporary laydown areas, 34.5kV electrical collection lines, a transformer substation, a 115kV transmission line, a switching station, access roads, meteorological tower(s), and an operations/maintenance building.

As identified the REA Regulation, the proposed layout of these features is collectively referred to as the 'project location'. In accordance with Section 25 of the REA Regulation (O. Reg. 359/09 of the Environmental Protection Act), NRSI has conducted a thorough records review of available background resources to identify any potentially significant natural features within 120m of the project location. This includes areas within 120m of turbine blade tip as well as other supporting infrastructure and development activities. For the purposes of this report, NRSI will refer to the areas within 120m of the project location as the 'project area'.

The project area represents habitat and landscape features typical of a southern Ontario landscape. The approximate boundaries of the area proposed for turbine placement are Rogerville Road to the north, Parr Line to the east, Mount Carmel Drive to the south, and Klondyke Road to the west (Figure 1). The project area is dominated by agricultural habitats, including both actively tilled cropland and pasture. Fallow fields,

hedgerows, woodlots, creek valleys and wetlands are also present throughout the project area.

# Goshen Wind Energy Centre: Bat Habitats Project Area and Natural Features Wind Energy Centre



August 7, 2012  
Project: NRES-10768  
Scale: 1:40,000 (24 x 36")  
UTM Zone 17 NAD83

Figure 1

- Legend**
- Study Area Boundary
  - Turbine Buffer (171 m)
  - Project Location
  - Proposed Turbine
  - Access Road
  - Collection
  - Proposed Transmission Line
  - Substation
  - Highway
  - Primary Road
  - Local Street
  - Railway
  - Permanent Watercourse
  - Intermittent Watercourse
  - Waterbody
  - Other Wetland
  - Provincially Significant Wetland
  - Woodland - L10



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# Goshen Wind Energy Centre: Bat Habitats Transmission Line

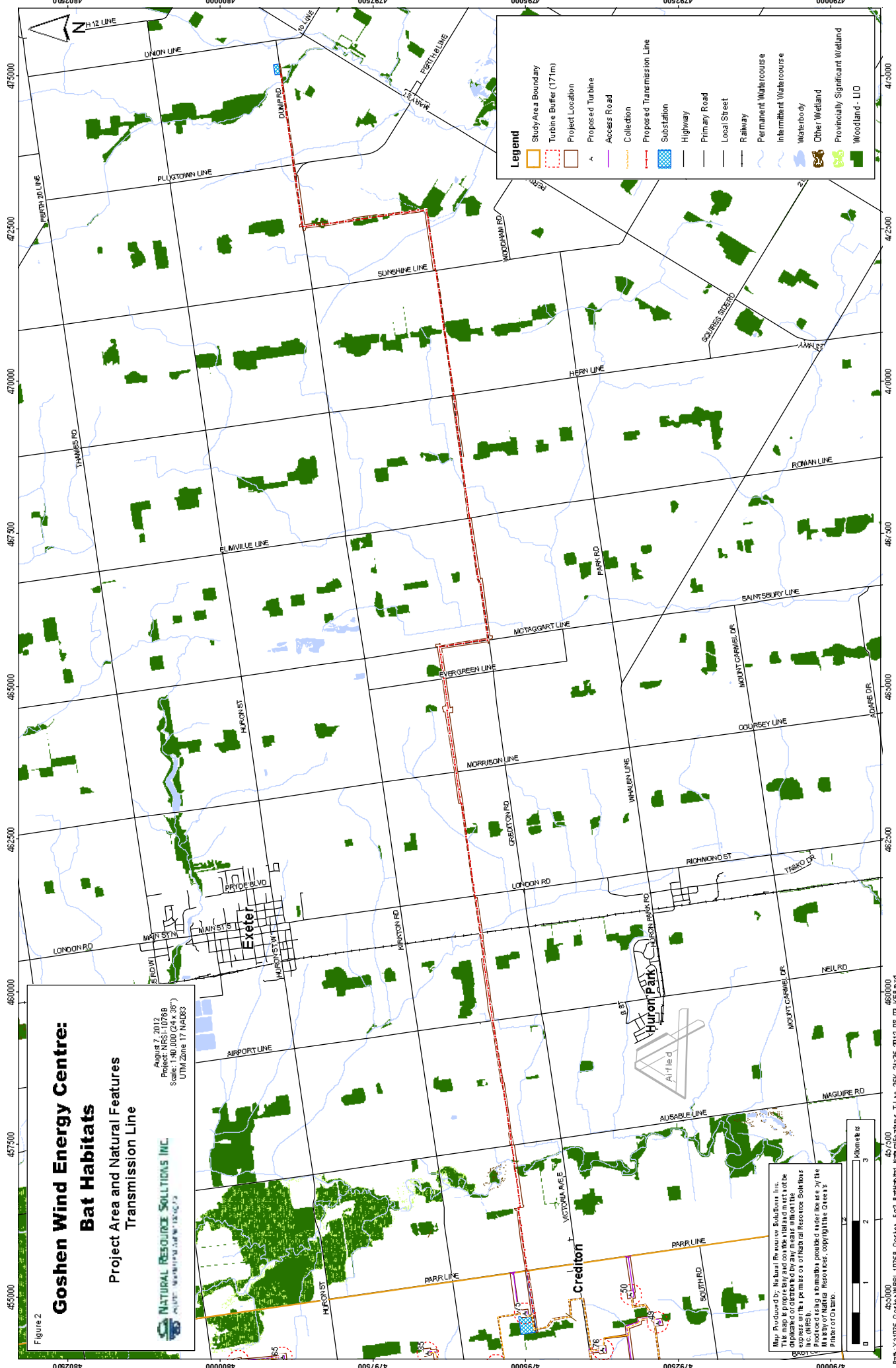
August 7, 2012  
Project: NRS-1-0768  
Scale: 1:40,000 (24" x 36")  
UTM Zone 17 NAD83



Figure 2

**Legend**

- Study Area Boundary
- Turbine Buffer (171m)
- Project Location
- Proposed Turbine
- Access Road
- Collection
- Proposed Transmission Line
- Substation
- Highway
- Primary Road
- Local Street
- Railway
- Permanent Watercourse
- Intermittent Watercourse
- Waterbody
- Other Wetland
- Provincially Significant Wetland
- Woodland - L10



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## 2.0 REA Requirements

Ontario Regulation (O. Reg.) 359/09 – *Renewable Energy Approvals Under Part V.0.1 of the Act*, (herein referred to as the REA Regulation) made under the *Environmental Protection Act* identifies the requirements for the development of renewable energy projects in Ontario. In accordance with the REA Regulation, the project is classified as a Class 4 wind energy generating facility, and is required to complete a Natural Heritage Assessment.

### 2.1 Records Review

Section 25 of the REA Regulation requires proponents of Class 4 wind projects to undertake a natural heritage records review to identify whether the project location is:

1. in a provincial park or conservation reserve
2. within 120m of a provincial park or conservation reserve
3. in a natural feature
4. within 50m of an area of natural and scientific interest (earth science), or
5. within 120m of a natural feature that is not an area of natural and scientific interest (earth science)

Natural Features are defined in Section 1.1 of the REA Regulation to be all or part of

- (a) an area of natural and scientific interest (ANSI) (earth science)
- (b) an ANSI (life science)
- (c) a coastal wetland
- (d) a northern wetland
- (e) a southern wetland
- (f) a valleyland
- (g) a wildlife habitat, or
- (h) a woodland.

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

### 2.2 Site Investigation

Section 26 of the REA Regulation requires proponents of Class 4 wind projects to undertake a natural heritage site investigation for the purpose of determining:

1. whether the results of the analysis summarized in the [Natural Heritage Records Review] report prepared under subsection 25 (3) are correct or require correction, and identifying any required corrections.

2. whether any additional natural features exist, other than those that were identified in the [Natural Heritage Records Review] report prepared under subsection 25 (3).
3. the boundaries, located within 120m of the project location, of any natural feature that was identified in the records review or the site investigation.
4. the distance from the project location to the boundaries determined under clause (c).

Natural Features, as defined in Section 1.1 of the REA Regulation, are identified in Section 3.1 above.

Subsection 3 of Section 26 of the REA Regulation requires the proponent to prepare a report which includes the following:

1. A summary of any corrections to the report prepared under subsection 25 (3) and the determinations made as a result of conducting the site investigations under subsection (1).
2. Information relating to each natural feature identified in the records review and in the site investigations, including the type, attributes, composition and function of the feature.
3. A map showing
  - a) the boundaries mentioned in clause (1) (c)
  - b) the location and type of each natural feature identified in relation to the project location, and
  - c) the distance mentioned in clause (1) (d).
4. The dates and times of the beginning and completion of the site investigation.
5. The duration of the site investigation.
6. The weather conditions during the site investigation.
7. A summary of methods used to make observations for the purposes of the site investigation.
8. The name and qualifications of any person conducting the site investigation.
9. Field notes kept by the person conducting the site investigation.

This Bat Monitoring Report has been organized and prepared to satisfy the conditions of the requirements outlined above for candidate significant bat habitats.

### 2.3 Evaluation of Significance

Section 27 of the REA Regulation requires that, if any candidate significant natural feature is identified within 120m of the project location, a natural heritage evaluation of significance should be undertaken. This evaluation of significance should utilize evaluation criteria or procedures established or accepted by the Ministry of Natural Resources. In conjunction with the evaluation of significance, Subsection 4 of Section 27 of the REA Regulation requires that a report be prepared that sets out the following:

1. For each natural feature shown on the map mentioned in paragraph 3 of subsection 26 (3), a determination of whether the natural feature is provincially significant, significant, not significant, or not provincially significant.
2. A summary of the evaluation criteria or procedures used to make the determinations mentioned in paragraph 1.
3. The name and qualifications of any person who applied the evaluation criteria or procedures mentioned in paragraph 2.
4. The dates of the beginning and completion of the evaluation

This Bat Monitoring Report has been organized and prepared to satisfy the requirements of the evaluation of significance for candidate significant bat habitats as outlined in the REA Regulation.

#### 2.4 Environmental Impact Study

Section 38 of the REA Regulation specifies that no development activities shall be permitted within 120m of a significant natural feature unless an environmental impact study report is prepared in accordance with any procedures established by the Ministry of Natural Resources. As per Subsection 2, this report should:

1. Identify and assess any negative environmental effects of the project on a natural feature, provincial park or conservation reserve,
2. Identify mitigation measures in respect of any negative environmental effects mentioned in the subclause above,
3. Describe how the environmental effects monitoring plan...addresses any negative environmental effects mentioned in subclause 1, and
4. Describe how the construction plan report...addresses any negative environmental effects mentioned in subclause 1.

This Bat Monitoring Report has been organized and prepared to satisfy the requirements of the environmental impact study for significant bat habitats as outlined in the REA Regulation.

### 3.0 Records Review

#### 3.1 Records Review Methodology

In accordance with the REA Regulation, NRSI has consulted several online, published, and agency resources specific to the potential for candidate significant bat habitat. The results of this detailed records review has been listed in Table 1 below. As the lead author of the full Natural Heritage Assessment, AECOM has conducted a more thorough review of other resources pertaining to other natural features and wildlife habitat that may not be specifically discussed here. These can be found in the Goshen Wind Energy Centre Natural Heritage Assessment (AECOM 2012).

**Table 1. Summary of Records Consulted for the Goshen Wind Energy Centre**

Information Source	Consultation Date(s)	Type of Records Reviewed
Ministry of Natural Resources, Land Information Ontario	December 14, 2011	Woodlands Significant Wildlife Habitat
Ministry of Northern Development and Mines, Ontario Geological Survey	January 18, 2012	Significant Wildlife Habitat (Karst of Southern Ontario and Manitoulin Island, Abandoned Mines Information System)
Huron County Official Plan (Amendment No. 3, 2010)	January 18, 2012	Woodlands
Municipality of Bluewater Official Plan (2005)	January 18, 2012	Woodlands
Municipality of South Huron Official Plan (2009)	January 18, 2012	Woodlands
Ministry of Natural Resources, NHIC and Biodiversity Explorer	July 9, 2012	Significant Wildlife Habitat
Atlas of the Mammals of Ontario	January 18, 2012	Significant Wildlife Habitat

#### 3.2 Records Review Results

Based on results of the records review, there are no bat hibernacula, maternity colonies, or migratory stopover locations known from within 120m of the project location. However, there are 33 woodlands within 120m of wind turbines, and 5 woodlands overlapped by proposed the proposed transmission line, which may provide suitable habitat for bat maternity colonies. An additional 2 woodlands are shown to be overlapped by proposed cabling, however the cabling in these locations will be directionally drilled underneath of the features. As a result, the project is not considered



to be located within the feature and these woodlands will not be considered for identification of candidate significant bat habitats as a result.

There are no known abandoned mines within 120m of the project location. However, there is inferred karst topography overlapping the project area. Karst is susceptible to the creation of geologic features, such as caves, which may be suitable for bat hibernacula (OGS 2011). As a result there are no known features which may be suitable for bat hibernacula within 120m of the project location, but there may be previously unknown features within areas of inferred karst which could provide suitable habitat for bat hibernacula. These will be considered in the site investigation.

Bat species which are known from the vicinity of the project location include little brown bat (*Myotis lucifugus*), big brown bat (*Eptesicus fuscus*), eastern red bat (*Lasiurus borealis*), and hoary bat (*Lasiurus cinereus*) (Dobbyn 1994). Little brown bats are considered Endangered by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC, Gov. of Canada 2012), but are not listed as a Species at Risk in Ontario (OMNR 2010a). As a result the little brown bat is considered a species of conservation concern for the purposes of the Natural Heritage Assessment. Important habitat for this species includes hibernacula and maternity colonies, and as such the specific habitat for this species will be included within the consideration of hibernacula and maternity colonies within the project area.

**Table 2. Summary of Significant Wildlife Habitats Identified Through Records Near the Goshen Wind Energy Centre**

Wildlife Habitat Type	Present Within 120m of Project Location	Present Within Project Location	Details	Site Investigation Required
<b>Seasonal Concentration Areas</b>				
Bat Hibernacula	Unknown	Unknown	No abandoned mines, but there is inferred karst topography <120m from and overlapping the project location. Site investigation will be conducted to identify any potential caves.	Yes
Bat Maternity Colonies	Unknown	Unknown	Project located <120m from, and overlapping, woodlands which may contain suitable trees.	Yes
<b>Species of Conservation Concern</b>				

S1-S3, and SH Species and Communities	Unknown	Unknown	Little brown bat, considered Endangered by COSEWIC, is known from the vicinity of the project location.	Yes (to be considered under above categories)
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## 4.0 Site Investigation

Comprehensive site investigations to document the environmental and biological characteristics of the Goshen Wind Energy Centre relating to bats and bat habitats were undertaken in accordance with the REA Regulation and the requirements of the MNR. These site-specific field investigations focused on habitat assessments to support and build on the information collected during the records review phase of this project, aiding in identifying candidate significant bat habitats. The results of these site investigations will be used to identify and map the boundaries of wildlife habitats within 120m of the project location. Information collected at this stage will subsequently be used to help evaluate the significance of identified wildlife habitats.

### 4.1 Site Investigation Methods

#### 4.1.1 Staff Roles

The requirements of the REA Regulation indicate that the name and qualifications of staff participating in the site investigation should be included. As a result, the qualifications and roles of key staff participating in the site investigations at the Goshen Wind Energy Centre have been outlined in the following section.

#### Andrew G. Ryckman, B.Sc.

Andrew is a Terrestrial and Wetland Biologist with 7 years of environmental experience. He routinely manages the natural heritage aspects of renewable energy projects, with specific expertise relating to bats and herpetofauna. Andrew is certified in Ecological Land Classification (2010), and has successfully completed a Bat Conservation International (BCI) Acoustic Monitoring Workshop (2008).

Andrew's role in the project was to act as the project manager, overseeing all aspects of the site investigation, including all associated field work and reporting. Andrew reviewed photos and habitat descriptions of potentially significant habitats and provided input into habitat characteristics.

#### Christy L. Humphrey, B.E.S.

Christy is a Terrestrial and Wetland Biologist with more than 3 years of environmental consulting experience, working on a variety of project tasks. Her primary areas of expertise are vegetation mapping and floral inventories, but she has experience conducting bird and bat assessments, amphibian studies, and other fauna assessments. Christy is certified in both the Ecological Land Classification (ELC) for Southern Ontario (2010) and Northeastern Ecological

Land Classification (2010), and participated in the Ontario MNR Bat Monitoring Workshop for Wind Power Projects (2010).

Christy organized field work to be conducted for the site investigation, and conducted site specific habitat assessments, assessing both qualitative characteristics of potential cavity trees and the number of cavity trees per hectare in woodlands. Christy also compiled, interpreted, and reported on the results of the site investigation.

Andrew M. Dean, B.E.S.

Andrew is a Terrestrial and Wetland Biologist with 2 years of environmental consulting and not-for-profit work experience, monitoring both for the protection of natural areas within construction projects and for the rehabilitation of former aggregate extraction sites. He has a keen interest in botany and plant ecology and is certified in the Ecological Land Classification (ELC) for Southern Ontario (2011). Andrew has participated in field investigations inventorying flora and fauna, their respective habitats and sensitive natural heritage features.

Andrew conducted site specific habitat assessments for the Goshen Wind Energy Centre, quantitatively assessing the number of cavity trees per hectare within woodlands.

Ashley C. Nathan, M.Sc.

Ashley is a Field Technician with two years of technical experience in environmental consulting and research. Ashley completed her Master of Science in Elementary Education at Medaille College, NY after acquiring her Bachelor of Science degree in Biology with Environmental Science from the University of Western Ontario. Ashley has experience conducting vegetation, mammal, and bird surveys for a variety of environmental projects.

Ashley conducted site specific habitat assessments for the Goshen Wind Energy Centre, assessing qualitative characteristics of potential cavity trees.

Erin M. Pettit, B.E.S. Candidate 2012

Erin Pettit is an undergraduate student at the University of Waterloo completing her degree in Environment and Resource Studies. During her co-operative education term with NRSI, she worked as a Field Technician, participating in a wide variety of field work from habitat assessment to wildlife surveys.

Erin conducted site specific habitat assessments for the Goshen Wind Energy Centre, quantitatively assessing the number of cavity trees per hectare within woodlands.

Jessica R. Walker, M.E.S.

Jessica graduated from the University of Waterloo with a B.E.S. and an M.E.S. in Environmental Studies. She has a wide range of field skills including bird, amphibian, reptile, bat, and plant identification, and she is certified in the Ecological Land Classification (ELC) System for Southern Ontario (2012).

Jessica conducted site specific habitat assessments for the Goshen Wind Energy Centre, quantitatively assessing the number of cavity trees per hectare within woodlands.

Kaitlin N. Powers, B.E.S.

Kaitlin is a Terrestrial and Wetland Biologist with over 2 years experience working as an environmental technician in both public and private sectors. As a graduate in Environment and Resources Studies from the University of Waterloo, Kaitlin specialized her studies in ecological restoration and is a member of the Society for Ecological Restoration of Ontario (SERO). She is certified in Northeastern Ecological Land Classification (2011) and has been involved in completing ELC surveys, wildlife habitat assessments, bat monitoring, migratory bird and reptile surveys, as well as assisting in wetland evaluations.

Kaitlin conducted site specific habitat assessments for the Goshen Wind Energy Centre, quantitatively assessing the number of cavity trees per hectare within woodlands.

Mike W. Wolosinecky, B.E.S.

Mike is a Terrestrial and Wetland Biologist with more than 2 years of practical work experience in environmental monitoring and restoration of terrestrial and aquatic ecosystems; primarily in parks and protected areas. His interests are focused on Species at Risk management and restoration ecology and he is a member of the Society for Ecological Restoration, Ontario Chapter. He has participated in various terrestrial and aquatic projects including bat abundance monitoring, fisheries biomass surveys and post construction mortality monitoring for various wind energy projects.

Mike conducted site specific habitat assessments for the Goshen Wind Energy Centre, assessing qualitative characteristics of potential cavity trees.

Patrick W. Deacon, B.E.S.

Patrick is a Terrestrial Biologist with 4 years of environmental consulting experience. He regularly conducts vegetation inventories and community mapping, and specializes in ecological restoration with particular focus on Species At Risk, tallgrass prairie ecosystems, and invasive species management. He also has experience conducting a variety of wildlife studies, including birds and mammals.

Patrick conducted site specific habitat assessments for the Goshen Wind Energy Centre, assessing both qualitative characteristics of potential cavity trees and the number of cavity trees per hectare in woodlands.

Tara A. Lessard, B.Sc.

Tara is a Terrestrial and Wetland Biologist with more than 4 years of experience working in the environmental field. During her consulting experience, Tara has conducted bird and bat assessments, amphibian studies, and other fauna assessments throughout Ontario. Tara has participated in field investigations and reporting for wind power projects in Ontario and New Brunswick.

Tara conducted site specific habitat assessments for the Goshen Wind Energy Centre, quantitatively assessing the number of cavity trees per hectare within woodlands.

Tyler M. Bradley, Certified Arborist

Tyler is a Certified Arborist with 7 years of practical work experience, specializing in arboricultural practices and plant health care. He carries a certificate in Urban Forestry and Arboriculture. During his consulting experience, Tyler has conducted vegetation mapping and rare species assessment, bird and bat surveys, and post-construction mortality monitoring.

Tyler conducted site specific habitat assessments for the Goshen Wind Energy Centre, quantitatively assessing the number of cavity trees per hectare within woodlands.

#### 4.1.2 Survey Dates

In accordance with the REA Regulation, NRSI recorded dates, times, duration, and weather conditions during each site investigation. This information has been summarized in the following table. Key staff who conducted site investigations are provided in bold font in this table. Detailed descriptions of staff roles and qualifications can be found in Section 4.1.1 of this report, and detailed field forms have been appended to this report.

**Table 3. Site Investigation Survey Dates**

Purpose	General Methods	Feature ID(s)	Date(s)	Time(s) and Duration	Weather	Staff
Bat Habitat Characterization	Qualitative assessment of cavity trees, Area search for caves or crevices	189	June 21, 2010	17:45	26°C, No precipitation, Wind speed 1 from W.	<b>Ashley Nathan</b> Pat Deacon
Bat Habitat Characterization	Qualitative assessment of cavity trees, Area search for caves or crevices	342	June 22, 2010	13:34	27°C, No precipitation, Wind 3 from W.	<b>Ashley Nathan</b>
Bat Habitat Characterization	Qualitative assessment of cavity trees, Area search for caves or crevices	236	June 24, 2010	12:03	18°C No precipitation Wind speed 4 from NW.	<b>Pat Deacon</b> Megan Anevich
Bat Habitat Characterization	Qualitative assessment of cavity trees, Area search for caves or crevices	215	June 29, 2010	13:47	16°C No precipitation Wind speed 5 from SW.	<b>Ashley Nathan</b> Alyson Smith
Bat Habitat Characterization	Qualitative assessment of cavity trees, Area search for caves or crevices	757	July 8, 2010	17:26	27°C No precipitation Wind speed 3 from NW.	<b>Ashley Nathan</b> Kevin Dance
Bat Habitat Characterization	Qualitative assessment of cavity trees, Area search for caves or crevices	225 375B	June 8, 2011	13:15 - 14:00 17:00 – 18:30 2 hrs 15 min	30°C No precipitation Wind speed 4.	<b>Christy Humphrey</b> Julia Lawler
Bat Habitat Characterization	Qualitative assessment of cavity trees, Area search for caves or crevices	177 258	June 24, 2011	11:00 – 15:15 4 hrs 15 min	20°C Heavy rain at times Wind speed 3 from SW.	<b>Christy Humphrey</b> <b>Mike Wolosinecky</b>
Bat Habitat Characterization	Qualitative assessment of cavity trees, Area search for caves or crevices	280 326 229	June 25, 2011	12:00 – 16:15 4 hrs 15 min	16°C No precipitation.	<b>Christy Humphrey</b> <b>Mike Wolosinecky</b>
Bat Habitat Characterization	Qualitative assessment of cavity trees, Area search for caves or crevices	216	June 26, 2011	9:45 – 12:30 2 hrs 45 min	22°C No precipitation Wind speed 3 from SW.	<b>Christy Humphrey</b> <b>Mike Wolosinecky</b>
Bat Habitat Characterization	Qualitative assessment of cavity trees, Area search for caves or crevices	177	June 27, 2011	8:52 – 10:42 1 hr 50 min	23°C No precipitation Wind speed 3 from SE.	<b>Mike Wolosinecky</b> <b>Andrew Dean</b>
Bat Habitat Assessment	Quantitative assessment of cavity trees	242 259	January 4, 2012	13:45 -16:46 3 hrs	-6°C No precipitation Wind speed 2 from SW.	<b>Pat Deacon</b> Heather Wright
Bat Habitat Assessment	Quantitative assessment of cavity trees	285	January 5, 2012	13:00 -13:40 40 min	-1°C No precipitation Wind speed 1.	<b>Pat Deacon</b> Heather Wright

Bat Habitat Assessment	Quantitative assessment of cavity trees	267 352 358	January 6, 2012	8:15 -11:00 2 hrs 45 min	4°C No precipitation Wind speed 2 from W.	<b>Pat Deacon</b> Heather Wright
Bat Habitat Assessment	Quantitative assessment of cavity trees	290 392	January 11, 2012	13:25 – 15:00 1 hr 35 min	4°C No precipitation Wind speed 2 from W.	<b>Pat Deacon</b> <b>Erin Pettit</b>
Bat Habitat Assessment	Quantitative assessment of cavity trees	206	January 18, 2012	15:51 – 15:24 33 min	-5°C Wind speed 5 from NW.	<b>Kaitlin Powers</b> Ken Burrell
Bat Habitat Assessment	Quantitative assessment of cavity trees	235 282	May 18, 2012	9:07-10:45 1 hr 38 min	22°C No precipitation Wind speed 1.	<b>Tara Lessard</b> Kaitlin Boddaert
Bat Habitat Assessment	Quantitative assessment of cavity trees	321	May 19, 2012	11:30 – 13:15 1 hr 45 min	22°C No precipitation Wind speed 1.	<b>Tara Lessard</b> Kaitlin Boddaert
Bat Habitat Assessment	Quantitative assessment of cavity trees	720	June 1, 2012	12:13 – 13:02 49 minutes	11°C No precipitation Wind speed 5.	<b>Jessica Walker</b> Kaitlin Boddaert
Bat Habitat Assessment	Quantitative assessment of cavity trees	244 271 721	June 6, 2012	10:15 -12:05 1 hr 50 min	17°C No precipitation Wind speed 3 from N.	<b>Tyler Bradley</b> Jeremy Bannon
Bat Habitat Assessment	Quantitative assessment of cavity trees	648	June 8, 2012	9:50 – 12:35 2 hrs 45 min	19°C No precipitation Wind speed 3 from W.	<b>Christy Humphrey</b> Matt Dil
Bat Habitat Assessment	Quantitative assessment of cavity trees	648 662 722	June 22, 2012	13:00 – 15:36 2 hrs 36 min	24°C E Wind speed 2.	<b>Erin Pettit</b> Rachele Young
Bat Habitat Assessment	Quantitative assessment of cavity trees	198 342	July 26, 2012	10:30 – 14:05 3 hrs 35 min	28°C Light rain Wind speed 2 from NW.	<b>Andrew Dean</b> Colin Oaks



#### 4.1.3 Identification of Bat Habitat

The Draft Significant Wildlife Habitat Ecoregion 6E and 7E Criterion Schedule Addendums (OMNR 2012a, 2012b) outline general characteristics that may be used to identify candidate significant bat habitats, including seasonal concentration areas. The general characteristics used to identify candidate seasonal concentration areas relating to bat habitats are outlined in Table 4 below.

**Table 4. General Characteristics Used to Identify Candidate Significant Bat Habitats Within the Goshen Wind Energy Centre**

Bat Habitat	Significant Wildlife Habitat Ecoregion 6E and 7E Criteria Schedule Addendum
Bat Hibernacula	Caves, mine shafts, underground foundations, Karsts or one of the following Community Types: Crevice (CCR), Cave (CCA). Does not include buildings (OMNR 2010b, 2011a, 2012).
Bat Maternity Colonies (2009 <sup>E</sup> )	Tree cavities, vegetation, buildings (OMNR 2009, 2010b).
Bat Maternity Colonies (2011 <sup>2</sup> , 2012 <sup>3</sup> )	Any of the following Community Types: Deciduous Forest (FOD), Mixed Forest (FOM) that have >10/ha cavity trees (snags or cavity trees) which are >25cm dbh. Maternity colonies can be found in tree cavities, vegetation and often in buildings (buildings are not considered to be SWH). Maternity roosts are not found in caves and mines in Ontario (OMNR 2011a, 2012a, 2012b).

<sup>1</sup> Draft Ecoregion 6E and 7E Criterion Schedule Addendums (OMNR 2009)

<sup>2</sup> Bats and Bat Habitats (OMNR 2011a)

<sup>3</sup> Draft Ecoregion 6E and 7E Criterion Schedule Addendums (OMNR 2012a, 2012b)

Site investigations conducted in June of 2010 and 2011 were conducted according to the general guidance that was available at the time, from the Draft Ecoregion Criteria Schedules Addendum (OMNR 2009) and from the document *Bats and Bat Habitats: Guidelines for Wind Power Projects* (OMNR 2010a). Both of these documents provided limited information on identifying suitable habitats for bat maternity colonies. NRSI used the information available from OMNR documents, combined with secondary research conducted and the experience of the company to identify candidate bat maternity colonies in woodlands located less than 120m from a wind turbine. Criteria used to identify candidate bat maternity colonies included the presence of snags or live cavity trees which were >20cm dbh with exfoliating bark and/or cavities. In addition, any suitable candidates had a clear entranceway to the cavity or surrounding exfoliating bark. Field notes for these assessments are included in Appendix II.

Site investigations conducted after June of 2011 followed the most recent OMNR guidance document, *Bats and Bat Habitats: Guidelines for Wind Power Projects* (2011b), which dictates that the number of cavity trees (>25cm dbh) per hectare should be determined using 0.05ha plots (circular plots with a radius of 12.6m), which are randomly placed throughout each woodland being investigated. The document stipulates that a minimum of 10 plots should be used for woodlands which are 10ha or less in size, with one additional plot for every additional hectare for larger woodlands (up to a maximum of 35 plots). NRSI followed this protocol for all site investigations completed after the release of this document in July 2011, randomly selecting circular plots 12.6m in radius within the portions of woodlands for which access was granted. The number of snags (with or without cavities) or live trees containing cavities within these plots which were >25cm dbh were counted. Following clarification of the intention of the guidance documents during a field session with MNR in March of 2012, only live or dead trees containing cavities were counted. As the method of counting all snags (dead trees) is more conservative than counting only live or dead cavity trees, re-assessments of previously assessed woodlands was not determined necessary. Field notes for these assessments are included in Appendix I.

#### 4.1.4 Identification of Generalized Candidate Significant Bat Habitats

As the potential for operational impacts has been determined to be limited to areas within 120m of proposed wind turbines, as measured from blade tip (OMNR 2011c), woodlands located within 120m of, but not overlapped by, other project components may be treated as significant, with generalized candidate significant wildlife habitat mitigation measures applied in the EIS to address potential impacts to these habitats during construction only. However, not all woodlands have the potential to contain a sufficient quantity of suitable snags or cavity trees to indicate they may contain a significant bat maternity colony. As a result, not all woodlands located further than 120m from wind turbines, but less than 120m from other project components, will be considered as generalized candidate significant wildlife habitat. NRSI has utilized the Ecological Land Classification information collected by AECOM in order to narrow down the list of woodlands considered as generalized candidate significant wildlife habitat for bat maternity colonies.

A woodland is identified by NRSI as generalized candidate significant wildlife habitat for bat maternity colonies if it consists of suitable deciduous or mixed mid-age to mature forests with the canopy stand description (top 4 species) containing one or more of the following species: white pine (*Pinus strobus*), maple (*Acer* spp.), aspen (*Populus* spp.), ash (*Fraxinus* sp.), oak (*Quercus* sp.). These species are identified as tree species providing good cavity habitat in the 2011 *Bats and Bat Habitats: Guidelines for Wind Power Projects* document (OMNR 2011b). In addition these woodlands must contain a sufficient quantity of trees and snags >25cm dbh to allow for the potential for >10 suitable trees per hectare to occur (at least occasionally occurring live trees >25cm dbh and rarely occurring snags >25cm dbh). This information is obtained from the tree and snag size class analysis which utilizes a scale of none, rare, occasional, or abundant for size categories <10cm, 10-24cm, 25-50cm, and >50cm dbh. If cavity trees were specifically noted by AECOM biologists, and there are at least occasionally occurring live trees >25cm dbh, although snags were not noted, this habitat is considered as generalized candidate significant wildlife habitat as well. In addition, potential forested habitats that could not be specifically accessed to sufficiently assess size class analysis, but were located within 120m of other (non-turbine) project components, were automatically considered generalized candidate significant wildlife habitat.

If a natural area consists solely of any of the following criteria, it is not considered as generalized candidate significant wildlife habitat: plantation; has a canopy dominated (>75%) by coniferous trees; has <60% canopy cover; contains a significant proportion of weedy tree species such as common buckthorn (*Rhamnus cathartica*) or common apple (*Malus pumila*); or contains no trees >25cm dbh.

#### 4.2 Site Investigation Results

The majority of the Goshen Wind Energy Centre is dominated by agricultural habitats, including both actively tilled cropland and pasture. Fallow fields, hedgerows, and occasional woodlands are also present throughout the project area. NRSI used habitat criteria outlined by the Ecoregion Criterion Schedules (OMNR 2009, 2011a, 2012a, 2012b), and Bats and Bat Habitat Guidelines (OMNR 2010b, 2011b) to compare site-specific habitat conditions to potential bat habitats. The results of the site investigation are provided in the sections below.

#### 4.2.1 Bat Winter Hibernacula

According to the 2012 Addendum to the SWHTG, caves, mine shafts, underground formations and karsts are considered examples of locations where bat hibernacula may be found (OMNR 2011a, 2012a, 2012b). No candidate bat hibernacula were identified by NRSI biologists within the Goshen Wind Energy Centre.

#### 4.2.2 Bat Maternity Colony

NRSI conducted assessments to determine the potential for candidate significant bat maternity colonies using a qualitative assessment method for habitats examined prior to the release of quantitative criteria, as well as a plot-based approach to calculate the number of snags or cavity trees per hectare within each woodland examined after the release of the 2011 *Bat and Bat Habitats* guidelines (OMNR 2011b). The results of these exercises are included in Table 5 below. This table is followed by another which indicates the size, composition, attributes, and functions of those habitats which are considered candidate significant bat maternity colonies (Table 6).

**Table 5. Summary of Site Investigation Results and Consideration for Candidate Significant Bat Habitats**

Area ID	<120m from Turbine No.	Size (ha)	Qualitative Assessment		Quantitative Assessment		Evaluation of Significance Required (Y/N)
			Qualitative Characteristics of Habitat	Number of Sample Plots	# Cavity Trees/ha		
<b>Wind Energy Centre Habitats</b>							
177	63	17.4	This woodland consists primarily of young white elm, green ash, and Freeman's maple swamp. Towards the north end, there is an older Freeman's maple swamp, consisting of trees approximately 60cm dbh. Many trees do not contain cavities, however one large freeman's maple contains a large cavity beginning at the base of the tree, extending upward into the tree for approximately 3m.				Yes
189	52, 55	63.4	AECOM's ELC information indicates this woodland contains sugar maple-hardwood deciduous forest, shagbark hickory deciduous forest, and some areas of white elm, ash, and hawthorn. It contains a large, dead American beech tree, approximately 100cm dbh, which contains a large cavity as well as some exfoliating bark.				Yes
198	57	7.1		13	4.62		No
206	42	7.0		10	4.00		No
215	68	12.5	AECOM's ELC information indicates this woodland contains white ash-basswood forest, sugar maple-hardwood forest, and Freeman's maple deciduous swamp. It contains a white elm snag of approximately 30cm dbh, with exfoliating bark.				Yes
216	53	22.8	This woodland contains an upland sugar maple forest with some lowland areas. Dominant species include sugar maple, white ash, ironwood, basswood, yellow birch, and hemlock. The trees are characterized as fairly young (typically around 30cm dbh), with live trees appearing healthy with very few cavities. There are some snags in the forest, but they are smaller trees with only newer woodpecker excavations. There is also a				No

				component of white oak-shagbark hickory-basswood-ash, containing several large trees approximately 100cm dbh. However, these trees are all very healthy and none contain cavities. As a result there is no suitable candidate significant habitat within the property examined.				
225	64	3.5		This woodland consists of very young swamp. There are no trees containing cavities or with exfoliating bark. As a result there is no suitable candidate significant habitat within this woodland.				No
229	70	4.3		This forest is dominated by basswood, white elm, and sugar maple. It contains a very large, live basswood, approximately 120cm dbh, which is largely hollow. The cavity of the tree has a circular entrance of approximately 100cm in diameter.				Yes
235	49	1.6		AECOM's ELC information indicates this woodland contains green ash deciduous swamp, Freeman's maple swamp, fresh-moist hemlock mixed forest, moist shagbark hickory deciduous forest, oak-maple-hickory forest, and white ash deciduous forest. It contains two black walnut snags within 20m of each other, each approximately 30cmdbh and containing 1 small cavity each.	10	14.00		Yes
236	36, 37, 64	28.8						Yes
242	47	3.7			10	16.00		Yes
244	86	8.7			10	4.00		No
249	86	7.8		Access was not able to be obtained for this woodland.			Access was not able to be obtained for this woodland. Appropriate data cannot be gathered through an alternative site investigation.  AECOM's ELC information (collected from the property line) indicates this woodland contains green ash deciduous swamp. From the property line, it appeared that there were occasionally occurring trees >25cm DBH and no snags >25cm DBH. Because this feature was entirely assessed from the property line, it is uncertain if the woodland contains a sufficient quantity of cavity trees to indicate it may contain a significant bat maternity colony.	Yes

258	16, 17	159.3		This woodland contains upland deciduous forest of sugar maple, white birch, American beech, and white ash, as well as some lowland areas of eastern hemlock, green ash, eastern cottonwood, black walnut, and white oak. Some areas are also dominated by white elm and green ash. There are some larger sugar maple trees, very large eastern cottonwood and black walnuts, but very few of these contain cavities and the cavities are all very small. As a result there is no candidate significant habitat within this woodland.				<b>No</b>
259	21	19.6			19	5.26	<b>No</b>	
267	20	5.1			12	20.00	<b>Yes</b>	
271	85	6.2			10	4.00	<b>No</b>	
280	22, 23	85.3		This woodland contains upland forest consisting of sugar maple, white birch, American beech, and yellow birch, as well as lowland forest consisting of Freeman's maple and white elm. There are a number of large-sized trees in the upland portion at the northern end of the forest, including up to 100cm DBH American beech, yellow birch, and white birch. However, none of these contain cavities, and there were no other suitable trees found.			<b>No</b>	
282	80	20.6			25	10.40	<b>Yes</b>	
285	23	5.8			10	12.00	<b>Yes</b>	
290	35	3.5			10	2.00	<b>No</b>	
321	34	4.4			10	8.00	<b>No</b>	
326	15	8.3		This woodland is a recently logged sugar maple forest, with few trees >30cm dbh. It contains a sugar maple of approximately 30cm dbh which contains a cavity approximately 10m up the trunk. The cavity entrance is approximately 10-15cm wide and 100cm long. AECOM's ELC information indicates this is a mature sugar maple-hickory deciduous forest. It contains two dead elm trees within 5m of each other, each with exfoliating bark.			<b>Yes</b>	
342	14	2.8					<b>Yes</b>	
352	13	7.2			10	12.00	<b>Yes</b>	
358	12	4.1			10	14.00	<b>Yes</b>	

369	11	1.0	AECOM's ELC information indicates this is a cultural woodland. As a result, it does not qualify for consideration as candidate significant bat maternity colony habitat.			No
372	10	4.0	AECOM's ELC information indicates this is a cultural woodland. As a result, it does not qualify for consideration as candidate significant bat maternity colony habitat.	10	24.00	Yes
373	10	0.9	AECOM's ELC information indicates this is a cultural woodland. As a result, it does not qualify for consideration as candidate significant bat maternity colony habitat.			No
375B	4	2.1	This woodland contains mid-aged upland sugar maple forest, with no trees containing suitable cavities or exfoliating bark.			No
392	3	11.1	AECOM's ELC information indicates this woodland largely consists of fresh-moist sugar maple hardwood deciduous forest, with some green ash deciduous swamp. It contains a dead white elm tree, approximately 30cm dbh, with exfoliating bark.	10	2.00	No
757	6	11.7	This habitat consists of a young coniferous plantation. As a result it does not qualify for consideration as candidate significant bat maternity colony habitat.			Yes
759	34	0.6				No
<b>Transmission Line Habitats (overlapped by proposed infrastructure)</b>						
648	N/A	2.8		10	18.00	Yes
662	N/A	4.4		10	6.00	No
720	N/A	2.3		10	10.00	Yes
721	N/A	4.8		10	0.00	No
722	N/A	0.7		4	0.00	No



**Table 6. Summary of Identified Candidate Significant Bat Maternity Colonies within 120m of the Goshen Wind Energy Centre**

Wildlife Habitat ID	Area ID	Size (ha)	Composition	Attributes	Functions	Distance to Wind Turbine (blade tip) (m)	Figure	EOS Required (Y/N)
<b>Wind Energy Centre Habitats</b>								
BMA-177	177	17.4	Young white elm, green ash, and Freeman's maple swamp. Towards the north end, there is an older Freeman's maple swamp, consisting of trees approximately 60cm dbh.	Contains one large Freeman's maple with a large cavity beginning at the base of the tree, extending upward into the tree for ~3m.	Habitat for bat maternity colonies	42 (T63)	3	Yes
BMA-189	189	51.6	AECOM's ELC information indicates this woodland contains sugar maple-hardwood deciduous forest, shagbark hickory deciduous forest, and some areas of white elm, ash, and hawthorn.	Contains a large, dead American beech tree, ~100cm dbh, with a large cavity as well as some exfoliating bark.	Habitat for bat maternity colonies	41 (T55) 60 (T52)	3	Yes
BMA-215	215	12.5	AECOM's ELC information indicates this woodland contains white ash-basswood forest, sugar maple-hardwood forest, and Freeman's maple deciduous swamp.	Contains a white elm snag of ~30cm dbh, with exfoliating bark.	Habitat for bat maternity colonies	37(T68)	3	Yes
BMA-229	229	4.3	This forest is dominated by basswood, white elm, and sugar maple.	Contains a very large, live basswood, ~120cm dbh, which is largely hollow. The cavity of the tree has a circular entrance of ~100cm in diameter.	Habitat for bat maternity colonies	43 (T70)	3	Yes
BMA-235	235	1.6	A mid-age forest dominated by maple, with abundant basswood and rare black walnut and American beech.	14.00 cavity trees per hectare	Habitat for bat maternity colonies	32 (T49)	3, 4	Yes

BMA-236	236	28.8	AECOM's ELC information indicates this woodland contains green ash deciduous swamp, Freeman's maple swamp, fresh-moist hemlock mixed forest, moist shagbark hickory deciduous forest, oak-maple-hickory forest, and white ash deciduous forest.	Contains two black walnut snags within 20m of each other, each ~30cm dbh and containing 1 small cavity each.	Habitat for bat maternity colonies	32 (T36) 28 (T37) 95 (T64)	3	Yes
BMA-242	242	3.7	Abundant sugar maple and white ash ( <i>Fraxinus americana</i> ), with occasional American beech, hop hornbeam, black cherry ( <i>Prunus serotina</i> ), blue beech ( <i>Carpinus caroliniana</i> ssp. <i>virginiana</i> ), basswood, and white elm.	16.00 cavity trees per hectare	Habitat for bat maternity colonies	56 (T47)	3	Yes
BMA-249	249	7.8	AECOM's ELC information (collected from the fence line) indicates this woodland contains green ash deciduous swamp.	Access was not able to be obtained in order to describe the relevant attributes.	Habitat for bat maternity colonies	116 (T86)	3	Yes
BMA-267	267	5.1	A mid-age forest with abundant green ash and occasional basswood, sugar maple, ironwood, bur oak, and shagbark hickory.	20.00 cavity trees per hectare	Habitat for bat maternity colonies	43 (T20)	3	Yes
BMA-282	282	20.6	A mid-age forest with dominant maple, abundant white elm, American beech, and basswood.	10.40 cavity trees per hectare	Habitat for bat maternity colonies	106 (T80)	3	Yes
BMA-285	285	5.8	Abundant white ash, with plantations of white pine ( <i>Pinus strobus</i> ). Also contains occasional large-tooth aspen ( <i>Populus grandidentata</i> ), white elm, white birch, blue beech,	12.00 cavity trees per hectare	Habitat for bat maternity colonies	83 (T23)	3	Yes

BMA-326	326	8.3	black cherry, and white spruce ( <i>Picea glauca</i> ). This woodland is a recently logged sugar maple forest, with few trees >30cm dbh.	Contains a sugar maple of approximately 30cm dbh which contains a cavity ~10m up the trunk. The cavity entrance is ~10-15cm wide and 100cm long.	Habitat for bat maternity colonies	37 (T15)	3	Yes	
BMA-342	342	2.8	AECOM's ELC information indicates this is a mature sugar maple-hickory deciduous forest.	Contains two dead elm trees within 5m of each other, each with exfoliating bark.	Habitat for bat maternity colonies	117 (T14)	3	Yes	
BMA-352	352	7.2	Dominant sugar maple, with occasional American beech, white ash, basswood, black cherry, and hop hornbeam.	12.00 cavity trees per hectare	Habitat for bat maternity colonies	102 (T13)	3	Yes	
BMA-358	358	4.1	Abundant sugar maple and American beech, with occasional white ash, ironwood, black cherry, and white elm.	14.00 cavity trees per hectare	Habitat for bat maternity colonies	77 (T12)	3	Yes	
BMA-372	372	4.0	Dominant sugar maple, with occasional white ash, American beech, basswood, blue beech, hop hornbeam, and white elm.	24.00 cavity trees per hectare	Habitat for bat maternity colonies	59 (T10)	3	Yes	
BMA-757	757	11.7	AECOM's ELC information indicates this woodland largely consists of fresh-moist sugar maple hardwood deciduous forest, with some green ash deciduous swamp.	Contains a dead white elm tree, approximately 30cm dbh, with exfoliating bark.	Habitat for bat maternity colonies	24 (T6)	3	Yes	
<b>Transmission Line Habitats (overlapped by proposed infrastructure)</b>									
BMA-648	648	2.8	Dominated by bitternut hickory, with occasional sweet cherry, white elm, trembling aspen, ironwood, and English hawthorn.	18.00 cavity trees per hectare	Habitat for bat maternity colonies	Overlapping	4	Yes	

BMA-720	720	2.3	Occasional sugar maple, basswood, freeman's maple, shagbark hickory, white elm, ironwood, American beech, and ash.	10.00 cavity trees per hectare	Habitat for bat maternity colonies	Overlapping	4	Yes
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# Goshen Wind Energy Centre: Bat Habitats

## Candidate Significant Bat Habitat Wind Energy Centre

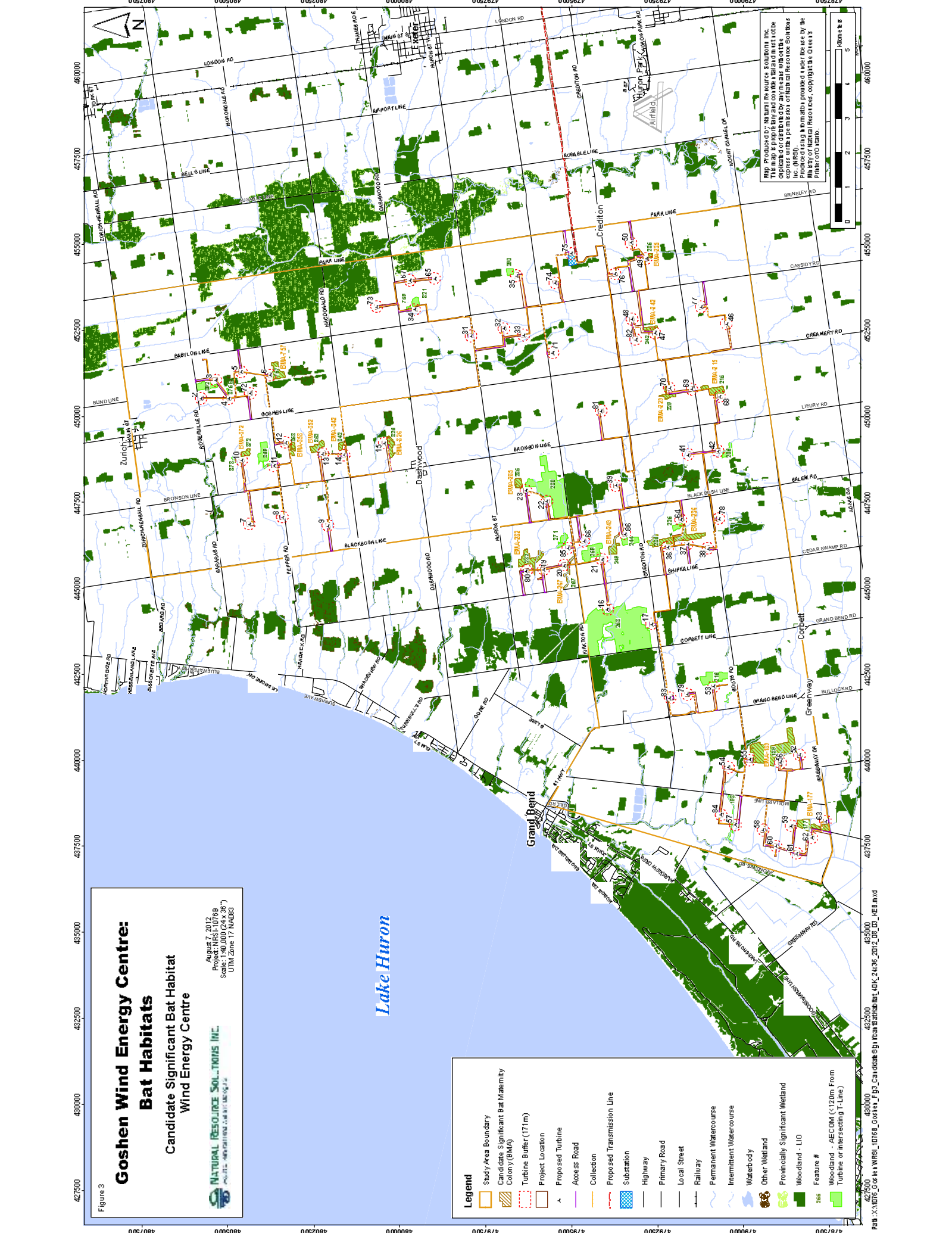
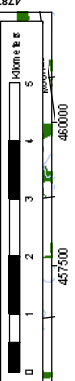
August 7, 2012  
Project: NRS1-10768  
Scale: 1:40,000 (24 x 36")  
UTM Zone 17 NAD83



Figure 3

Legend	
[Orange outline]	Study Area Boundary
[Hatched pattern]	Candidate Significant Bat Maternity Colony (BMA)
[Red dashed line]	Turbine Buffer (171m)
[Red circle]	Project Location
[Red 'A' symbol]	Proposed Turbine
[Purple line]	Access Road
[Blue line]	Collection
[Red dashed line]	Proposed Transmission Line
[Blue square]	Substation
[Black line]	Highway
[Grey line]	Primary Road
[Thin black line]	Local Street
[Black line with cross-ticks]	Railway
[Blue wavy line]	Permanent Watercourse
[Blue dashed wavy line]	Intermittent Watercourse
[Blue circle]	Waterbody
[Green circle]	Other Wetland
[Light green circle]	Provincially Significant Wetland
[Dark green circle]	Woodland - L10
[Light green square]	Feature #
[Green square]	266
[Light green square]	Woodland - AECOM (<120m From Turbine or intersecting T-Line)

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# Goshen Wind Energy Centre: Bat Habitats

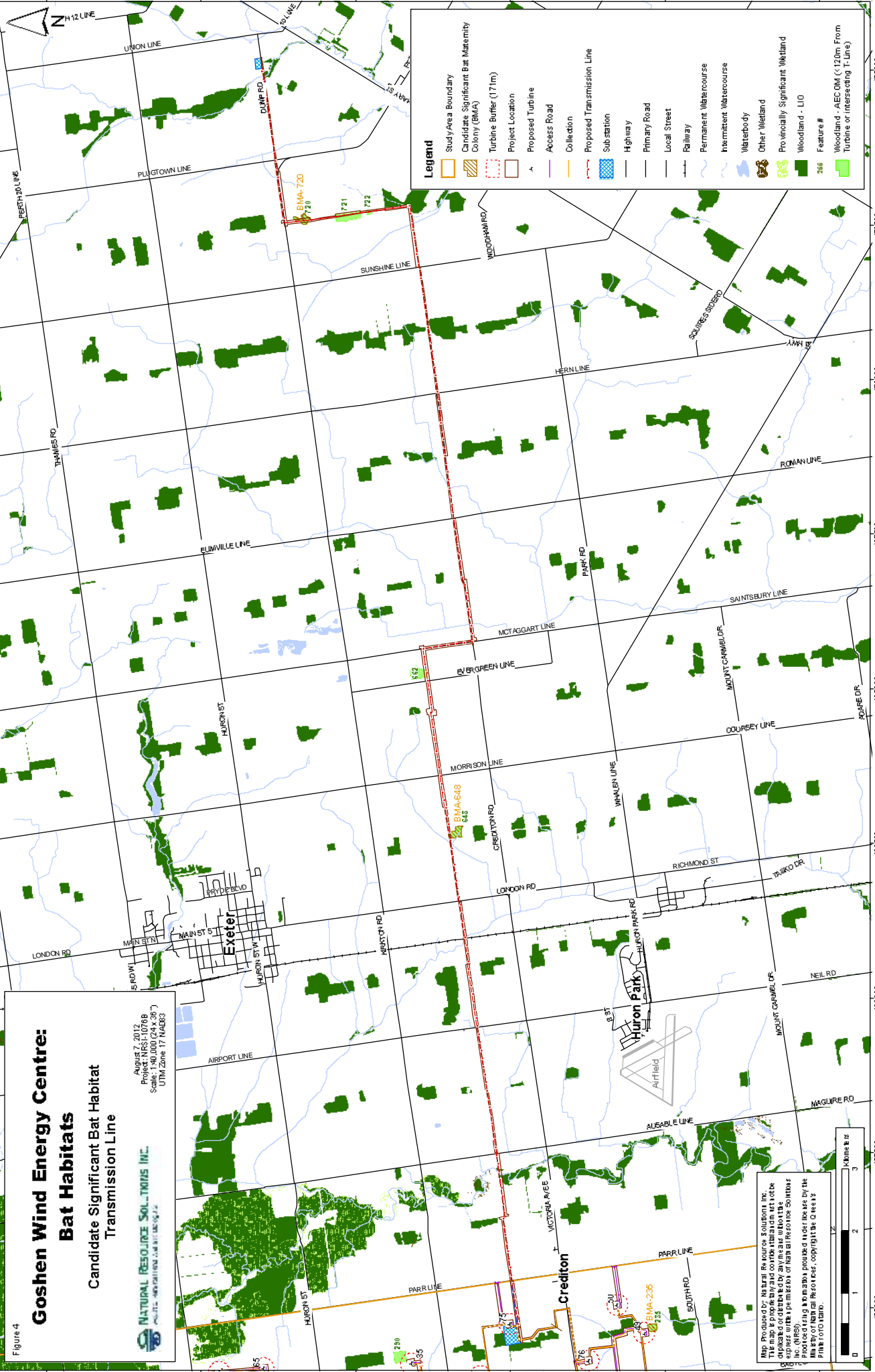
## Candidate Significant Bat Habitat Transmission Line

August 7, 2012  
Project: N651-10768  
Scale: 1:40,000 (24" x 36")  
UTM Zone 17 NAD83



Figure 4

- Legend**
- Study Area Boundary
  - Candidate Significant Bat Maturity Colony (BMA)
  - Turbine Buffer (77m)
  - Project Location
  - Proposed Turbine
  - Access Road
  - Collection
  - Proposed Transmission Line
  - Substation
  - Highway
  - Primary Road
  - Local Street
  - Railway
  - Permanent Watercourse
  - Intermittent Watercourse
  - Waterbody
  - Other Wetland
  - Provincially Significant Wetland
  - Woodland - L10
  - Feature #
  - Woodland - AEC DM (< 120m From Turbine or intersecting T-Line)



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#### 4.3 Site Investigation Summary

NRSI did not identify any candidate bat hibernacula in the vicinity of the Goshen Wind Energy Centre. However, 17 candidate significant bat maternity roost habitats were identified in woodlands found within 120m of proposed wind turbines and 2 candidate significant bat maternity roost habitats were found that are proposed to be overlapped by the transmission line. These are summarized in Table 7 below.

**Table 7. Summary of Candidate Bat Habitats within 120m of or overlapped by the Goshen Wind Energy Centre**

Wildlife Habitat ID	Area ID	Distance to Closest Turbine (from blade tip) (m)	Evaluation of Significance Required (Y/N)
<b>Wind Energy Centre Habitats</b>			
BMA-177	177	42	Yes
BMA-189	189	41	Yes
BMA-215	215	37	Yes
BMA-229	229	43	Yes
BMA-235	235	32	Yes
BMA-236	236	32	Yes
BMA-242	242	56	Yes
BMA-249	249	116	Yes
BMA-267	267	43	Yes
BMA-282	282	106	Yes
BMA-285	285	83	Yes
BMA-326	326	37	Yes
BMA-342	342	117	Yes
BMA-352	352	102	Yes
BMA-358	358	77	Yes
BMA-372	372	59	Yes
BMA-757	757	24	Yes
<b>Transmission Line Habitats (overlapped by proposed infrastructure)</b>			
BMA-648	648	Overlapping	Yes
BMA-720	720	Overlapping	Yes

## 5.0 Evaluation of Significance

In accordance with the REA Regulation, NRSI biologists conducted field surveys to evaluate the significance of the 19 candidate bat maternity colonies identified as part of the site investigation. The evaluation of significance followed bat monitoring protocol that was current at the time of the field investigations, *Bats and Bat Habitats: Guidelines for Wind Power Projects* (OMNR 2010b).

### 5.1 Evaluation of Significance Methods

#### 5.1.1 Staff Roles

The requirements of the REA Regulation indicate that the name and qualifications of all staff participating in the evaluation of significance should be included. As a result, the qualifications and roles of all staff participating in the evaluations of significance at the Goshen Wind Energy Centre have been outlined in the following sections. Qualifications of staff that also assisted in the site investigation are listed in Section 4.1.

#### Andrew G. Ryckman, B.Sc.

Andrew's role in the project was to act as the project manager, overseeing all aspects of the evaluation of significance, including all associated field work and reporting. Andrew reviewed photos and habitat descriptions of potentially significant habitats, provided quality assurance screening for species identification of recorded calls, and provided input into determinations of significance.

#### Christy Humphrey, B.E.S.

Christy organized field work to be conducted for the evaluation of significance, as well as conducted evening visual surveys and set up and maintained equipment for through-the-night surveys. Christy also interpreted the results of surveys to determine significance, and reported the results for the evaluation of significance.

#### Andrew Dean, B.E.S.

Andrew conducted evening visual surveys and maintained equipment for through-the-night surveys.

#### Ashley Nathan, M.S.

Ashley conducted evening visual surveys and set up and maintained equipment for through-the-night surveys. She also assisted in the analysis of data.

#### Gina MacVeigh, F.W.T.

Gina is a Biologist with over 5 years of work experience in the environmental field. Her areas of expertise are fish habitat surveys, aquatic habitat mapping, and fish community assessments, but she also has experience conducting and



assisting with terrestrial surveys, including bat monitoring, winter moose habitat surveys, deer habitat and movement surveys, vegetation inventories, salamander and anuran trapping surveys, and habitat assessments and marking of turtle Species at Risk.

Gina conducted evening visual surveys and maintained equipment for through-the-night surveys.

Kaitlin N. Powers, B.E.S.

Kaitlin conducted evening visual surveys and maintained equipment for through-the-night surveys.

Mike W. Wolosinecky, B.E.S.

Mike conducted evening visual surveys and set up and maintained equipment for through-the-night surveys. He also assisted with the analysis of acoustic data.

Patrick Deacon, B.E.S.

Patrick conducted evening visual surveys and set up and maintained equipment for through-the-night surveys.

W. Graham Wright, B.E.S.

Graham is a Terrestrial and Wetland Biologist and a graduate of the University of Waterloo with a Bachelor of Environmental Studies. He has a combined year of experience working both as a field technician and as an Information Officer working with protected areas and Species At Risk in Ontario. He has also participated in various terrestrial and aquatic environmental monitoring projects.

Graham conducted evening visual surveys and maintained equipment for through-the-night surveys.

### 5.1.2 Evaluation Dates

In accordance with the REA Regulation, NRSI recorded dates, times, duration, and weather conditions during each evaluation of significance. This information has been summarized in the following table, and detailed in Appendix I. Key staff leading evaluations of significance on each date are provided in bold font in this table. Detailed descriptions of staff roles and qualifications can be found in Section 5.1.1 of this report.

**Table 8. Evaluation of Significance Survey Summary**

Purpose	General Methods	Wildlife Habitat ID	Area ID	Station	Date	Time (24hrs)	Duration	Staff
Quantitative assessment of bats at candidate maternity roosts	Evening Visual Survey	BMA-189	189	BAT-002	June 9, 2010	22:38 – 22:48	10 min	<b>Pat Deacon</b> Megan Anevich
	Evening Visual Survey	BMA-189 BMA-236 BMA-215 BMA-342	189 236 215 342	BAT-002 BAT-003 BAT-004 BAT-005	June 10, 2010	21:11 – 23:07	1hr 56 min	<b>Pat Deacon</b> , Megan Anevich
	Evening Visual Survey	BMA-189 BMA-236 BMA-215 BMA-342	189 236 215 342	BAT-002 BAT-003 BAT-004 BAT-005	June 13, 2010	22:12 – 00:08	1hr 56 min	<b>Pat Deacon</b> Alyson Smith
	Evening Visual Survey	BMA-189 BMA-236 BMA-215 BMA-342 BMA-757	189 236 215 342 757	BAT-002 BAT-003 BAT-004 BAT-005 BAT-010	June 16, 2010	21:28 – 00:49	3hrs 21 min	<b>Pat Deacon</b> Alyson Smith
	Evening Visual Survey	BMA-189 BMA-236 BMA-215 BMA-342 BMA-757	189 236 215 342 757	BAT-002 BAT-003 BAT-004 BAT-342 BAT-010	June 17, 2010	21:53 – 00:10	2hrs 17 min	<b>Pat Deacon</b> Alyson Smith
	Evening Visual Survey	BMA-189 BMA-215 BMA-342 BMA-757	189 215 342 757	BAT-002 BAT-004 BAT-005 BAT-010	June 20, 2010	22:06 – 00:42	2hrs 36 min	<b>Ashley Nathan</b> <b>Pat Deacon</b>
	Acoustic Through-the-night Monitoring: Station Maintenance	BMA-189	189	BAT-002	June 21, 2010	17:45 – 18:15	30 min	<b>Ashley Nathan</b> <b>Pat Deacon</b>
	Acoustic Through-the-night Monitoring: Station Maintenance	BMA-342 BMA-189 BMA-236 BMA-342 BMA-757	342 189 236 342 757	BAT-005 BAT-002 BAT-003 BAT-005 BAT-010	June 22, 2010	13:34 – 14:00 22:04 – 00:51	26 min 2hrs 47 min	<b>Ashley Nathan</b> <b>Pat Deacon</b> Megan Anevich

Acoustic Through-the-night Monitoring: Station Maintenance	BMA-189 BMA-236 BMA-215 BMA-342 BMA-757	189 236 215 342 757	BAT-002 BAT-003 BAT-004 BAT-005 BAT-010	June 23, 2010	11:32 – 11:45 21:16 – 00:09	13 min 2hrs 53 min	<b>Pat Deacon</b> Megan Anevich
Acoustic Through-the-night Monitoring: Station Maintenance	BMA-236 BMA-342	236 342	BAT-003 BAT-005	June 24, 2010	10:37 – 12:45 21:09 – 00:17	2 hrs 8 min 3 hrs 8 min	<b>Pat Deacon</b> Megan Anevich
Evening Visual Survey	BMA-189 BMA-236 BMA-215 BMA-342 BMA-757	189 236 215 342 757	BAT-002 BAT-003 BAT-004 BAT-005 BAT-010	June 25, 2010	12:00 – 12:15	15 min	<b>Ashley Nathan</b> <b>Pat Deacon</b>
Acoustic Through-the-night Monitoring: Station Maintenance	BMA-189	189	BAT-002	June 26, 2010	11:35 – 12:40	1 hr 5 min	<b>Ashley Nathan</b> <b>Pat Deacon</b>
Acoustic Through-the-night Monitoring: Station Maintenance	BMA-236 BMA-342	236 342	BAT-003 BAT-005	June 27, 2010	11:40 – 12:00	20 min	<b>Ashley Nathan</b> <b>Pat Deacon</b>
Acoustic Through-the-night Monitoring: Station Maintenance	BMA-189	189	BAT-002	June 28, 2010	00:18 – 00:35 10:50 – 11:10	17 min 20 min	<b>Ashley Nathan</b> <b>Pat Deacon</b>
Acoustic Through-the-night Monitoring: Station Maintenance	BMA-236 BMA-342	236 342	BAT-003 BAT-005	June 29, 2010	13:47 – 14:15	28 min	<b>Ashley Nathan</b> Alyson Smith
Acoustic Through-the-night Monitoring: Station Maintenance	BMA-215	215	BAT-004				

Acoustic Through-the-night Monitoring: Station Maintenance	BMA-236 BMA-342	236 342	BAT-003 BAT-005	June 30, 2010	08:30 – 09:30	1 hr	<b>Ashley Nathan</b> Alyson Smith
Acoustic Through-the-night Monitoring: Station Maintenance	BMA-236 BMA-342	236 342	BAT-003 BAT-005	July 6, 2010	14:42 – 15:05	23 min	<b>Ashley Nathan</b> Kevin Dance
Acoustic Through-the-night Monitoring: Station Maintenance	BMA-215 BMA-757	215 757	BAT-004 BAT-010	July 8, 2010	16:09 – 17:45	1hr 36 min	<b>Ashley Nathan</b> Kevin Dance
Evening Visual Survey	BMA-236 BMA-342	236 342	BAT-003 BAT-005		23:27 – 23:52	25 min	
Acoustic Through-the-night Monitoring: Station Maintenance	BMA-215	215	BAT-004	July 9, 2010	16:24 – 17:25	59 min	<b>Ashley Nathan</b> Kevin Dance
Evening Visual Survey	BMA-342 BMA-757	342 757	BAT-005 BAT-010		23:16 – 00:50	1 hr 34 min	
Evening Visual Survey	BMA-229	229	BAT-011	June 25, 2011	21:40 – 21:50	10 min	<b>Christy</b> <b>Humphrey</b> <b>Mike</b> <b>Wolosinecky</b>
Acoustic Through-the-night Monitoring: Station Maintenance	BMA-229 BMA-326	229 326	BAT-011 BAT-012	June 26, 2011	12:30 – 15:45	3hrs 15 min	<b>Christy</b> <b>Humphrey</b> <b>Mike</b> <b>Wolosinecky</b> <b>Kaitlin Powers</b> <b>Andrew Dean</b>
Evening Visual Survey	BMA-326	326	BAT-012		22:09 – 22:19	10 min	
Acoustic Through-the-night Monitoring: Station Maintenance	BMA-177	177	BAT-013	June 27, 2011	14:25 – 15:15	50 min	<b>Mike</b> <b>Wolosinecky</b> <b>Andrew Dean</b>
Evening Visual Survey	BMA-229 BMA-326 BMA-177	229 326 177	BAT-011 BAT-012 BAT-013		21:17 – 23:05	1hr 48 min	

Evening Visual Survey	BMA-229 BMA-326 BMA-177	229 326 177	BAT011 BAT012 BAT013	June 28, 2011	21:20 – 22:56	1hr 36 min	<b>Mike Wolosinecky</b> <b>Andrew Dean</b>
Evening Visual Survey	BMA-229 BMA-326 BMA-177	229 326 177	BAT011 BAT012 BAT013	June 29, 2011	21:26 – 23:05	1hr 39 min	<b>Mike Wolosinecky</b> Carolyn Knapper
Acoustic Through-the-night Monitoring: Station Maintenance	BMA-229 BMA-326 BMA-177	229 326 177	BAT011 BAT012 BAT013	July 1, 2011	16:00 – 17:45 11:30 – 12:15	1hr 45 min 45 min	<b>Kaitlin Powers</b> Katherine Clapham <b>Gina MacVeigh</b> Brydon MacVeigh
Evening Visual Survey	BMA-229 BMA-326 BMA-177	229 326 177	BAT011 BAT012 BAT013		21:15 – 23:02	1hr 47 min	<b>Andrew Dean</b> Shawn MacDonald
Evening Visual Survey	BMA-229 BMA-326 BMA-177	229 326 177	BAT011 BAT012 BAT013	July 2, 2011	21:50 – 23:36	1hr 46 min	<b>Andrew Dean</b> Shawn MacDonald
Evening Visual Survey	BMA-229 BMA-326 BMA-177	229 326 177	BAT011 BAT012 BAT013	July 3, 2011	21:21 – 22:56	1hr 35 min	<b>Mike Wolosinecky</b> <b>Andrew Dean</b>
Acoustic Through-the-night Monitoring: Station Maintenance	BMA-229 BMA-326	229 326	BAT011 BAT012	July 4, 2011	14:10 – 15:40	1hr 30 min	<b>Mike Wolosinecky</b> <b>Andrew Dean</b>
Evening Visual Survey	BMA-177	177	BAT013		23:03 – 23:13	10 min	
Acoustic Through-the-night Monitoring: Station Maintenance	BMA-177	177	BAT013	July 5, 2011	13:07 – 14:35	1 hr 28 min	<b>Graham Wright</b> Justin Becker
Evening Visual Survey	BMA-326	326	BAT012	July 6, 2011	23:47 – 23:57	10 min	<b>Kaitlin Powers</b> Charlotte Moore
Acoustic Through-the-night Monitoring: Station Maintenance	BMA-229 BMA-326	229 326	BAT011 BAT012	July 7, 2011	13:08 – 14:25	1hr 17 min	<b>Graham Wright</b> Justin Becker
	BMA-177	177	BAT013		22:00 – 22:10	10 min	<b>Andrew Dean</b>

Evening Visual Survey										<b>Kaitlin Powers</b>
Acoustic Through-the-night Monitoring: Station Maintenance	BMA-177	177	BAT013	July 8, 2011	13:38 – 14:00 21:18 – 22:52	22 min 1hr 34 min	<b>Graham Wright</b> Justin Becker			
Evening Visual Survey	BMA-229 BMA-326 BMA-177	229 326 177	BAT011 BAT012 BAT013	July 9, 2011	21:10 – 22:45	1hr 35 min	<b>Graham Wright</b> Justin Becker			
Evening Visual Survey	BMA-229 BMA-326 BMA-177	229 326 177	BAT011 BAT012 BAT013	July 10, 2011	22:49 – 00:23	1hr 34 min	<b>Mike Wolosinecky</b> Justin Becker			
Acoustic Through-the-night Monitoring: Station Maintenance	BMA-326	326	BAT012	July 11, 2011	16:40 – 17:00	20 min	<b>Kaitlin Powers</b> Sophie Gibbs			
Acoustic Through-the-night Monitoring: Station Maintenance	BMA-229	229	BAT011	July 12, 2011	15:20 – 16:15	55 min	<b>Kaitlin Powers</b> <b>Mike Wolosinecky</b>			
Acoustic Through-the-night Monitoring: Station Removal	BMA-326	326	BAT012	July 13, 2011	14:30 – 15:00	30 min	<b>Kaitlin Powers</b> <b>Mike Wolosinecky</b>			

### 5.1.3 Evaluating Bat Maternity Colonies

### 5.1.4 Through-the-Night Acoustic Bat Monitoring

According to the 2010 guidance document *Bats and Bat Habitats: Guidelines for Wind Power Projects* (OMNR 2010), NRSI biologists conducted through-the-night acoustic bat monitoring at 8 locations in woodlands within 120m of proposed wind turbines in 2010 and 2011 (see Figure 5). A total of 11 potential bat habitats were introduced into the project area as a result of project changes after the 2011 monitoring season had completed, and could not be surveyed during the appropriate monitoring season prior to the completion of this report. These habitats will be evaluated prior to construction. No woodlands proposed to be overlapped by the transmission line were monitored in 2010 or 2011, and as a result are not displayed on Figure 5. The guidance document indicates that monitoring should be conducted beginning at dusk and continuing for 5 hours. NRSI conducted this monitoring on a total of 16 and 14 nights for 2010 and 2011 respectively, totaling more than 713 hours of monitoring data. In 2010 monitoring began on the night of June 21/22 and lasted through the night of July 9/10. In 2011 monitoring began on the night of June 26/27 and lasted through the night of July 12/13. On some of the monitoring nights, monitoring occurred at more than one station on the same night, contributing to an overall 42 and 40 nights of monitoring in 2010 and 2011, respectively. Detailed information on monitoring effort can be seen in Appendix I. While monitoring was typically conducted for more than 5 hours each night, the data was analyzed using the results from dusk until 5 hours after (2000–0100hrs).

On each monitoring night, a Pettersson D240X ultrasound bat detector was paired with a portable computer to record all bat activity. This monitoring system was powered by gel deep cycle batteries and left to record between 2-5 nights of data at a time. The portable computer recorded wave files at a moderate sampling rate of 22.2 kHz/sec, which typically provides ample sonogram resolution to identify the call sonograms of Ontario's bat species.

Each passive monitoring station was designed to record both Heterodyne and Time Expansion data simultaneously to allow for a full analysis of activity in the vicinity of monitoring stations. Although Time Expansion records broadband data, the Heterodyne

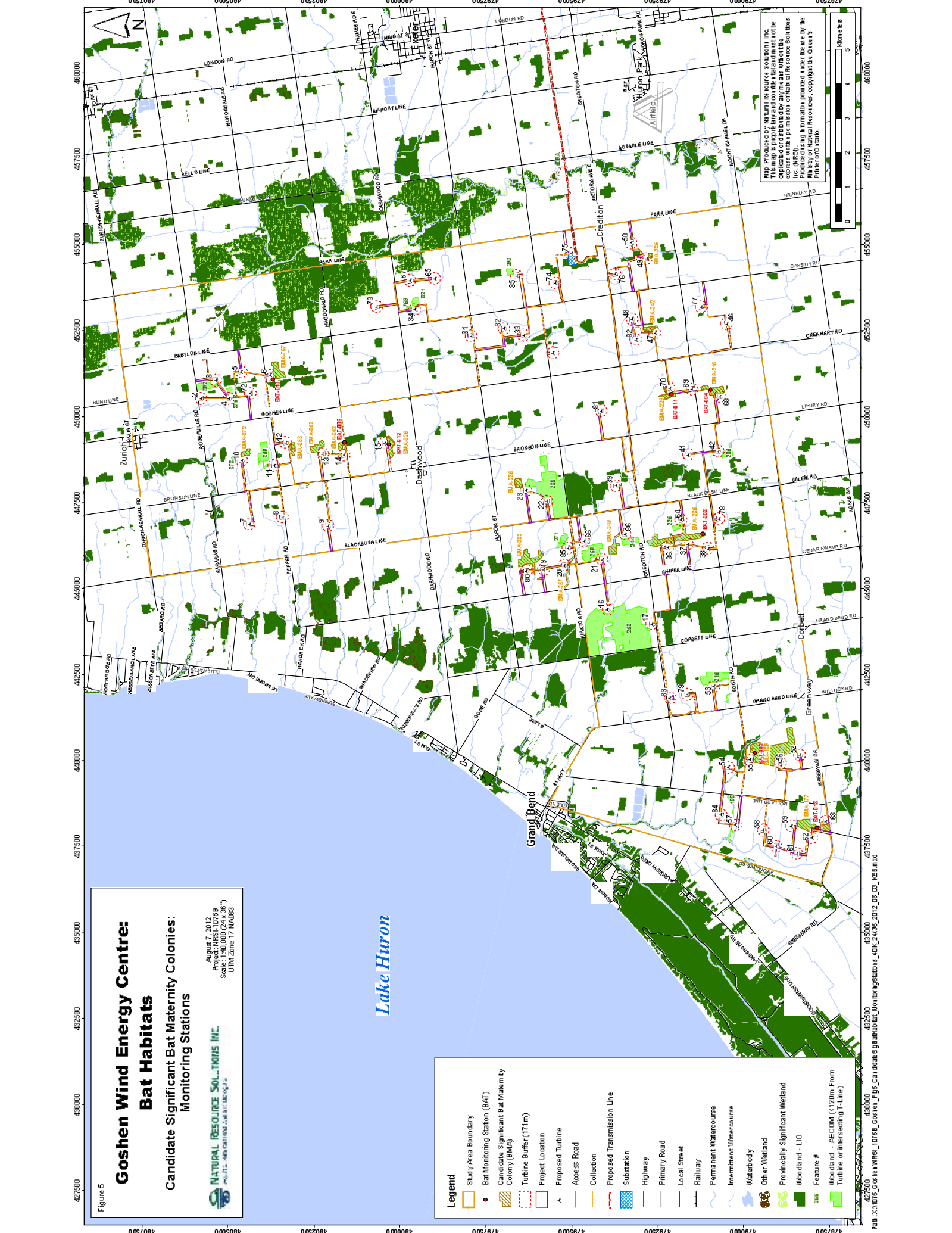
# Goshen Wind Energy Centre: Bat Habitats

## Candidate Significant Bat Maternity Colonies: Monitoring Stations

August 7, 2012  
Project: NRS1-10768  
Scale: 1:40,000 (2" x 30")  
UTM Zone 17 NAD83



Legend	
[Orange outline]	Study Area Boundary
[Red dot]	Bat Monitoring Station (BMS)
[Yellow hatched box]	Candidate Significant Bat Maternity Colony (BMA)
[Red dashed box]	Turbine Buffer (171m)
[Red outline]	Project Location
[A]	Proposed Turbine
[Purple line]	Access Road
[Blue dashed line]	Collection
[Red dashed line]	Proposed Transmission Line
[Blue hatched box]	Substation
[Black line]	Highway
[Grey line]	Primary Road
[Thin black line]	Local Street
[Black line with cross-ticks]	Railway
[Blue wavy line]	Permanent Watercourse
[Blue dashed wavy line]	Intermittent Watercourse
[Blue hatched box]	Waterbody
[Green hatched box]	Other Wetland
[Light green hatched box]	Provincially Significant Wetland
[Dark green hatched box]	Woodland - L10
[Green hatched box]	256
[Green hatched box]	Woodland - AECOM (<120m From Turbine or intersecting T-Line)



Map Produced by: Natural Resource Solutions Inc.  
The map is proprietary and contains information that is the  
property of Natural Resource Solutions Inc. (NRSI).  
Produced using information provided to users by the  
client. All rights reserved. Copyright © 2012  
NRSI PHOTO DATA



setting typically records narrowband data within approximately 5kHz of the recording frequency. Based on call frequencies of Ontario bat species, a recording frequency of 35kHz was chosen to provide the most accurate representation of bat abundance through the study area. Representative calls of all of Ontario's bat species demonstrate that at least some of the call will overlap with the 30-40kHz detectable range. It is possible that some distant or uncharacteristic calls were not picked up by the Heterodyne recordings, however when paired with the broadband recordings of the Time Expansion data, this data is expected to give an accurate representation of the bat activity and species found at each monitoring station.

#### 5.1.5 Visual Bat Surveys

In addition to the passive monitoring described above, active visual and acoustic monitoring was undertaken to establish if any woodlands monitored may contain bat maternity colonies. These surveys occurred at a total of 5 and 3 locations in 2010 and 2011, respectively, and were conducted 40 and 33 times during the 2010 and 2011 monitoring seasons, respectively. Visual surveys were conducted at the same location as through-the-night acoustic monitoring stations, and can be seen on Figure 5. Surveys were conducted between sunset and midnight, and consisted of ten minute surveys at each point count location. During each survey, the observer used the manual trigger setting of the Pettersson D240X ultrasound detector, paired with an audio recorder, to record bat calls while listening to and observing the total number of bat passes during the survey.

The Heterodyne and species data collected from these visual monitoring surveys have been analyzed separately from the data collected from through-the-night acoustic monitoring.

**Table 9. Bat Habitat Evaluation of Significance Criteria**

Concentration Area	Standards of Significance
Bat Maternity Colony	Significant maternity colonies include at least 20 northern long-eared bats ( <i>Myotis septentrionalis</i> ) or little brown bats ( <i>Myotis lucifugus</i> ), 10 big brown bats ( <i>Eptesicus fuscus</i> ), or 5 adult, female, silver-haired bats ( <i>Lasionycteris noctivagans</i> ) (OMNR 2011a).
	NRSI has used acoustic monitoring passage rates of 1.0 passes/hr, 2.0 passes/hr and 4.0 passes/hr to represent baseline values for candidate SWH. These values roughly correspond to a maximum of 5, 10 or 20 individual bats per night (1.0 passes/hr, 2.0 passes/hr or 4.0 passes/hr through 5 hours of flight time). These values of 5, 10 and 20 individual bats will assist with the identification of significant bat maternity colony habitat for silver-haired bats ( <i>Lasionycteris noctivagans</i> ) and the two most common bat species in Ontario, big brown bat ( <i>Eptesicus fuscus</i> ), and little brown bat ( <i>Myotis lucifugus</i> ), respectively.

NRSI has used overall passage rates and species data obtained from acoustic monitoring to estimate the number of individuals of a species found at candidate maternity colony habitats. The equation utilized to determine the number of individuals present is as follows:

$$I = 5P \times S_p$$

- where
- I = number of individuals of a species
  - P= average passage rate
  - S<sub>p</sub>= proportion of overall species composition

The average passage rate is multiplied by 5 to represent the estimated total number of individuals present in 5 hours (the acoustic monitoring period). The results of this analysis are described below.

## 5.2 Evaluation of Significance Results

In accordance with the REA Regulation, the presence of candidate significant bat maternity colonies within the project area has been reviewed by NRSI biologists. NRSI has used the results of the site investigation to evaluate the significance of each of the candidate significant bat maternity colonies identified within the project area. This evaluation of significance has been conducted using evaluation criteria outlined in

applicable guidance documents, specifically the Ecoregion Criteria Schedules addendum to the Significant Wildlife Habitat Technical Guide, for Ecoregion 6E and 7E (OMNR 2011a).

### 5.2.1 Bat Maternity Colonies

NRSI biologists have identified a total of 17 candidate significant bat maternity colony habitats located within 120m of wind turbines for the Goshen Wind Energy Centre, and 2 candidate significant bat maternity colony habitats proposed to be overlapped by the transmission line. The results of monitoring that has occurred at 7 of these candidate bat maternity colonies which are within 120m of proposed wind turbines are indicated below.

#### BMA-177 (BAT-013)

A total of 22 passes were recorded in 14 nights of acoustic monitoring at BAT-013. The number of distinct passes recorded on a given night varied from 0 to 15. It had an overall passage rate of 0.31 passes/hr. A total of 4 species calls were recorded, 2 of which were identified as eastern red bat, 1 as a northern long-eared bat, and the fourth call was identified as an unidentifiable bat in the 40kHz range, without enough detail to further narrow the species.

A total of 2 passes were recorded in 11 ten-minute visual point count surveys, with the number of passes observed during point counts ranging from 0 to 1. This results in an average passage rate of 1.09 passes/hour. No species calls were obtained from visual monitoring

#### BMA-189 (BAT-002)

A total of 30 passes were recorded in 6 nights of acoustic monitoring at BAT-002. The number of passes recorded on a given night varied from 0 to 18. It had an overall passage rate of 1.00 passes/hr. One species call was obtained from through-the-night monitoring at this station, which was identified to the 30kHz range, which represents the call of either a big brown or a silver-haired bat.

A total of 27 passes were recorded in 8 ten-minute visual point count surveys, with the number of passes observed during point counts ranging from 0 to 13. This results in an average passage rate of 20.25 passes/hour. A total of 8 calls were recorded during visual surveys, 5 of which were identified to the 40kHz range, without enough detail to further narrow down the species.

BMA-215 (BAT-004)

A total of 1 pass was recorded in 9 nights of acoustic monitoring at BAT-004. As a result, it had an overall passage rate of 0.04 passes/hr. No species calls were obtained from acoustic monitoring at this station.

A total of 3 passes were recorded in 7 ten-minute visual point count surveys, with the number of passes observed during point counts ranging from 0 to 2. This results in an average passage rate of 2.57 passes/hour. A total of 2 calls were recorded during visual surveys, both of which were identified to the 30kHz range (big brown or silver-haired bat).

BMA-229 (BAT-011)

A total of 1178 passes were recorded in 14 nights of acoustic monitoring at BAT-011. The number of passes recorded on a given night varied from 0 to 212. It had an overall passage rate of 17.58 passes/hr. The vast majority of bat calls (96%) were identified to the 30kHz range, which represents the call of either a big brown or a silver-haired bat.

A total of 59 passes were recorded in 11 ten-minute visual point count surveys, with the number of passes observed during point counts ranging from 0 to 34. This results in an average passage rate of 32.18 passes/hour. A total of 10 calls were recorded during visual surveys, all of which were identified to the 30kHz range (big brown or silver-haired bat).

BMA-236 (BAT-003)

A total of 20 passes were recorded in 12 nights of acoustic monitoring at BAT-003. The number of passes recorded on a given night varied from 0 to 8. It had an overall passage rate of 0.33 passes/hr. Two species calls were obtained from acoustic monitoring at this station, both of which were identified as belonging to a *Myotis* species.

A total of 14 passes were recorded in 8 ten-minute visual point count surveys, with the number of passes observed during point counts ranging from 0 to 5. This results in an average passage rate of 10.50 passes/hour. A total of 6 calls were recorded during visual surveys, and were identified to the 30kHz range (big brown or silver-haired bat), the 40kHz range, and silver-haired bat.

BMA-326 (BAT-012)

A total of 326 passes were recorded in 12 nights of acoustic monitoring at BAT-012. The number of passes recorded on a given night varied from 0 to 52. It had an overall passage rate of 5.43 passes/hr. The majority of bat calls (88%) were identified to the 30kHz range, which represents the call of either a big brown or a silver-haired bat.

A total of 11 passes were recorded in 11 ten-minute visual point count surveys, with the number of passes observed during point counts ranging from 0 to 4. This results in an average passage rate of 6.00 passes/hour. A total of 2 calls were recorded during visual surveys, one of which was identified to the 30kHz range (big brown or silver-haired bat), and one of which was identified as a *Myotis* species.

#### BMA-342 (BAT-005)

A total of 103 passes were recorded in 12 nights of acoustic monitoring at BAT-005. The number of passes recorded on a given night varied from 0 to 25. It had an overall passage rate of 1.72 passes/hr. The majority of bat calls (78%) were identified to the 30kHz range, which represents the call of either a big brown or a silver-haired bat.

A minimum of 98 passes were recorded in 10 ten-minute visual point count surveys, with the number of passes observed during point counts ranging from 0 to over 59. This results in a minimum average passage rate of 58.8 passes/hour. A total of 26 calls were recorded during visual surveys, the majority of which (88%) were identified to the 30kHz range (big brown or silver-haired bat).

#### BMA-757 (BAT-010)

A total of 131 passes were recorded in 3 nights of acoustic monitoring at BAT-010. The number of passes recorded on a given night varied from 22 to 71. It had an overall passage rate of 8.73 passes/hr. A total of 89 calls were obtained from this station, the vast majority of which (91%) were identified to the 30kHz range, which represents the call of either a big brown or a silver-haired bat.

A total of 23 passes were recorded in 7 ten-minute visual point count surveys, with the number of passes observed during point counts ranging from 0 to 13. This results in an average passage rate of 19.71 passes/hour. A total of 15 calls were recorded during visual surveys, the majority of which were identified to the 30kHz range (big brown or silver-haired bat).

The passage rates for visual surveys generally correspond to the results of acoustic monitoring, i.e., those stations with lower acoustic passage rates also had lower visual passage rates. However, the passage rates for visual surveys have not been used to specifically identify the number of individuals. While the trends in visual survey results generally reflect the results of acoustic monitoring, activity recorded during the 10-minute visual survey period does not necessarily represent typical activity of bats which are residing in close proximity to the station location (such as bats which would be exiting or entering a maternity colony), but may include bats which forage in the area on a particular night. Acoustic monitoring allows for the continual collection of data, and records bats foraging near the station location, but also bats which are entering or exiting a maternity colony at the station. Bats were not directly observed to enter or exit a potential maternity colony during visual surveys at any of the candidate habitats evaluated.

For instances where no calls were obtained from acoustic monitoring to allow for species identification, the proportion of species present during visual surveys (combined with the passage rate acquired from acoustic monitoring) was utilized to interpret the number of individuals of a species present.

**Table 10. Bat Monitoring Results for the Goshen Wind Energy Centre**

Wildlife Habitat ID	Station	Natural Feature ID	Acoustic Through-the-night Surveys			Visual Surveys	
			Average Passage Rate (P) (passes/hr)	Species Composition (S <sub>p</sub> )	No. of Individuals I = 5P x S <sub>p</sub>	Average Passage Rate (passes/hr)	Species Composition
BMA-177	BAT-013	177	0.31	Total # calls: 4 Eastern Red: 50% 40kHz: 25% N. Long-eared: 25%	Total Individuals: 1.55 (3) Eastern Red: 0.78 (1) 40kHz: 0.39 (1) N. Long-eared: 0.39 (1)	1.09	No calls obtained
BMA-189	BAT-002	189	1.00	Total # calls: 1 30kHz (BB/SH): 100%	Total individuals: 5.00 30kHz (BB/SH): 5.00	20.25	Total # calls: 8 40kHz: 62.5% Silver-haired: 12.5% Little Brown: 12.5% Myotis sp.: 12.5%
BMA-215	BAT-004	215	0.04	No calls obtained	Total Individuals: 0.2 (1) <i>Species proportions used from Visual Surveys:</i> 30kHz (BB/SH): 0.2 (1)	2.57	Total # calls: 2 30kHz (BB/SH): 100%
BMA-229	BAT-011	229	17.58	Total # calls: 535 30kHz (BB/SH): 96% Hoary: 2% Silver-haired: 2%	Total Individuals: 87.9 30kHz (BB/SH): 84.38 Hoary: 1.76 Silver-haired: 1.76	32.18	Total # calls: 10 30kHz (BB/SH): 100%
BMA-236	BAT-003	236	0.33	Total # calls: 2 Myotis sp.: 100%	Total Individuals: 1.65 Myotis sp.: 1.65	10.50	Total # calls: 6 30kHz (BB/SH): 50% 40kHz: 17% Silver-haired: 33%
BMA-326	BAT-012	326	5.43	Total # calls: 130 30kHz (BB/SH): 88% Big Brown: 6% Eastern Red: <1% Hoary: <1% Silver-haired: 2% Myotis sp.: 2% N. Long-eared: <1%	Total Individuals: 27.15 30kHz (BB/SH): 23.89 Big Brown: 1.63 Eastern Red: 0.21 (1) Hoary: 0.21 (1) Silver-haired: 0.42 (1) Myotis sp.: 0.63 (1) N. Long-eared: 0.21 (1)	6.00	Total # calls: 2 30kHz (BB/SH): 50% Myotis sp.: 50%

BMA-342	BAT-005	342	1.72	Total # calls: 9 30kHz (BB/SH): 78% Hoary: 22%	Total Individuals: 8.6 30kHz (BB/SH): 6.71 Hoary: 1.89	58.80	Total # calls: 26 30kHz (BB/SH): 88% Hoary: 3.8% Eastern Red: 3.8% Myotis sp.: 3.8%
BMA-757	BAT-010	757	8.73	Total # calls: 89 30kHz (BB/SH): 91% 40kHz: <1% Hoary: 8%	Total Individuals: 43.65 30kHz (BB/SH): 39.72 40kHz: 0.44 (1) Hoary: 3.49	19.71	Total # calls: 15 30kHz (BB/SH): 73% 40kHz: 17% Silver-haired: 33%



Table 11. Evaluation of Significance for Bat Habitat within 120m of the Goshen Wind Energy Centre

Wildlife Habitat ID	Feature ID	Size (ha)	Composition	Distance to Wind Turbine (from blade tip) (m)	Evaluation Methods	Evaluation Results	Provincial Criteria	Significance	Figure	EIS Required (Y/N)
<b>Wind Energy Centre Habitats</b>										
BMA-177	177	17.4	Young white elm, green ash, and Freeman's maple swamp. Towards the north end, there is an older Freeman's maple swamp, consisting of trees approximately 60cm dbh.	42	Acoustic Monitoring	<b>Acoustic Results:</b> 1 Eastern Red Bat 1 Eastern Red or Tricoloured Bat 1 N. Long-eared Bat	20 N. Long-eared Bats 20 Little Brown Bats 10 Big Brown Bats 5 adult, female Silver-haired Bats	Not Significant	N/A	No
BMA-189	189	51.6	Sugar maple-hardwood deciduous forest, shagbark hickory deciduous forest, and some areas of white elm, ash, and hawthorn.	40 (T55), 60 (T52)	Acoustic Monitoring	<b>Acoustic Results:</b> 5.00 Big Brown or Silver-haired Bats	20 N. Long-eared Bats 20 Little Brown Bats 10 Big Brown Bats 5 adult, female Silver-haired Bats	Significant	6	Yes
BMA-215	215	12.5	White ash-basswood forest, sugar maple-hardwood forest, and Freeman's maple deciduous swamp.	37	Acoustic Monitoring	<b>Acoustic Results:</b> 1 Big Brown or Silver-haired Bat	20 N. Long-eared Bats 20 Little Brown Bats 10 Big Brown Bats 5 adult, female Silver-haired Bats	Not Significant	N/A	No
BMA-229	229	4.3	This forest is dominated by basswood, white elm, and sugar maple.	43	Acoustic Monitoring	<b>Acoustic Results:</b> 84.38 Big Brown or Silver-haired Bats 1.76 Hoary Bats 1.76 Silver-haired Bats	20 N. Long-eared Bats 20 Little Brown Bats 10 Big Brown Bats 5 adult, female Silver-haired Bats	Significant	6	Yes

BMA-235	235	1.6	A mid-age forest dominated by maple, with abundant basswood and rare black walnut and American beech.	32	Pre-construction Surveys Required	Not Evaluated	20 N. Long-eared Bats 20 Little Brown Bats 10 Big Brown Bats 5 adult, female Silver-haired Bats	Assumed Significant	6, 7	Yes
BMA-236	236	28.8	Green ash deciduous swamp, Freeman's maple swamp, fresh-moist hemlock mixed forest, moist shagbark hickory deciduous forest, oak-maple-hickory forest, and white ash deciduous forest.	28	Acoustic Monitoring	<b>Acoustic Results:</b> 1.74 Myotis sp.	20 N. Long-eared Bats 20 Little Brown Bats 10 Big Brown Bats 5 adult, female Silver-haired Bats	Not Significant	N/A	No
BMA-242	242	3.7	Abundant sugar maple and white ash, with occasional American beech, hop hornbeam, black cherry, blue beech, basswood, and white elm.	56	Pre-Construction Surveys Required	Not Evaluated	20 N. Long-eared Bats 20 Little Brown Bats 10 Big Brown Bats 5 adult, female Silver-haired Bats	Assumed Significant	6	Yes
BMA-249	249	7.8	Green ash deciduous swamp.	116	Pre-Construction Surveys Required	Not Evaluated	20 N. Long-eared Bats 20 Little Brown Bats 10 Big Brown Bats 5 adult, female Silver-haired Bats	Assumed Significant	6	Yes
BMA-267	267	5.1	A mid-age forest with abundant green ash and occasional basswood, sugar maple, ironwood, bur oak, and shagbark hickory.	43	Pre-Construction Surveys Required	Not Evaluated	20 N. Long-eared Bats 20 Little Brown Bats 10 Big Brown Bats 5 adult, female Silver-haired Bats	Assumed Significant	6	Yes

BMA-282	282	20.6	A mid-age forest with dominant maple, abundant white elm, American beech, and basswood.	106	Pre-Construction Surveys Required	Not Evaluated	20 N. Long-eared Bats 20 Little Brown Bats 10 Big Brown Bats 5 adult, female Silver-haired Bats	Assumed Significant	6	Yes
BMA-285	285	5.8	Abundant white ash, with plantations of white pine. Also contains occasional large-tooth aspen, white elm, white birch, blue beech, black cherry, and white spruce.	83	Pre-Construction Surveys Required	Not Evaluated	20 N. Long-eared Bats 20 Little Brown Bats 10 Big Brown Bats 5 adult, female Silver-haired Bats	Assumed Significant	6	Yes
BMA-326	326	8.3	This woodland is a recently logged sugar maple forest, with few trees >30cm dbh.	37	Acoustic Monitoring	<b>Acoustic Results: 23.89 Big Brown or Silver-haired Bats</b> 1.63 Big Brown Bats 1 Eastern Red Bat 1 Hoary Bat 1 Silver-haired Bat 1 Myotis sp. 1 N. Long-eared Bat	20 N. Long-eared Bats 20 Little Brown Bats 10 Big Brown Bats 5 adult, female Silver-haired Bats	Significant	6	Yes
BMA-342	342	2.8	A mature sugar maple-hickory deciduous forest.	117	Acoustic Monitoring	<b>Acoustic Results: 6.71 Big Brown or Silver-haired Bats</b> 1.89 Hoary Bats	20 N. Long-eared Bats 20 Little Brown Bats 10 Big Brown Bats 5 adult, female Silver-haired Bats	Significant	6	Yes
BMA-352	352	7.2	Dominant sugar maple, with occasional American beech, white ash, basswood, black cherry, and hop hornbeam.	102	Pre-Construction Surveys Required	Not Evaluated	20 N. Long-eared Bats 20 Little Brown Bats 10 Big Brown Bats 5 adult, female Silver-haired Bats	Assumed Significant	6	Yes

BMA-358	358	4.1	Abundant sugar maple and American beech, with occasional white ash, ironwood, black cherry, and white elm	77	Pre-Construction Surveys Required	Not Evaluated	20 N. Long-eared Bats 20 Little Brown Bats 10 Big Brown Bats 5 adult, female Silver-haired Bats	Assumed Significant	6	Yes
BMA-372	372	11.7	Dominant sugar maple, with occasional white ash, American beech, basswood, blue beech, hop hornbeam, and white elm.	24	Pre-Construction Surveys Required	Not Evaluated	20 N. Long-eared Bats 20 Little Brown Bats 10 Big Brown Bats 5 adult, female Silver-haired Bats	Assumed Significant	6	Yes
BMA-757	757	4.0	Fresh-moist sugar maple hardwood deciduous forest, with some green ash deciduous swamp.	59	Acoustic Monitoring	<b>Acoustic Results: 39.72 Big Brown or Silver-haired Bats</b> 11 Eastern Red or Tricoloured Bats 3.49 Hoary Bats	20 N. Long-eared Bats 20 Little Brown Bats 10 Big Brown Bats 5 adult, female Silver-haired Bats	Significant	6	Yes
<b>Transmission Line Habitats (overlapped by proposed infrastructure)</b>										
BMA-648	648	2.8	Dominated by bitternut hickory, with occasional sweet cherry, white elm, trembling aspen, ironwood, and English hawthorn.	In Feature	Pre-Construction Surveys Required	Not Evaluated	20 N. Long-eared Bats 20 Little Brown Bats 10 Big Brown Bats 5 adult, female Silver-haired Bats	Assumed Significant	7	Yes
BMA-720	720	2.3	Occasional sugar maple, basswood, freeman's maple, shagbark hickory, white elm, ironwood, American beech, and ash.	In Feature	Pre-Construction Surveys Required	Not Evaluated	20 N. Long-eared Bats 20 Little Brown Bats 10 Big Brown Bats 5 adult, female Silver-haired Bats	Assumed Significant	7	Yes

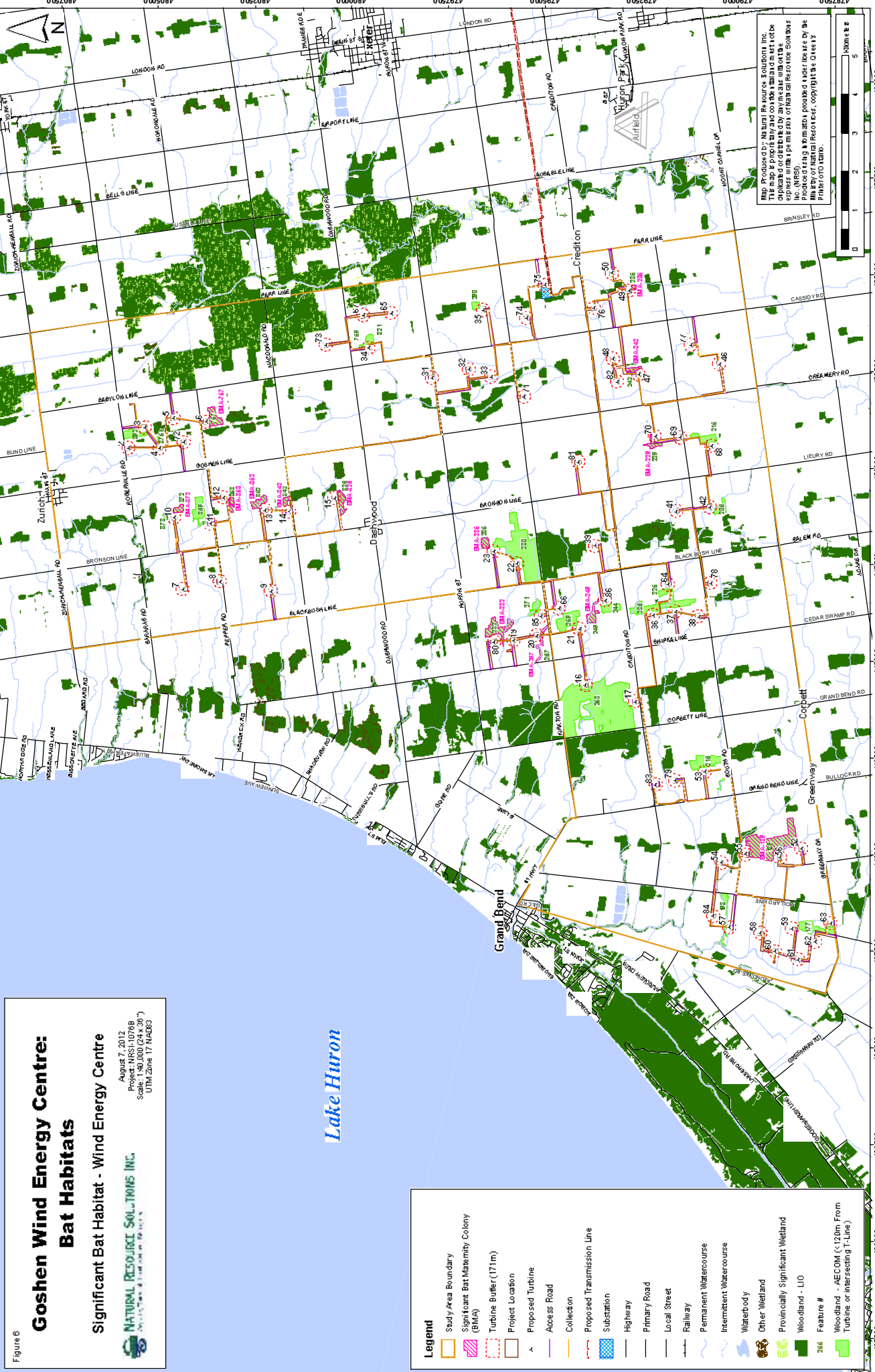
**Goshen Wind Energy Centre:  
Bat Habitats**

Significant Bat Habitat - Wind Energy Centre

August 7, 2012  
Project: NRS-1076B  
Scale: 1:50,000 (25 x 36")  
UTM Zone 17 NAD83



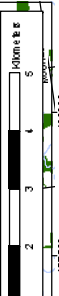
NATURAL RESOURCE SOLUTIONS INC.  
CONSULTANTS & ENGINEERS OF ONTARIO



**Legend**

- Study Area Boundary
- Significant Bat Massing Colony (BMA)
- Turbine Buffer (171m)
- Project Location
- Proposed Turbine
- Access Road
- Collection
- Proposed Transmission Line
- Substation
- Highway
- Primary Road
- Local Street
- Railway
- Permanent Watercourse
- Intermittent Watercourse
- Waterbody
- Other Wetland
- Provincially Significant Wetland
- Woodland - L10
- Feature #
- Woodland - AECOM (<120m From Turbine or intersecting T-Line)

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# Goshen Wind Energy Centre: Bat Habitats

## Significant Bat Habitat - Transmission Line

August 7, 2012  
Project: NRS1-10768  
Scale: 1:50,000 (24 x 36")  
UTM Zone 17 NAD83



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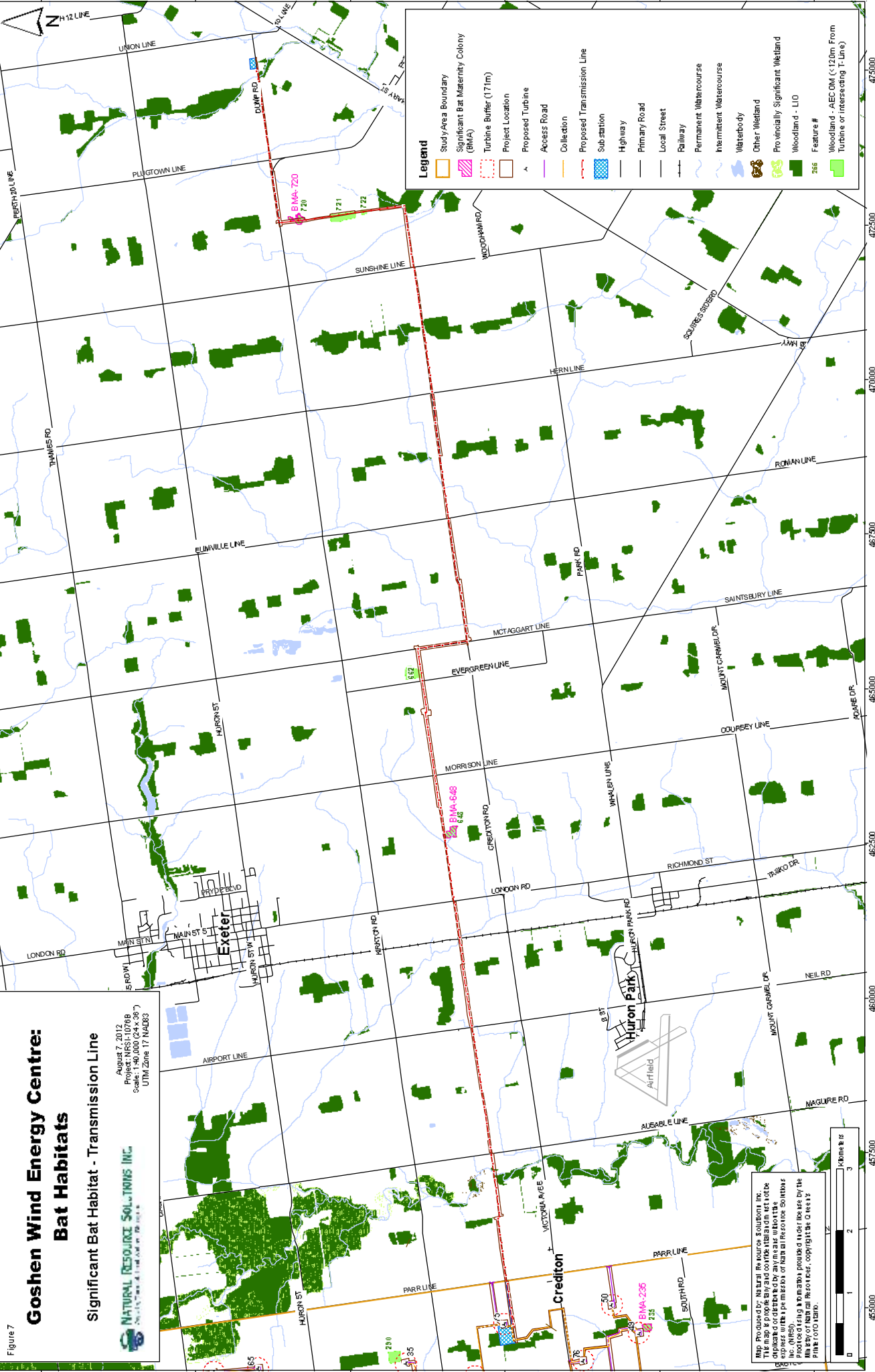


Figure 7

### 5.3 Evaluation of Significance Summary

Based on the records review and site investigation, no significant bat hibernacula were found within the project area. Based on criteria in the DRAFT Ecoregion Criteria Schedules Addendum to the SWHTG (OMNR 2009), Significant Wildlife Habitat Ecoregion Criterion Schedules for Ecoregion 6E and 7E (OMNR 2012), and Bats and Bat Habitats guidelines (OMNR 2010b, 2011b), NRSI identified 19 locations with candidate significant bat maternity habitat.

NRSI followed appropriate provincial guidelines to collect data during June and early July of 2010 and 2011, and has been able to evaluate the significance of 8 these locations. The remaining 11 potential bat habitats were introduced into the project area as a result of project changes after 2011 monitoring had completed, and could not be surveyed during the appropriate monitoring season prior to the completion of this report.

Based on NRSI's data collection, 5 habitats (BMA-189, BMA-229, BMA-326, BMA-342, and BMA-757) were identified as significant habitats for bat maternity colonies as a result of passage rates and species assemblages which indicate the overall presence of a number of bats at these locations determined by provincial criteria to be significant. A total of 3 habitats were deemed not to be significant. Although surveys could not be completed at habitats BMA-235, BMA-242, BMA-249, BMA-267, BMA-282, BMA-285, BMA-352, BMA-358, BMA-372, BMA-648, and BMA-720 due to constraints in site accessibility at the time surveys were conducted, these features have been identified as being assumed significant for the purposes of the Environment Impact Study. The evaluation of significance of these 16 habitats has been summarized in Table 12 below.

**Table 12. Summary of Significant Bat Habitats within 120m of the Goshen Wind Energy Centre**

Wildlife Habitat ID	Feature ID	Feature Type	Distance to Closest Turbine (from blade tip)	Distance to Nearest Infrastructure	Type of Significance	EIS Required (Y/N)
<b>Wind Energy Centre Habitats</b>						
BMA-189	189	Significant Bat Maternity Colony	41m (T55) 60m (T52)	7m (Temporary Infrastructure)	Evaluated	Yes
BMA-229	229	Significant Bat Maternity Colony	43m (T70)	>0.1m (Access Road)	Evaluated	Yes
BMA-235	235	Significant Bat Maternity Colony	32m (T49)	>0.1m (Temporary Infrastructure)	Assumed	Yes
BMA-242	242	Significant Bat Maternity Colony	56m (T47)	>0.1m (Access Road)	Assumed	Yes
BMA-249	249	Significant Bat Maternity Colony	116m (T86)	67m (Access Road)	Assumed	Yes
BMA-267	267	Significant Bat Maternity Colony	43m (T20)	22m (Temporary Infrastructure)	Assumed	Yes
BMA-282	282	Significant Bat Maternity Colony	106m (T80)	30m (Underground Line)	Assumed	Yes
BMA-285	285	Significant Bat Maternity Colony	83m (T23)	49m (Temporary Infrastructure)	Assumed	Yes
BMA-326	326	Significant Bat Maternity Colony	37m (T15)	>0.1m (Access Road)	Evaluated	Yes
BMA-342	342	Significant Bat Maternity Colony	117m (T14)	>0.1m (Underground Line)	Evaluated	Yes
BMA-352	352	Significant Bat Maternity Colony	102m (T13)	21m (Access Road)	Assumed	Yes
BMA-358	358	Significant Bat Maternity Colony	77m (T12)	>0.1m (Underground Line)	Assumed	Yes
BMA-372	372	Significant Bat Maternity Colony	59m (T10)	49m (Temporary Infrastructure)	Assumed	Yes
BMA-757	757	Significant Bat Maternity Colony	24m (T6)	10m (Temporary Infrastructure)	Evaluated	Yes



<b>Transmission Line Habitats (overlapped by proposed infrastructure)</b>						
BMA-648	648	Significant Bat Maternity Colony	>120m	Overlapped (Overhead Line)	Assumed	Yes
BMA-720	720	Significant Bat Maternity Colony	>120m	Overlapped (Overhead Line)	Assumed	Yes

According to the REA Regulation, if any significant natural features are present within 120m of the project location an Environmental Impact Study (EIS) must be completed. Potential impacts, mitigation measures, and follow-up programs associated with these 16 significant bat habitats are discussed in Section 6.0 below.

Other woodlands which are located within 120m of access roads, connection cabling, temporary construction and laydown areas, substation, operations and maintenance building, and the transmission line may also contain suitable habitat for bat maternity colonies. These habitats will be treated as significant, and generalized mitigation measures for these habitats will be applied. Generalized mitigation measures have been detailed as part of the EIS.

## **6.0 Environmental Impact Study**

In accordance with the REA Regulation, any significant bat maternity colonies found within 120m of the project location require an Environmental Impact Study (EIS) to identify potential impacts and mitigation measures. The Evaluation of Significance for the Goshen Wind Energy Centre has identified that 16 significant bat maternity colonies are present within 120m of the project location, with the potential to incur operational impacts from this proposed development. The potential impacts on these features are discussed in more detail in the following sections.

### **6.1 Description of the Proposed Undertaking**

The Goshen Wind Energy Centre, proposed by NextEra Energy Inc., is located approximately 5km southeast of the Town of Grand Bend, Ontario. This wind energy generating facility is proposed to be 102MW in size, consisting of up to 71 operational 1.6MW wind turbine generators and 1 operational 1.56MW wind turbine generator (however only 63 turbines will be constructed), as well as supporting infrastructure and development activities. This includes construction areas, temporary laydown areas, 34.5kV electrical collection lines, a transformer substation, a 115kV transmission line, a switching station, access roads, meteorological tower(s), and an operations/maintenance building. Both chosen turbine models stand approximately 80m to the height of the hub with a blade length of 50m.

The installation of each turbine will involve a subterranean concrete base, and a temporary above-ground lay-down area where turbine components will be stored. Access roads will be gravel and will be placed throughout the project area, to allow for regular maintenance activities at each of the turbines. Connector cabling will be underground and will primarily follow the placement of the access road. Minor grading activities and site alteration is expected to occur along proposed access road routes and at turbine locations. The transmission line will be installed along the backs of lots and adjacent to the road right-of-way on private property, and will intersect some woodlands.

Based on current layouts, minor vegetation removal may occur during the construction of the Goshen Wind Energy Centre and associated infrastructure, with the removal of portions of some woodlands associated with the transmission line. The extent of

vegetation clearing, if any, and potential impacts of this project on vegetation communities and other significant wildlife habitat has been examined by AECOM, and is discussed in more detail in the full Natural Heritage Assessment reports.

A summary of the potential impacts that the proposed development may have on significant bat habitat is provided in Table 13 below.

**Table 13. Summary of Potential Impacts to Significant Bat Habitat**

Project Phase	Project Component	Description of Activity	Potential Impact(s)
Construction	Supporting Infrastructure	Installation of access roads, cabling, maintenance yards, auxiliary buildings, etc.	<ul style="list-style-type: none"> <li>• Habitat Loss</li> <li>• Noise</li> <li>• Direct Bat Mortality or Disturbance (Habitat Loss)</li> </ul>
Construction	Wind Turbine Erection	Turbine pad grading, concrete pouring, turbine assembly.	<ul style="list-style-type: none"> <li>• Noise</li> </ul>
Operation	Wind Turbine Operation	Operation of up to 72 wind energy generating turbines.	<ul style="list-style-type: none"> <li>• Noise</li> <li>• Direct Bat Mortality</li> </ul>
Decommissioning	Wind Turbine Removal	Removal of and disassembly of up to 72 wind energy generating turbines.	<ul style="list-style-type: none"> <li>• Noise</li> </ul>

The potential environmental impacts to bats and bat habitats associated with the development of the Goshen Wind Energy Centre have been provided in detail in the following sections.

## 6.2 Potential Impacts to Significant Bat Habitat

NRSI biologists have completed comprehensive site investigations and evaluations of significance of potential bat habitats within the Goshen Wind Energy Centre. These studies have determined that several significant or presumed significant bat maternity colony habitats are present within 120m of, or overlapping, the project location. In accordance with the REA Regulation, each of these features within 120m of a wind turbine or overlapped by a project component has been specifically addressed below, as these may be impacted by the operation of the project as per Appendix D of the Natural Heritage Assessment Guide (OMNR 2011a). Other significant, or presumed significant, bat habitats present within 120m of project components that will not have an operational impact on the habitat have been collectively addressed as part of the generalized mitigation measures in Section 6.3.4.

### 6.2.1 Habitat Loss

As a result of the proposed development of the Goshen Wind Energy Centre, it is possible that some significant bat maternity colonies may be impacted by direct habitat loss. Current layouts indicate that the transmission line is proposed to overlap with 2 woodlands considered candidate significant bat maternity colony habitats, BMA-648 and BMA-720. These woodlands will be evaluated prior to construction, and for the purposes of this report are assumed to be significant.

Installation of the transmission line will require tree removal, and may result in the permanent loss of suitable tree habitat for bat maternity colonies. If a suitable cavity tree containing a significant bat maternity colony will be removed for the installation of the transmission line, this will result in the loss of the preferred habitat for that colony. If such a tree is removed during the roosting period, there may also be direct mortality of bats, particularly if there are juveniles within a cavity which are unable to fly.

Removal of trees may also result in the loss of suitable alternative cavity trees which may not be directly used by maternal roosting bats, but which may aid in the selection of the woodland by bats as a preferred roosting site.

Removal of treed area may also result in a decrease in the number of cavity trees per hectare, which may indicate the woodland would no longer be identified as a candidate significant habitat. Conversely, removal of treed area may result in an increase in the number of cavity trees per hectare, depending on the spatial distribution of cavity trees within the woodland. This potential impact depends on a number of factors including the fact that it is highly dependent on spatial configuration of trees within the woodland and it is unknown whether the change in the number of cavity trees per hectare as a result of transmission line installation would influence the use of the habitat by bats. This change in the number of cavity trees per hectare is minor in comparison to the loss of individual cavity trees or even a significant bat maternity colony. As a result it is not discussed in further detail within this report.

It is not anticipated that significant bat maternity colonies will be impacted by direct habitat loss in woodlands other than the above-mentioned. Current layouts indicate that

the remainder of proposed development is located outside of the boundaries of other significant, or presumed significant, bat habitats. Accidental vegetation removal when working in close proximity to features is still possible, however, and as a result is addressed in mitigation measures outlined below.

#### 6.2.2 Noise Disturbance

Bat activity is generally limited to the period of twilight through sunrise. As with most wildlife, the noise associated with the construction activity has the potential to disturb regular bat activity. This disturbance, if any, will be a temporary disturbance limited to the construction and decommissioning phases of this project and is not expected to permanently impact local bat populations.

#### 6.2.3 Operational Bat Mortality

The placement of wind turbines within 120m of significant bat maternity colonies has the potential to result in direct bat mortality due to the operation of large-scale wind turbines. Overall bat mortality levels have been shown to be extremely variable through projects in North America, with an MNR summary of available literature indicating ranges of 0.07 - 47.5 bats/turbine/year (OMNR 2006).

### 6.3 Approach to Impact Assessment

Following guidelines set out by the REA Regulation with regards to bats and bat habitats associated with wind turbines, an environmental impact assessment is required to be completed for this project, based on proposed layout and presence of significant, or presumed significant, bat habitat. This impact assessment discusses potential impacts to significant bat habitats, in each of the construction, operation, and decommissioning phases of this project. In addition, NRSI has also considered generalized mitigation measures that should be applied in areas where non-operational impacts on bat habitats may occur. These generalized mitigation measures are meant to limit the temporary disturbance that may occur during the construction or decommissioning phases of this project.

Given the potential impacts at various distances to project location, NRSI has grouped features or wildlife habitats into 3 broad distance categories: overlapping, 0-30m, and 30-120m from the project location. These distance categories have been chosen as

they each have the potential for different types of impacts on bat habitats. Although there is expected to be a gradual increase in potential impacts as development occurs closer to wildlife habitats, a distance of 30m has been chosen as a suitable division between specific types of impacts. For areas where the project location is within 30m of a significant bat habitat, there is increased potential for impacts relating to visual and noise disturbance to bats and other localized impacts. The impacts within each of these distance categories are expected to be relatively consistent within the given distance, with slightly different impacts (and related mitigation measures) associated with each distance category.

Each of these significant bat habitats are discussed in more detail below, including potential impacts and proposed mitigation measures. Additional consideration has been given to mitigation measures and monitoring programs for this project in the Environmental Effects Monitoring Plan, which has been prepared under separate cover by AECOM. This report summarizes the potential environmental effects of the project on bat habitats and details the monitoring program that will be implemented for bat habitats during the various phases of the Goshen Wind Energy Centre.

#### 6.3.1 Project Location In Significant Bat Habitat

NRSI has reviewed the project location and significant bat habitats and has confirmed that the project location does not overlap with any known significant bat habitats. However, the transmission line is proposed to be located within 2 woodlands identified as candidate significant bat maternity colony habitats, BMA-648 and BMA-720. For the purposes of this report these have been treated as significant and will be evaluated prior to construction. As this may result in the removal of significant wildlife habitat, an environmental impact statement is required, and is discussed in further detail in Section 6.3.3 below.

#### 6.3.2 Project Location Within 120m of Confirmed Significant Bat Habitat

Through extensive acoustic monitoring that occurred in 2010 and 2011 within the Goshen Wind Energy Centre, NRSI has confirmed the significance of 5 bat maternity colonies within the project area. The potential impacts, proposed mitigation measures, objectives, and follow-up programs associated with these 4 significant wildlife habitats have been provided in Table 14 below.

**Table 14. Potential Impacts, Mitigation Measures, and Survey Methods for Bat Habitats that have been Confirmed Significant**

Feature ID	Distance to Project Component with an Operational Effect	Distance to Project Location (Nearest Component)	Potential Negative Effects	Mitigation Measures	Performance Objectives, Monitoring, and Contingency Plans
BMA-757 Bat Maternity Colony	0-30m	BMA-757: 10m (Temporary Infrastructure)	<ul style="list-style-type: none"> <li>Accidental damage to vegetation, including tree limbs</li> <li>Noise disturbance and/or avoidance behaviour during construction</li> <li>Avoidance caused by turbine lighting</li> </ul>	<ul style="list-style-type: none"> <li>Clearly delineate construction boundaries where construction will occur within 10m of woodlands to avoid accidental damage to tree species.</li> <li>Limit construction activities within 30m of woodlands to daylight hours during the period of May 15<sup>th</sup>-August 31<sup>st</sup>, wherever possible</li> <li>Propose a lighting scheme to that will minimize potential risk to bat collisions while fulfilling Transport Canada requirements</li> </ul>	<p><b>Performance Objective:</b></p> <ul style="list-style-type: none"> <li>Protection of bat roosting habitat</li> </ul> <p><b>Monitoring:</b></p> <ul style="list-style-type: none"> <li>Conduct post-construction habitat monitoring of this feature for 3 years after construction, following pre-construction methods utilized for these habitats.</li> </ul> <p><b>Contingency Measure:</b></p> <ul style="list-style-type: none"> <li>If a permanent disturbance has been noted within this wildlife habitat, the MNR will be contacted to determine whether additional mitigation measures will be needed.</li> </ul>
BMA-189 BMA-229 BMA-326 BMA-342  Bat Maternity Colony	30-120m	BMA-189: 7m (Temporary Infrastructure)  BMA-229: >0.1m (Road)  BMA-326: >0.1m (Road)  BMA-342: >0.1m (Underground)	<ul style="list-style-type: none"> <li>Accidental damage to vegetation, including tree limbs</li> <li>Noise disturbance and/or avoidance behaviour during construction</li> </ul>	<ul style="list-style-type: none"> <li>Clearly delineate construction boundaries where construction will occur within 10m of woodlands to avoid accidental damage to tree species.</li> <li>Limit construction activities within 30m of woodlands to daylight hours during the period of May 15<sup>th</sup>-August 31<sup>st</sup>, wherever possible</li> </ul>	<p><b>Performance Objective:</b></p> <ul style="list-style-type: none"> <li>Protection of bat roosting habitat</li> </ul> <p><b>Monitoring:</b></p> <ul style="list-style-type: none"> <li>Conduct post-construction monitoring of this feature for 1 year after construction, following pre-construction methods, for all features deemed significant.</li> <li>If this first year of post-construction monitoring indicates that this feature may no longer be significant, an additional 2 years of post-construction monitoring will occur following pre-construction methods.</li> </ul>



		Line)	<ul style="list-style-type: none"> <li>Avoidance caused by turbine lighting</li> </ul>	<ul style="list-style-type: none"> <li>Propose a lighting scheme to that will minimize potential risk to bat collisions while fulfilling Transport Canada requirements</li> </ul>	<ul style="list-style-type: none"> <li>If a significant habitat is still significant after the first year of post-construction monitoring, no further monitoring will occur as the habitat will be considered to be unaffected.</li> </ul> <p><b>Contingency Measure:</b></p> <ul style="list-style-type: none"> <li>If a permanent disturbance has been noted within this wildlife habitat, the MNR will be contacted to determine whether additional mitigation measures will be needed.</li> </ul>
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### 6.3.3 Project Location In, or Within 120m, of Assumed Significant Bat Habitat

As a result of site investigations which were completed after the end of the 2011 bat monitoring period, NRSI has identified a total of 12 woodlands that were identified as having suitable habitat for a bat maternity colony, but could not be evaluated for significance during the appropriate monitoring season prior to the submission of this report. For the purposes of this report, NRSI has treated these habitats as significant with the commitment to conduct pre-construction monitoring within these habitats to confirm whether these features are significant. Pre-construction monitoring will be conducted in accordance with the July 2011 *Bat and Bat Habitats* provincial guidelines, and results will be compared to the appropriate provincial standards discussed previously in this report. Any of these habitats determined to be significant will be subject to the potential impacts, mitigation measures, and follow-up monitoring programs outlined in Table 15 below. If any of these habitats are identified as being not significant when compared with provincial standards of significance, no specific mitigation measures are required.

Table 15. Potential Impacts, Mitigation Measures, and Survey Methods for Bat Habitats that have been Presumed Significant

Feature ID	Distance to Project Component with an Operational Effect	Distance to Project Location (Nearest Component)	Potential Negative Effects	Pre-construction Surveys	Mitigation Measures (if significant)	Performance Objectives, Monitoring, and Contingency Plans
BMA-648 BMA-720 Bat Maternity Colony	>120m	Overlapping	<ul style="list-style-type: none"> <li>Displacement and/or mortality of nursing female and juvenile bats</li> <li>Removal of confirmed significant cavity trees or other suitable, but not studied, cavity trees</li> <li>Noise disturbance and/or avoidance</li> </ul>	<p>Pre-construction surveys will follow July 2011 <i>Bat and Bat Habitats</i> guidelines to be consistent with other monitoring that will occur at the project area.</p> <p>Acoustic bat monitoring will occur at 10-30 candidate maternity colony trees in each woodland. Each tree will be surveyed once in June prior to construction from one half hour before dusk until one hour after dusk to observe evidence of bats exiting. Monitoring will use high-powered spotlights and acoustic detectors to record species calls.</p>	<ul style="list-style-type: none"> <li>Prepare a tree preservation plan which identifies specific trees to be removed and whether each tree contains a cavity suitable for potential use as a bat maternity colony.</li> <li>Tree removal will occur outside of the maternity and summer swarming period of May 15 to August 31, wherever possible. If this is not possible, MNR will be consulted regarding any additional mitigation measures that may be required.</li> <li>For each suitable cavity tree to be removed, a bat house will be installed in the closest suitable woodland habitat (the remainder of the woodland for each of the affected habitats).</li> <li>Details of bat box construction and placement will be provided to MNR for approval prior to installation.</li> <li>If a significant maternity colony must be removed, timing, location, and bat house design will be of utmost importance for the colony to successfully re-establish, and will be discussed with the MNR.</li> <li>Tree removal should occur outside of the summer swarming</li> </ul>	<p><b>Performance Objective:</b></p> <ul style="list-style-type: none"> <li>Protection of suitable cavity trees for bat maternity colonies.</li> <li>Successful relocation of any significant maternity colonies that may be removed (if applicable).</li> <li>Avoidance of direct bat mortality.</li> </ul> <p><b>Monitoring:</b></p> <ul style="list-style-type: none"> <li>Conduct post-construction visual monitoring of any bat boxes installed for 3 years after construction, to determine the success of the implemented mitigation measures.</li> <li>Conduct post-construction monitoring of all remaining cavity trees within this feature for 3 years after construction, following pre-construction methods as outlined in this table for features determined to be significant.</li> </ul> <p><b>Contingency Measure:</b></p> <ul style="list-style-type: none"> <li>If a permanent disturbance has been noted within this wildlife</li> </ul>

			behaviour during construction		and roosting period of local bat species (May 15 <sup>th</sup> -August 31 <sup>st</sup> ).	habitat, the MNR will be contacted to determine whether additional mitigation measures will be needed.
BMA-235: >0.1m (Temporary Infrastructure) BMA-242: >0.1m (Road) BMA-249: 67m (Road) BMA-267: 22m (Temporary Infrastructure) BMA-282: 30m (Underground Line) BMA-285: 49m (Temporary Infrastructure) BMA-352: 21m (Road) BMA-358: >0.1m (Underground Line) BMA-372: 49m (Temporary Infrastructure)  Bat Maternity Colony	30-120m	<ul style="list-style-type: none"> <li>Accidental damage to vegetation, including tree limbs</li> <li>Noise disturbance and/or avoidance behaviour during construction</li> </ul>	<p>Pre-construction surveys will follow July 2011 <i>Bats and Bat Habitats</i> guidelines (OMNR 2011).</p> <p>Acoustic bat monitoring will occur at 10-30 candidate maternity colony trees in each woodland. Each tree will be surveyed once from one half hour before dusk until one hour after dusk to observe evidence of bats exiting.</p> <p>Surveys will be conducted during the month of June, on nights with suitable weather conditions.</p> <p>Site specific bat surveys are dependent on receiving site access for each of these features. If site access is not available, possible alternative methods will be discussed with the MNR.</p>	<ul style="list-style-type: none"> <li>Clearly delineate construction boundaries where construction will occur within 10m of woodlands to avoid accidental damage to tree species.</li> <li>Limit construction activities within 30m of woodlands to daylight hours during the period of May 15<sup>th</sup>-August 31<sup>st</sup>, wherever possible.</li> </ul>	<ul style="list-style-type: none"> <li>Propose a lighting scheme to that will minimize potential risk to bat collisions while fulfilling Transport Canada requirements</li> </ul>	<p><b>Performance Objective:</b></p> <ul style="list-style-type: none"> <li>Protection of bat roosting habitat</li> </ul> <p><b>Monitoring:</b></p> <ul style="list-style-type: none"> <li>Conduct post-construction monitoring of this feature for 1 year after construction, following pre-construction methods, for all features deemed significant.</li> <li>If this first year of post-construction monitoring indicates that this feature may no longer be significant, an additional 2 years of post-construction monitoring will occur following pre-construction methods.</li> <li>If a significant habitat is still significant after the first year of post-construction monitoring, no further monitoring will occur as the habitat will be considered to be unaffected.</li> <li>Habitats for which access cannot be gained for surveys will not receive pre-construction or post-construction monitoring.</li> </ul>

						<p><b>Contingency Measure:</b>          If a permanent disturbance has been noted within this wildlife habitat, the MNR will be contacted to determine whether additional mitigation measures will be needed.</p>
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#### 6.3.4 Generalized Mitigation Measures

In addition to the specific significant bat maternity colonies identified above (where operational impacts may occur), there are a number of additional potential bat habitats that are located within 120m of, but not overlapping, project components that do not have the potential to result in operational impacts to these habitats, as per Appendix D of the Natural Heritage Assessment Guide (OMNR 2011c). As a result, NRSI is recommending generalized mitigation measures that should be applied to development activities within 120m of these generalized candidate significant bat maternity colony habitats. These generalized mitigation measures are provided in Table 16 below.

**Table 16. Summary of Potential Effects and Mitigation Measures for Generalized Wildlife Habitat during the Construction and Decommissioning Phases of the Goshen Wind Energy Centre**

Project Component	Potential Impact	Potential Negative Effects	Mitigation Measures
All Project Components	Noise/human activity	<ul style="list-style-type: none"> <li>Disturbance to foraging bats as a result of increased noise and activity during the construction period</li> </ul>	<ul style="list-style-type: none"> <li>Limit construction activities within 30m of woodlands to daylight hours during the period of May 15<sup>th</sup>-August 31<sup>st</sup>, wherever possible.</li> <li>Maintain the largest possible distance between construction activity and wooded habitats, respecting the limits of the constructible area.</li> </ul>
	Accidental damage to vegetation	<ul style="list-style-type: none"> <li>Accidental damage or removal of vegetation adjacent to the project location.</li> </ul>	<ul style="list-style-type: none"> <li>Keep vegetation removal to a minimum and limited to non-significant habitats.</li> <li>Clearly delineate construction boundaries where construction will occur within 10m of woodlands to avoid accidental damage to tree species.</li> </ul>

#### 6.4 Summary of Commitments

The records review, site investigation, and evaluation of significance have all been used to guide the proposed development and assess the potential impacts that the Goshen Wind Energy Centre may have on bats and bat habitats.

Proposed development activities indicate that most turbines are located further than 120m away from significant bat habitat with the exception of # of the proposed turbines, which are all located within 120m of significant bat habitat. A summary of the 16 significant, or presumed significant, bat habitats (all bat maternity colonies) found within the project area, including distance to project location, can be seen in Table 17 **Error! Reference source not found.** below.

**Table 17. Summary of Significant, or Presumed Significant, Bat Maternity Colonies and Proximity to Project Location for the Goshen Wind Energy Centre**

Type of Natural Feature	Wildlife Habitat ID	Distance to Nearest Turbine (from blade tip) or Other Infrastructure	Turbine No.
<b>Seasonal Concentration Area</b>			
<b>Wind Energy Centre Habitats</b>			
Bat Maternity Colony	BMA-189	41m 60m	T 55 T 52
Bat Maternity Colony	BMA-229	43m	T 70
Bat Maternity Colony	BMA-235	32m	T 49
Bat Maternity Colony	BMA-242	56m	T 47
Bat Maternity Colony	BMA-249	116m	T 86
Bat Maternity Colony	BMA-267	43m	T 20
Bat Maternity Colony	BMA-282	106m	T 80
Bat Maternity Colony	BMA-285	83m	T 23
Bat Maternity Colony	BMA-326	37m	T 15
Bat Maternity Colony	BMA-342	117m	T 14
Bat Maternity Colony	BMA-352	102m	T 13
Bat Maternity Colony	BMA-358	77m	T 12
Bat Maternity Colony	BMA-372	59m	T 10
Bat Maternity Colony	BMA-757	24m	T 6
<b>Transmission Line Habitats (overlapping proposed infrastructure)</b>			
Bat Maternity Colony	BMA-648	Overlapping	T-Line
Bat Maternity Colony	BMA-720	Overlapping	T-Line



The impacts to bat populations within the Goshen Wind Energy Centre project area will largely consist of potential collision impacts or the potential loss of significant or alternative bat maternity colony cavity trees. Based on the presence of significant bat habitats overlapping, and within 120m of, the Goshen Wind Energy Centre location, NRSI has recommended a series of pre-construction monitoring requirements, mitigation measures, and follow-up monitoring that should be applied during the development of this facility, and have been summarized in the following sections.

#### 6.4.1 Pre-Construction Monitoring Commitments

In accordance with the Natural Heritage Assessment process, NRSI biologists have identified several natural features that have been treated as significant for the purposes of this report. These features have been treated as significant until additional pre-construction surveys can be completed to confirm (or deny) the significance based on provincially accepted evaluation criteria. The pre-construction surveys that will be conducted as part of the commitments made in this EIS are summarized in Table 18 below.

The survey methods described below have assumed that site access will be granted. In the event that specific site access is not available for any part of a specific feature, monitoring cannot be completed at the habitat. An alternative method of monitoring a maternity colony is not possible, and as a result neither pre-construction nor post-construction monitoring can take place. At the time of preparation of this report, access to BMA-249, BMA-358, and BMA-372 has not been granted.

**Table 18. Summary of Pre-construction Monitoring Commitments for Bat Habitats at the Goshen Wind Energy Centre**

Wildlife Habitat Type	Generalized Methods	Location/Feature(s)
Bat Maternity Colony	A series of single 1.5hr visual point count surveys at potential roosts within each habitat.  Visual surveys will occur at a minimum of 10 snags/cavity trees for areas <10ha with one snag/cavity trees for each hectare for areas <30ha and a maximum of 30 snags/cavity trees for areas >30ha. Surveys will be conducted from 30min before dusk and end 1hr after dusk, and	BMA-235 BMA-242 BMA-249 BMA-267 BMA-282 BMA-285 BMA-352 BMA-358 BMA-372

	<p>will include a combination of both visual and acoustic documentation of bat activity.</p> <p>Surveys will be in accordance with Bats and Bat Habitats (OMNR 2011).</p> <p>Specific surveys, following the methods described above may not be conducted if site access cannot be secured for specific habitats. If site access is not available, alternative methods (if applicable) will be discussed with the MNR.</p> <p>See Appendix III for detailed survey methods</p>	<p>BMA-648 BMA-720</p>
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#### 6.4.2 Construction Mitigation Measures

Various sections above identify several mitigation measures that are recommended to limit potential impacts to significant natural features or wildlife habitats for the development of the Goshen Wind Energy Centre. To assist in identifying all mitigation measures that are recommended for this development as it pertains to bat habitats, a summary table of construction related mitigation measures has been provided below in Table 19, including the mitigation objective and specific location where each mitigation measure should be applied. The purpose of the table below is to consolidate the construction mitigation measures that are applicable to the bat habitats that have been identified through the Natural Heritage Assessment process. These mitigation measures, along with other mitigation measures that may be required as a part of other Natural Heritage features, have all been included in the Natural Heritage Assessment that has been prepared by AECOM.

**Table 19. Summary of Construction Phase Mitigation Measures Recommended for the Goshen Wind Energy Centre**

Mitigation Measure	Objective(s)	Location(s)
<ul style="list-style-type: none"> <li>Maintain the largest possible distance between construction activity and wooded habitats, respecting the limits of the constructible area.</li> </ul>	<ul style="list-style-type: none"> <li>Limit disturbances to natural foraging patterns</li> </ul>	Entire Project
<ul style="list-style-type: none"> <li>Clearly delineate construction boundaries where construction will occur within 10m of woodlands to avoid accidental damage to tree species.</li> </ul>	<ul style="list-style-type: none"> <li>Minimize impacts to trees in which bats may be roosting</li> </ul>	All Generalized Candidate Significant Bat Habitats, BMA-189, BMA-229, BMA-235*, BMA-242*, BMA-326, BMA-342, BMA-358*

		BMA-757
<ul style="list-style-type: none"> <li>Limit construction activities within 30m of woodlands to daylight hours during the period of May 15<sup>th</sup>-August 31<sup>st</sup>, wherever possible.</li> </ul>	<ul style="list-style-type: none"> <li>Limit disturbances to natural foraging patterns</li> </ul>	All Generalized Candidate Significant Bat Habitats, BMA-189, BMA-229, BMA-235*, BMA-242*, BMA-267*, BMA-282*, BMA-326, BMA-342, BMA-352*, BMA-358*, BMA-757
<ul style="list-style-type: none"> <li>Prepare a tree preservation plan which identifies specific trees to be removed and whether each tree contains a cavity suitable for potential use as a bat maternity colony.</li> </ul>	<ul style="list-style-type: none"> <li>Protection of suitable cavity trees for bat maternity colonies</li> </ul>	BMA-648*, BMA-720*
<ul style="list-style-type: none"> <li>Tree removal will occur outside of the maternity and summer swarming period of May 15 to August 31, wherever possible. If this is not possible, MNR will be consulted regarding any additional mitigation measures that may be required.</li> </ul>	<ul style="list-style-type: none"> <li>Avoidance of direct bat mortality</li> </ul>	BMA-648*, BMA-720*
<ul style="list-style-type: none"> <li>For each suitable cavity tree to be removed, a bat house will be installed in the remainder of the woodland for each of the affected habitats.</li> </ul>	<ul style="list-style-type: none"> <li>Relocation of any significant maternity colonies that may be removed (if applicable)</li> </ul>	BMA-648*, BMA-720*

\* Only if these habitats are determined to be significant through pre-construction surveys described in Section 6.3.3.

### 6.4.3 Post-Construction Monitoring Commitments

In accordance with appropriate provincial guidance and the results of pre-construction surveys, a series of post-construction surveys may be required at the Goshen Wind Energy Centre. Some of these surveys will only be required depending on the results of additional pre-construction surveys that have been committed to in Section 8.1 above. Others are already known to be required based on the results of pre-construction surveys or standard monitoring required for all wind energy developments. A summary of post-construction commitments can be found below in Table 20.

**Table 20. Summary of Post-construction Monitoring Commitments at the Goshen Wind Energy Centre**

Survey Type	Location(s)	Generalized Methods	Purpose
Mortality Monitoring	Entire Project	Post-construction mortality monitoring will be conducted following the <i>Bats and Bat Habitats</i> (OMNR 2011) provincial guidelines for three (3) years after the project has become operational.	To assess the direct impact of this facility on bat populations.  If mortality rates surpass provincially determined

		<p>A suitable sub-set (at least 1/3) of turbines will be searched approximately every 3 days (twice weekly) for bat mortalities from May 1<sup>st</sup> to October 31<sup>st</sup>.</p> <p>Searcher efficiency and carcass removal trials will be conducted in accordance with provincial guidelines.</p> <p>Bat mortality monitoring methods will be addressed in detail in the Environmental Effects Monitoring Plan.</p>	<p>thresholds, mitigation measures will be discussed with the MNR.</p>
Bat Maternity Colony Monitoring	BMA-757	<p>Post-construction bat monitoring will be repeated at this habitat for three (3) years following the same methods utilized during pre-construction surveys (March 2010 <i>Bats and Bat Habitats</i> guidelines).</p>	<p>To assess the potential disturbance impact of operational turbines on nearby significant bat maternity roosts.</p>
Bat Maternity Colony Monitoring	BMA-189 BMA-229 BMA-326 BMA-342	<p>Post-construction bat monitoring will be repeated at this habitat, if deemed to be significant, for one (1) year following the same methods utilized during pre-construction surveys (March 2010 <i>Bats and Bat Habitats</i> guidelines).</p> <p>If the habitat is still confirmed to be significant after the first year of post-construction monitoring, no further monitoring will occur. If this first year of post-construction monitoring indicates that this feature may no longer be significant, an additional 2 years of post-construction monitoring will occur following pre-construction methods.</p>	<p>To assess the potential disturbance impact of operational turbines on nearby significant bat maternity roosts.</p>
Bat Maternity Colony Monitoring	BMA-235* BMA-242* BMA-249* BMA-267* BMA-282* BMA-352* BMA-358* BMA-372* BMA-648* BMA-720*	<p>Post-construction bat monitoring will be repeated at this habitat, if deemed to be significant, for one (1) year following the same methods utilized during pre-construction surveys (July 2011 <i>Bats and Bat Habitats</i> guidelines).</p> <p>If the habitat is still confirmed to be significant after the first year of post-construction monitoring, no further monitoring will occur. If this first year of post-construction monitoring indicates that this feature may no longer be significant, an additional 2 years of post-construction monitoring will occur following pre-construction methods.</p> <p>These surveys are only required if habitats are evaluated to be significant based on pre-construction surveys.</p>	<p>To assess the potential disturbance impact of operational turbines on nearby significant bat maternity roosts.</p>
Bat Maternity Colony (Bat House) Monitoring	BMA-648* BMA-720*	<p>Visual surveys will be conducted at all installed bat houses within this habitat for three (3) years.</p> <p>These surveys are only required if</p>	<p>To assess the use of substitute cavities as maternity colonies by bats.</p>

		habitats are evaluated to be significant based on pre-construction surveys.	
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*\* Only if these habitats are determined to be significant through pre-construction surveys described in Section 6.3.3.*

## 7.0 Summary and Conclusions

A detailed assessment of the bat habitats and bat activity within the proposed Goshen Wind Energy Centre occurred through the use of a records review, comprehensive site investigation, and evaluation of significance by Natural Resource Solutions Inc. biologists.

The proposed Goshen Wind Energy Centre is a 102MW wind energy facility located in Huron County, Ontario, and consists of the proposed installation of up to 72 wind turbine generators (with only 63 turbines constructed) and associated infrastructure, primarily in agricultural habitat. In accordance with the Renewable Energy Approval (REA) Regulation, a records review, comprehensive site investigation, and evaluation of significance were all completed at the Goshen Wind Energy Centre. This information has been compiled into this *Bat Monitoring Report and Environmental Impact Study*.

The results of the preliminary site investigation identified 19 potentially significant bat habitats within 120m of project components deemed to have a potential operational impact (i.e. wind turbines), or within which the project will be located (i.e. transmission line). In order to confirm significance, extensive bat monitoring occurred at 7 of these habitats in 2010 and 2011. Monitoring at the remaining 12 habitats was not conducted because of site accessibility at the time of the 2011 monitoring period. Based on the results of both the site investigation and evaluation of significance, NRSI has determined that 16 of the 19 habitats warrant significant consideration for bat maternity habitats, including those which are presumed to be significant until pre-construction monitoring confirms otherwise. This determination is based on a combination of habitat present, overall bat abundance, and species associations observed at these habitats. As a result of the significant determination, NRSI has outlined numerous mitigation measures and monitoring commitments that should be specifically applied to any development activity within 120m of these significant habitats.

NRSI has also identified the presence of other suitable bat habitats within 120m of project components that are not expected to have operational impacts on bat habitats (i.e. access roads, cabling, etc.). In accordance with the Natural Heritage Assessment

Guide, Appendix D, generalized mitigation measures can be applied to these features to mitigate against potential disturbances during the construction and decommissioning phases of this project. NRSI has provided several mitigation measures that should be applied during the development of this project to ensure impacts to bats and bat habitats are limited.

Providing that the appropriate recommendations are followed and that best management practices are implemented, the anticipated impacts of this facility on significant bat habitat and local bat populations are expected to be minimal.

## 8.0 References

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**Appendix I**  
Evaluation of Significance Survey Dates

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**Appendix II**  
Site Investigation Field Notes

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**Appendix III**  
Pre-Construction Monitoring Methodology

# Appendix H

## Vascular Plant Species List













BOTANICAL NAME	COMMON NAME	Coefficient of Conservatism	Wetness Index	Weediness Index	Provincial Status	OMNR Status	COSEWIC Status	Global Status	Local Status Lambton County	Local Status Huron County	177 GSH 1068	177 GSH1068 (GE-72)	177 GSH1068 (SMN-46)	177 GSH1068 (SMN47)	SI_177_GSH1068_2012-04-16_North	189 GSH1023 (GE64)	SI_189_GSH1023_2012-07-04
		Oldham et al	Oldham et al	Oldham et al	Newmaster			Newmaster	Tiedje 2004	Oldham 1993	12-Aug-11	12-Jul-11	12-Jul-11	12-Jul-11	16-Apr-12	12-Jul-11	4-Jul-12
<b>Convolvulaceae</b>	<b>Morning-glory Family</b>																
<i>Convolvulus</i>	<i>arvensis</i>	Field Bindweed	5	-1	SE5			G?		I							
<b>Cornaceae</b>	<b>Dogwood Family</b>																
<i>Cornus</i>	<i>alternifolia</i>	Alternate-leaved Dogwood	6	5	S5			G5		X							
<i>Cornus</i>	<i>amomum ssp. obliqua</i>	Silky Dogwood	5	-4	S5			G5T?		X							
<i>Cornus</i>	<i>racemosa</i>	Grey dogwood	2	-2	S5			G5?		X	√						R
<i>Cornus</i>	<i>sericea</i>	Red-osier Dogwood	2	-3	S5			G5		X	√						
<i>Cornus</i>	<i>rugosa</i>	Round-leaved Dogwood															
<b>Cucurbitaceae</b>	<b>Gourd Family</b>																
<i>Echinocystis</i>	<i>lobata</i>	Prickly Cucumber	3	-2	S5			G5		X							
<b>Dipsacaceae</b>	<b>Teasel Family</b>																
<i>Dipsacus</i>	<i>fullonum ssp. sylvestris</i>	Wild Teasel		5	-1	SE5		G?T?		I					U		
<b>Elaeagnaceae</b>	<b>Oleaster Family</b>																
<i>Elaeagnus</i>	<i>angustifolia</i>	Russian Olive		3	-3	SE3		G?									
<i>Elaeagnus</i>	<i>umbellata</i>	Autum Olive				SNA		GNR									
<i>Shepherdia</i>	<i>canadensis</i>	Buffaloberry				S5		G5									
<b>Ericaceae</b>	<b>Heath Family</b>																
<i>Lotus</i>	<i>corniculatus</i>	Bird's-foot Trefoil		1	-2	SE5		G?		I							
<b>Euphorbiaceae</b>	<b>Spurge Family</b>																
<i>Acalypha</i>	<i>rhomboidea</i>	Three-seeded Mercury	0	3	S5			G5T5		X							
<b>Fabaceae</b>	<b>Pea Family</b>																
<i>Lotus</i>	<i>corniculatus</i>	Bird's-foot Trefoil															
<i>Medicago</i>	<i>lupulina</i>	Black Medick		1	-1	SE5		G?		I							
<i>Medicago</i>	<i>Sativa</i>	alfalfa		5	-1	SE5		G?T?									
<i>Melilotus</i>	<i>alba</i>	White Sweet-clover		3	-3	SE5		G?		I							
<i>Melilotus</i>	<i>officinalis</i>	Yellow Sweet-clover		3	-1	SE5		G?									
<i>Robinia</i>	<i>pseudo-acacia</i>	Black Locust		4	-3	SE5		G5									
<i>Trifolium</i>	<i>pratense</i>	Red Clover		2	-2	SE5		G?		I							
<i>Trifolium</i>	<i>sp.</i>	Clover species															
<i>Trifolium</i>	<i>repens</i>	White Clover		2	-1	SE5		G?		I							
<i>Vicia</i>	<i>cracca</i>	Tufted Vetch		5	-1	SE5		G?		I							
<b>Fagaceae</b>	<b>Beech Family</b>																
<i>Fagus</i>	<i>grandifolia</i>	American Beech	6	3	S5			G5		X						√	
<i>Quercus</i>	<i>alba</i>	White Oak	6	3	S5			G5									R
<i>Quercus</i>	<i>macrocarpa</i>	Bur Oak	5	1	S5			G5		X					U		
<i>Quercus</i>	<i>rubra</i>	Red Oak	6	3	S5			G5		X							
<b>Fumariaceae</b>	<b>Fumitory Family</b>																
<i>Dicentra</i>	<i>canadensis</i>	Squirrel-corn	7	5	S5			G5	L4	X							
<i>Dicentra</i>	<i>cucullaria</i>	Dutchman's-breeches	6	5	S5			G5		X							
<b>Geraniaceae</b>	<b>Geranium Family</b>																
<i>Geranium</i>	<i>maculatum</i>	Spotted Crane's-bill	6	3	S5			G5		X						√	U
<i>Geranium</i>	<i>robertianum</i>	Herb-robert	5	-2	SE5			G5		I	√			F	√		

BOTANICAL NAME		COMMON NAME		Coefficient of Conservatism	Wetness Index	Weediness Index	Provincial Status	OMNR Status	COSEWIC Status	Global Status	Local Status Lambton County	Local Status Huron County	177 GSH 1068	177 GSH1068 (GE-72)	177 GSH1068 (SMN-46)	177 GSH1068 (SMN47)	SI_177_GSH1068_2012-04-16_North	189 GSH1023 (GE64)	SI_189_GSH1515&1023_2012-07-04			
																12-Aug-11	12-Jul-11	12-Jul-11	12-Jul-11	16-Apr-12	12-Jul-11	4-Jul-12
																177						
				Oldham et al	Oldham et al	Oldham et al	Newmaster				Newmaster	Tiedje 2004	Oldham 1993	FOD7-2	FOD7-2	FOD7-2	FOD7-2	FOD7-2	FOD6-5	SWD2-2		
<b>Grossulariaceae</b>		<b>Currant Family</b>																				
<i>Ribes</i>	<i>americanum</i>	Wild Black Currant	4	-3		S5			G5		X											
<i>Ribes</i>	<i>cynosbati</i>	Prickly Gooseberry	4	5		S5			G5		X											
<i>Ribes</i>	<i>lacustre</i>	Swamp Black Currant	7	-3		S5			G5													
<i>Ribes</i>	<i>rubrum</i>	Red Currant		5	-2	SE5			G4G5													
<i>Ribes</i>	<i>triste</i>	Wild Red Currant	6	-5		S5			G5	L	X	√										
<i>Ribes</i>	<i>sp.</i>	Currant species															F					
<b>Guttiferae</b>		<b>St. John's-wort Family</b>																				
<i>Hypericum</i>	<i>perforatum</i>	Common St. John's-wort		5	-3	SE5			G?		I											
<i>Hypericum</i>	<i>punctatum</i>	Spotted St. John's-wort	5	-1		S5			G5	L2	X											
<b>Hamamelidaceae</b>		<b>Witch-hazel Family</b>																				
<i>Hamamelis</i>	<i>virginiana</i>	Witch-hazel	6	3		S5			G5		X											
<b>Hydrophyllaceae</b>		<b>Water-leaf Family</b>																				
<i>Hydrophyllum</i>	<i>virginianum</i>	Virginia Water-leaf	6	-2		S5			G5	L4	X											
<b>Juglandaceae</b>		<b>Walnut Family</b>																				
<i>Carya</i>	<i>cordiformis</i>	Bitternut hickory	6	0		S5			G5		X								F			
<i>Carya</i>	<i>ovata var. ovata</i>	Shagbark Hickory	6	3		S5			G5								√		F			
<i>Carya</i>	<i>sp</i>	Hickory species																				
<i>Juglans</i>	<i>cinerea</i>	Butternut	6	2		S3?			G4		X											
<i>Juglans</i>	<i>nigra</i>	Black Walnut	5	3		S4			G5		X											
<b>Lamiaceae</b>		<b>Mint Family</b>																				
<i>Clinopodium</i>	<i>vulgare</i>	Wild Basil	4	5		S5			G?		X											
<i>Leonurus</i>	<i>cardiaca ssp. cardiaca</i>	Common Motherwort		5	-2	SE5			G?T?		I											
<i>Lycopus</i>	<i>americanus</i>	Cut-leaved Water-horehound	4	-5		S5			G5		X											
<i>Lycopus</i>	<i>uniflorus</i>	Northern Water-horehound	5	-5		S5			G5	L2	X											
<i>Mentha</i>	<i>arvensis</i>	American Wild Mint	3	-3		S5					X											
<i>Mentha</i>	<i>sp.</i>	species																				
<i>Prunella</i>	<i>vulgaris ssp. vulgaris</i>	Heal-all		0	-1	SE3			G5T?		X											
<i>Scutellaria</i>	<i>lateriflora</i>	Mad-dog Skullcap	5	-5		S5			G5		X											
<i>Satureja</i>	<i>vulgaris</i>	wild basil	5	-1		SE2			G?													
<b>Lauraceae</b>		<b>Laurel Family</b>																				
<i>Lindera</i>	<i>benzoin</i>	Spicebush	6	-2		S5			G5		X											
<b>Malvaceae</b>		<b>Mallow Family</b>																				
<i>Abutilon</i>	<i>theophrasti</i>	Velvet-leaf		4	-1	SE5			G?													
<i>Malva</i>	<i>neglecta</i>	Cheeses		5	-1	SE5			G?		I											
<b>Montiaceae</b>		<b>Montia Family</b>																				
<i>Claytonia</i>	<i>caroliniana</i>	Carolina Spring Beauty	7	5		S5			G5													
<i>Claytonia</i>	<i>virginica</i>	Virginia Spring Beauty	5	3																		
<b>Menispermaceae</b>		<b>Moonseed Family</b>																				
<i>Menispermum</i>	<i>canadense</i>	Moonseed	7	0		S4			G5		X											
<b>Oleaceae</b>		<b>Olive Family</b>																				
<i>Fraxinus</i>	<i>americana</i>	White Ash	4	3		S5			G5		X	√					√					

BOTANICAL NAME		COMMON NAME	Coefficient of Conservatism	Wetness Index	Weediness Index	Provincial Status	OMNR Status	COSEWIC Status	Global Status	Local Status Lambton County	Local Status Huron County	177 GSH 1068	177 GSH1068 (GE-72)	177 GSH1068 (SMN-46)	177 GSH1068 (SMN47)	SI_177_GSH1068_2012-04-16_North	189 GSH1023 (GE64)	SI_189_GSH1518&1023_2012-07-04
			Oldham et al	Oldham et al	Oldham et al	Newmaster			Newmaster	Tiedje 2004	Oldham 1993	FOD7-2	FOD7-2	FOD7-2	FOD7-2	FOD7-2	FOD6-5	SWD2-2
<i>Fraxinus</i>	<i>nigra</i>	Black Ash	7	-4		S5			G5		X		√	√	√			
<i>Fraxinus</i>	<i>pennsylvanica</i>	Green Ash	3	-3		S5			G5		X		√	√	√	D		D
<i>Fraxinus</i>	<i>sp.</i>	species																
<i>Syringa</i>	<i>vulgaris</i>	Common Lilac		5	-2	SE5			G?		I							
<b>Onagraceae</b>		<b>Evening-primrose Family</b>																
<i>Circaea</i>	<i>lutetiana</i>	Enchanter's Nightshade	3	3		S5			G5T5		X	√	√	√	√			F
<i>Epilobium</i>	<i>ciliatum ssp. ciliatum</i>	Ciliate Willow-herb	3	3		S5			G5T?		X							
<i>Epilobium</i>	<i>parviflorum</i>	Sparse-flowered Willow-herb		3	-1	SE4			G?									
<i>Epilobium</i>	<i>sp.</i>	Willow-herb species																
<i>Oenothera</i>	<i>biennis</i>	Common Evening-primrose	0	3		S5			G5		X							
<b>Orobanchaceae</b>		<b>Broom-rape Family</b>																
<i>Epifagus</i>	<i>virginiana</i>	Beech-drops	6	5		S5			G5	L4	X							
<b>Oxalidaceae</b>		<b>Wood Sorrel Family</b>																
<i>Oxalis</i>	<i>stricta</i>	Upright Yellow Wood-sorrel	0	3		S5			G5		X							
<b>Papaveraceae</b>		<b>Poppy Family</b>																
<i>Sanguinaria</i>	<i>canadensis</i>	Bloodroot	5	4		S5			G5		X							
<b>Phytolaccaceae</b>		<b>Pokeweed Family</b>																
<i>Phytolacca</i>	<i>americana</i>	Pokeweed	3	1		S4			G5	P4L4								
<b>Plantaginaceae</b>		<b>Plantain Family</b>																
<i>Plantago</i>	<i>lanceolata</i>	Ribgrass		0	-1	SE5			G5		I							
<i>Plantago</i>	<i>major</i>	Common Plantain		-1	-1	SE5			G5		I							
<i>Plantago</i>	<i>rugelii</i>	Rugel's Plantain	1	0		S5			G5		X							
<b>Platanaceae</b>		<b>Plane-tree Family</b>																
<i>Platanus</i>	<i>occidentalis</i>	Sycamore	8	-3		S4			G5		X							
<b>Polygonaceae</b>		<b>Smartweed Family</b>																
<i>Polygonum</i>	<i>hydropiper</i>	Water-pepper	4	-5		SE5			G5		I							
<i>Polygonum</i>	<i>lapathifolium</i>	Pale Smartweed	2	-4		S5			G5		X							
<i>Polygonum</i>	<i>pennsylvanicum</i>	Pennsylvania Smartweed	3	-4		S5			G5		X							
<i>Polygonum</i>	<i>persicaria</i>	Lady's-thumb		-3	-1	SE5			G?		I							
<i>Polygonum</i>	<i>sp.</i>	smartweed species																
<i>Polygonum</i>	<i>virginianum</i>	Virginia Knotweed	6	0		S4			G5		X							
<i>Rumex</i>	<i>crispus</i>	Curly-leaf Dock		-1	-2	SE5			G?		I							
<i>Rumex</i>	<i>obtusifolius</i>	Bitter Dock		-3	-1	SE5			G5		I							
<i>Rumex</i>	<i>verticillatus</i>	Swamp Dock	7	-5		S4			G5	P4L								
<i>Rumex</i>	<i>sp.</i>	Dock species																
<b>Portulacaceae</b>																		
<i>Claytonia</i>	<i>Virginica</i>	Virginia Springbeauty				S5			G5							R		
<b>Primulaceae</b>		<b>Primrose Family</b>																
<i>Lysimachia</i>	<i>ciliata</i>	Fringed Loosestrife	4	-3		S5			G5		X	√	√	√				F
<i>Lysimachia</i>	<i>nummularia</i>	Moneywort		-4	-3	SE5			G?		I							F
<b>Pyrolaceae</b>		<b>Wintergreen Family</b>																
<i>Pyrola</i>	<i>elliptica</i>	Shinleaf	5	5		S5			G5	L4	X							











BOTANICAL NAME		COMMON NAME	Coefficient of Conservatism	Wetness Index	Weediness Index	Provincial Status	OMNR Status	COSEWIC Status	Global Status	Local Status Lambton County	Local Status Huron County	177 GSH 1068	177 GSH1068 (GE-72)	177 GSH1068 (SMN-46)	177 GSH1068 (SMN47)	SI_177_GSH1068_2012-04-16_North	189 GSH1023 (GE64)	SI_189_GSH1518&1023_2012-07-04
			Oldham et al	Oldham et al	Oldham et al	Newmaster			Newmaster	Tiedje 2004	Oldham 1993	FOD7-2	FOD7-2	FOD7-2	FOD7-2	FOD7-2	FOD6-5	SWD2-2
<i>Juncus</i>	<i>dudleyi</i>	Dudley's Rush	1	0		S5			G5		X	12-Aug-11	12-Jul-11	12-Jul-11	12-Jul-11	16-Apr-12	12-Jul-11	4-Jul-12
<i>Juncus</i>	<i>effusus</i>	Common rush	4	-5		S5			G5T?									
<i>Juncus</i>	<i>tenuis</i>	Path Rush	0	0		S5			G5		X							
<b>Liliaceae</b>		<b>Lily Family</b>										177						
<i>Allium</i>	<i>triccoccum</i>	Wild Leek	7	2		S5			G5	L4	X						√	
<i>Clintonia</i>	<i>borealis</i>	bluebead lily	7	-1		S5			G5									
<i>Erythronium</i>	<i>americanum ssp. americanum</i>	Yellow trout lilly	5	5		S5			G5T5		X							
<i>Erythronium</i>	<i>albidum</i>	White Trout Lily	5	5		S5			G5T5	X								
<i>Lilium</i>	<i>sp.</i>	Lily species																
<i>Maianthemum</i>	<i>canadense</i>	Wild Lily-of-the-valley	5	0		S5			G5		X						√	
<i>Maianthemum</i>	<i>racemosum ssp. racemosum</i>	False Solomon's Seal	4	3		S5			G5T		X						√	
<i>Maianthemum</i>	<i>stellatum</i>	Star-flowered Solomon's Seal	6	1		S5			G5		X							
<i>Polygonatum</i>	<i>pubescens</i>	Hairy Solomon's Seal	5	5		S5			G5		X							
<i>Streptopus</i>	<i>lanceolatus var roseus</i>	Rose twisted-stalk																
<i>Trillium</i>	<i>erectum</i>	Purple Trillium	6	1		S5			G5		X						√	
<i>Trillium</i>	<i>grandiflorum</i>	White Trillium	5	5		S5			G5		X							
<i>Trillium</i>	<i>sp.</i>	Trillium species																
<i>Uvularia</i>	<i>grandiflora</i>	Large-flowered Bellwort	6	5		S5			G5								√	
<i>Uvularia</i>	<i>perfoliata</i>	Perfoliate Bellwort	10	5		S1			G5									
<b>Orchidaceae</b>		<b>Orchid Family</b>																
<i>Epipactis</i>	<i>helleborine</i>	Common Helleborine		5	-2	SE5			G?		I							
<b>Poaceae</b>		<b>Grass Family</b>																
<i>Grass</i>	<i>sp.</i>	Grass species																
<i>Agrostis</i>	<i>gigantea</i>	Red-top		0	-2	SE5			G4G5		I							
<i>Bromus</i>	<i>inermis ssp. inermis</i>	Awnless Brome		5	-3	SE5			G4G5T?		I							
<i>Bromus</i>	<i>sp.</i>	Brome species																
<i>Dactylis</i>	<i>glomerata</i>	Orchard Grass		3	-1	SE5			G?		I							
<i>Echinochloa</i>	<i>crusgalli</i>	Common Barnyard Grass		-3	-1	SE5			G?		I							
<i>Elymus</i>	<i>hystrix</i>	Bottle-brush Grass	5	5		S5			G5		X							
<i>Elymus</i>	<i>repens</i>	Quack Grass		3	-3	SE5			G?		I							
<i>Elymus</i>	<i>riparius</i>	River-bank Wild Rye	7	-3		S4?			G5		X							
<i>Elymus</i>	<i>virginicus var. virginicus</i>	Virginia Wild Rye	5	-2		S5			G5T?		X							
<i>Glyceria</i>	<i>striata</i>	Fowl Manna Grass	3	-5		S5			G5		X	√	√	√	√			U
<i>Leersia</i>	<i>oryzoides</i>	Rice Cut Grass	3	-5		S5			G5		X							
<i>Leersia</i>	<i>virginica</i>	White Cut Grass	6	-3		S4			G5		X							
<i>Lolium</i>	<i>arundinaceum</i>	Tall Fescue		2	-1	SE5			G?		I							
<i>Panicum</i>	<i>dichotomiflorum</i>	Fall Panicum		-2	-1	SE5			G5		I							
<i>Phalaris</i>	<i>arundinacea</i>	Reed Canary Grass	0	-4		S5			G5		X		√	√	√			
<i>Phleum</i>	<i>pratense</i>	Timothy		3	-1	SE5			G?		I							
<i>Phragmites</i>	<i>australis</i>	Common Reed	0	-4		S5			G5									
<i>Poa</i>	<i>compressa</i>	Canada Blue Grass	0	2		S5			G?		X							
<i>Poa</i>	<i>palustris</i>	Fowl Meadow Grass	5	-4		S5			G5		X							
<i>Poa</i>	<i>pratensis ssp. pratensis</i>	Kentucky Bluegrass	0	1		S5			G5T		X							



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												12-Aug-11	12-Jul-11	12-Jul-11	12-Jul-11	16-Apr-12	12-Jul-11	4-Jul-12
												177						
		Oldham et al	Oldham et al	Oldham et al	Newmaster			Newmaster	Tiedje 2004	Oldham 1993	FOD7-2	FOD7-2	FOD7-2	FOD7-2	FOD7-2	FOD6-5	SWD2-2	

FLORISTIC SUMMARY & ASSESSMENT			
<b>Species Diversity</b>			
Total Species:		<b>368</b>	
Native Species:		<b>278</b>	75.54%
Exotic Species		<b>90</b>	24.46%
Total Taxa in Region (List Region, Source)		10000	
% Regional Taxa Recorded		3.68%	
Regionally Significant Species		0	
S1-S3 Species		5	
S4 Species		14	
S5 Species		253	
<b>Co-efficient of Conservatism and Floral Quality Index</b>			
Co-efficient of Conservatism (CC) (average)		<b>4.46</b>	
CC 0 to 3	lowest sensitivity	81	29.14%
CC 4 to 6	moderate sensitivity	155	55.76%
CC 7 to 8	high sensitivity	38	13.67%
CC 9 to 10	highest sensitivity	4	1.44%
Floral Quality Index (FQI)		<b>74.37</b>	
<b>Presence of Weedy &amp; Invasive Species</b>			
mean weediness		<b>-1.67</b>	
weediness = -1	low potential invasiveness	49	54.44%
weediness = -2	moderate potential invasiveness	22	24.44%
weediness = -3	high potential invasiveness	19	21.11%
<b>Presence of Wetland Species</b>			
average wetness value		<b>0.71</b>	
upland		89	24.18%
facultative upland		89	24.18%
facultative		69	18.75%
facultative wetland		76	20.65%
obligate wetland		44	11.96%

BOTANICAL NAME	COMMON NAME	189_GSH1023 (2nd visit)	189_GSH1557	189_GSH1091 (GSH-65)	189_GSH 1097/1557	189 GSH1559/1091	189_GSH1515	190_GSH1515	198_GSH1020/ 2176	198_GSH1020/ 2176	198_GSH2176	198_GSH2176	198_GSH2176	198_GSH2176	203_GSH1510	204 GSH1535&153 6	206_GSH1062 (GE47 P1 -Jul. 20)		
		12-Aug-11	7-Nov-11	13-Jul-11	23-Apr-12	26-Apr-12	4-Jul-12	14-Oct-11	17-May-12	17-May-12	17-Apr-12	17-Apr-12	17-Apr-12	7-Nov-11	30-Apr-12	23-Apr-12	20-Jul-11		
		189							190	198							203	204	
		FOD6-5	FOD7d	FOD9-5	FOD7-1	FOD9-4	SWD2-2	CUW1m FOD5-8	FOD7-2	CUM1-1	SWD2	FOD7-2	CUT1	CUT1h	FOD 9-3	CUM1-1	FOD9-4		
<b>PTERIDOPHYTES</b>		<b>FERNS &amp; ALLIES</b>																	
<b>Dennstaedtiaceae</b>		<b>Bracken Fern Family</b>																	
<i>Pteridium</i>	<i>aquilinum var. latiusculum</i>	Eastern Bracken-fern																	
<b>Dryopteridaceae</b>		<b>Wood Fern Family</b>																	
<i>Athyrium</i>	<i>filix-femina var. angustum</i>	Northern Lady Fern																	
<i>Cystopteris</i>	<i>bulbifera</i>	bulblet bladderfern																	
<i>Dryopteris</i>	<i>carthusiana</i>	Spinulose Wood Fern																	
<i>Dryopteris</i>	<i>intermedia</i>	Evergreen Wood Fern																	
<i>Dryopteris</i>	<i>marginalis</i>	Marginal Wood Fern																	
<i>Onoclea</i>	<i>sensibilis</i>	Sensitive Fern																	
<i>Polystichum</i>	<i>acrostichoides</i>	Christmas Fern																	
<b>Equisetaceae</b>		<b>Horsetail Family</b>																	
<i>Equisetum</i>	<i>arvense</i>	Field Horsetail																	
<i>Equisetum</i>	<i>hyemale var. affine</i>	Scouring-rush																	
<i>Equisetum</i>	<i>pratense</i>	Meadow Horsetail																	
<i>Equisetum</i>	<i>sp.</i>	Horestail species																	
<b>Lycopodiaceae</b>		<b>Clubmoss Family</b>																	
<i>Lycopodium</i>	<i>obscurum</i>	Ground-pine																	
<b>Osmundaceae</b>		<b>Royal Fern Family</b>																	
<i>Osmunda</i>	<i>regalis</i>	Royal Fern																	
<b>Thelypteridaceae</b>		<b>Marsh Fern Family</b>																	
<i>Thelypteris</i>	<i>noveboracensis</i>	New York Fern																	
<i>Thelypteris</i>	<i>palustris var. pubescens</i>	Marsh Fern																	
<b>GYMNOSPERMS</b>		<b>CONIFERS</b>																	
<b>Cupressaceae</b>		<b>Cedar Family</b>																	
<i>Juniperus</i>	<i>virginiana</i>	Eastern Red Cedar																	
<i>Juniperus</i>	<i>communis</i>	Common Juniper																	
<i>Thuja</i>	<i>occidentalis</i>	Eastern White Cedar																	
<b>Pinaceae</b>		<b>Pine Family</b>																	
<i>Picea</i>	<i>abies</i>	Norway Spruce																	
<i>Abies</i>	<i>balsamea</i>	Balsam Fir																	
<i>Picea</i>	<i>glauca</i>	White Spruce																	
<i>Picea</i>	<i>pungens</i>	Colorado Spruce																	
<i>Pinus</i>	<i>banksiana</i>	Jack Pine																	
<i>Pinus</i>	<i>nigra</i>	Austrian Pine																	
<i>Pinus</i>	<i>strobus</i>	Eastern White Pine																	
<i>Pinus</i>	<i>sylvestris</i>	Scots Pine																	
<i>Pinus</i>	<i>resinosa</i>	Red Pine																	
<i>Tsuga</i>	<i>canadensis</i>	Eastern Hemlock																	
<b>Taxaceae</b>		<b>Yew Family</b>																	
<i>Taxus</i>	<i>canadensis</i>	American Yew																	
<b>DICOTYLED+D308ONS</b>		<b>DICOTS</b>																	
<b>Aceraceae</b>		<b>Maple Family</b>																	









BOTANICAL NAME	COMMON NAME	189_GSH1023 (2nd visit)	189_GSH1557	189_GSH1091 (GSH-65)	189_GSH 1097/1557	189 GSH1559/1091	189_GSH1515	190_GSH1515	198_GSH1020/ 2176	198_GSH1020/ 2176	198_GSH2176	198_GSH2176	198_GSH2176	198_GSH2176	203_GSH1510	204 GSH1535&153 6	206_GSH1062 (GE47 P1 -Jul. 20)		
		12-Aug-11	7-Nov-11	13-Jul-11	23-Apr-12	26-Apr-12	4-Jul-12	14-Oct-11	17-May-12	17-May-12	17-Apr-12	17-Apr-12	17-Apr-12	7-Nov-11	30-Apr-12	23-Apr-12	20-Jul-11		
		189							190	198							203	204	
		FOD6-5	FOD7d	FOD9-5	FOD7-1	FOD9-4	SWD2-2	CUW1m FOD5-8	FOD7-2	CUM1-1	SWD2	FOD7-2	CUT1	CUT1h	FOD 9-3	CUM1-1	FOD9-4		
<b>Convolvulaceae</b>		<b>Morning-glory Family</b>																	
<i>Convolvulus</i>	<i>arvensis</i>	Field Bindweed																	
<b>Cornaceae</b>		<b>Dogwood Family</b>																	
<i>Cornus</i>	<i>alternifolia</i>	Alternate-leaved Dogwood																	
<i>Cornus</i>	<i>amomum ssp. obliqua</i>	Silky Dogwood																	
<i>Cornus</i>	<i>racemosa</i>	Grey dogwood	√				R		√						R				
<i>Cornus</i>	<i>sericea</i>	Red-osier Dogwood	√			R			F	F			R						
<i>Cornus</i>	<i>rugosa</i>	Round-leaved Dogwood																	
<b>Cucurbitaceae</b>		<b>Gourd Family</b>																	
<i>Echinocystis</i>	<i>lobata</i>	Prickly Cucumber							R		R								
<b>Dipsacaceae</b>		<b>Teasel Family</b>																	
<i>Dipsacus</i>	<i>fullonum ssp. sylvestris</i>	Wild Teasel													R				
<b>Elaeagnaceae</b>		<b>Oleaster Family</b>																	
<i>Elaeagnus</i>	<i>angustifolia</i>	Russian Olive																	
<i>Elaeagnus</i>	<i>umbellata</i>	Autum Olive																	
<i>Sheperdia</i>	<i>canadensis</i>	Buffaloberry																	
<b>Ericaceae</b>		<b>Heath Family</b>																	
<i>Lotus</i>	<i>corniculatus</i>	Bird's-foot Trefoil							√										
<b>Euphorbiaceae</b>		<b>Spurge Family</b>																	
<i>Acalypha</i>	<i>rhomboidea</i>	Three-seeded Mercury																	
<b>Fabaceae</b>		<b>Pea Family</b>																	
<i>Lotus</i>	<i>corniculatus</i>	Bird's-foot Trefoil																	
<i>Medicago</i>	<i>lupulina</i>	Black Medick																	
<i>Medicago</i>	<i>Sativa</i>	alfalfa																	
<i>Melilotus</i>	<i>alba</i>	White Sweet-clover																	
<i>Melilotus</i>	<i>officinalis</i>	Yellow Sweet-clover																	
<i>Robinia</i>	<i>pseudo-acacia</i>	Black Locust																	
<i>Trifolium</i>	<i>pratense</i>	Red Clover								U	U								
<i>Trifolium</i>	<i>sp.</i>	Clover species																	
<i>Trifolium</i>	<i>repens</i>	White Clover																	
<i>Vicia</i>	<i>cracca</i>	Tufted Vetch																	
<b>Fagaceae</b>		<b>Beech Family</b>																	
<i>Fagus</i>	<i>grandifolia</i>	American Beech	√				F								R				
<i>Quercus</i>	<i>alba</i>	White Oak						R											
<i>Quercus</i>	<i>macrocarpa</i>	Bur Oak	√				R		√				U		D		√		
<i>Quercus</i>	<i>rubra</i>	Red Oak													R				
<b>Fumariaceae</b>		<b>Fumitory Family</b>																	
<i>Dicentra</i>	<i>canadensis</i>	Squirrel-corn																	
<i>Dicentra</i>	<i>cucullaria</i>	Dutchman's-breeches																	
<b>Geraniaceae</b>		<b>Geranium Family</b>																	
<i>Geranium</i>	<i>maculatum</i>	Spotted Crane's-bill	√	√				U							U		√		
<i>Geranium</i>	<i>robertianum</i>	Herb-robert	√	√					√						U		√		

BOTANICAL NAME	COMMON NAME	189_GSH1023 (2nd visit)	189_GSH1557	189_GSH1091 (GSH-65)	189_GSH 1097/1557	189 GSH1559/1091	189_GSH1515	190_GSH1515	198_GSH1020/ 2176	198_GSH1020/ 2176	198_GSH2176	198_GSH2176	198_GSH2176	198_GSH2176	203_GSH1510	204 GSH1535&153 6	206_GSH1062 (GE47 P1 -Jul. 20)
		12-Aug-11	7-Nov-11	13-Jul-11	23-Apr-12	26-Apr-12	4-Jul-12	14-Oct-11	17-May-12	17-May-12	17-Apr-12	17-Apr-12	17-Apr-12	7-Nov-11	30-Apr-12	23-Apr-12	20-Jul-11
		189						190	198						203	204	
		FOD6-5	FOD7d	FOD9-5	FOD7-1	FOD9-4	SWD2-2	CUW1m FOD5-8	FOD7-2	CUM1-1	SWD2	FOD7-2	CUT1	CUT1h	FOD 9-3	CUM1-1	FOD9-4
<b>Grossulariaceae</b>		<b>Currant Family</b>															
<i>Ribes</i>	<i>americanum</i>	Wild Black Currant				U	U	√	U	U							
<i>Ribes</i>	<i>cynosbati</i>	Prickly Gooseberry	√	√					U								
<i>Ribes</i>	<i>lacustre</i>	Swamp Black Currant				R											
<i>Ribes</i>	<i>rubrum</i>	Red Currant															
<i>Ribes</i>	<i>triste</i>	Wild Red Currant															
<i>Ribes</i>	<i>sp.</i>	Currant species										F					
<b>Guttiferae</b>		<b>St. John's-wort Family</b>															
<i>Hypericum</i>	<i>perforatum</i>	Common St. John's-wort															
<i>Hypericum</i>	<i>punctatum</i>	Spotted St. John's-wort															
<b>Hamamelidaceae</b>		<b>Witch-hazel Family</b>															
<i>Hamamelis</i>	<i>virginiana</i>	Witch-hazel	√		√												
<b>Hydrophyllaceae</b>		<b>Water-leaf Family</b>															
<i>Hydrophyllum</i>	<i>virginianum</i>	Virginia Water-leaf				U											
<b>Juglandaceae</b>		<b>Walnut Family</b>															
<i>Carya</i>	<i>cordiformis</i>	Bitternut hickory	√		√		U	F							U		√
<i>Carya</i>	<i>ovata var. ovata</i>	Shagbark Hickory	√		√		F	F							F		√
<i>Carya</i>	<i>sp</i>	Hickory species															
<i>Juglans</i>	<i>cinerea</i>	Butternut															
<i>Juglans</i>	<i>nigra</i>	Black Walnut															
<b>Lamiaceae</b>		<b>Mint Family</b>															
<i>Clinopodium</i>	<i>vulgare</i>	Wild Basil															
<i>Leonurus</i>	<i>cardiaca ssp. cardiaca</i>	Common Motherwort															
<i>Lycopus</i>	<i>americanus</i>	Cut-leaved Water-horehound															
<i>Lycopus</i>	<i>uniflorus</i>	Northern Water-horehound															
<i>Mentha</i>	<i>arvensis</i>	American Wild Mint															√
<i>Mentha</i>	<i>sp.</i>	species															
<i>Prunella</i>	<i>vulgaris ssp. vulgaris</i>	Heal-all													R		
<i>Scutellaria</i>	<i>lateriflora</i>	Mad-dog Skullcap															
<i>Satureja</i>	<i>vulgaris</i>	wild basil															
<b>Lauraceae</b>		<b>Laurel Family</b>															
<i>Lindera</i>	<i>benzoin</i>	Spicebush															
<b>Malvaceae</b>		<b>Mallow Family</b>															
<i>Abutilon</i>	<i>theophrasti</i>	Velvet-leaf															
<i>Malva</i>	<i>neglecta</i>	Cheeses															
<b>Montiaceae</b>		<b>Montia Family</b>															
<i>Claytonia</i>	<i>caroliniana</i>	Carolina Spring Beauty															
<i>Claytonia</i>	<i>virginica</i>	Virginia Spring Beauty															
<b>Menispermaceae</b>		<b>Moonseed Family</b>															
<i>Menispermum</i>	<i>canadense</i>	Moonseed															
<b>Oleaceae</b>		<b>Olive Family</b>															
<i>Fraxinus</i>	<i>americana</i>	White Ash	√			U		√							R		√

















<b>BOTANICAL NAME</b>	<b>COMMON NAME</b>	189_GSH1023 (2nd visit)	189_GSH1557	189_GSH1091 (GSH-65)	189_GSH 1097/1557	189 GSH1559/1091	189_GSH1515	190_GSH1515	198_GSH1020/ 2176	198_GSH1020/ 2176	198_GSH2176	198_GSH2176	198_GSH2176	198_GSH2176	203_GSH1510	204 GSH1535&153 6	206_GSH1062 (GE47 P1 -Jul. 20)
		12-Aug-11	7-Nov-11	13-Jul-11	23-Apr-12	26-Apr-12	4-Jul-12	14-Oct-11	17-May-12	17-May-12	17-Apr-12	17-Apr-12	17-Apr-12	7-Nov-11	30-Apr-12	23-Apr-12	20-Jul-11
		189						190	198						203	204	
		FOD6-5	FOD7d	FOD9-5	FOD7-1	FOD9-4	SWD2-2	CUW1m FOD5-8	FOD7-2	CUM1-1	SWD2	FOD7-2	CUT1	CUT1h	FOD 9-3	CUM1-1	FOD9-4

**FLORISTIC SUMMARY & ASSESSMENT**

<b>Species Diversity</b>	
Total Species:	<b>368</b>
Native Species:	<b>278</b>
Exotic Species	<b>90</b>
Total Taxa in Region (List Region, Source)	10000
% Regional Taxa Recorded	3.68%
Regionally Significant Species	0
S1-S3 Species	5
S4 Species	14
S5 Species	253

**Co-efficient of Conservatism and Floral Quality Index**

Co-efficient of Conservatism (CC) (average)		<b>4.46</b>
CC 0 to 3	lowest sensitivity	81
CC 4 to 6	moderate sensitivity	155
CC 7 to 8	high sensitivity	38
CC 9 to 10	highest sensitivity	4
<b>Floral Quality Index (FQI)</b>		<b>74.37</b>

**Presence of Weedy & Invasive Species**

mean weediness		<b>-1.67</b>
weediness = -1	low potential invasiveness	49
weediness = -2	moderate potential invasiveness	22
weediness = -3	high potential invasiveness	19

**Presence of Wetland Species**

average wetness value		<b>0.71</b>
upland		89
facultative upland		89
facultative		69
facultative wetland		76
obligate wetland		44

BOTANICAL NAME	COMMON NAME	206 GSH1062 (GE47 P2 -Jul-20)	206 GSH1062 (GE42 V1)	209 GSH1066	209 GSH1066	209 GSH1066	209 GSH1066	209 GSH1066	209 GSH1066	209 GSH1066	209 GSH1066	209 GSH1066	210 GSH1075/1090 /1022 (P1)	210 GSH1075/1090 /1022 (P2)	210 GSH1022	210 GSH1022	210 GSH1022	215 GSH1067	
		20-Jul-11	8-Sep-11	1-May-12	1-May-12	1-May-12	1-May-12	29-Jun-12	29-Jun-12	4-Jul-12	4-Jul-12	4-Jul-12	11-Aug-11	11-Aug-11	1-May-12	1-May-12	1-May-12	4-Oct-11	
		206		209										210					21
		CUW1c	CUW1c	FOD2-1	FOD9e	CUP3d	CUP3-2	CUP2b	CUT1	CUP2	CUT1	FOD4-2	FOD7-1	CUT1i	CUM1-1	FOD7-2	FOD6-5 SWD3-3		
<b>PTERIDOPHYTES</b>		<b>FERNS &amp; ALLIES</b>																	
<b>Dennstaedtiaceae</b>		<b>Bracken Fern Family</b>																	
<i>Pteridium</i>	<i>aquilinum var. latiusculum</i>																		
<b>Dryopteridaceae</b>		<b>Wood Fern Family</b>																	
<i>Athyrium</i>	<i>filix-femina var. angustum</i>																	√	
<i>Cystopteris</i>	<i>bulbifera</i>																		
<i>Dryopteris</i>	<i>carthusiana</i>																		
<i>Dryopteris</i>	<i>intermedia</i>																	√	
<i>Dryopteris</i>	<i>marginalis</i>																	√	
<i>Onoclea</i>	<i>sensibilis</i>				U													√	
<i>Polystichum</i>	<i>acrostichoides</i>																		
<b>Equisetaceae</b>		<b>Horsetail Family</b>																	
<i>Equisetum</i>	<i>arvense</i>												√						
<i>Equisetum</i>	<i>hyemale var. affine</i>																		
<i>Equisetum</i>	<i>pratense</i>																		
<i>Equisetum</i>	<i>sp.</i>																		
<b>Lycopodiaceae</b>		<b>Clubmoss Family</b>																	
<i>Lycopodium</i>	<i>obscurum</i>																		
<b>Osmundaceae</b>		<b>Royal Fern Family</b>																	
<i>Osmunda</i>	<i>regalis</i>																		
<b>Thelypteridaceae</b>		<b>Marsh Fern Family</b>																	
<i>Thelypteris</i>	<i>noveboracensis</i>																		
<i>Thelypteris</i>	<i>palustris var. pubescens</i>																		
<b>GYMNOSPERMS</b>		<b>CONIFERS</b>																	
<b>Cupressaceae</b>		<b>Cedar Family</b>																	
<i>Juniperus</i>	<i>virginiana</i>																		
<i>Juniperus</i>	<i>communis</i>																		
<i>Thuja</i>	<i>occidentalis</i>																		
<b>Pinaceae</b>		<b>Pine Family</b>																	
<i>Picea</i>	<i>abies</i>																		
<i>Abies</i>	<i>balsamea</i>						F												
<i>Picea</i>	<i>glauca</i>																		
<i>Picea</i>	<i>pungens</i>																		
<i>Pinus</i>	<i>banksiana</i>																		
<i>Pinus</i>	<i>nigra</i>																		
<i>Pinus</i>	<i>strobus</i>						F	D	D	F	F								
<i>Pinus</i>	<i>sylvestris</i>						F												
<i>Pinus</i>	<i>resinosa</i>						F												
<i>Tsuga</i>	<i>canadensis</i>																		
<b>Taxaceae</b>		<b>Yew Family</b>																	
<i>Taxus</i>	<i>canadensis</i>																		
<b>DICOTYLED+D308ONS</b>		<b>DICOTS</b>																	
<b>Aceraceae</b>		<b>Maple Family</b>																	

BOTANICAL NAME		COMMON NAME		206 GSH1062 (GE47 P2 -Jul. 20)	206 GSH1062 (GE42 V1)	209 GSH1066	209 GSH1066	209 GSH1066	209 GSH1066	209 GSH1066	209 GSH1066	209 GSH1066	209 GSH1066	209 GSH1066	209 GSH1066	209 GSH1066	210 GSH1075/1090 /1022 (P1)	210 GSH1075/1090 /1022 (P2)	210 GSH1022	210 GSH1022	210 GSH1022	215 GSH1067
				20-Jul-11	8-Sep-11	1-May-12	1-May-12	1-May-12	1-May-12	29-Jun-12	29-Jun-12	4-Jul-12	4-Jul-12	4-Jul-12	11-Aug-11	11-Aug-11	1-May-12	1-May-12	1-May-12	4-Oct-11		
				206		209										210					21	
				CUW1c	CUW1c	FOD2-1	FOD9e	CUP3d	CUP3-2	CUP2b	CUT1	CUP2	CUT1	FOD4-2	FOD7-1	CUT1i	CUM1-1	FOD7-2	FOD6-5 SWD3-3			
<i>Acer</i>	<i>negundo</i>	Manitoba Maple															√	√	U		U	
<i>Acer</i>	<i>rubrum</i>	Red Maple				F												√				
<i>Acer</i>	<i>saccharinum</i>	Silver Maple																				
<i>Acer</i>	<i>saccharum</i>	Sugar Maple				F				F			R				√				R	√
<i>Acer X</i>	<i>freemanii</i>	Freeman's Maple																√				√
<i>Acer</i>	<i>platanoides</i>	Norway Maple																				
<b>Amaranthaceae</b>		<b>Amaranth Family</b>																				
<i>Amaranthus</i>	<i>retroflexus</i>	Green Amaranth																				
<b>Anacardiaceae</b>		<b>Sumac or Cashew Family</b>																				
<i>Toxicodendron</i>	<i>rydbergii</i>	Ground Poison-ivy																				
<i>Toxicodendron</i>	<i>radicans ssp. negundo</i>	Climbing Poison-ivy								U	R											√
<i>Rhus</i>	<i>Glabra</i>	Smooth Sumac																				
<i>Rhus</i>	<i>hirta</i>	Staghorn Sumac	√	√										F								
<b>Apiaceae</b>		<b>Carrot or Parsley Family</b>																				
<i>Angelica</i>	<i>atropurpurea</i>	Purple Angelica																				
<i>Angelica</i>	<i>sylvestris</i>	woodland angelica																				
<i>Cicuta</i>	<i>maculata</i>	Spotted Water-hemlock																				
<i>Cicuta</i>	<i>Virosa</i>	Water Hemlock																				
<i>Daucus</i>	<i>carota</i>	Wild Carrot	√	√			U			R	U	U						U	U			
<i>Sium</i>	<i>suave</i>	Hemlock Water-parsnip																				
<b>Apocynaceae</b>		<b>Dogbane Family</b>																				
<i>Apocynum</i>	<i>cannabinum</i>	Indian Hemp																				
<i>Vinca</i>	<i>minor</i>	Periwinkle																				
<b>Aquifoliaceae</b>		<b>Holly Family</b>																				
<i>Ilex</i>	<i>verticillata</i>	Winterberry																				
<b>Araliaceae</b>		<b>Ginseng Family</b>																				
<i>Aralia</i>	<i>nudicaulis</i>	Wild Sarsaparilla																				
<b>Aristolochiaceae</b>		<b>Duchman's-pipe Family</b>																				
<i>Asarum</i>	<i>canadense</i>	Wild Ginger																				
<b>Asclepiadaceae</b>		<b>Milkweed Family</b>																				
<i>Asclepias</i>	<i>incarnata ssp. incarnata</i>	Swamp Milkweed																				
<i>Asclepias</i>	<i>syriaca</i>	Common Milkweed	√	√					U		R	R										
<b>Asteraceae</b>		<b>Composite or Aster Family</b>																				
<i>Achillea</i>	<i>millefolium var. millefolium</i>	Common Yarrow		√			U				R	U						U	U			
<i>Ambrosia</i>	<i>artemisiifolia</i>	Common Ragweed		√													√					
<i>Ambrosia</i>	<i>trifida</i>	Giant Ragweed		√																		
<i>Arctium</i>	<i>minus</i>	Common Burdock	√	√					R										U	U		
<i>Symphyotrichum</i>	<i>sp.</i>	Aster species	√	√			U															
<i>Symphyotrichum</i>	<i>cordifolium</i>	Heart-leaved Aster																				
<i>Symphyotrichum</i>	<i>ericoides</i>	White Heath Aster		√																		
<i>Symphyotrichum</i>	<i>lanceolatum</i>	Tall White Aster		√																		
<i>Symphyotrichum</i>	<i>lanceolatum</i>	Panicled Aster															√					







BOTANICAL NAME	COMMON NAME	206 GSH1062 (GE47 P2 -Jul. 20)	206 GSH1062 (GE42 V1)	209 GSH1066	209 GSH1066	209 GSH1066	209 GSH1066	209 GSH1066	209 GSH1066	209 GSH1066	209 GSH1066	209 GSH1066	210 GSH1075/1090 /1022 (P1)	210 GSH1075/1090 /1022 (P2)	210 GSH1022	210 GSH1022	210 GSH1022	215 GSH1067	
		20-Jul-11	8-Sep-11	1-May-12	1-May-12	1-May-12	1-May-12	29-Jun-12	29-Jun-12	4-Jul-12	4-Jul-12	4-Jul-12	11-Aug-11	11-Aug-11	1-May-12	1-May-12	1-May-12	4-Oct-11	
		206		209										210					215
		CUW1c	CUW1c	FOD2-1	FOD9e	CUP3d	CUP3-2	CUP2b	CUT1	CUP2	CUT1	FOD4-2	FOD7-1	CUT1i	CUM1-1	FOD7-2	FOD6-5 SWD3-3		
<b>Grossulariaceae</b>		<b>Currant Family</b>																	
<i>Ribes</i>	<i>americanum</i>									R									
<i>Ribes</i>	<i>cynosbati</i>												√					√	
<i>Ribes</i>	<i>lacustre</i>									R								√	
<i>Ribes</i>	<i>rubrum</i>																		
<i>Ribes</i>	<i>triste</i>												√						
<i>Ribes</i>	<i>sp.</i>																		
<b>Guttiferae</b>		<b>St. John's-wort Family</b>																	
<i>Hypericum</i>	<i>perforatum</i>		√																
<i>Hypericum</i>	<i>punctatum</i>																		
<b>Hamamelidaceae</b>		<b>Witch-hazel Family</b>																	
<i>Hamamelis</i>	<i>virginiana</i>																		
<b>Hydrophyllaceae</b>		<b>Water-leaf Family</b>																	
<i>Hydrophyllum</i>	<i>virginianum</i>																	√	
<b>Juglandaceae</b>		<b>Walnut Family</b>																	
<i>Carya</i>	<i>cordiformis</i>									R								√	
<i>Carya</i>	<i>ovata var. ovata</i>				F								√	√				√	
<i>Carya</i>	<i>sp.</i>																		
<i>Juglans</i>	<i>cinerea</i>																		
<i>Juglans</i>	<i>nigra</i>									R	R		√		R		R		
<b>Lamiaceae</b>		<b>Mint Family</b>																	
<i>Clinopodium</i>	<i>vulgare</i>																		
<i>Leonurus</i>	<i>cardiaca ssp. cardiaca</i>																		
<i>Lycopus</i>	<i>americanus</i>																		
<i>Lycopus</i>	<i>uniflorus</i>																		
<i>Mentha</i>	<i>arvensis</i>																		
<i>Mentha</i>	<i>sp.</i>																		
<i>Prunella</i>	<i>vulgaris ssp. vulgaris</i>																		
<i>Scutellaria</i>	<i>lateriflora</i>																		
<i>Satureja</i>	<i>vulgaris</i>																		
<b>Lauraceae</b>		<b>Laurel Family</b>																	
<i>Lindera</i>	<i>benzoin</i>			U	F														
<b>Malvaceae</b>		<b>Mallow Family</b>																	
<i>Abutilon</i>	<i>theophrasti</i>																		
<i>Malva</i>	<i>neglecta</i>																		
<b>Montiaceae</b>		<b>Montia Family</b>																	
<i>Claytonia</i>	<i>caroliniana</i>																		
<i>Claytonia</i>	<i>virginica</i>																		
<b>Menispermaceae</b>		<b>Moonseed Family</b>																	
<i>Menispermum</i>	<i>canadense</i>																		
<b>Oleaceae</b>		<b>Olive Family</b>																	
<i>Fraxinus</i>	<i>americana</i>		√							U	F		√	√				√	

















<b>BOTANICAL NAME</b>	<b>COMMON NAME</b>	206 GSH1062 (GE47 P2 -Jul. 20)	206 GSH1062 (GE42 V1)	209 GSH1066	209 GSH1066	209 GSH1066	209 GSH1066	209 GSH1066	209 GSH1066	209 GSH1066	209 GSH1066	209 GSH1066	210 GSH1075/1090 /1022 (P1)	210 GSH1075/1090 /1022 (P2)	210 GSH1022	210 GSH1022	210 GSH1022	215 GSH1067
		20-Jul-11	8-Sep-11	1-May-12	1-May-12	1-May-12	1-May-12	29-Jun-12	29-Jun-12	4-Jul-12	4-Jul-12	4-Jul-12	11-Aug-11	11-Aug-11	1-May-12	1-May-12	1-May-12	4-Oct-11
		206		209										210				215
		CUW1c	CUW1c	FOD2-1	FOD9e	CUP3d	CUP3-2	CUP2b	CUT1	CUP2	CUT1	FOD4-2	FOD7-1	CUT1i	CUM1-1	FOD7-2	FOD6-5 SWD3-3	

**FLORISTIC SUMMARY & ASSESSMENT**

<b>Species Diversity</b>	
Total Species:	<b>368</b>
Native Species:	<b>278</b>
Exotic Species	<b>90</b>
Total Taxa in Region (List Region, Source)	10000
% Regional Taxa Recorded	3.68%
Regionally Significant Species	0
S1-S3 Species	5
S4 Species	14
S5 Species	253

**Co-efficient of Conservatism and Floral Quality Index**

Co-efficient of Conservatism (CC) (average)		<b>4.46</b>
CC 0 to 3	lowest sensitivity	81
CC 4 to 6	moderate sensitivity	155
CC 7 to 8	high sensitivity	38
CC 9 to 10	highest sensitivity	4
<b>Floral Quality Index (FQI)</b>		<b>74.37</b>

**Presence of Weedy & Invasive Species**

mean weediness		<b>-1.67</b>
weediness = -1	low potential invasiveness	49
weediness = -2	moderate potential invasiveness	22
weediness = -3	high potential invasiveness	19

**Presence of Wetland Species**

average wetness value		<b>0.71</b>
upland		89
facultative upland		89
facultative		69
facultative wetland		76
obligate wetland		44



BOTANICAL NAME	COMMON NAME	215 GSH1067 & 2018 (2nd Visit)	216 GSH1528 (GE 61)	216 GSH1528 (V1)	216 GSH1528 (V2)	216 GSH 1532	196 GSH1532	217 GSH2028	217 GSH2028	220 GSH1539	220 GSH1539 (2nd visit)	225 GSH1949 (GE 43)	225 GSH1949	226 GSH1949	225 GSH1949	227_GSH1605	229 GSH1740
		4-Oct-11 8-Nov-11	13-Dec-11	7-Sep-11	7-Sep-11	13-Dec-11	7-Sep-11	30-Apr-12	30-Apr-12	26-Apr-12	18-May-12	13-Jul-11	17-Apr-12	17-Apr-12	17-Apr-12	18-May-12	13-Oct-11
		5	216					217		220		225				227	
		FOD4f	FOD9-2	FOD9-2	CUM1-1	FOD9-2	FOD7-2 CUW1d	FOD7-2	SWD3-1	CUM1-1	CUM1-1	SWD2-2	SWD2-2	FOD9d	MAM2-2	CUM1-1	FOD4b
<b>PTERIDOPHYTES</b>		<b>FERNS &amp; ALLIES</b>															
<b>Dennstaedtiaceae</b>		<b>Bracken Fern Family</b>															
<i>Pteridium</i>	<i>aquilinum var. latiusculum</i>	Eastern Bracken-fern															
<b>Dryopteridaceae</b>		<b>Wood Fern Family</b>															
<i>Athyrium</i>	<i>filix-femina var. angustum</i>	Northern Lady Fern															
<i>Cystopteris</i>	<i>bulbifera</i>	bulblet bladderfern															
<i>Dryopteris</i>	<i>carthusiana</i>	Spinulose Wood Fern															
<i>Dryopteris</i>	<i>intermedia</i>	Evergreen Wood Fern															
<i>Dryopteris</i>	<i>marginalis</i>	Marginal Wood Fern															
<i>Onoclea</i>	<i>sensibilis</i>	Sensitive Fern															
<i>Polystichum</i>	<i>acrostichoides</i>	Christmas Fern															
<b>Equisetaceae</b>		<b>Horsetail Family</b>															
<i>Equisetum</i>	<i>arvense</i>	Field Horsetail															
<i>Equisetum</i>	<i>hyemale var. affine</i>	Scouring-rush															
<i>Equisetum</i>	<i>pratense</i>	Meadow Horsetail															
<i>Equisetum</i>	<i>sp.</i>	Horestail species															
<b>Lycopodiaceae</b>		<b>Clubmoss Family</b>															
<i>Lycopodium</i>	<i>obscurum</i>	Ground-pine															
<b>Osmundaceae</b>		<b>Royal Fern Family</b>															
<i>Osmunda</i>	<i>regalis</i>	Royal Fern															
<b>Thelypteridaceae</b>		<b>Marsh Fern Family</b>															
<i>Thelypteris</i>	<i>noveboracensis</i>	New York Fern															
<i>Thelypteris</i>	<i>palustris var. pubescens</i>	Marsh Fern															
<b>GYMNOSPERMS</b>		<b>CONIFERS</b>															
<b>Cupressaceae</b>		<b>Cedar Family</b>															
<i>Juniperus</i>	<i>virginiana</i>	Eastern Red Cedar															
<i>Juniperus</i>	<i>communis</i>	Common Juniper															
<i>Thuja</i>	<i>occidentalis</i>	Eastern White Cedar															
<b>Pinaceae</b>		<b>Pine Family</b>															
<i>Picea</i>	<i>abies</i>	Norway Spruce															
<i>Abies</i>	<i>balsamea</i>	Balsam Fir															
<i>Picea</i>	<i>glauca</i>	White Spruce															
<i>Picea</i>	<i>pungens</i>	Colorado Spruce															
<i>Pinus</i>	<i>banksiana</i>	Jack Pine															
<i>Pinus</i>	<i>nigra</i>	Austrian Pine															
<i>Pinus</i>	<i>strobus</i>	Eastern White Pine															
<i>Pinus</i>	<i>sylvestris</i>	Scots Pine															
<i>Pinus</i>	<i>resinosa</i>	Red Pine															
<i>Tsuga</i>	<i>canadensis</i>	Eastern Hemlock															
<b>Taxaceae</b>		<b>Yew Family</b>															
<i>Taxus</i>	<i>canadensis</i>	American Yew															
<b>DICOTYLED+D3080NS</b>		<b>DICOTS</b>															
<b>Aceraceae</b>		<b>Maple Family</b>															







BOTANICAL NAME	COMMON NAME	215 GSH1067 & 2018 (2nd Visit)	216 GSH1528 (GE 61)	216 GSH1528 (V1)	216 GSH1528 (V2)	216 GSH 1532	196 GSH1532	217 GSH2028	217 GSH2028	220 GSH1539	220 GSH1539 (2nd visit)	225 GSH1949 (GE 43)	225 GSH1949	226 GSH1949	225 GSH1949	227_GSH1605	229 GSH1740	
		4-Oct-11 8-Nov-11	13-Dec-11	7-Sep-11	7-Sep-11	13-Dec-11	7-Sep-11	30-Apr-12	30-Apr-12	26-Apr-12	18-May-12	13-Jul-11	17-Apr-12	17-Apr-12	17-Apr-12	18-May-12	13-Oct-11	
		5	216					217		220		225					227	
		FOD4f	FOD9-2	FOD9-2	CUM1-1	FOD9-2	FOD7-2 CUW1d	FOD7-2	SWD3-1	CUM1-1	CUM1-1	SWD2-2	SWD2-2	FOD9d	MAM2-2	CUM1-1	FOD4b	
<b>Convolvulaceae</b>		<b>Morning-glory Family</b>																
<i>Convolvulus</i>	<i>arvensis</i>																	
<b>Cornaceae</b>		<b>Dogwood Family</b>																
<i>Cornus</i>	<i>alternifolia</i>			√													√	
<i>Cornus</i>	<i>amomum ssp. obliqua</i>		√															
<i>Cornus</i>	<i>racemosa</i>	√	√		√	√	√				U						√	
<i>Cornus</i>	<i>sericea</i>	√									U				R		√	
<i>Cornus</i>	<i>rugosa</i>																	
<b>Cucurbitaceae</b>		<b>Gourd Family</b>																
<i>Echinocystis</i>	<i>lobata</i>																	
<b>Dipsacaceae</b>		<b>Teasel Family</b>																
<i>Dipsacus</i>	<i>fullonum ssp. sylvestris</i>				√						U	U					√	
<b>Elaeagnaceae</b>		<b>Oleaster Family</b>																
<i>Elaeagnus</i>	<i>angustifolia</i>									R	R							
<i>Elaeagnus</i>	<i>umbellata</i>																	
<i>Sheperdia</i>	<i>canadensis</i>																	
<b>Ericaceae</b>		<b>Heath Family</b>																
<i>Lotus</i>	<i>corniculatus</i>																	
<b>Euphorbiaceae</b>		<b>Spurge Family</b>																
<i>Acalypha</i>	<i>rhomboidea</i>																	
<b>Fabaceae</b>		<b>Pea Family</b>																
<i>Lotus</i>	<i>corniculatus</i>																	
<i>Medicago</i>	<i>lupulina</i>				√						R							
<i>Medicago</i>	<i>Sativa</i>																	
<i>Melilotus</i>	<i>alba</i>																√	
<i>Melilotus</i>	<i>officinalis</i>																	
<i>Robinia</i>	<i>pseudo-acacia</i>										R							
<i>Trifolium</i>	<i>pratense</i>									U	U							
<i>Trifolium</i>	<i>sp.</i>																	
<i>Trifolium</i>	<i>repens</i>																	
<i>Vicia</i>	<i>cracca</i>										U						√	
<b>Fagaceae</b>		<b>Beech Family</b>																
<i>Fagus</i>	<i>grandifolia</i>		√	√		√		R										
<i>Quercus</i>	<i>alba</i>			√														
<i>Quercus</i>	<i>macrocarpa</i>		√			√												
<i>Quercus</i>	<i>rubra</i>					√												
<b>Fumariaceae</b>		<b>Fumitory Family</b>																
<i>Dicentra</i>	<i>canadensis</i>																	
<i>Dicentra</i>	<i>cucullaria</i>																	
<b>Geraniaceae</b>		<b>Geranium Family</b>																
<i>Geranium</i>	<i>maculatum</i>			√				F			U			F				
<i>Geranium</i>	<i>robertianum</i>	√		√				U					U				√	



















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		5	216					217		220		225				227	
		FOD4f	FOD9-2	FOD9-2	CUM1-1	FOD9-2	FOD7-2 CUW1d	FOD7-2	SWD3-1	CUM1-1	CUM1-1	SWD2-2	SWD2-2	FOD9d	MAM2-2	CUM1-1	FOD4b

**FLORISTIC SUMMARY & ASSESSMENT**

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facultative upland		89
facultative		69
facultative wetland		76
obligate wetland		44

BOTANICAL NAME	COMMON NAME	229 GSH1740	229GSH1975/ GSH1976/GSH 1740	229 GSH1976	229 GSH197 5/GSH1976/G SH1740	232 GSH1619	232 GSH1619 (Poly F)	232 GSH1619 (Poly G)	232 GSH1620 (P1)	232 GSH1620 (P2)	232 GSH1639	232 GSH1639	235 GSH2061	236 GSH1079	236 GSH1507	236 GSH1508 (Poly H)	236 GSH1509	
		28-Jul-11	24-Apr-12	9-Nov-11	22-Jun-12	14-Oct-11	8-Nov-11	8-Nov-11	15-Sep-11	15-Sep-11	25-Apr-12	25-Apr-12	7-Nov-11	21-Sep-11	13-Oct-11	13-Oct-11	13-Oct-11	
		229				232								235	236			
		FOD4b	FOD5-6	FOD5-6	SOCC/SAR Vascular Plant Survey	FOD4c FOD7-2 FOD5-8	FOM6-1	FOD4c	CUP3-2	FOD3-1	FOD7-2	FOD5-5	FOD9c SWD3-3	SWD3-3 FOD9-4	FOD9b SWD 3-3 FOD4-2	SWD3-3	CUT1h FOD9-4 SWD2-2	
<b>PTERIDOPHYTES</b>		<b>FERNS &amp; ALLIES</b>																
<b>Dennstaedtiaceae</b>		<b>Bracken Fern Family</b>																
<i>Pteridium</i>	<i>aquilinum var. latiusculum</i>																	
<b>Dryopteridaceae</b>		<b>Wood Fern Family</b>																
<i>Athyrium</i>	<i>filix-femina var. angustum</i>													v				
<i>Cystopteris</i>	<i>bulbifera</i>																	
<i>Dryopteris</i>	<i>carthusiana</i>					√								v				
<i>Dryopteris</i>	<i>intermedia</i>																	
<i>Dryopteris</i>	<i>marginalis</i>																	
<i>Onoclea</i>	<i>sensibilis</i>			√		√				√				v		√		
<i>Polystichum</i>	<i>acrostichoides</i>																	
<b>Equisetaceae</b>		<b>Horsetail Family</b>																
<i>Equisetum</i>	<i>arvense</i>																	
<i>Equisetum</i>	<i>hyemale var. affine</i>																	
<i>Equisetum</i>	<i>pratense</i>																	
<i>Equisetum</i>	<i>sp.</i>																	
<b>Lycopodiaceae</b>		<b>Clubmoss Family</b>																
<i>Lycopodium</i>	<i>obscurum</i>																	
<b>Osmundaceae</b>		<b>Royal Fern Family</b>																
<i>Osmunda</i>	<i>regalis</i>																	
<b>Thelypteridaceae</b>		<b>Marsh Fern Family</b>																
<i>Thelypteris</i>	<i>noveboracensis</i>																	
<i>Thelypteris</i>	<i>palustris var. pubescens</i>																	
<b>GYMNOSPERMS</b>		<b>CONIFERS</b>																
<b>Cupressaceae</b>		<b>Cedar Family</b>																
<i>Juniperus</i>	<i>virginiana</i>																	
<i>Juniperus</i>	<i>communis</i>																	
<i>Thuja</i>	<i>occidentalis</i>																	
<b>Pinaceae</b>		<b>Pine Family</b>																
<i>Picea</i>	<i>abies</i>																	
<i>Abies</i>	<i>balsamea</i>																	
<i>Picea</i>	<i>glauca</i>																	
<i>Picea</i>	<i>pungens</i>																	
<i>Pinus</i>	<i>banksiana</i>																	
<i>Pinus</i>	<i>nigra</i>																	
<i>Pinus</i>	<i>strobus</i>									√								
<i>Pinus</i>	<i>sylvestris</i>																	
<i>Pinus</i>	<i>resinosa</i>																	
<i>Tsuga</i>	<i>canadensis</i>					√	√										√	
<b>Taxaceae</b>		<b>Yew Family</b>																
<i>Taxus</i>	<i>canadensis</i>																	
<b>DICOTYLED+D308ONS</b>		<b>DICOTS</b>																
<b>Aceraceae</b>		<b>Maple Family</b>																









BOTANICAL NAME	COMMON NAME	229 GSH1740	229GSH1975/ GSH1976/GSH 1740	229 GSH1976	229_GSH197 5/GSH1976/G SH1740	232 GSH1619	232 GSH1619 (Poly F)	232 GSH1619 (Poly G)	232 GSH1620 (P1)	232 GSH1620 (P2)	232 GSH1639	232 GSH1639	235 GSH2061	236 GSH1079	236 GSH1507	236 GSH1508 (Poly H)	236 GSH1509	
		28-Jul-11	24-Apr-12	9-Nov-11	22-Jun-12	14-Oct-11	8-Nov-11	8-Nov-11	15-Sep-11	15-Sep-11	25-Apr-12	25-Apr-12	7-Nov-11	21-Sep-11	13-Oct-11	13-Oct-11	13-Oct-11	
		229				232								235	236			
		FOD4b	FOD5-6	FOD5-6	SOCC/SAR Vascular Plant Survey	FOD4c FOD7-2 FOD5-8	FOM6-1	FOD4c	CUP3-2	FOD3-1	FOD7-2	FOD5-5	FOD9c SWD3-3	SWD3-3 FOD9-4	FOD9b SWD 3-3 FOD4-2	SWD3-3	CUT1h FOD9-4 SWD2-2	
<b>Convolvulaceae</b>		<b>Morning-glory Family</b>																
<i>Convolvulus</i>	<i>arvensis</i>	Field Bindweed																
<b>Cornaceae</b>		<b>Dogwood Family</b>																
<i>Cornus</i>	<i>alternifolia</i>	Alternate-leaved Dogwood		√		√												
<i>Cornus</i>	<i>amomum ssp. obliqua</i>	Silky Dogwood		√												√	√	
<i>Cornus</i>	<i>racemosa</i>	Grey dogwood		√	U	√			√						√	√	√	
<i>Cornus</i>	<i>sericea</i>	Red-osier Dogwood		√													√	
<i>Cornus</i>	<i>rugosa</i>	Round-leaved Dogwood																
<b>Cucurbitaceae</b>		<b>Gourd Family</b>																
<i>Echinocystis</i>	<i>lobata</i>	Prickly Cucumber																
<b>Dipsacaceae</b>		<b>Teasel Family</b>																
<i>Dipsacus</i>	<i>fullonum ssp. sylvestris</i>	Wild Teasel	√		√								√			√		
<b>Elaeagnaceae</b>		<b>Oleaster Family</b>																
<i>Elaeagnus</i>	<i>angustifolia</i>	Russian Olive									R					√		
<i>Elaeagnus</i>	<i>umbellata</i>	Autum Olive																
<i>Sheperdia</i>	<i>canadensis</i>	Buffaloberry																
<b>Ericaceae</b>		<b>Heath Family</b>																
<i>Lotus</i>	<i>corniculatus</i>	Bird's-foot Trefoil																
<b>Euphorbiaceae</b>		<b>Spurge Family</b>																
<i>Acalypha</i>	<i>rhomboidea</i>	Three-seeded Mercury														√		
<b>Fabaceae</b>		<b>Pea Family</b>																
<i>Lotus</i>	<i>corniculatus</i>	Bird's-foot Trefoil																
<i>Medicago</i>	<i>lupulina</i>	Black Medick																
<i>Medicago</i>	<i>Sativa</i>	alfalfa																
<i>Melilotus</i>	<i>alba</i>	White Sweet-clover	√		√													
<i>Melilotus</i>	<i>officinalis</i>	Yellow Sweet-clover																
<i>Robinia</i>	<i>pseudo-acacia</i>	Black Locust																
<i>Trifolium</i>	<i>pratense</i>	Red Clover																
<i>Trifolium</i>	<i>sp.</i>	Clover species																
<i>Trifolium</i>	<i>repens</i>	White Clover																
<i>Vicia</i>	<i>cracca</i>	Tufted Vetch																
<b>Fagaceae</b>		<b>Beech Family</b>																
<i>Fagus</i>	<i>grandifolia</i>	American Beech		F	√	U	√	√		√			√	√	√	√	√	
<i>Quercus</i>	<i>alba</i>	White Oak																
<i>Quercus</i>	<i>macrocarpa</i>	Bur Oak					√					U	√		√	√	√	
<i>Quercus</i>	<i>rubra</i>	Red Oak		F	√	R	√		√					√		√	√	
<b>Fumariaceae</b>		<b>Fumitory Family</b>																
<i>Dicentra</i>	<i>canadensis</i>	Squirrel-corn																
<i>Dicentra</i>	<i>cucullaria</i>	Dutchman's-breeches																
<b>Geraniaceae</b>		<b>Geranium Family</b>																
<i>Geranium</i>	<i>maculatum</i>	Spotted Crane's-bill		F		U								√				
<i>Geranium</i>	<i>robertianum</i>	Herb-robert			√	U	√		√		R	U		√		√	√	

BOTANICAL NAME	COMMON NAME	229 GSH1740	229GSH1975/ GSH1976/GSH 1740	229 GSH1976	229_GSH197 5/GSH1976/G SH1740	232 GSH1619	232 GSH1619 (Poly F)	232 GSH1619 (Poly G)	232 GSH1620 (P1)	232 GSH1620 (P2)	232 GSH1639	232 GSH1639	235 GSH2061	236 GSH1079	236 GSH1507	236 GSH1508 (Poly H)	236 GSH1509	
		28-Jul-11	24-Apr-12	9-Nov-11	22-Jun-12	14-Oct-11	8-Nov-11	8-Nov-11	15-Sep-11	15-Sep-11	25-Apr-12	25-Apr-12	7-Nov-11	21-Sep-11	13-Oct-11	13-Oct-11	13-Oct-11	
		229				232								235	236			
		FOD4b	FOD5-6	FOD5-6	SOCC/SAR Vascular Plant Survey	FOD4c FOD7-2 FOD5-8	FOM6-1	FOD4c	CUP3-2	FOD3-1	FOD7-2	FOD5-5	FOD9c SWD3-3	SWD3-3 FOD9-4	FOD9b SWD 3-3 FOD4-2	SWD3-3	CUT1h FOD9-4 SWD2-2	
<b>Grossulariaceae</b>		<b>Currant Family</b>																
<i>Ribes</i>	<i>americanum</i>	Wild Black Currant			R	√				√	U	U						
<i>Ribes</i>	<i>cynosbati</i>	Prickly Gooseberry								√						√		
<i>Ribes</i>	<i>lacustre</i>	Swamp Black Currant								√								
<i>Ribes</i>	<i>rubrum</i>	Red Currant																
<i>Ribes</i>	<i>triste</i>	Wild Red Currant																
<i>Ribes</i>	<i>sp.</i>	Currant species																
<b>Guttiferae</b>		<b>St. John's-wort Family</b>																
<i>Hypericum</i>	<i>perforatum</i>	Common St. John's-wort	√			√												
<i>Hypericum</i>	<i>punctatum</i>	Spotted St. John's-wort												√				
<b>Hamamelidaceae</b>		<b>Witch-hazel Family</b>																
<i>Hamamelis</i>	<i>virginiana</i>	Witch-hazel				√				√								
<b>Hydrophyllaceae</b>		<b>Water-leaf Family</b>																
<i>Hydrophyllum</i>	<i>virginianum</i>	Virginia Water-leaf		U	√						U		√					
<b>Juglandaceae</b>		<b>Walnut Family</b>																
<i>Carya</i>	<i>cordiformis</i>	Bitternut hickory			√	U				√		U	√	√		√		
<i>Carya</i>	<i>ovata var. ovata</i>	Shagbark Hickory				√			√	√		F	√	√	√	√	√	
<i>Carya</i>	<i>sp</i>	Hickory species																
<i>Juglans</i>	<i>cinerea</i>	Butternut																
<i>Juglans</i>	<i>nigra</i>	Black Walnut				U	√											
<b>Lamiaceae</b>		<b>Mint Family</b>																
<i>Clinopodium</i>	<i>vulgare</i>	Wild Basil															√	
<i>Leonurus</i>	<i>cardiaca ssp. cardiaca</i>	Common Motherwort																
<i>Lycopus</i>	<i>americanus</i>	Cut-leaved Water-horehound												√				
<i>Lycopus</i>	<i>uniflorus</i>	Northern Water-horehound												√				
<i>Mentha</i>	<i>arvensis</i>	American Wild Mint																
<i>Mentha</i>	<i>sp.</i>	species																
<i>Prunella</i>	<i>vulgaris ssp. vulgaris</i>	Heal-all																
<i>Scutellaria</i>	<i>lateriflora</i>	Mad-dog Skullcap												√				
<i>Satureja</i>	<i>vulgaris</i>	wild basil																
<b>Lauraceae</b>		<b>Laurel Family</b>																
<i>Lindera</i>	<i>benzoin</i>	Spicebush				√				√				√				
<b>Malvaceae</b>		<b>Mallow Family</b>																
<i>Abutilon</i>	<i>theophrasti</i>	Velvet-leaf													√	√	√	
<i>Malva</i>	<i>neglecta</i>	Cheeses													√			
<b>Montiaceae</b>		<b>Montia Family</b>																
<i>Claytonia</i>	<i>caroliniana</i>	Carolina Spring Beauty				R												
<i>Claytonia</i>	<i>virginica</i>	Virginia Spring Beauty																
<b>Menispermaceae</b>		<b>Moonseed Family</b>																
<i>Menispermum</i>	<i>canadense</i>	Moonseed																
<b>Oleaceae</b>		<b>Olive Family</b>																
<i>Fraxinus</i>	<i>americana</i>	White Ash		U	√	√	√	√	√	√					√	√	√	





BOTANICAL NAME		COMMON NAME		229 GSH1740	229GSH1975/ GSH1976/GSH 1740	229 GSH1976	229_GSH197 5/GSH1976/G SH1740	232 GSH1619	232 GSH1619 (Poly F)	232 GSH1619 (Poly G)	232 GSH1620 (P1)	232 GSH1620 (P2)	232 GSH1639	232 GSH1639	235 GSH2061	236 GSH1079	236 GSH1507	236 GSH1508 (Poly H)	236 GSH1509		
				28-Jul-11	24-Apr-12	9-Nov-11	22-Jun-12	14-Oct-11	8-Nov-11	8-Nov-11	15-Sep-11	15-Sep-11	25-Apr-12	25-Apr-12	7-Nov-11	21-Sep-11	13-Oct-11	13-Oct-11	13-Oct-11		
				229				232									235	236			
				FOD4b	FOD5-6	FOD5-6	SOCC/SAR Vascular Plant Survey	FOD4c FOD7-2 FOD5-8	FOM6-1	FOD4c	CUP3-2	FOD3-1	FOD7-2	FOD5-5	FOD9c SWD3-3	SWD3-3 FOD9-4	FOD9b SWD 3-3 FOD4-2	SWD3-3	CUT1h FOD9-4 SWD2-2		
<i>Potentilla</i>	<i>recta</i>	Rough-fruited Cinquefoil																			
<i>Prunus</i>	<i>avium</i>	Sweet Cherry																			
<i>Prunus</i>	<i>cerasus</i>	Sour Cherry																			
<i>Prunus</i>	<i>pensylvanica</i>	Pin Cherry																			
<i>Prunus</i>	<i>serotina</i>	Black Cherry	U			R	v		v					√							
<i>Prunus</i>	<i>virginiana</i>	Choke Cherry	D			U	v						U	F	√	√					
<i>Prunus</i>	<i>sp.</i>	Cherry species																			
<i>Pyrus</i>	<i>communis</i>	Common Pear																			
<i>Physocarpus</i>	<i>opulifolius</i>	Ninebark																			
<i>Rosa</i>	<i>blanda</i>	Smooth Rose																			
<i>Rosa</i>	<i>multiflora</i>	Multiflora Rose					v														
<i>Rosa</i>	<i>sp.</i>	Rose species																			
<i>Rubus</i>	<i>allegheniensis</i>	Alleghany Blackberry					v									√		√			
<i>Rubus</i>	<i>canadensis</i>	Millspaugh's Blackberry																			
<i>Rubus</i>	<i>idaeus</i>	Red Raspberry	U	v		R	v		v		v		F		√	√					
<i>Rubus</i>	<i>occidentalis</i>	Black raspberry		v		F	v						U		√	√	v	√	√		
<i>Rubus</i>	<i>odoratus</i>	Purple-fl. Raspberry																			
<i>Rubus</i>	<i>pubescens</i>	Dwarf Raspberry														√					
<i>Rubus</i>	<i>sp.</i>	Raspberry species																			
<i>Sorbus</i>	<i>aucuparia</i>	Eur. Mountain Ash																			
<b>Rubiaceae</b>		<b>Madder Family</b>																			
<i>Cephalanthus</i>	<i>occidentalis</i>	Eastern Buttonbush																			
<i>Galium</i>	<i>aparine</i>	Cleavers											U	R							
<i>Galium</i>	<i>asprellum</i>	Rough Bedstraw																			
<i>Galium</i>	<i>mollugo</i>	White Bedstraw																			
<i>Galium</i>	<i>triflorum</i>	Sweet-scented Bedstraw																			
<i>Galium</i>	<i>sp.</i>	Bedstraw species																			
<i>Mitchella</i>	<i>repens</i>	Creeping Partridge-berry					v				v										
<b>Rutaceae</b>		<b>Rue Family</b>																			
<i>Zanthoxylum</i>	<i>americanum</i>	American Prickly-ash																			
<b>Salicaceae</b>		<b>Willow Family</b>																			
<i>Populus</i>	<i>alba</i>	Silver Poplar																			
<i>Populus</i>	<i>balsamifera</i> ssp. <i>balsamifera</i>	Balsam Poplar																			
<i>Populus</i>	<i>deltoides</i> ssp. <i>deltoides</i>	Eastern Cottonwood					v				v				√	v	√				
<i>Populus</i>	<i>grandidentata</i>	Large-tooth Aspen																			
<i>Populus</i>	<i>tremuloides</i>	Trembling Aspen			v		v								√	v					
<i>Salix</i>	<i>sp.</i>	Willow species												R							
<i>Salix</i>	<i>alba</i>	White Willow																			
<i>Salix</i>	<i>amygdaloides</i>	Peach-leaved Willow																			
<i>Salix</i>	<i>bebbiana</i>	Long-beaked Willow					v														
<i>Salix</i>	<i>discolor</i>	Pussy Willow																			
<i>Salix</i>	<i>eriocephala</i>	Missouri Willow													√						
<i>Salix</i>	<i>exigua</i>	Sandbar Willow															v				







BOTANICAL NAME		COMMON NAME		229 GSH1740	229GSH1975/ GSH1976/GSH 1740	229 GSH1976	229_GSH197 5/GSH1976/G SH1740	232 GSH1619	232 GSH1619 (Poly F)	232 GSH1619 (Poly G)	232 GSH1620 (P1)	232 GSH1620 (P2)	232 GSH1639	232 GSH1639	235 GSH2061	236 GSH1079	236 GSH1507	236 GSH1508 (Poly H)	236 GSH1509		
				28-Jul-11	24-Apr-12	9-Nov-11	22-Jun-12	14-Oct-11	8-Nov-11	8-Nov-11	15-Sep-11	15-Sep-11	25-Apr-12	25-Apr-12	7-Nov-11	21-Sep-11	13-Oct-11	13-Oct-11	13-Oct-11		
				229				232									235	236			
				FOD4b	FOD5-6	FOD5-6	SOCC/SAR Vascular Plant Survey	FOD4c FOD7-2 FOD5-8	FOM6-1	FOD4c	CUP3-2	FOD3-1	FOD7-2	FOD5-5	FOD9c SWD3-3	SWD3-3 FOD9-4	FOD9b SWD 3-3 FOD4-2	SWD3-3	CUT1h FOD9-4 SWD2-2		
<i>Juncus</i>	<i>dudleyi</i>	Dudley's Rush																	√		
<i>Juncus</i>	<i>effusus</i>	Common rush														√			√		
<i>Juncus</i>	<i>tenuis</i>	Path Rush														√					
<b>Liliaceae</b>		<b>Lily Family</b>																			
<i>Allium</i>	<i>tricoccum</i>	Wild Leek		U										R							
<i>Clintonia</i>	<i>borealis</i>	bluebead lily																			
<i>Erythronium</i>	<i>americanum ssp. americanum</i>	Yellow trout lilly		D										R	F						
<i>Erythronium</i>	<i>albidum</i>	White Trout Lily																			
<i>Lilium</i>	<i>sp.</i>	Lily species																			
<i>Maianthemum</i>	<i>canadense</i>	Wild Lily-of-the-valley						v				v									
<i>Maianthemum</i>	<i>racemosum ssp. racemosum</i>	False Solomon's Seal				U					v			U							
<i>Maianthemum</i>	<i>stellatum</i>	Star-flowered Solomon's Sea						v				v				√					
<i>Polygonatum</i>	<i>pubescens</i>	Hairy Solomon's Seal																			
<i>Streptopus</i>	<i>lanceolatus var roseus</i>	Rose twisted-stalk																			
<i>Trillium</i>	<i>erectum</i>	Purple Trillium		R																	
<i>Trillium</i>	<i>grandiflorum</i>	White Trillium		U																	
<i>Trillium</i>	<i>sp.</i>	Trillium species																			
<i>Uvularia</i>	<i>grandiflora</i>	Large-flowered Bellwort																			
<i>Uvularia</i>	<i>perfoliata</i>	Perfoliate Bellwort																			
<b>Orchidaceae</b>		<b>Orchid Family</b>																			
<i>Epipactis</i>	<i>helleborine</i>	Common Helleborine		U		U															
<b>Poaceae</b>		<b>Grass Family</b>																			
<i>Grass</i>	<i>sp.</i>	Grass species																			
<i>Agrostis</i>	<i>gigantea</i>	Red-top																			
<i>Bromus</i>	<i>inermis ssp. inermis</i>	Awnless Brome																			
<i>Bromus</i>	<i>sp.</i>	Brome species																			
<i>Dactylis</i>	<i>glomerata</i>	Orchard Grass			v										√						
<i>Echinochloa</i>	<i>crusgalli</i>	Common Barnyard Grass																			
<i>Elymus</i>	<i>hystrix</i>	Bottle-brush Grass																			
<i>Elymus</i>	<i>repens</i>	Quack Grass																	√		
<i>Elymus</i>	<i>riparius</i>	River-bank Wild Rye																			
<i>Elymus</i>	<i>virginicus var. virginicus</i>	Virginia Wild Rye														√					
<i>Glyceria</i>	<i>striata</i>	Fowl Manna Grass						v				v				√			√		
<i>Leersia</i>	<i>oryzoides</i>	Rice Cut Grass														√					
<i>Leersia</i>	<i>virginica</i>	White Cut Grass																√			
<i>Lolium</i>	<i>arundinaceum</i>	Tall Fescue																			
<i>Panicum</i>	<i>dichotomiflorum</i>	Fall Panicum																			
<i>Phalaris</i>	<i>arundinacea</i>	Reed Canary Grass						v					F	R				√	√		
<i>Phleum</i>	<i>pratense</i>	Timothy																	√		
<i>Phragmites</i>	<i>australis</i>	Common Reed														√					
<i>Poa</i>	<i>compressa</i>	Canada Blue Grass																	√		
<i>Poa</i>	<i>palustris</i>	Fowl Meadow Grass																			
<i>Poa</i>	<i>pratensis ssp. pratensis</i>	Kentucky Bluegrass													√				√		



<b>BOTANICAL NAME</b>	<b>COMMON NAME</b>	229 GSH1740	229GSH1975/ GSH1976/GSH 1740	229 GSH1976	229_GSH197 5/GSH1976/G SH1740	232 GSH1619	232 GSH1619 (Poly F)	232 GSH1619 (Poly G)	232 GSH1620 (P1)	232 GSH1620 (P2)	232 GSH1639	232 GSH1639	235 GSH2061	236 GSH1079	236 GSH1507	236 GSH1508 (Poly H)	236 GSH1509	
		28-Jul-11	24-Apr-12	9-Nov-11	22-Jun-12	14-Oct-11	8-Nov-11	8-Nov-11	15-Sep-11	15-Sep-11	25-Apr-12	25-Apr-12	7-Nov-11	21-Sep-11	13-Oct-11	13-Oct-11	13-Oct-11	
		229				232								235	236			
		FOD4b	FOD5-6	FOD5-6	SOCC/SAR Vascular Plant Survey	FOD4c FOD7-2 FOD5-8	FOM6-1	FOD4c	CUP3-2	FOD3-1	FOD7-2	FOD5-5	FOD9c SWD3-3	SWD3-3 FOD9-4	FOD9b SWD 3-3 FOD4-2	SWD3-3	CUT1h FOD9-4 SWD2-2	

**FLORISTIC SUMMARY & ASSESSMENT**

<b>Species Diversity</b>	
Total Species:	<b>368</b>
Native Species:	<b>278</b>
Exotic Species	<b>90</b>
Total Taxa in Region (List Region, Source)	10000
% Regional Taxa Recorded	3.68%
Regionally Significant Species	0
S1-S3 Species	5
S4 Species	14
S5 Species	253

**Co-efficient of Conservatism and Floral Quality Index**

Co-efficient of Conservatism (CC) (average)		<b>4.46</b>
CC 0 to 3	lowest sensitivity	81
CC 4 to 6	moderate sensitivity	155
CC 7 to 8	high sensitivity	38
CC 9 to 10	highest sensitivity	4
<b>Floral Quality Index (FQI)</b>		<b>74.37</b>

**Presence of Weedy & Invasive Species**

mean weediness		<b>-1.67</b>
weediness = -1	low potential invasiveness	49
weediness = -2	moderate potential invasiveness	22
weediness = -3	high potential invasiveness	19

**Presence of Wetland Species**

average wetness value		<b>0.71</b>
upland		89
facultative upland		89
facultative		69
facultative wetland		76
obligate wetland		44

BOTANICAL NAME	COMMON NAME	236 GSH1079/1509	236 GSH1079/1509	236 GSH1506&1507 &1508	240 GSH2032	242 GSH2163	242 GSH2163	244 GSH1743/1744	244 GSH1743/1744	245 GSH1481	245 GSH2056	245 GSH2054&1481	245 GSH1481	249 GSH1745&1746	249 GSH1645&1745	250 GSH1078 (P1)	250 GSH1078 (P2)
		18-Apr-12	18-Apr-12	4-Jul-12	13-Dec-11	24-Apr-12	22-Jun-12	27-Apr-12	27-Apr-12	8-Sep-11 9-Nov-11	4-Oct-11	23-Apr-12	22-Jun-12	27-Apr-12	4-Jul-12	10-Aug-11	10-Aug-11
					240	242		244		245				249		250	
		FOD9-4	SWD3-3	FOD9b / FOM6-2	FOD7-2	FOD6-1	SOCC/SAR Vascular Plant Survey	FOD6-5	SWD3-3	FOD7-2 SWD3-3 FOD5b SWD4a CUP1c FOD7a	FOD6-4	FOD6-5	SOCC/SAR Vascular Plant Survey	OAD	SWD2-2	FOD5-1	OAD
<b>PTERIDOPHYTES</b>		<b>FERNS &amp; ALLIES</b>															
<b>Dennstaedtiaceae</b>		<b>Bracken Fern Family</b>															
<i>Pteridium</i>	<i>aquilinum var. latiusculum</i>	Eastern Bracken-fern															
<b>Dryopteridaceae</b>		<b>Wood Fern Family</b>															
<i>Athyrium</i>	<i>filix-femina var. angustum</i>	Northern Lady Fern															
<i>Cystopteris</i>	<i>bulbifera</i>	bulblet bladderfern															
<i>Dryopteris</i>	<i>carthusiana</i>	Spinulose Wood Fern															
<i>Dryopteris</i>	<i>intermedia</i>	Evergreen Wood Fern															
<i>Dryopteris</i>	<i>marginalis</i>	Marginal Wood Fern															
<i>Onoclea</i>	<i>sensibilis</i>	Sensitive Fern															
<i>Polystichum</i>	<i>acrostichoides</i>	Christmas Fern															
<b>Equisetaceae</b>		<b>Horsetail Family</b>															
<i>Equisetum</i>	<i>arvense</i>	Field Horsetail															
<i>Equisetum</i>	<i>hyemale var. affine</i>	Scouring-rush															
<i>Equisetum</i>	<i>pratense</i>	Meadow Horsetail															
<i>Equisetum</i>	<i>sp.</i>	Horestail species															
<b>Lycopodiaceae</b>		<b>Clubmoss Family</b>															
<i>Lycopodium</i>	<i>obscurum</i>	Ground-pine															
<b>Osmundaceae</b>		<b>Royal Fern Family</b>															
<i>Osmunda</i>	<i>regalis</i>	Royal Fern															
<b>Thelypteridaceae</b>		<b>Marsh Fern Family</b>															
<i>Thelypteris</i>	<i>noveboracensis</i>	New York Fern															
<i>Thelypteris</i>	<i>palustris var. pubescens</i>	Marsh Fern															
<b>GYMNOSPERMS</b>		<b>CONIFERS</b>															
<b>Cupressaceae</b>		<b>Cedar Family</b>															
<i>Juniperus</i>	<i>virginiana</i>	Eastern Red Cedar															
<i>Juniperus</i>	<i>communis</i>	Common Juniper															
<i>Thuja</i>	<i>occidentalis</i>	Eastern White Cedar															
<b>Pinaceae</b>		<b>Pine Family</b>															
<i>Picea</i>	<i>abies</i>	Norway Spruce															
<i>Abies</i>	<i>balsamea</i>	Balsam Fir															
<i>Picea</i>	<i>glauca</i>	White Spruce															
<i>Picea</i>	<i>pungens</i>	Colorado Spruce															
<i>Pinus</i>	<i>banksiana</i>	Jack Pine															
<i>Pinus</i>	<i>nigra</i>	Austrian Pine															
<i>Pinus</i>	<i>strobus</i>	Eastern White Pine															
<i>Pinus</i>	<i>sylvestris</i>	Scots Pine															
<i>Pinus</i>	<i>resinosa</i>	Red Pine															
<i>Tsuga</i>	<i>canadensis</i>	Eastern Hemlock															
<b>Taxaceae</b>		<b>Yew Family</b>															
<i>Taxus</i>	<i>canadensis</i>	American Yew															
<b>DICOTYLED+D3080NS</b>		<b>DICOTS</b>															
<b>Aceraceae</b>		<b>Maple Family</b>															









BOTANICAL NAME	COMMON NAME	236 GSH1079/1509	236 GSH1079/1509	236 GSH1506&1507 &1508	240 GSH2032	242 GSH2163	242 GSH2163	244 GSH1743/1744	244 GSH1743/1744	245 GSH1481	245 GSH2056	245 GSH2054&1481	245 GSH1481	249 GSH1745&1746	249 GSH1645&1745	250 GSH1078 (P1)	250 GSH1078 (P2)
		18-Apr-12	18-Apr-12	4-Jul-12	13-Dec-11	24-Apr-12	22-Jun-12	27-Apr-12	27-Apr-12	8-Sep-11 9-Nov-11	4-Oct-11	23-Apr-12	22-Jun-12	27-Apr-12	4-Jul-12	10-Aug-11	10-Aug-11
					240	242		244		245				249		250	
		FOD9-4	SWD3-3	FOD9b / FOM6-2	FOD7-2	FOD6-1	SOCC/SAR Vascular Plant Survey	FOD6-5	SWD3-3	FOD7-2 SWD3-3 FOD5b SWD4a CUP1c FOD7a	FOD6-4	FOD6-5	SOCC/SAR Vascular Plant Survey	OAD	SWD2-2	FOD5-1	OAD
<b>Convolvulaceae</b>		<b>Morning-glory Family</b>															
<i>Convolvulus</i>	<i>arvensis</i>	Field Bindweed															
<b>Cornaceae</b>		<b>Dogwood Family</b>															
<i>Cornus</i>	<i>alternifolia</i>	Alternate-leaved Dogwood						U									
<i>Cornus</i>	<i>amomum ssp. obliqua</i>	Silky Dogwood															√
<i>Cornus</i>	<i>racemosa</i>	Grey dogwood						U					√		R		
<i>Cornus</i>	<i>sericea</i>	Red-osier Dogwood							R								
<i>Cornus</i>	<i>rugosa</i>	Round-leaved Dogwood															
<b>Cucurbitaceae</b>		<b>Gourd Family</b>															
<i>Echinocystis</i>	<i>lobata</i>	Prickly Cucumber															
<b>Dipsacaceae</b>		<b>Teasel Family</b>															
<i>Dipsacus</i>	<i>fullonum ssp. sylvestris</i>	Wild Teasel															
<b>Elaeagnaceae</b>		<b>Oleaster Family</b>															
<i>Elaeagnus</i>	<i>angustifolia</i>	Russian Olive															
<i>Elaeagnus</i>	<i>umbellata</i>	Autum Olive															
<i>Shepherdia</i>	<i>canadensis</i>	Buffaloberry															
<b>Ericaceae</b>		<b>Heath Family</b>															
<i>Lotus</i>	<i>corniculatus</i>	Bird's-foot Trefoil															
<b>Euphorbiaceae</b>		<b>Spurge Family</b>															
<i>Acalypha</i>	<i>rhomboidea</i>	Three-seeded Mercury															
<b>Fabaceae</b>		<b>Pea Family</b>															
<i>Lotus</i>	<i>corniculatus</i>	Bird's-foot Trefoil															
<i>Medicago</i>	<i>lupulina</i>	Black Medick															
<i>Medicago</i>	<i>Sativa</i>	alfalfa															
<i>Melilotus</i>	<i>alba</i>	White Sweet-clover															
<i>Melilotus</i>	<i>officinalis</i>	Yellow Sweet-clover															
<i>Robinia</i>	<i>pseudo-acacia</i>	Black Locust															
<i>Trifolium</i>	<i>pratense</i>	Red Clover															
<i>Trifolium</i>	<i>sp.</i>	Clover species															
<i>Trifolium</i>	<i>repens</i>	White Clover															
<i>Vicia</i>	<i>cracca</i>	Tufted Vetch															
<b>Fagaceae</b>		<b>Beech Family</b>															
<i>Fagus</i>	<i>grandifolia</i>	American Beech															
<i>Quercus</i>	<i>alba</i>	White Oak															
<i>Quercus</i>	<i>macrocarpa</i>	Bur Oak															
<i>Quercus</i>	<i>rubra</i>	Red Oak															
<b>Fumariaceae</b>		<b>Fumitory Family</b>															
<i>Dicentra</i>	<i>canadensis</i>	Squirrel-corn															
<i>Dicentra</i>	<i>cucullaria</i>	Dutchman's-breeches															
<b>Geraniaceae</b>		<b>Geranium Family</b>															
<i>Geranium</i>	<i>maculatum</i>	Spotted Crane's-bill	F		F		D	U					D	U			
<i>Geranium</i>	<i>robertianum</i>	Herb-robert	U		U		U	U	R				√	√	U	U	

BOTANICAL NAME	COMMON NAME	236 GSH1079/1509	236 GSH1079/1509	236 GSH1506&1507 &1508	240 GSH2032	242 GSH2163	242 GSH2163	244 GSH1743/1744	244 GSH1743/1744	245 GSH1481	245 GSH2056	245 GSH2054&1481	245 GSH1481	249 GSH1745&1746	249 GSH1645&1745	250 GSH1078 (P1)	250 GSH1078 (P2)
		18-Apr-12	18-Apr-12	4-Jul-12	13-Dec-11	24-Apr-12	22-Jun-12	27-Apr-12	27-Apr-12	8-Sep-11 9-Nov-11	4-Oct-11	23-Apr-12	22-Jun-12	27-Apr-12	4-Jul-12	10-Aug-11	10-Aug-11
					240	242		244		245				249		250	
		FOD9-4	SWD3-3	FOD9b / FOM6-2	FOD7-2	FOD6-1	SOCC/SAR Vascular Plant Survey	FOD6-5	SWD3-3	FOD7-2 SWD3-3 FOD5b SWD4a CUP1c FOD7a	FOD6-4	FOD6-5	SOCC/SAR Vascular Plant Survey	OAD	SWD2-2	FOD5-1	OAD
<b>Grossulariaceae</b>		<b>Currant Family</b>															
<i>Ribes</i>	<i>americanum</i>	Wild Black Currant				U	U	U	U				U				
<i>Ribes</i>	<i>cynosbati</i>	Prickly Gooseberry		R			U	U									
<i>Ribes</i>	<i>lacustre</i>	Swamp Black Currant			R			R					R			√	
<i>Ribes</i>	<i>rubrum</i>	Red Currant								√							
<i>Ribes</i>	<i>triste</i>	Wild Red Currant															
<i>Ribes</i>	<i>sp.</i>	Currant species															
<b>Guttiferae</b>		<b>St. John's-wort Family</b>															
<i>Hypericum</i>	<i>perforatum</i>	Common St. John's-wort															
<i>Hypericum</i>	<i>punctatum</i>	Spotted St. John's-wort															
<b>Hamamelidaceae</b>		<b>Witch-hazel Family</b>															
<i>Hamamelis</i>	<i>virginiana</i>	Witch-hazel															
<b>Hydrophyllaceae</b>		<b>Water-leaf Family</b>															
<i>Hydrophyllum</i>	<i>virginianum</i>	Virginia Water-leaf				U		U				U	R				
<b>Juglandaceae</b>		<b>Walnut Family</b>															
<i>Carya</i>	<i>cordiformis</i>	Bitternut hickory			F	U	U	R		√		U	U				
<i>Carya</i>	<i>ovata var. ovata</i>	Shagbark Hickory	D		F	R	R	U			√	R	R				
<i>Carya</i>	<i>sp</i>	Hickory species														√	
<i>Juglans</i>	<i>cinerea</i>	Butternut															
<i>Juglans</i>	<i>nigra</i>	Black Walnut								√			R				
<b>Lamiaceae</b>		<b>Mint Family</b>															
<i>Clinopodium</i>	<i>vulgare</i>	Wild Basil															
<i>Leonurus</i>	<i>cardiaca ssp. cardiaca</i>	Common Motherwort					R										
<i>Lycopus</i>	<i>americanus</i>	Cut-leaved Water-horehound															
<i>Lycopus</i>	<i>uniflorus</i>	Northern Water-horehound															
<i>Mentha</i>	<i>arvensis</i>	American Wild Mint															
<i>Mentha</i>	<i>sp.</i>	species															
<i>Prunella</i>	<i>vulgaris ssp. vulgaris</i>	Heal-all			U			R									
<i>Scutellaria</i>	<i>lateriflora</i>	Mad-dog Skullcap															
<i>Satureja</i>	<i>vulgaris</i>	wild basil															
<b>Lauraceae</b>		<b>Laurel Family</b>															
<i>Lindera</i>	<i>benzoin</i>	Spicebush			U				U								
<b>Malvaceae</b>		<b>Mallow Family</b>															
<i>Abutilon</i>	<i>theophrasti</i>	Velvet-leaf															
<i>Malva</i>	<i>neglecta</i>	Cheeses															
<b>Montiaceae</b>		<b>Montia Family</b>															
<i>Claytonia</i>	<i>caroliniana</i>	Carolina Spring Beauty				R											R
<i>Claytonia</i>	<i>virginica</i>	Virginia Spring Beauty															R
<b>Menispermaceae</b>		<b>Moonseed Family</b>															
<i>Menispermum</i>	<i>canadense</i>	Moonseed															
<b>Oleaceae</b>		<b>Olive Family</b>															
<i>Fraxinus</i>	<i>americana</i>	White Ash			F	U				√	√	F	U		√	√	

















<b>BOTANICAL NAME</b>	<b>COMMON NAME</b>	236 GSH1079/1509	236 GSH1079/1509	236 GSH1506&1507 &1508	240 GSH2032	242 GSH2163	242 GSH2163	244 GSH1743/1744	244 GSH1743/1744	245 GSH1481	245 GSH2056	245 GSH2054&1481	245 GSH1481	249 GSH1745&1746	249 GSH1645&1745	250 GSH1078 (P1)	250 GSH1078 (P2)
		18-Apr-12	18-Apr-12	4-Jul-12	13-Dec-11	24-Apr-12	22-Jun-12	27-Apr-12	27-Apr-12	8-Sep-11 9-Nov-11	4-Oct-11	23-Apr-12	22-Jun-12	27-Apr-12	4-Jul-12	10-Aug-11	10-Aug-11
					240	242	244	245			249		250				
		FOD9-4	SWD3-3	FOD9b / FOM6-2	FOD7-2	FOD6-1	SOCC/SAR Vascular Plant Survey	FOD6-5	SWD3-3	FOD7-2 SWD3-3 FOD5b SWD4a CUP1c FOD7a	FOD6-4	FOD6-5	SOCC/SAR Vascular Plant Survey	OAD	SWD2-2	FOD5-1	OAD

**FLORISTIC SUMMARY & ASSESSMENT**

<b>Species Diversity</b>	
Total Species:	368
Native Species:	278
Exotic Species	90
Total Taxa in Region (List Region, Source)	10000
% Regional Taxa Recorded	3.68%
Regionally Significant Species	0
S1-S3 Species	5
S4 Species	14
S5 Species	253

**Co-efficient of Conservatism and Floral Quality Index**

Co-efficient of Conservatism (CC) (average)	4.46
CC 0 to 3	lowest sensitivity 81
CC 4 to 6	moderate sensitivity 155
CC 7 to 8	high sensitivity 38
CC 9 to 10	highest sensitivity 4
Floral Quality Index (FQI)	74.37

**Presence of Weedy & Invasive Species**

mean weediness	-1.67
weediness = -1	low potential invasiveness 49
weediness = -2	moderate potential invasiveness 22
weediness = -3	high potential invasiveness 19

**Presence of Wetland Species**

average wetness value	0.71
upland	89
facultative upland	89
facultative	69
facultative wetland	76
obligate wetland	44

BOTANICAL NAME	COMMON NAME	250 GSH1077	251 GSH1733	255 GSH1606	258 GSH1658 (P1)	258 GSH1658 (P2)	258 GSH1659 (GE-17/SMN-17)	258 GSH1618 (GE-17)	258 GSH1618	258 GSH1618	258 GSH1618	258 GSH1618	258 GSH1658&1659	258 GSH1658&1659	258 GSH1658&1659	258 GSH1658&1659	259 GSH1498 (GE-21)	259 GSH1662		
		18-May-12	14-Oct-12	9-May-12	22-Sep-11	22-Sep-11	19-Jul-11	29-Nov-11	1-May-12	1-May-12	1-May-12	25-Apr-12	25-Apr-12	25-Apr-12	25-Apr-12	9-Sep-11	9-Sep-11			
			251	255	258													259		
		FOD5-1	FOD4-1 FOD5-7 FOD5-1 FOD4b	FOM5-2	FOD 7-1	FOD 9-4	FOD 9-4	CUM 1 CUP 3 Man 2 SWD 3-2	CUM1-1	CUP3	SWD3-3	FOD9-4	SWD2-2	SWD3-3	FOD7-2	FOD9-4 FOD 7-2	FOD 5-9 SWD 2-2 SWD 3-3			
<b>PTERIDOPHYTES</b>		<b>FERNS &amp; ALLIES</b>																		
<b>Dennstaedtiaceae</b>		<b>Bracken Fern Family</b>																		
<i>Pteridium</i>	<i>aquilinum var. latiusculum</i>	Eastern Bracken-fern																		
<b>Dryopteridaceae</b>		<b>Wood Fern Family</b>																		
<i>Athyrium</i>	<i>filix-femina var. angustum</i>	Northern Lady Fern																		
<i>Cystopteris</i>	<i>bulbifera</i>	bulblet bladderfern																		
<i>Dryopteris</i>	<i>carthusiana</i>	Spinulose Wood Fern																√		
<i>Dryopteris</i>	<i>intermedia</i>	Evergreen Wood Fern																		
<i>Dryopteris</i>	<i>marginalis</i>	Marginal Wood Fern																		
<i>Onoclea</i>	<i>sensibilis</i>	U	Sensitive Fern														U	√	√	
<i>Polystichum</i>	<i>acrostichoides</i>	Christmas Fern																		
<b>Equisetaceae</b>		<b>Horsetail Family</b>																		
<i>Equisetum</i>	<i>arvense</i>	R	Field Horsetail																	
<i>Equisetum</i>	<i>hyemale var. affine</i>	Scouring-rush															U			
<i>Equisetum</i>	<i>pratense</i>	Meadow Horsetail																		
<i>Equisetum</i>	<i>sp.</i>	Horestail species																		
<b>Lycopodiaceae</b>		<b>Clubmoss Family</b>																		
<i>Lycopodium</i>	<i>obscurum</i>	Ground-pine																		
<b>Osmundaceae</b>		<b>Royal Fern Family</b>																		
<i>Osmunda</i>	<i>regalis</i>	Royal Fern																		
<b>Thelypteridaceae</b>		<b>Marsh Fern Family</b>																		
<i>Thelypteris</i>	<i>noveboracensis</i>	New York Fern																		
<i>Thelypteris</i>	<i>palustris var. pubescens</i>	Marsh Fern																		
<b>GYMNOSPERMS</b>		<b>CONIFERS</b>																		
<b>Cupressaceae</b>		<b>Cedar Family</b>																		
<i>Juniperus</i>	<i>virginiana</i>	Eastern Red Cedar																		
<i>Juniperus</i>	<i>communis</i>	Common Juniper													U		R			
<i>Thuja</i>	<i>occidentalis</i>	Eastern White Cedar																		
<b>Pinaceae</b>		<b>Pine Family</b>																		
<i>Picea</i>	<i>abies</i>	Norway Spruce																		
<i>Abies</i>	<i>balsamea</i>	Balsam Fir																		
<i>Picea</i>	<i>glauca</i>	White Spruce															√		F	
<i>Picea</i>	<i>pungens</i>	Colorado Spruce																		
<i>Pinus</i>	<i>banksiana</i>	Jack Pine															√			
<i>Pinus</i>	<i>nigra</i>	Austrian Pine																		
<i>Pinus</i>	<i>strobus</i>	Eastern White Pine													U		U			
<i>Pinus</i>	<i>sylvestris</i>	Scots Pine															R		F	
<i>Pinus</i>	<i>resinosa</i>	Red Pine																		
<i>Tsuga</i>	<i>canadensis</i>	R	Eastern Hemlock																	
<b>Taxaceae</b>		<b>Yew Family</b>																		
<i>Taxus</i>	<i>canadensis</i>	American Yew																		
<b>DICOTYLED+D308ONS</b>		<b>DICOTS</b>																		
<b>Aceraceae</b>		<b>Maple Family</b>																		







BOTANICAL NAME	COMMON NAME	250 GSH1077	251 GSH1733	255 GSH1606	258 GSH1658 (P1)	258 GSH1658 (P2)	258 GSH1659 (GE-17/SMN-17)	258 GSH1618 (GE-17)	258 GSH1618	258 GSH1618	258 GSH1618	258 GSH1618	258 GSH1658&1659	258 GSH1658&1659	258 GSH1658&1659	258 GSH1658&1659	259 GSH1498 (GE-21)	259 GSH1662	
		18-May-12	14-Oct-12	9-May-12	22-Sep-11	22-Sep-11	19-Jul-11	29-Nov-11	1-May-12	1-May-12	1-May-12	25-Apr-12	25-Apr-12	25-Apr-12	25-Apr-12	9-Sep-11	9-Sep-11		
			251	255	258													259	
		FOD5-1	FOD4-1 FOD5-7 FOD5-1 FOD4b	FOM5-2	FOD 7-1	FOD 9-4	FOD 9-4	CUM 1 CUP 3 Man 2 SWD 3-2	CUM1-1	CUP3	SWD3-3	FOD9-4	SWD2-2	SWD3-3	FOD7-2	FOD9-4 FOD 7-2	FOD 5-9 SWD 2-2 SWD 3-3		
<b>Convolvulaceae</b>		<b>Morning-glory Family</b>																	
<i>Convolvulus</i>	<i>arvensis</i>	Field Bindweed																	
<b>Cornaceae</b>		<b>Dogwood Family</b>																	
<i>Cornus</i>	<i>alternifolia</i>	Alternate-leaved Dogwood																	
<i>Cornus</i>	<i>amomum ssp. obliqua</i>	Silky Dogwood																	
<i>Cornus</i>	<i>racemosa</i>	Grey dogwood		√	U			√										√	
<i>Cornus</i>	<i>sericea</i>	Red-osier Dogwood	U		U				U		R							√	
<i>Cornus</i>	<i>rugosa</i>	Round-leaved Dogwood																	
<b>Cucurbitaceae</b>		<b>Gourd Family</b>																	
<i>Echinocystis</i>	<i>lobata</i>	Prickly Cucumber																	
<b>Dipsacaceae</b>		<b>Teasel Family</b>																	
<i>Dipsacus</i>	<i>fullonum ssp. sylvestris</i>	Wild Teasel							U										
<b>Elaeagnaceae</b>		<b>Oleaster Family</b>																	
<i>Elaeagnus</i>	<i>angustifolia</i>	Russian Olive	R		U				R										
<i>Elaeagnus</i>	<i>umbellata</i>	Autum Olive																	
<i>Sheperdia</i>	<i>canadensis</i>	Buffaloberry																	
<b>Ericaceae</b>		<b>Heath Family</b>																	
<i>Lotus</i>	<i>corniculatus</i>	Bird's-foot Trefoil																	
<b>Euphorbiaceae</b>		<b>Spurge Family</b>																	
<i>Acalypha</i>	<i>rhomboidea</i>	Three-seeded Mercury																√	
<b>Fabaceae</b>		<b>Pea Family</b>																	
<i>Lotus</i>	<i>corniculatus</i>	Bird's-foot Trefoil																	
<i>Medicago</i>	<i>lupulina</i>	Black Medick	R														√		
<i>Medicago</i>	<i>Sativa</i>	alfalfa																	
<i>Melilotus</i>	<i>alba</i>	White Sweet-clover	U		U														
<i>Melilotus</i>	<i>officinalis</i>	Yellow Sweet-clover																	
<i>Robinia</i>	<i>pseudo-acacia</i>	Black Locust																	
<i>Trifolium</i>	<i>pratense</i>	Red Clover	U																
<i>Trifolium</i>	<i>sp.</i>	Clover species																	
<i>Trifolium</i>	<i>repens</i>	White Clover																	
<i>Vicia</i>	<i>cracca</i>	Tufted Vetch																	
<b>Fagaceae</b>		<b>Beech Family</b>																	
<i>Fagus</i>	<i>grandifolia</i>	American Beech		√								R					√		
<i>Quercus</i>	<i>alba</i>	White Oak																	
<i>Quercus</i>	<i>macrocarpa</i>	Bur Oak		√													√	√	
<i>Quercus</i>	<i>rubra</i>	Red Oak			R												√		
<b>Fumariaceae</b>		<b>Fumitory Family</b>																	
<i>Dicentra</i>	<i>canadensis</i>	Squirrel-corn																	
<i>Dicentra</i>	<i>cucullaria</i>	Dutchman's-breeches																	
<b>Geraniaceae</b>		<b>Geranium Family</b>																	
<i>Geranium</i>	<i>maculatum</i>	Spotted Crane's-bill	U	√			√					U			U	√	√		
<i>Geranium</i>	<i>robertianum</i>	Herb-robert	R				√				R								

BOTANICAL NAME	COMMON NAME	250 GSH1077	251 GSH1733	255 GSH1606	258 GSH1658 (P1)	258 GSH1658 (P2)	258 GSH1659 (GE-17/SMN-17)	258 GSH1618 (GE-17)	258 GSH1618	258 GSH1618	258 GSH1618	258 GSH1618	258 GSH1658&1659	258 GSH1658&1659	258 GSH1658&1659	258 GSH1658&1659	259 GSH1498 (GE-21)	259 GSH1662	
		18-May-12	14-Oct-12	9-May-12	22-Sep-11	22-Sep-11	19-Jul-11	29-Nov-11	1-May-12	1-May-12	1-May-12	25-Apr-12	25-Apr-12	25-Apr-12	25-Apr-12	9-Sep-11	9-Sep-11		
			251	255	258													259	
		FOD5-1	FOD4-1 FOD5-7 FOD5-1 FOD4b	FOM5-2	FOD 7-1	FOD 9-4	FOD 9-4	CUM 1 CUP 3 Man 2 SWD 3-2	CUM1-1	CUP3	SWD3-3	FOD9-4	SWD2-2	SWD3-3	FOD7-2	FOD9-4 FOD 7-2	FOD 5-9 SWD 2-2 SWD 3-3		
<b>Grossulariaceae</b>		<b>Currant Family</b>																	
<i>Ribes</i>	<i>americanum</i>	Wild Black Currant			√								U				√	√	
<i>Ribes</i>	<i>cynosbati</i>	Prickly Gooseberry										R				U			
<i>Ribes</i>	<i>lacustre</i>	Swamp Black Currant										R							
<i>Ribes</i>	<i>rubrum</i>	Red Currant		√															
<i>Ribes</i>	<i>triste</i>	Wild Red Currant																	
<i>Ribes</i>	<i>sp.</i>	Currant species																	
<b>Guttiferae</b>		<b>St. John's-wort Family</b>																	
<i>Hypericum</i>	<i>perforatum</i>	Common St. John's-wort																	
<i>Hypericum</i>	<i>punctatum</i>	Spotted St. John's-wort																√	
<b>Hamamelidaceae</b>		<b>Witch-hazel Family</b>																	
<i>Hamamelis</i>	<i>virginiana</i>	Witch-hazel															√	√	
<b>Hydrophyllaceae</b>		<b>Water-leaf Family</b>																	
<i>Hydrophyllum</i>	<i>virginianum</i>	Virginia Water-leaf		√															
<b>Juglandaceae</b>		<b>Walnut Family</b>																	
<i>Carya</i>	<i>cordiformis</i>	Bitternut hickory		√									U						
<i>Carya</i>	<i>ovata var. ovata</i>	Shagbark Hickory					√						F			√	√		
<i>Carya</i>	<i>sp</i>	Hickory species																	
<i>Juglans</i>	<i>cinerea</i>	Butternut																	
<i>Juglans</i>	<i>nigra</i>	Black Walnut																	
<b>Lamiaceae</b>		<b>Mint Family</b>																	
<i>Clinopodium</i>	<i>vulgare</i>	Wild Basil															√		
<i>Leonurus</i>	<i>cardiaca ssp. cardiaca</i>	Common Motherwort																	
<i>Lycopus</i>	<i>americanus</i>	Cut-leaved Water-horehound																	
<i>Lycopus</i>	<i>uniflorus</i>	Northern Water-horehound																	
<i>Mentha</i>	<i>arvensis</i>	American Wild Mint																√	
<i>Mentha</i>	<i>sp.</i>	species																	
<i>Prunella</i>	<i>vulgaris ssp. vulgaris</i>	Heal-all			U				R										
<i>Scutellaria</i>	<i>lateriflora</i>	Mad-dog Skullcap																√	
<i>Satureja</i>	<i>vulgaris</i>	wild basil																	
<b>Lauraceae</b>		<b>Laurel Family</b>																	
<i>Lindera</i>	<i>benzoin</i>	Spicebush																√	
<b>Malvaceae</b>		<b>Mallow Family</b>																	
<i>Abutilon</i>	<i>theophrasti</i>	Velvet-leaf																	
<i>Malva</i>	<i>neglecta</i>	Cheeses																	
<b>Montiaceae</b>		<b>Montia Family</b>																	
<i>Claytonia</i>	<i>caroliniana</i>	Carolina Spring Beauty																	
<i>Claytonia</i>	<i>virginica</i>	Virginia Spring Beauty																	
<b>Menispermaceae</b>		<b>Moonseed Family</b>																	
<i>Menispermum</i>	<i>canadense</i>	Moonseed		√														√	
<b>Oleaceae</b>		<b>Olive Family</b>																	
<i>Fraxinus</i>	<i>americana</i>	White Ash	F		√		√						U			√	√		

















<b>BOTANICAL NAME</b>	<b>COMMON NAME</b>	250 GSH1077	251 GSH1733	255 GSH1606	258 GSH1658 (P1)	258 GSH1658 (P2)	258 GSH1659 (GE-17/SMN-17)	258 GSH1618 (GE-17)	258 GSH1618	258 GSH1618	258 GSH1618	258 GSH1618	258 GSH1658&1659	258 GSH1658&1659	258 GSH1658&1659	258 GSH1658&1659	259 GSH1498 (GE-21)	259 GSH1662
		18-May-12	14-Oct-12	9-May-12	22-Sep-11	22-Sep-11	19-Jul-11	29-Nov-11	1-May-12	1-May-12	1-May-12	25-Apr-12	25-Apr-12	25-Apr-12	25-Apr-12	9-Sep-11	9-Sep-11	
			251	255	258												259	
		FOD5-1	FOD4-1 FOD5-7 FOD5-1 FOD4b	FOM5-2	FOD 7-1	FOD 9-4	FOD 9-4	CUM 1 CUP 3 Man 2 SWD 3-2	CUM1-1	CUP3	SWD3-3	FOD9-4	SWD2-2	SWD3-3	FOD7-2	FOD9-4 FOD 7-2	FOD 5-9 SWD 2-2 SWD 3-3	

**FLORISTIC SUMMARY & ASSESSMENT**

<b>Species Diversity</b>	
Total Species:	368
Native Species:	278
Exotic Species	90
Total Taxa in Region (List Region, Source)	10000
% Regional Taxa Recorded	3.68%
Regionally Significant Species	0
S1-S3 Species	5
S4 Species	14
S5 Species	253

**Co-efficient of Conservatism and Floral Quality Index**

Co-efficient of Conservatism (CC) (average)		4.46
CC 0 to 3	lowest sensitivity	81
CC 4 to 6	moderate sensitivity	155
CC 7 to 8	high sensitivity	38
CC 9 to 10	highest sensitivity	4
Floral Quality Index (FQI)		74.37

**Presence of Weedy & Invasive Species**

mean weediness		-1.67
weediness = -1	low potential invasiveness	49
weediness = -2	moderate potential invasiveness	22
weediness = -3	high potential invasiveness	19

**Presence of Wetland Species**

average wetness value		0.71
upland		89
facultative upland		89
facultative		69
facultative wetland		76
obligate wetland		44



BOTANICAL NAME	COMMON NAME	261	261	261	261	261	261	266	266	266	266	266	266	266	266	266	266	267	
		GSH1492/2052	GSH1492/2052	GSH2049/2050	GSH2049/2050	GSH2049/2050	GSH2049/2050	GSH1492	GSH1761 (V1)	GSH1761 (V2)	GSH1761 (V3)	GSH1760&1761	GSH1760&1761	GSH1762	GSH1762	GSH1762	GSH1762	GSH1762	GSH2237
		30-Apr-12	30-Apr-12	7-Jun-12	7-Jun-12	7-Jun-12	7-Jun-12	29-Jun-12	7-Sep-11	7-Sep-11	7-Sep-11	24-Apr-12	24-Apr-12	3-May-12	3-May-12	3-May-12	3-May-12	3-May-12	14-Oct-11
		261							266										267
		FOD6-5	SWD2-2/SWD4	FOD9a	FOD6-5	SWD2-2	SWT2-9	CUP3e	CUM 1-1	FOD 4a	FOD4a	CUP3-2	CUP3	CUP1a	SWT2a	CUP1b	FOD 7-2		
<b>PTERIDOPHYTES</b>		<b>FERNS &amp; ALLIES</b>																	
<b>Dennstaedtiaceae</b>		<b>Bracken Fern Family</b>																	
<i>Pteridium</i>	<i>aquilinum var. latiusculum</i>																		
<b>Dryopteridaceae</b>		<b>Wood Fern Family</b>																	
<i>Athyrium</i>	<i>filix-femina var. angustum</i>																		
<i>Cystopteris</i>	<i>bulbifera</i>																		
<i>Dryopteris</i>	<i>carthusiana</i>																		
<i>Dryopteris</i>	<i>intermedia</i>																		
<i>Dryopteris</i>	<i>marginalis</i>																		
<i>Onoclea</i>	<i>sensibilis</i>		U	R		R													
<i>Polystichum</i>	<i>acrostichoides</i>																		
<b>Equisetaceae</b>		<b>Horsetail Family</b>																	
<i>Equisetum</i>	<i>arvense</i>																		
<i>Equisetum</i>	<i>hyemale var. affine</i>																		
<i>Equisetum</i>	<i>pratense</i>																		
<i>Equisetum</i>	<i>sp.</i>																		
<b>Lycopodiaceae</b>		<b>Clubmoss Family</b>																	
<i>Lycopodium</i>	<i>obscurum</i>																		
<b>Osmundaceae</b>		<b>Royal Fern Family</b>																	
<i>Osmunda</i>	<i>regalis</i>																		
<b>Thelypteridaceae</b>		<b>Marsh Fern Family</b>																	
<i>Thelypteris</i>	<i>noveboracensis</i>																		
<i>Thelypteris</i>	<i>palustris var. pubescens</i>																		
<b>GYMNOSPERMS</b>		<b>CONIFERS</b>																	
<b>Cupressaceae</b>		<b>Cedar Family</b>																	
<i>Juniperus</i>	<i>virginiana</i>																		
<i>Juniperus</i>	<i>communis</i>																		
<i>Thuja</i>	<i>occidentalis</i>									√		U							
<b>Pinaceae</b>		<b>Pine Family</b>																	
<i>Picea</i>	<i>abies</i>												F						
<i>Abies</i>	<i>balsamea</i>																		
<i>Picea</i>	<i>glauca</i>							√					F						
<i>Picea</i>	<i>pungens</i>																		
<i>Pinus</i>	<i>banksiana</i>																		
<i>Pinus</i>	<i>nigra</i>																		
<i>Pinus</i>	<i>strobus</i>							√				D	F						
<i>Pinus</i>	<i>sylvestris</i>																		
<i>Pinus</i>	<i>resinosa</i>												F						
<i>Tsuga</i>	<i>canadensis</i>											R							
<b>Taxaceae</b>		<b>Yew Family</b>																	
<i>Taxus</i>	<i>canadensis</i>											R							
<b>DICOTYLED+D308ONS</b>		<b>DICOTS</b>																	
<b>Aceraceae</b>		<b>Maple Family</b>																	







BOTANICAL NAME	COMMON NAME	261 GSH1492/2052	261 GSH1492/2052	261 GSH2049/2050	261 GSH2049/2050	261 GSH2049/2050	261 GSH1492	266 GSH1761 (V1)	266 GSH1761 (V2)	266 GSH1761 (V3)	266 GSH1760&176 1	266 GSH1760&176 1	266 GSH1762	266 GSH1762	266 GSH1762	266 GSH1762	267 GSH2237	
		30-Apr-12	30-Apr-12	7-Jun-12	7-Jun-12	7-Jun-12	29-Jun-12	7-Sep-11	7-Sep-11	7-Sep-11	24-Apr-12	24-Apr-12	3-May-12	3-May-12	3-May-12	3-May-12	14-Oct-11	
		261						266										267
		FOD6-5	SWD2- 2/SWD4	FOD9a	FOD6-5	SWD2-2	SWT2-9	CUP3e	CUM 1-1	FOD 4a	FOD4a	CUP3-2	CUP3	CUP1a	SWT2a	CUP1b	FOD 7-2	
<b>Convolvulaceae</b>		<b>Morning-glory Family</b>																
<i>Convolvulus</i>	<i>arvensis</i>	Field Bindweed																
<b>Cornaceae</b>		<b>Dogwood Family</b>																
<i>Cornus</i>	<i>alternifolia</i>	Alternate-leaved Dogwood																
<i>Cornus</i>	<i>amomum ssp. obliqua</i>	Silky Dogwood																
<i>Cornus</i>	<i>racemosa</i>	Grey dogwood		R				F							R		√	
<i>Cornus</i>	<i>sericea</i>	Red-osier Dogwood						U							R			
<i>Cornus</i>	<i>rugosa</i>	Round-leaved Dogwood																
<b>Cucurbitaceae</b>		<b>Gourd Family</b>																
<i>Echinocystis</i>	<i>lobata</i>	Prickly Cucumber																
<b>Dipsacaceae</b>		<b>Teasel Family</b>																
<i>Dipsacus</i>	<i>fullonum ssp. sylvestris</i>	Wild Teasel			R													
<b>Elaeagnaceae</b>		<b>Oleaster Family</b>																
<i>Elaeagnus</i>	<i>angustifolia</i>	Russian Olive																
<i>Elaeagnus</i>	<i>umbellata</i>	Autum Olive													F			
<i>Sheperdia</i>	<i>canadensis</i>	Buffaloberry																
<b>Ericaceae</b>		<b>Heath Family</b>																
<i>Lotus</i>	<i>corniculatus</i>	Bird's-foot Trefoil																
<b>Euphorbiaceae</b>		<b>Spurge Family</b>																
<i>Acalypha</i>	<i>rhomboidea</i>	Three-seeded Mercury																
<b>Fabaceae</b>		<b>Pea Family</b>																
<i>Lotus</i>	<i>corniculatus</i>	Bird's-foot Trefoil																
<i>Medicago</i>	<i>lupulina</i>	Black Medick			R													
<i>Medicago</i>	<i>Sativa</i>	alfalfa																
<i>Melilotus</i>	<i>alba</i>	White Sweet-clover																
<i>Melilotus</i>	<i>officinalis</i>	Yellow Sweet-clover																
<i>Robinia</i>	<i>pseudo-acacia</i>	Black Locust																
<i>Trifolium</i>	<i>pratense</i>	Red Clover																
<i>Trifolium</i>	<i>sp.</i>	Clover species													U			
<i>Trifolium</i>	<i>repens</i>	White Clover																
<i>Vicia</i>	<i>cracca</i>	Tufted Vetch																
<b>Fagaceae</b>		<b>Beech Family</b>																
<i>Fagus</i>	<i>grandifolia</i>	American Beech	D		R	F					F							
<i>Quercus</i>	<i>alba</i>	White Oak																
<i>Quercus</i>	<i>macrocarpa</i>	Bur Oak			U	R	R				R					F	√	
<i>Quercus</i>	<i>rubra</i>	Red Oak																
<b>Fumariaceae</b>		<b>Fumitory Family</b>																
<i>Dicentra</i>	<i>canadensis</i>	Squirrel-corn																
<i>Dicentra</i>	<i>cucullaria</i>	Dutchman's-breeches																
<b>Geraniaceae</b>		<b>Geranium Family</b>																
<i>Geranium</i>	<i>maculatum</i>	Spotted Crane's-bill	U		R	R								R				
<i>Geranium</i>	<i>robertianum</i>	Herb-robert	U		R	R						U	U		U			

BOTANICAL NAME	COMMON NAME	261 GSH1492/2052	261 GSH1492/2052	261 GSH2049/2050	261 GSH2049/2050	261 GSH2049/2050	261 GSH1492	266 GSH1761 (V1)	266 GSH1761 (V2)	266 GSH1761 (V3)	266 GSH1760&176 1	266 GSH1760&176 1	266 GSH1762	266 GSH1762	266 GSH1762	266 GSH1762	267 GSH2237		
		30-Apr-12	30-Apr-12	7-Jun-12	7-Jun-12	7-Jun-12	29-Jun-12	7-Sep-11	7-Sep-11	7-Sep-11	24-Apr-12	24-Apr-12	3-May-12	3-May-12	3-May-12	3-May-12	14-Oct-11		
		261							266										267
		FOD6-5	SWD2- 2/SWD4	FOD9a	FOD6-5	SWD2-2	SWT2-9	CUP3e	CUM 1-1	FOD 4a	FOD4a	CUP3-2	CUP3	CUP1a	SWT2a	CUP1b	FOD 7-2		
<b>Grossulariaceae</b>		<b>Currant Family</b>																	
<i>Ribes</i>	<i>americanum</i>	Wild Black Currant	U		U			R					U	U		U	√		
<i>Ribes</i>	<i>cynosbati</i>	Prickly Gooseberry	U																
<i>Ribes</i>	<i>lacustre</i>	Swamp Black Currant																	
<i>Ribes</i>	<i>rubrum</i>	Red Currant															√		
<i>Ribes</i>	<i>triste</i>	Wild Red Currant																	
<i>Ribes</i>	<i>sp.</i>	Currant species																	
<b>Guttiferae</b>		<b>St. John's-wort Family</b>																	
<i>Hypericum</i>	<i>perforatum</i>	Common St. John's-wort																	
<i>Hypericum</i>	<i>punctatum</i>	Spotted St. John's-wort																	
<b>Hamamelidaceae</b>		<b>Witch-hazel Family</b>																	
<i>Hamamelis</i>	<i>virginiana</i>	Witch-hazel																	
<b>Hydrophyllaceae</b>		<b>Water-leaf Family</b>																	
<i>Hydrophyllum</i>	<i>virginianum</i>	Virginia Water-leaf	F																
<b>Juglandaceae</b>		<b>Walnut Family</b>																	
<i>Carya</i>	<i>cordiformis</i>	Bitternut hickory	F		F														
<i>Carya</i>	<i>ovata var. ovata</i>	Shagbark Hickory	F		U	R								U			√		
<i>Carya</i>	<i>sp</i>	Hickory species																	
<i>Juglans</i>	<i>cinerea</i>	Butternut																	
<i>Juglans</i>	<i>nigra</i>	Black Walnut					R									U			
<b>Lamiaceae</b>		<b>Mint Family</b>																	
<i>Clinopodium</i>	<i>vulgare</i>	Wild Basil																	
<i>Leonurus</i>	<i>cardiaca ssp. cardiaca</i>	Common Motherwort																	
<i>Lycopus</i>	<i>americanus</i>	Cut-leaved Water-horehound																	
<i>Lycopus</i>	<i>uniflorus</i>	Northern Water-horehound																	
<i>Mentha</i>	<i>arvensis</i>	American Wild Mint																	
<i>Mentha</i>	<i>sp.</i>	species																	
<i>Prunella</i>	<i>vulgaris ssp. vulgaris</i>	Heal-all																	
<i>Scutellaria</i>	<i>lateriflora</i>	Mad-dog Skullcap																	
<i>Satureja</i>	<i>vulgaris</i>	wild basil																	
<b>Lauraceae</b>		<b>Laurel Family</b>																	
<i>Lindera</i>	<i>benzoin</i>	Spicebush	U								F					R			
<b>Malvaceae</b>		<b>Mallow Family</b>																	
<i>Abutilon</i>	<i>theophrasti</i>	Velvet-leaf																	
<i>Malva</i>	<i>neglecta</i>	Cheeses																	
<b>Montiaceae</b>		<b>Montia Family</b>																	
<i>Claytonia</i>	<i>caroliniana</i>	Carolina Spring Beauty																	
<i>Claytonia</i>	<i>virginica</i>	Virginia Spring Beauty					R												
<b>Menispermaceae</b>		<b>Moonseed Family</b>																	
<i>Menispermum</i>	<i>canadense</i>	Moonseed																	
<b>Oleaceae</b>		<b>Olive Family</b>																	
<i>Fraxinus</i>	<i>americana</i>	White Ash	U		U					√	D								







BOTANICAL NAME		COMMON NAME		261	261	261	261	261	261	266	266	266	266	266	266	266	266	267		
				GSH1492/2052	GSH1492/2052	GSH2049/2050	GSH2049/2050	GSH2049/2050	GSH1492	GSH1761 (V1)	GSH1761 (V2)	GSH1761 (V3)	GSH1760&176	GSH1760&176	GSH1762	GSH1762	GSH1762	GSH1762	GSH1762	GSH2237
				30-Apr-12	30-Apr-12	7-Jun-12	7-Jun-12	7-Jun-12	29-Jun-12	7-Sep-11	7-Sep-11	7-Sep-11	24-Apr-12	24-Apr-12	3-May-12	3-May-12	3-May-12	3-May-12	3-May-12	14-Oct-11
				261						266										
				FOD6-5	SWD2-2/SWD4	FOD9a	FOD6-5	SWD2-2	SWT2-9	CUP3e	CUM 1-1	FOD 4a	FOD4a	CUP3-2	CUP3	CUP1a	SWT2a	CUP1b	FOD 7-2	
<i>Potentilla</i>	<i>recta</i>		Rough-fruited Cinquefoil																	
<i>Prunus</i>	<i>avium</i>		Sweet Cherry																	
<i>Prunus</i>	<i>cerasus</i>		Sour Cherry																	
<i>Prunus</i>	<i>pensylvanica</i>	R	Pin Cherry																	
<i>Prunus</i>	<i>serotina</i>		Black Cherry																	
<i>Prunus</i>	<i>virginiana</i>	F	Choke Cherry			R	U									U		U	√	
<i>Prunus</i>	<i>sp.</i>		Cherry species																	
<i>Pyrus</i>	<i>communis</i>		Common Pear																	
<i>Physocarpus</i>	<i>opulifolius</i>		Ninebark												R					
<i>Rosa</i>	<i>blanda</i>		Smooth Rose																	
<i>Rosa</i>	<i>multiflora</i>		Multiflora Rose																	
<i>Rosa</i>	<i>sp.</i>		Rose species																	
<i>Rubus</i>	<i>alleggheniensis</i>		Alleghany Blackberry																	
<i>Rubus</i>	<i>canadensis</i>		Millspaugh's Blackberry																	
<i>Rubus</i>	<i>idaeus</i>		Red Raspberry			R														√
<i>Rubus</i>	<i>occidentalis</i>		Black raspberry						U											√
<i>Rubus</i>	<i>odoratus</i>		Purple-fl. Raspberry																	
<i>Rubus</i>	<i>pubescens</i>		Dwarf Raspberry																	
<i>Rubus</i>	<i>sp.</i>		Raspberry species																	
<i>Sorbus</i>	<i>aucuparia</i>		Eur. Mountain Ash																	
<b>Rubiaceae</b>			<b>Madder Family</b>																	
<i>Cephalanthus</i>	<i>occidentalis</i>		Eastern Buttonbush																	
<i>Galium</i>	<i>aparine</i>		Cleavers																	
<i>Galium</i>	<i>asprellum</i>		Rough Bedstraw																	
<i>Galium</i>	<i>mollugo</i>		White Bedstraw																	
<i>Galium</i>	<i>triflorum</i>		Sweet-scented Bedstraw																	
<i>Galium</i>	<i>sp.</i>		Bedstraw species																	
<i>Mitchella</i>	<i>repens</i>		Creeping Partridge-berry																	
<b>Rutaceae</b>			<b>Rue Family</b>																	
<i>Zanthoxylum</i>	<i>americanum</i>		American Prickly-ash																	
<b>Salicaceae</b>			<b>Willow Family</b>																	
<i>Populus</i>	<i>alba</i>		Silver Poplar																	
<i>Populus</i>	<i>balsamifera ssp. balsamifera</i>		Balsam Poplar																	
<i>Populus</i>	<i>deltoides ssp. deltoides</i>		Eastern Cottonwood		D				F								D			√
<i>Populus</i>	<i>grandidentata</i>		Large-tooth Aspen									√	D							
<i>Populus</i>	<i>tremuloides</i>		Trembling Aspen																R	
<i>Salix</i>	<i>sp.</i>		Willow species																	
<i>Salix</i>	<i>alba</i>		White Willow																	
<i>Salix</i>	<i>amygdaloides</i>		Peach-leaved Willow																	
<i>Salix</i>	<i>bebbiana</i>		Long-beaked Willow																	
<i>Salix</i>	<i>discolor</i>		Pussy Willow																	
<i>Salix</i>	<i>eriocephala</i>		Missouri Willow																	
<i>Salix</i>	<i>exigua</i>		Sandbar Willow														F			



BOTANICAL NAME	COMMON NAME	261	261	261	261	261	261	266	266	266	266	266	266	266	266	266	266	267	
		GSH1492/2052	GSH1492/2052	GSH2049/2050	GSH2049/2050	GSH2049/2050	GSH2049/2050	GSH1492	GSH1761 (V1)	GSH1761 (V2)	GSH1761 (V3)	GSH1760&1761	GSH1760&1761	GSH1762	GSH1762	GSH1762	GSH1762	GSH1762	GSH2237
		30-Apr-12	30-Apr-12	7-Jun-12	7-Jun-12	7-Jun-12	7-Jun-12	29-Jun-12	7-Sep-11	7-Sep-11	7-Sep-11	24-Apr-12	24-Apr-12	3-May-12	3-May-12	3-May-12	3-May-12	3-May-12	14-Oct-11
		261						266											267
		FOD6-5	SWD2-2/SWD4	FOD9a	FOD6-5	SWD2-2	SWT2-9	CUP3e	CUM 1-1	FOD 4a	FOD4a	CUP3-2	CUP3	CUP1a	SWT2a	CUP1b	FOD 7-2		
<b>MONOCOTYLEDONS</b>		<b>MONOCOTS</b>																	
<i>Alisma</i>	<i>plantago-aquatica</i>	Common Water-plantain																	
<b>Araceae</b>		<b>Arum Family</b>																	
<i>Arisaema</i>	<i>triphillum</i>	Small Jack-in-the-pulpit																	
<i>Calla</i>	<i>palustris</i>	Wild Calla																	
<b>Cyperaceae</b>		<b>Sedge Family</b>																	
<i>Carex</i>	<i>sp.</i>	Sedge species																	
<i>Carex</i>	<i>albursina</i>	White Bear Sedge																	
<i>Carex</i>	<i>amphibola</i>	Narrow-leaved Sedge																	
<i>Carex</i>	<i>arctata</i>	Drooping Wood Sedge																	
<i>Carex</i>	<i>bebbii</i>	Bebb's Sedge																	
<i>Carex</i>	<i>blanda</i>	Woodland Sedge																	
<i>Carex</i>	<i>comosa</i>	Bristly Sedge																	
<i>Carex</i>	<i>crinita</i>	Fringed sedge																	
<i>Carex</i>	<i>crstatella</i>	Crested Sedge																	
<i>Carex</i>	<i>gracillima</i>	Graceful Sedge																	
<i>Carex</i>	<i>granularis</i>	Meadow Sedge																	
<i>Carex</i>	<i>grayi</i>	Gray's Sedge																	
<i>Carex</i>	<i>interior</i>	Inland Sedge																	
<i>Carex</i>	<i>intumescens</i>	Bladder Sedge																	
<i>Carex</i>	<i>lupulina</i>	Hop Sedge																	
<i>Carex</i>	<i>pedunculata</i>	Long-stalked Sedge																	
<i>Carex</i>	<i>pensylvanica</i>	Pennsylvania Sedge																	
<i>Carex</i>	<i>plantaginea</i>	Plantain-leaved Sedge																	
<i>Carex</i>	<i>platyphylla</i>	Broad-leaved Sedge																	
<i>Carex</i>	<i>projecta</i>	Necklace Sedge																	
<i>Carex</i>	<i>punctata</i>	Dotted Sedge																	
<i>Carex</i>	<i>radiata</i>	Radiate Sedge																	
<i>Carex</i>	<i>retrorsa</i>	Retorse Sedge																	
<i>Carex</i>	<i>rosea</i>	Stellate Sedge																	
<i>Eleocharis</i>	<i>sp.</i>	Spikerush species																	
<i>Carex</i>	<i>stipata</i>	Awl-fruited Sedge																	
<i>Carex</i>	<i>stricta</i>	Tussock Sedge																	
<i>Carex</i>	<i>tuckermanii</i>	Tuckerman's Sedge																	
<i>Carex</i>	<i>vulpinoidea</i>	Fox Sedge																	
<i>Schoenoplectus</i>	<i>atrovirens</i>	Dark-green Bulrush																	
<i>Schoenoplectus</i>	<i>tabernaemontani</i>	American Great Bulrush/softs																	
<i>Scirpus</i>	<i>cyperinus</i>	Wool-grass																	
<b>Iridaceae</b>		<b>Iris Family</b>																	
<i>Iris</i>	<i>versicolor</i>	Multi-coloured Blue-flag																	
<i>Iris</i>	<i>sp.</i>	Iris species																	
<b>Juncaceae</b>		<b>Rush Family</b>																	
<i>Juncus</i>	<i>compressus</i>	Compressed Rush																	





<b>BOTANICAL NAME</b>	<b>COMMON NAME</b>	261 GSH1492/2052	261 GSH1492/2052	261 GSH2049/2050	261 GSH2049/2050	261 GSH2049/2050	261 GSH1492	266 GSH1761 (V1)	266 GSH1761 (V2)	266 GSH1761 (V3)	266 GSH1760&176 1	266 GSH1760&176 1	266 GSH1762	266 GSH1762	266 GSH1762	266 GSH1762	267 GSH2237	
		30-Apr-12	30-Apr-12	7-Jun-12	7-Jun-12	7-Jun-12	29-Jun-12	7-Sep-11	7-Sep-11	7-Sep-11	24-Apr-12	24-Apr-12	3-May-12	3-May-12	3-May-12	3-May-12	14-Oct-11	
		261						266										267
		FOD6-5	SWD2-2/SWD4	FOD9a	FOD6-5	SWD2-2	SWT2-9	CUP3e	CUM 1-1	FOD 4a	FOD4a	CUP3-2	CUP3	CUP1a	SWT2a	CUP1b	FOD 7-2	

#### FLORISTIC SUMMARY & ASSESSMENT

<b>Species Diversity</b>	
Total Species:	368
Native Species:	278
Exotic Species	90
Total Taxa in Region (List Region, Source)	10000
% Regional Taxa Recorded	3.68%
Regionally Significant Species	0
S1-S3 Species	5
S4 Species	14
S5 Species	253

#### Co-efficient of Conservatism and Floral Quality Index

Co-efficient of Conservatism (CC) (average)		4.46
CC 0 to 3	lowest sensitivity	81
CC 4 to 6	moderate sensitivity	155
CC 7 to 8	high sensitivity	38
CC 9 to 10	highest sensitivity	4
Floral Quality Index (FQI)		74.37

#### Presence of Weedy & Invasive Species

mean weediness		-1.67
weediness = -1	low potential invasiveness	49
weediness = -2	moderate potential invasiveness	22
weediness = -3	high potential invasiveness	19

#### Presence of Wetland Species

average wetness value		0.71
upland		89
facultative upland		89
facultative		69
facultative wetland		76
obligate wetland		44

BOTANICAL NAME	COMMON NAME	269 GSH1493/1494	269 GSH1493/1494	271 GSH2252	273 GSH2133	273 GSH2133	274 GSH2124	274 GSH2124	275 GSH1495/2046	275 GSH1495/2046	279 GSH2119	279 GSH2119	279 GSH2119	280 GSH1801	280 GSH1758	280 GSH1758
		18-Apr-12	18-Apr-12	26-Apr-12	2-May-12	2-May-12	2-May-12	2-May-12	8-May-12	8-May-12	2-May-12	2-May-12	2-May-12	21-Sep-11	24-Apr-12	24-Apr-12
		269		271	273		274		275		279					
		FOD5-2	SWD2-2	FOD6-4	FOD8-1	SWD3-3	SWD6-3	MAM3-2	FOD6-5	SWD3-3	SWT2	SWD6-3	MAM3-2	SWD 2-1 CUM 1-1 MAM 2-10	FOD5_8 (Poly 5)	FOD5_8 (Poly 6)
<b>PTERIDOPHYTES</b>		<b>FERNS &amp; ALLIES</b>														
<b>Dennstaedtiaceae</b>		<b>Bracken Fern Family</b>														
<i>Pteridium</i>	<i>aquilinum var. latiusculum</i>	Eastern Bracken-fern														
<b>Dryopteridaceae</b>		<b>Wood Fern Family</b>														
<i>Athyrium</i>	<i>filix-femina var. angustum</i>	Northern Lady Fern														
<i>Cystopteris</i>	<i>bulbifera</i>	bulblet bladderfern														
<i>Dryopteris</i>	<i>carthusiana</i>	Spinulose Wood Fern														
<i>Dryopteris</i>	<i>intermedia</i>	Evergreen Wood Fern														
<i>Dryopteris</i>	<i>marginalis</i>	Marginal Wood Fern														
<i>Onoclea</i>	<i>sensibilis</i>	Sensitive Fern														
<i>Polystichum</i>	<i>acrostichoides</i>	Christmas Fern														
<b>Equisetaceae</b>		<b>Horsetail Family</b>														
<i>Equisetum</i>	<i>arvense</i>	Field Horsetail														
<i>Equisetum</i>	<i>hyemale var. affine</i>	Scouring-rush														
<i>Equisetum</i>	<i>pratense</i>	Meadow Horsetail														
<i>Equisetum</i>	<i>sp.</i>	Horestail species														
<b>Lycopodiaceae</b>		<b>Clubmoss Family</b>														
<i>Lycopodium</i>	<i>obscurum</i>	Ground-pine														
<b>Osmundaceae</b>		<b>Royal Fern Family</b>														
<i>Osmunda</i>	<i>regalis</i>	Royal Fern														
<b>Thelypteridaceae</b>		<b>Marsh Fern Family</b>														
<i>Thelypteris</i>	<i>noveboracensis</i>	New York Fern														
<i>Thelypteris</i>	<i>palustris var. pubescens</i>	Marsh Fern														
<b>GYMNOSPERMS</b>		<b>CONIFERS</b>														
<b>Cupressaceae</b>		<b>Cedar Family</b>														
<i>Juniperus</i>	<i>virginiana</i>	Eastern Red Cedar														
<i>Juniperus</i>	<i>communis</i>	Common Juniper														
<i>Thuja</i>	<i>occidentalis</i>	Eastern White Cedar														
<b>Pinaceae</b>		<b>Pine Family</b>														
<i>Picea</i>	<i>abies</i>	Norway Spruce														
<i>Abies</i>	<i>balsamea</i>	Balsam Fir														
<i>Picea</i>	<i>glauca</i>	White Spruce														
<i>Picea</i>	<i>pungens</i>	Colorado Spruce														
<i>Pinus</i>	<i>banksiana</i>	Jack Pine														
<i>Pinus</i>	<i>nigra</i>	Austrian Pine														
<i>Pinus</i>	<i>strobus</i>	Eastern White Pine														
<i>Pinus</i>	<i>sylvestris</i>	Scots Pine														
<i>Pinus</i>	<i>resinosa</i>	Red Pine														
<i>Tsuga</i>	<i>canadensis</i>	Eastern Hemlock														
<b>Taxaceae</b>		<b>Yew Family</b>														
<i>Taxus</i>	<i>canadensis</i>	American Yew														
<b>DICOTYLED+D308ONS</b>		<b>DICOTS</b>														
<b>Aceraceae</b>		<b>Maple Family</b>														











BOTANICAL NAME	COMMON NAME	269 GSH1493/1494	269 GSH1493/1494	271 GSH2252	273 GSH2133	273 GSH2133	274 GSH2124	274 GSH2124	275 GSH1495/2046	275 GSH1495/2046	279 GSH2119	279 GSH2119	279 GSH2119	280 GSH1801	280 GSH1758	280 GSH1758	
		18-Apr-12	18-Apr-12	26-Apr-12	2-May-12	2-May-12	2-May-12	2-May-12	8-May-12	8-May-12	2-May-12	2-May-12	2-May-12	21-Sep-11	24-Apr-12	24-Apr-12	
		269		271	273		274		275		279						
		FOD5-2	SWD2-2	FOD6-4	FOD8-1	SWD3-3	SWD6-3	MAM3-2	FOD6-5	SWD3-3	SWT2	SWD6-3	MAM3-2	SWD 2-1 CUM 1-1 MAM 2-10	FOD5_8 (Poly 5)	FOD5_8 (Poly 6)	
<b>Grossulariaceae</b>		<b>Currant Family</b>															
<i>Ribes</i>	<i>americanum</i>	Wild Black Currant	U		U	U			R						U	U	
<i>Ribes</i>	<i>cynosbati</i>	Prickly Gooseberry	R		U				U	U							
<i>Ribes</i>	<i>lacustre</i>	Swamp Black Currant				R						U				U	
<i>Ribes</i>	<i>rubrum</i>	Red Currant															
<i>Ribes</i>	<i>triste</i>	Wild Red Currant															
<i>Ribes</i>	<i>sp.</i>	Currant species															
<b>Guttiferae</b>		<b>St. John's-wort Family</b>															
<i>Hypericum</i>	<i>perforatum</i>	Common St. John's-wort															
<i>Hypericum</i>	<i>punctatum</i>	Spotted St. John's-wort															
<b>Hamamelidaceae</b>		<b>Witch-hazel Family</b>															
<i>Hamamelis</i>	<i>virginiana</i>	Witch-hazel												√			
<b>Hydrophyllaceae</b>		<b>Water-leaf Family</b>															
<i>Hydrophyllum</i>	<i>virginianum</i>	Virginia Water-leaf	R		F				U								
<b>Juglandaceae</b>		<b>Walnut Family</b>															
<i>Carya</i>	<i>cordiformis</i>	Bitternut hickory	R		U				R						R		
<i>Carya</i>	<i>ovata var. ovata</i>	Shagbark Hickory	R		U				U	R							
<i>Carya</i>	<i>sp.</i>	Hickory species															
<i>Juglans</i>	<i>cinerea</i>	Butternut															
<i>Juglans</i>	<i>nigra</i>	Black Walnut															
<b>Lamiaceae</b>		<b>Mint Family</b>															
<i>Clinopodium</i>	<i>vulgare</i>	Wild Basil															
<i>Leonurus</i>	<i>cardiaca ssp. cardiaca</i>	Common Motherwort															
<i>Lycopus</i>	<i>americanus</i>	Cut-leaved Water-horehound															
<i>Lycopus</i>	<i>uniflorus</i>	Northern Water-horehound															
<i>Mentha</i>	<i>arvensis</i>	American Wild Mint															
<i>Mentha</i>	<i>sp.</i>	species															
<i>Prunella</i>	<i>vulgaris ssp. vulgaris</i>	Heal-all															
<i>Scutellaria</i>	<i>lateriflora</i>	Mad-dog Skullcap															
<i>Satureja</i>	<i>vulgaris</i>	wild basil															
<b>Lauraceae</b>		<b>Laurel Family</b>															
<i>Lindera</i>	<i>benzoin</i>	Spicebush							R					√	U	U	
<b>Malvaceae</b>		<b>Mallow Family</b>															
<i>Abutilon</i>	<i>theophrasti</i>	Velvet-leaf															
<i>Malva</i>	<i>neglecta</i>	Cheeses															
<b>Montiaceae</b>		<b>Montia Family</b>															
<i>Claytonia</i>	<i>caroliniana</i>	Carolina Spring Beauty															
<i>Claytonia</i>	<i>virginica</i>	Virginia Spring Beauty															
<b>Menispermaceae</b>		<b>Moonseed Family</b>															
<i>Menispermum</i>	<i>canadense</i>	Moonseed															
<b>Oleaceae</b>		<b>Olive Family</b>															
<i>Fraxinus</i>	<i>americana</i>	White Ash	U						F								





BOTANICAL NAME		COMMON NAME		269	269	271	273	273	274	274	275	275	279	279	279	280	280	280
				GSH1493/1494	GSH1493/1494	GSH2252	GSH2133	GSH2133	GSH2124	GSH2124	GSH1495/2046	GSH1495/2046	GSH2119	GSH2119	GSH2119	GSH1801	GSH1758	GSH1758
				18-Apr-12	18-Apr-12	26-Apr-12	2-May-12	2-May-12	2-May-12	2-May-12	8-May-12	8-May-12	2-May-12	2-May-12	2-May-12	21-Sep-11	24-Apr-12	24-Apr-12
				269		271	273		274		275		279					
		FOD5-2	SWD2-2	FOD6-4	FOD8-1	SWD3-3	SWD6-3	MAM3-2	FOD6-5	SWD3-3	SWT2	SWD6-3	MAM3-2	SWD 2-1 CUM 1-1 MAM 2-10	FOD5_8 (Poly 5)	FOD5_8 (Poly 6)		
<i>Potentilla</i>	<i>recta</i>	Rough-fruited Cinquefoil																
<i>Prunus</i>	<i>avium</i>	Sweet Cherry																
<i>Prunus</i>	<i>cerasus</i>	Sour Cherry																
<i>Prunus</i>	<i>pensylvanica</i>	Pin Cherry																
<i>Prunus</i>	<i>serotina</i>	Black Cherry	R														U	
<i>Prunus</i>	<i>virginiana</i>	Choke Cherry	F		U				U			U			U		U	
<i>Prunus</i>	<i>sp.</i>	Cherry species																
<i>Pyrus</i>	<i>communis</i>	Common Pear																
<i>Physocarpus</i>	<i>opulifolius</i>	Ninebark																
<i>Rosa</i>	<i>blanda</i>	Smooth Rose																
<i>Rosa</i>	<i>multiflora</i>	Multiflora Rose																
<i>Rosa</i>	<i>sp.</i>	Rose species																
<i>Rubus</i>	<i>alleggheniensis</i>	Alleghany Blackberry																
<i>Rubus</i>	<i>canadensis</i>	Millspaugh's Blackberry																
<i>Rubus</i>	<i>idaeus</i>	Red Raspberry			U									√			U	
<i>Rubus</i>	<i>occidentalis</i>	Black raspberry			U				U									
<i>Rubus</i>	<i>odoratus</i>	Purple-fl. Raspberry																
<i>Rubus</i>	<i>pubescens</i>	Dwarf Raspberry																
<i>Rubus</i>	<i>sp.</i>	Raspberry species																
<i>Sorbus</i>	<i>aucuparia</i>	Eur. Mountain Ash																
<b>Rubiaceae</b>		<b>Madder Family</b>																
<i>Cephalanthus</i>	<i>occidentalis</i>	Eastern Buttonbush																
<i>Galium</i>	<i>aparine</i>	Cleavers															U	
<i>Galium</i>	<i>asprellum</i>	Rough Bedstraw							U									
<i>Galium</i>	<i>mollugo</i>	White Bedstraw																
<i>Galium</i>	<i>triflorum</i>	Sweet-scented Bedstraw																
<i>Galium</i>	<i>sp.</i>	Bedstraw species																
<i>Mitchella</i>	<i>repens</i>	Creeping Partridge-berry																
<b>Rutaceae</b>		<b>Rue Family</b>																
<i>Zanthoxylum</i>	<i>americanum</i>	American Prickly-ash																
<b>Salicaceae</b>		<b>Willow Family</b>																
<i>Populus</i>	<i>alba</i>	Silver Poplar																
<i>Populus</i>	<i>balsamifera</i> ssp. <i>balsamifera</i>	Balsam Poplar																
<i>Populus</i>	<i>deltoides</i> ssp. <i>deltoides</i>	Eastern Cottonwood		U		R	R				F	U					U	
<i>Populus</i>	<i>grandidentata</i>	Large-tooth Aspen																
<i>Populus</i>	<i>tremuloides</i>	Trembling Aspen				D	R							√	U			
<i>Salix</i>	<i>sp.</i>	Willow species																
<i>Salix</i>	<i>alba</i>	White Willow																
<i>Salix</i>	<i>amygdaloides</i>	Peach-leaved Willow																
<i>Salix</i>	<i>bebbiana</i>	Long-beaked Willow																
<i>Salix</i>	<i>discolor</i>	Pussy Willow																
<i>Salix</i>	<i>eriocephala</i>	Missouri Willow																
<i>Salix</i>	<i>exigua</i>	Sandbar Willow							U			U						





BOTANICAL NAME	COMMON NAME	269 GSH1493/1494	269 GSH1493/1494	271 GSH2252	273 GSH2133	273 GSH2133	274 GSH2124	274 GSH2124	275 GSH1495/2046	275 GSH1495/2046	279 GSH2119	279 GSH2119	279 GSH2119	280 GSH1801	280 GSH1758	280 GSH1758	
		18-Apr-12	18-Apr-12	26-Apr-12	2-May-12	2-May-12	2-May-12	2-May-12	8-May-12	8-May-12	2-May-12	2-May-12	2-May-12	21-Sep-11	24-Apr-12	24-Apr-12	
		269		271	273		274		275		279						
		FOD5-2	SWD2-2	FOD6-4	FOD8-1	SWD3-3	SWD6-3	MAM3-2	FOD6-5	SWD3-3	SWT2	SWD6-3	MAM3-2	SWD 2-1 CUM 1-1 MAM 2-10	FOD5_8 (Poly 5)	FOD5_8 (Poly 6)	
<b>MONOCOTYLEDONS</b>		<b>MONOCOTS</b>															
<i>Alisma</i>	<i>plantago-aquatica</i>	Common Water-plantain															
<b>Araceae</b>		<b>Arum Family</b>															
<i>Arisaema</i>	<i>triphillum</i>	U		R	U				U			R			U	U	
<i>Calla</i>	<i>palustris</i>	Wild Calla															
<b>Cyperaceae</b>		<b>Sedge Family</b>															
<i>Carex</i>	<i>sp.</i>	U							U					√			
<i>Carex</i>	<i>albursina</i>	White Bear Sedge															
<i>Carex</i>	<i>amphibola</i>	Narrow-leaved Sedge															
<i>Carex</i>	<i>arctata</i>	Drooping Wood Sedge															
<i>Carex</i>	<i>bebbii</i>	Bebb's Sedge															
<i>Carex</i>	<i>blanda</i>	Woodland Sedge															
<i>Carex</i>	<i>comosa</i>	Bristly Sedge															
<i>Carex</i>	<i>crinita</i>	Fringed sedge															
<i>Carex</i>	<i>cristatella</i>	Crested Sedge															
<i>Carex</i>	<i>gracillima</i>								U								
<i>Carex</i>	<i>granularis</i>	Meadow Sedge															
<i>Carex</i>	<i>grayi</i>	Gray's Sedge															
<i>Carex</i>	<i>interior</i>	Inland Sedge															
<i>Carex</i>	<i>intumescens</i>												F				
<i>Carex</i>	<i>lupulina</i>	Hop Sedge															
<i>Carex</i>	<i>pedunculata</i>			U											U		
<i>Carex</i>	<i>pensylvanica</i>	Pennsylvania Sedge															
<i>Carex</i>	<i>plantaginea</i>	Plantain-leaved Sedge															
<i>Carex</i>	<i>platyphylla</i>	Broad-leaved Sedge															
<i>Carex</i>	<i>projecta</i>	Necklace Sedge															
<i>Carex</i>	<i>punctata</i>	Dotted Sedge															
<i>Carex</i>	<i>radiata</i>	Radiate Sedge															
<i>Carex</i>	<i>retrorsa</i>	Retorse Sedge															
<i>Carex</i>	<i>rosea</i>	Stellate Sedge															
<i>Eleocharis</i>	<i>sp.</i>	Spikerush species															
<i>Carex</i>	<i>stipata</i>	Awl-fruited Sedge															
<i>Carex</i>	<i>stricta</i>	Tussock Sedge															
<i>Carex</i>	<i>tuckermanii</i>	Tuckerman's Sedge															
<i>Carex</i>	<i>vulpinoidea</i>	Fox Sedge															
<i>Schoenoplectus</i>	<i>atrovirens</i>	Dark-green Bulrush															
<i>Schoenoplectus</i>	<i>tabernaemontani</i>	American Great Bulrush/softs															
<i>Scirpus</i>	<i>cyperinus</i>	Wool-grass															
<b>Iridaceae</b>		<b>Iris Family</b>															
<i>Iris</i>	<i>versicolor</i>	Multi-coloured Blue-flag															
<i>Iris</i>	<i>sp.</i>	Iris species															
<b>Juncaceae</b>		<b>Rush Family</b>															
<i>Juncus</i>	<i>compressus</i>	Compressed Rush															





<b>BOTANICAL NAME</b>	<b>COMMON NAME</b>	269 GSH1493/1494	269 GSH1493/1494	271 GSH2252	273 GSH2133	273 GSH2133	274 GSH2124	274 GSH2124	275 GSH1495/2046	275 GSH1495/2046	279 GSH2119	279 GSH2119	279 GSH2119	280 GSH1801	280 GSH1758	280 GSH1758
		18-Apr-12	18-Apr-12	26-Apr-12	2-May-12	2-May-12	2-May-12	2-May-12	8-May-12	8-May-12	2-May-12	2-May-12	2-May-12	21-Sep-11	24-Apr-12	24-Apr-12
		269		271	273		274		275		279					
		FOD5-2	SWD2-2	FOD6-4	FOD8-1	SWD3-3	SWD6-3	MAM3-2	FOD6-5	SWD3-3	SWT2	SWD6-3	MAM3-2	SWD 2-1 CUM 1-1 MAM 2-10	FOD5_8 (Poly 5)	FOD5_8 (Poly 6)

**FLORISTIC SUMMARY & ASSESSMENT**

<b>Species Diversity</b>	
Total Species:	<b>368</b>
Native Species:	<b>278</b>
Exotic Species	<b>90</b>
Total Taxa in Region (List Region, Source)	10000
% Regional Taxa Recorded	3.68%
Regionally Significant Species	0
S1-S3 Species	5
S4 Species	14
S5 Species	253

**Co-efficient of Conservatism and Floral Quality Index**

Co-efficient of Conservatism (CC) (average)		<b>4.46</b>
CC 0 to 3	lowest sensitivity	81
CC 4 to 6	moderate sensitivity	155
CC 7 to 8	high sensitivity	38
CC 9 to 10	highest sensitivity	4
<b>Floral Quality Index (FQI)</b>		<b>74.37</b>

**Presence of Weedy & Invasive Species**

mean weediness		<b>-1.67</b>
weediness = -1	low potential invasiveness	49
weediness = -2	moderate potential invasiveness	22
weediness = -3	high potential invasiveness	19

**Presence of Wetland Species**

average wetness value		<b>0.71</b>
upland		89
facultative upland		89
facultative		69
facultative wetland		76
obligate wetland		44

BOTANICAL NAME	COMMON NAME	280 GSH1758	280 GSH1759	280 GSH1759	280 GSH1759	280 GSH1759	280 GSH1801	280 GSH1801	280 GSH1801	280 GSH1801	280 GSH1801	282 GSH2238	282 GSH2238	282 GSH2238	285 GSH1802	285 GSH1802	290 GSH2089
		24-Apr-12	24-Apr-12	24-Apr-12	24-Apr-12	24-Apr-12	24-Apr-12	24-Apr-12	24-Apr-12	24-Apr-12	24-Apr-12	25-Apr-12	25-Apr-12	25-Apr-12	28-Jun-12	28-Jun-12	21-Sep-11
		280										282			285		290
		FOD4e	FOD4d	FOD6-1 (Poly 2)	FOD7-2 (Poly 3)	CUP3-2 (Poly 4)	CUP3-1 (Poly 7)	CUM1-1 (Poly 8)	FOD6-1 (Poly 9)	SWD3-3 (Poly 10)	FOD6-4	SWD2-2	CUM1-1	FOD7-2	CUP3-2	FOD 5-6	
<b>PTERIDOPHYTES</b>		<b>FERNS &amp; ALLIES</b>															
<b>Dennstaedtiaceae</b>		<b>Bracken Fern Family</b>															
<i>Pteridium</i>	<i>aquilinum var. latiusculum</i>	Eastern Bracken-fern	R	R								R					
<b>Dryopteridaceae</b>		<b>Wood Fern Family</b>															
<i>Athyrium</i>	<i>filix-femina var. angustum</i>	Northern Lady Fern															
<i>Cystopteris</i>	<i>bulbifera</i>	bulblet bladderfern															
<i>Dryopteris</i>	<i>carthusiana</i>	Spinulose Wood Fern															
<i>Dryopteris</i>	<i>intermedia</i>	Evergreen Wood Fern										R					
<i>Dryopteris</i>	<i>marginalis</i>	Marginal Wood Fern															
<i>Onoclea</i>	<i>sensibilis</i>	Sensitive Fern			U	U									F		√
<i>Polystichum</i>	<i>acrostichoides</i>	Christmas Fern															
<b>Equisetaceae</b>		<b>Horsetail Family</b>															
<i>Equisetum</i>	<i>arvense</i>	Field Horsetail													R		
<i>Equisetum</i>	<i>hyemale var. affine</i>	Scouring-rush															
<i>Equisetum</i>	<i>pratense</i>	Meadow Horsetail															
<i>Equisetum</i>	<i>sp.</i>	Horetail species				U											
<b>Lycopodiaceae</b>		<b>Clubmoss Family</b>															
<i>Lycopodium</i>	<i>obscurum</i>	Ground-pine															
<b>Osmundaceae</b>		<b>Royal Fern Family</b>															
<i>Osmunda</i>	<i>regalis</i>	Royal Fern															
<b>Thelypteridaceae</b>		<b>Marsh Fern Family</b>															
<i>Thelypteris</i>	<i>noveboracensis</i>	New York Fern															
<i>Thelypteris</i>	<i>palustris var. pubescens</i>	Marsh Fern															
<b>GYMNOSPERMS</b>		<b>CONIFERS</b>															
<b>Cupressaceae</b>		<b>Cedar Family</b>															
<i>Juniperus</i>	<i>virginiana</i>	Eastern Red Cedar															
<i>Juniperus</i>	<i>communis</i>	Common Juniper															
<i>Thuja</i>	<i>occidentalis</i>	Eastern White Cedar													R		
<b>Pinaceae</b>		<b>Pine Family</b>															
<i>Picea</i>	<i>abies</i>	Norway Spruce															
<i>Abies</i>	<i>balsamea</i>	Balsam Fir															
<i>Picea</i>	<i>glauca</i>	White Spruce					R									F	
<i>Picea</i>	<i>pungens</i>	Colorado Spruce															
<i>Pinus</i>	<i>banksiana</i>	Jack Pine															
<i>Pinus</i>	<i>nigra</i>	Austrian Pine															
<i>Pinus</i>	<i>strobus</i>	Eastern White Pine				R	D	F							U	D	
<i>Pinus</i>	<i>sylvestris</i>	Scots Pine															
<i>Pinus</i>	<i>resinosa</i>	Red Pine						D	U							U	
<i>Tsuga</i>	<i>canadensis</i>	Eastern Hemlock			U	U	R										
<b>Taxaceae</b>		<b>Yew Family</b>															
<i>Taxus</i>	<i>canadensis</i>	American Yew															
<b>DICOTYLED+D308ONS</b>		<b>DICOTS</b>															
<b>Aceraceae</b>		<b>Maple Family</b>															









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		24-Apr-12	24-Apr-12	24-Apr-12	24-Apr-12	24-Apr-12	24-Apr-12	24-Apr-12	24-Apr-12	24-Apr-12	24-Apr-12	25-Apr-12	25-Apr-12	25-Apr-12	28-Jun-12	28-Jun-12
		280									282			285		290
		FOD4e	FOD4d	FOD6-1 (Poly 2)	FOD7-2 (Poly 3)	CUP3-2 (Poly 4)	CUP3-1 (Poly 7)	CUM1-1 (Poly 8)	FOD6-1 (Poly 9)	SWD3-3 (Poly 10)	FOD6-4	SWD2-2	CUM1-1	FOD7-2	CUP3-2	FOD 5-6
<b>Convolvulaceae</b>		<b>Morning-glory Family</b>														
<i>Convolvulus</i>	<i>arvensis</i>															
<b>Cornaceae</b>		<b>Dogwood Family</b>														
<i>Cornus</i>	<i>alternifolia</i>	U		U	U				U		U		U	U		
<i>Cornus</i>	<i>amomum ssp. obliqua</i>															
<i>Cornus</i>	<i>racemosa</i>													R		
<i>Cornus</i>	<i>sericea</i>				U			R			R			U		
<i>Cornus</i>	<i>rugosa</i>															
<b>Cucurbitaceae</b>		<b>Gourd Family</b>														
<i>Echinocystis</i>	<i>lobata</i>													F		
<b>Dipsacaceae</b>		<b>Teasel Family</b>														
<i>Dipsacus</i>	<i>fullonum ssp. sylvestris</i>													R		
<b>Elaeagnaceae</b>		<b>Oleaster Family</b>														
<i>Elaeagnus</i>	<i>angustifolia</i>															
<i>Elaeagnus</i>	<i>umbellata</i>															
<i>Shepherdia</i>	<i>canadensis</i>															
<b>Ericaceae</b>		<b>Heath Family</b>														
<i>Lotus</i>	<i>corniculatus</i>															
<b>Euphorbiaceae</b>		<b>Spurge Family</b>														
<i>Acalypha</i>	<i>rhomboidea</i>															
<b>Fabaceae</b>		<b>Pea Family</b>														
<i>Lotus</i>	<i>corniculatus</i>															
<i>Medicago</i>	<i>lupulina</i>															
<i>Medicago</i>	<i>Sativa</i>															
<i>Melilotus</i>	<i>alba</i>															
<i>Melilotus</i>	<i>officinalis</i>															
<i>Robinia</i>	<i>pseudo-acacia</i>															
<i>Trifolium</i>	<i>pratense</i>															
<i>Trifolium</i>	<i>sp.</i>															
<i>Trifolium</i>	<i>repens</i>															
<i>Vicia</i>	<i>cracca</i>															
<b>Fagaceae</b>		<b>Beech Family</b>														
<i>Fagus</i>	<i>grandifolia</i>										U					√
<i>Quercus</i>	<i>alba</i>															
<i>Quercus</i>	<i>macrocarpa</i>				R						U					√
<i>Quercus</i>	<i>rubra</i>															
<b>Fumariaceae</b>		<b>Fumitory Family</b>														
<i>Dicentra</i>	<i>canadensis</i>															
<i>Dicentra</i>	<i>cucullaria</i>															
<b>Geraniaceae</b>		<b>Geranium Family</b>														
<i>Geranium</i>	<i>maculatum</i>	U	U	U	U	R					U		R			
<i>Geranium</i>	<i>robertianum</i>				U	R					R			U		

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		24-Apr-12	24-Apr-12	24-Apr-12	24-Apr-12	24-Apr-12	24-Apr-12	24-Apr-12	24-Apr-12	24-Apr-12	24-Apr-12	25-Apr-12	25-Apr-12	25-Apr-12	28-Jun-12	28-Jun-12	21-Sep-11
		280										282			285		290
		FOD4e	FOD4d	FOD6-1 (Poly 2)	FOD7-2 (Poly 3)	CUP3-2 (Poly 4)	CUP3-1 (Poly 7)	CUM1-1 (Poly 8)	FOD6-1 (Poly 9)	SWD3-3 (Poly 10)	FOD6-4	SWD2-2	CUM1-1	FOD7-2	CUP3-2	FOD 5-6	
<b>Grossulariaceae</b>		<b>Currant Family</b>															
<i>Ribes</i>	<i>americanum</i>	U	U	U	U	U					U	R		U			
<i>Ribes</i>	<i>cynosbati</i>															√	
<i>Ribes</i>	<i>lacustre</i>				R				U		R						
<i>Ribes</i>	<i>rubrum</i>																
<i>Ribes</i>	<i>triste</i>			U												√	
<i>Ribes</i>	<i>sp.</i>																
<b>Guttiferae</b>		<b>St. John's-wort Family</b>															
<i>Hypericum</i>	<i>perforatum</i>													U			
<i>Hypericum</i>	<i>punctatum</i>																
<b>Hamamelidaceae</b>		<b>Witch-hazel Family</b>															
<i>Hamamelis</i>	<i>virginiana</i>													U			
<b>Hydrophyllaceae</b>		<b>Water-leaf Family</b>															
<i>Hydrophyllum</i>	<i>virginianum</i>																
<b>Juglandaceae</b>		<b>Walnut Family</b>															
<i>Carya</i>	<i>cordiformis</i>									U	R			U			
<i>Carya</i>	<i>ovata var. ovata</i>										R					√	
<i>Carya</i>	<i>sp</i>																
<i>Juglans</i>	<i>cinerea</i>																
<i>Juglans</i>	<i>nigra</i>															√	
<b>Lamiaceae</b>		<b>Mint Family</b>															
<i>Clinopodium</i>	<i>vulgare</i>																
<i>Leonurus</i>	<i>cardiaca ssp. cardiaca</i>																
<i>Lycopus</i>	<i>americanus</i>													R			
<i>Lycopus</i>	<i>uniflorus</i>																
<i>Mentha</i>	<i>arvensis</i>																
<i>Mentha</i>	<i>sp.</i>																
<i>Prunella</i>	<i>vulgaris ssp. vulgaris</i>					R											
<i>Scutellaria</i>	<i>lateriflora</i>																
<i>Satureja</i>	<i>vulgaris</i>													R			
<b>Lauraceae</b>		<b>Laurel Family</b>															
<i>Lindera</i>	<i>benzoin</i>			F	U	U				F		U		F			
<b>Malvaceae</b>		<b>Mallow Family</b>															
<i>Abutilon</i>	<i>theophrasti</i>																
<i>Malva</i>	<i>neglecta</i>																
<b>Montiaceae</b>		<b>Montia Family</b>															
<i>Claytonia</i>	<i>caroliniana</i>																
<i>Claytonia</i>	<i>virginica</i>																
<b>Menispermaceae</b>		<b>Moonseed Family</b>															
<i>Menispermum</i>	<i>canadense</i>																
<b>Oleaceae</b>		<b>Olive Family</b>															
<i>Fraxinus</i>	<i>americana</i>										F					√	







BOTANICAL NAME		COMMON NAME		280 GSH1758	280 GSH1759	280 GSH1759	280 GSH1759	280 GSH1759	280 GSH1759	280 GSH1801	280 GSH1801	280 GSH1801	280 GSH1801	280 GSH1801	282 GHS2238	282 GHS2238	282 GHS2238	285 GSH1802	285 GSH1802	290 GSH2089		
				24-Apr-12	24-Apr-12	24-Apr-12	24-Apr-12	24-Apr-12	24-Apr-12	24-Apr-12	24-Apr-12	24-Apr-12	24-Apr-12	24-Apr-12	24-Apr-12	24-Apr-12	25-Apr-12	25-Apr-12	25-Apr-12	28-Jun-12	28-Jun-12	21-Sep-11
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<i>Salix</i>	<i>fragilis</i>	Crack Willow																				
<i>Salix</i>	<i>nigra</i>	Black Willow																				
<i>Salix</i>	<i>petiolaris</i>	Slender Willow																				
<i>Salix X</i>	<i>rubens</i>	Reddish Willow																				
<i>Salix</i>	<i>cordata</i>	Sand dune willow																				
<b>Saxifragaceae</b>		<b>Saxifrage Family</b>																				
<i>Penthorum</i>	<i>sedoides</i>	Ditch Stonecrop																				
<i>Tiarella</i>	<i>cordifolia</i>	Foamflower																				
<b>Scrophulariaceae</b>		<b>Figwort Family</b>																				
<i>Chelone</i>	<i>glabra</i>	Turtlehead																				
<i>Verbascum</i>	<i>thapsus</i>	Common Mullein					R															
<i>Veronica</i>	<i>officinalis</i>	Common Speedwell																F				
<b>Solanaceae</b>		<b>Nightshade Family</b>																				
<i>Solanum</i>	<i>dulcamara</i>	Bitter Nightshade																			√	
<i>Solanum</i>	<i>nigrum</i>	Black Nightshade																				
<b>Tiliaceae</b>		<b>Linden Family</b>																				
<i>Tilia</i>	<i>americana</i>	American Basswood	U	U	U									U		R					√	
<b>Ulmaceae</b>		<b>Elm Family</b>																				
<i>Celtis</i>	<i>occidentalis</i>	Common Hackberry																				
<i>Ulmus</i>	<i>americana</i>	White Elm	U	U	F	U	U							U	U			U			√	
<i>Ulmus</i>																						
<b>Urticaceae</b>		<b>Nettle Family</b>																				
<i>Boehmeria</i>	<i>cylindrica</i>	False Nettle																				
<i>Laportea</i>	<i>canadensis</i>	Wood Nettle																				
<i>Pilea</i>	<i>pumila</i>	Dwarf Clearweed																				
<i>Urtica</i>	<i>dioica ssp. dioica</i>	European Stinging Nettle																				
<i>Urtica</i>	<i>dioica ssp. Gracilis</i>	American Stinging Nettle																				
<b>Verbenaceae</b>		<b>Vervain Family</b>																				
<i>Verbena</i>	<i>urticifolia</i>	White Vervain																				
<b>Violaceae</b>		<b>Violet Family</b>																				
<i>Viola</i>	<i>Blanda</i>	sweet white violet																				
<i>Viola</i>	<i>canadensis</i>	Canada Violet																				
<i>Viola</i>	<i>conspersa</i>	Dog Violet	U											U								
<i>Viola</i>	<i>pubescens</i>	Downy Yellow Violet					R							U								
<i>Viola</i>	<i>rostrata</i>	Long-spurred Violet																				
<i>Viola</i>	<i>sororia</i>	Woolly Blue Violet																				
<i>Viola</i>	<i>striata</i>	Cream Violet																				
<i>Viola</i>	<i>Selkirkii</i>	Selkirk's violet	U	U	U	U	U				U			U								
<i>Viola</i>	<i>sp.</i>	Violet species													U							
<b>Vitaceae</b>		<b>Grape Family</b>																				
<i>Parthenocissus</i>	<i>inserta</i>	Thicket-creeper																F	U			
<i>Vitis</i>	<i>riparia</i>	Riverbank Grape																R			√	
<i>Vine</i>	<i>sp.</i>	Grapevine species												U								









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facultative upland		89
facultative		69
facultative wetland		76
obligate wetland		44

BOTANICAL NAME	COMMON NAME	290 GSH208&204 3	291 GSH2108	291 GSH2108	291 GSH2108	291 GSH2108	300 GSH2106	300 GSH 2110 (P2)	300 GSH2110 (P3)	300 GSH2108&211 0	300 GSH2108&211 0	300 GSH2108&211 0	300 GSH2108&211 0	300 GSH2114	300 GSH2108/GS H2110	309 GSH1015 (P1)	309 GSH1015 (P2)	
		25-Apr-12	7-Nov-11	26-Apr-12	26-Apr-12	22-Jun-12	21-Sep-12	7-Nov-11	7-Nov-11	26-Apr-12	26-Apr-12	26-Apr-12	26-Apr-12	2-May-12	22-Jun-12	23-Oct-11	23-Oct-11	
		0	291				300										309	
		FOD5-6	SWD4a FOD 8-1	FOD8-1	SWD4a	SOCC/SAR Vascular Plant Survey	SWD 3-2	FOD 7-2 SWD 3-3	CUM1	SWD3-3	FOD6-5	CUM1-1	FOD7-2	FOD7c	Vascular Plant Survey	FOD 7-4	SWD 3-2	
<b>PTERIDOPHYTES</b>		<b>FERNS &amp; ALLIES</b>																
<b>Dennstaedtiaceae</b>		<b>Bracken Fern Family</b>																
<i>Pteridium</i>	<i>aquilinum var. latiusculum</i>																	
<b>Dryopteridaceae</b>		<b>Wood Fern Family</b>																
<i>Athyrium</i>	<i>filix-femina var. angustum</i>																	
<i>Cystopteris</i>	<i>bulbifera</i>																	
<i>Dryopteris</i>	<i>carthusiana</i>							√										
<i>Dryopteris</i>	<i>intermedia</i>																	
<i>Dryopteris</i>	<i>marginalis</i>																	
<i>Onoclea</i>	<i>sensibilis</i>		√			U												
<i>Polystichum</i>	<i>acrostichoides</i>																	
<b>Equisetaceae</b>		<b>Horsetail Family</b>																
<i>Equisetum</i>	<i>arvense</i>		√															
<i>Equisetum</i>	<i>hyemale var. affine</i>																	
<i>Equisetum</i>	<i>pratense</i>																	
<i>Equisetum</i>	<i>sp.</i>																	
<b>Lycopodiaceae</b>		<b>Clubmoss Family</b>																
<i>Lycopodium</i>	<i>obscurum</i>																	
<b>Osmundaceae</b>		<b>Royal Fern Family</b>																
<i>Osmunda</i>	<i>regalis</i>																	
<b>Thelypteridaceae</b>		<b>Marsh Fern Family</b>																
<i>Thelypteris</i>	<i>noveboracensis</i>																	
<i>Thelypteris</i>	<i>palustris var. pubescens</i>																	
<b>GYMNOSPERMS</b>		<b>CONIFERS</b>																
<b>Cupressaceae</b>		<b>Cedar Family</b>																
<i>Juniperus</i>	<i>virginiana</i>																	
<i>Juniperus</i>	<i>communis</i>																	
<i>Thuja</i>	<i>occidentalis</i>							√										
<b>Pinaceae</b>		<b>Pine Family</b>																
<i>Picea</i>	<i>abies</i>																	
<i>Abies</i>	<i>balsamea</i>																	
<i>Picea</i>	<i>glauca</i>																	
<i>Picea</i>	<i>pungens</i>																	
<i>Pinus</i>	<i>banksiana</i>																	
<i>Pinus</i>	<i>nigra</i>																	
<i>Pinus</i>	<i>strobus</i>																	
<i>Pinus</i>	<i>sylvestris</i>																	
<i>Pinus</i>	<i>resinosa</i>																	
<i>Tsuga</i>	<i>canadensis</i>							√										
<b>Taxaceae</b>		<b>Yew Family</b>																
<i>Taxus</i>	<i>canadensis</i>																	
<b>DICOTYLED+D308ONS</b>		<b>DICOTS</b>																
<b>Aceraceae</b>		<b>Maple Family</b>																







BOTANICAL NAME	COMMON NAME	290 GSH208&204 3	291 GSH2108	291 GSH2108	291 GSH2108	291 GSH2108	300 GSH2106	300 GSH 2110 (P2)	300 GSH2110 (P3)	300 GSH2108&211 0	300 GSH2108&211 0	300 GSH2108&211 0	300 GSH2108&211 0	300 GSH2114	300 GSH2108/GS H2110	309 GSH1015 (P1)	309 GSH1015 (P2)	
		25-Apr-12	7-Nov-11	26-Apr-12	26-Apr-12	22-Jun-12	21-Sep-12	7-Nov-11	7-Nov-11	26-Apr-12	26-Apr-12	26-Apr-12	26-Apr-12	2-May-12	22-Jun-12	23-Oct-11	23-Oct-11	
		0	291				300										309	
		FOD5-6	SWD4a FOD 8-1	FOD8-1	SWD4a	SOCC/SAR Vascular Plant Survey	SWD 3-2	FOD 7-2 SWD 3-3	CUM1	SWD3-3	FOD6-5	CUM1-1	FOD7-2	FOD7c	Vascular Plant Survey	FOD 7-4	SWD 3-2	
<b>Convolvulaceae</b>	<b>Morning-glory Family</b>																	
<i>Convolvulus</i>	<i>arvensis</i>																	
<b>Cornaceae</b>	<b>Dogwood Family</b>																	
<i>Cornus</i>	<i>alternifolia</i>		√					√			R				R			
<i>Cornus</i>	<i>amomum ssp. obliqua</i>		√					√										
<i>Cornus</i>	<i>racemosa</i>			U	U			√										
<i>Cornus</i>	<i>sericea</i>					U						R					√	
<i>Cornus</i>	<i>rugosa</i>																	
<b>Cucurbitaceae</b>	<b>Gourd Family</b>																	
<i>Echinocystis</i>	<i>lobata</i>						√											
<b>Dipsacaceae</b>	<b>Teasel Family</b>																	
<i>Dipsacus</i>	<i>fullonum ssp. sylvestris</i>		√						√			R				U		
<b>Elaeagnaceae</b>	<b>Oleaster Family</b>																	
<i>Elaeagnus</i>	<i>angustifolia</i>								√									
<i>Elaeagnus</i>	<i>umbellata</i>																	
<i>Sheperdia</i>	<i>canadensis</i>																	
<b>Ericaceae</b>	<b>Heath Family</b>																	
<i>Lotus</i>	<i>corniculatus</i>								√									
<b>Euphorbiaceae</b>	<b>Spurge Family</b>																	
<i>Acalypha</i>	<i>rhomboidea</i>															U		
<b>Fabaceae</b>	<b>Pea Family</b>																	
<i>Lotus</i>	<i>corniculatus</i>																	
<i>Medicago</i>	<i>lupulina</i>								√									
<i>Medicago</i>	<i>Sativa</i>																	
<i>Melilotus</i>	<i>alba</i>																	
<i>Melilotus</i>	<i>officinalis</i>																	
<i>Robinia</i>	<i>pseudo-acacia</i>																	
<i>Trifolium</i>	<i>pratense</i>					R			√							U		
<i>Trifolium</i>	<i>sp.</i>																	
<i>Trifolium</i>	<i>repens</i>																	
<i>Vicia</i>	<i>cracca</i>																	
<b>Fagaceae</b>	<b>Beech Family</b>																	
<i>Fagus</i>	<i>grandifolia</i>		U									R						
<i>Quercus</i>	<i>alba</i>																	
<i>Quercus</i>	<i>macrocarpa</i>																	
<i>Quercus</i>	<i>rubra</i>																	
<b>Fumariaceae</b>	<b>Fumitory Family</b>																	
<i>Dicentra</i>	<i>canadensis</i>																	
<i>Dicentra</i>	<i>cucullaria</i>																	
<b>Geraniaceae</b>	<b>Geranium Family</b>																	
<i>Geranium</i>	<i>maculatum</i>		U			R												
<i>Geranium</i>	<i>robertianum</i>		U			U		√			R							

BOTANICAL NAME	COMMON NAME	290 GSH208&204 3	291 GSH2108	291 GSH2108	291 GSH2108	291 GSH2108	300 GSH2106	300 GSH 2110 (P2)	300 GSH2110 (P3)	300 GSH2108&211 0	300 GSH2108&211 0	300 GSH2108&211 0	300 GSH2108&211 0	300 GSH2114	300 GSH2108/GS H2110	309 GSH1015 (P1)	309 GSH1015 (P2)	
		25-Apr-12	7-Nov-11	26-Apr-12	26-Apr-12	22-Jun-12	21-Sep-12	7-Nov-11	7-Nov-11	26-Apr-12	26-Apr-12	26-Apr-12	26-Apr-12	2-May-12	22-Jun-12	23-Oct-11	23-Oct-11	
		0	291				300										309	
		FOD5-6	SWD4a FOD 8-1	FOD8-1	SWD4a	SOCC/SAR Vascular Plant Survey	SWD 3-2	FOD 7-2 SWD 3-3	CUM1	SWD3-3	FOD6-5	CUM1-1	FOD7-2	FOD7c	Vascular Plant Survey	FOD 7-4	SWD 3-2	
<b>Grossulariaceae</b>	<b>Currant Family</b>																	
<i>Ribes</i>	<i>americanum</i>	Wild Black Currant	√	U						R						√	√	
<i>Ribes</i>	<i>cynosbati</i>	Prickly Gooseberry	U								R							
<i>Ribes</i>	<i>lacustre</i>	Swamp Black Currant																
<i>Ribes</i>	<i>rubrum</i>	Red Currant						√										
<i>Ribes</i>	<i>triste</i>	Wild Red Currant																
<i>Ribes</i>	<i>sp.</i>	Currant species																
<b>Guttiferae</b>	<b>St. John's-wort Family</b>																	
<i>Hypericum</i>	<i>perforatum</i>	Common St. John's-wort																
<i>Hypericum</i>	<i>punctatum</i>	Spotted St. John's-wort																
<b>Hamamelidaceae</b>	<b>Witch-hazel Family</b>																	
<i>Hamamelis</i>	<i>virginiana</i>	Witch-hazel																
<b>Hydrophyllaceae</b>	<b>Water-leaf Family</b>																	
<i>Hydrophyllum</i>	<i>virginianum</i>	Virginia Water-leaf	F															
<b>Juglandaceae</b>	<b>Walnut Family</b>																	
<i>Carya</i>	<i>cordiformis</i>	Bitternut hickory	R															
<i>Carya</i>	<i>ovata var. ovata</i>	Shagbark Hickory	R															
<i>Carya</i>	<i>sp</i>	Hickory species																
<i>Juglans</i>	<i>cinerea</i>	Butternut																
<i>Juglans</i>	<i>nigra</i>	Black Walnut														√	√	
<b>Lamiaceae</b>	<b>Mint Family</b>																	
<i>Clinopodium</i>	<i>vulgare</i>	Wild Basil																
<i>Leonurus</i>	<i>cardiaca ssp. cardiaca</i>	Common Motherwort																
<i>Lycopus</i>	<i>americanus</i>	Cut-leaved Water-horehound																
<i>Lycopus</i>	<i>uniflorus</i>	Northern Water-horehound		√				√										
<i>Mentha</i>	<i>arvensis</i>	American Wild Mint						√										
<i>Mentha</i>	<i>sp.</i>	species																
<i>Prunella</i>	<i>vulgaris ssp. vulgaris</i>	Heal-all																
<i>Scutellaria</i>	<i>lateriflora</i>	Mad-dog Skullcap		√														
<i>Satureja</i>	<i>vulgaris</i>	wild basil																
<b>Lauraceae</b>	<b>Laurel Family</b>																	
<i>Lindera</i>	<i>benzoin</i>	Spicebush						√		F			F				√	
<b>Malvaceae</b>	<b>Mallow Family</b>																	
<i>Abutilon</i>	<i>theophrasti</i>	Velvet-leaf																
<i>Malva</i>	<i>neglecta</i>	Cheeses																
<b>Montiaceae</b>	<b>Montia Family</b>																	
<i>Claytonia</i>	<i>caroliniana</i>	Carolina Spring Beauty																
<i>Claytonia</i>	<i>virginica</i>	Virginia Spring Beauty																
<b>Menispermaceae</b>	<b>Moonseed Family</b>																	
<i>Menispermum</i>	<i>canadense</i>	Moonseed																
<b>Oleaceae</b>	<b>Olive Family</b>																	
<i>Fraxinus</i>	<i>americana</i>	White Ash	U								F			R	√	√		







BOTANICAL NAME		COMMON NAME	290 GSH208&204 3	291 GSH2108	291 GSH2108	291 GSH2108	291 GSH2108	300 GSH2106	300 GSH 2110 (P2)	300 GSH2110 (P3)	300 GSH2108&211 0	300 GSH2108&211 0	300 GSH2108&211 0	300 GSH2108&211 0	300 GSH2114	300 GSH2108/GS H2110	309 GSH1015 (P1)	309 GSH1015 (P2)	
			25-Apr-12	7-Nov-11	26-Apr-12	26-Apr-12	22-Jun-12	21-Sep-12	7-Nov-11	7-Nov-11	26-Apr-12	26-Apr-12	26-Apr-12	26-Apr-12	2-May-12	22-Jun-12	23-Oct-11	23-Oct-11	
			0	291				300										309	
			FOD5-6	SWD4a FOD 8-1	FOD8-1	SWD4a	SOCC/SAR Vascular Plant Survey	SWD 3-2	FOD 7-2 SWD 3-3	CUM1	SWD3-3	FOD6-5	CUM1-1	FOD7-2	FOD7c	Vascular Plant Survey	FOD 7-4	SWD 3-2	
<i>Potentilla</i>	<i>recta</i>	Rough-fruited Cinquefoil		√			R			√						U			
<i>Prunus</i>	<i>avium</i>	Sweet Cherry																	
<i>Prunus</i>	<i>cerasus</i>	Sour Cherry																	
<i>Prunus</i>	<i>pensylvanica</i>	Pin Cherry																	
<i>Prunus</i>	<i>serotina</i>	Black Cherry		√					√										
<i>Prunus</i>	<i>virginiana</i>	Choke Cherry	F	√	D				√								√		
<i>Prunus</i>	<i>sp.</i>	Cherry species			R														
<i>Pyrus</i>	<i>communis</i>	Common Pear		√															
<i>Physocarpus</i>	<i>opulifolius</i>	Ninebark																	
<i>Rosa</i>	<i>blanda</i>	Smooth Rose																	
<i>Rosa</i>	<i>multiflora</i>	Multiflora Rose																	
<i>Rosa</i>	<i>sp.</i>	Rose species																	
<i>Rubus</i>	<i>alleggheniensis</i>	Alleghany Blackberry		√															
<i>Rubus</i>	<i>canadensis</i>	Millspaugh's Blackberry																	
<i>Rubus</i>	<i>idaeus</i>	Red Raspberry		√	U											U	√	√	
<i>Rubus</i>	<i>occidentalis</i>	Black raspberry		√				√											
<i>Rubus</i>	<i>odoratus</i>	Purple-fl. Raspberry																	
<i>Rubus</i>	<i>pubescens</i>	Dwarf Raspberry																	
<i>Rubus</i>	<i>sp.</i>	Raspberry species																	
<i>Sorbus</i>	<i>aucuparia</i>	Eur. Mountain Ash																	
<b>Rubiaceae</b>		<b>Madder Family</b>																	
<i>Cephalanthus</i>	<i>occidentalis</i>	Eastern Buttonbush																	
<i>Galium</i>	<i>aparine</i>	Cleavers																	
<i>Galium</i>	<i>asprellum</i>	Rough Bedstraw																	
<i>Galium</i>	<i>mollugo</i>	White Bedstraw																	
<i>Galium</i>	<i>triflorum</i>	Sweet-scented Bedstraw		√												U			
<i>Galium</i>	<i>sp.</i>	Bedstraw species																	
<i>Mitchella</i>	<i>repens</i>	Creeping Partridge-berry																	
<b>Rutaceae</b>		<b>Rue Family</b>																	
<i>Zanthoxylum</i>	<i>americanum</i>	American Prickly-ash																	
<b>Salicaceae</b>		<b>Willow Family</b>																	
<i>Populus</i>	<i>alba</i>	Silver Poplar																	
<i>Populus</i>	<i>balsamifera</i> ssp. <i>balsamifera</i>	Balsam Poplar		√															
<i>Populus</i>	<i>deltoides</i> ssp. <i>deltoides</i>	Eastern Cottonwood															√	√	
<i>Populus</i>	<i>grandidentata</i>	Large-tooth Aspen																	
<i>Populus</i>	<i>tremuloides</i>	Trembling Aspen		√	D		F												
<i>Salix</i>	<i>sp.</i>	Willow species																	
<i>Salix</i>	<i>alba</i>	White Willow																	
<i>Salix</i>	<i>amygdaloides</i>	Peach-leaved Willow																	
<i>Salix</i>	<i>bebbiana</i>	Long-beaked Willow																	
<i>Salix</i>	<i>discolor</i>	Pussy Willow																	
<i>Salix</i>	<i>eriocephala</i>	Missouri Willow																	
<i>Salix</i>	<i>exigua</i>	Sandbar Willow												U					



BOTANICAL NAME	COMMON NAME	290 GSH208&204 3	291 GSH2108	291 GSH2108	291 GSH2108	291 GSH2108	300 GSH2106	300 GSH 2110 (P2)	300 GSH2110 (P3)	300 GSH2108&211 0	300 GSH2108&211 0	300 GSH2108&211 0	300 GSH2108&211 0	300 GSH2114	300 GSH2108/GS H2110	309 GSH1015 (P1)	309 GSH1015 (P2)	
		25-Apr-12	7-Nov-11	26-Apr-12	26-Apr-12	22-Jun-12	21-Sep-12	7-Nov-11	7-Nov-11	26-Apr-12	26-Apr-12	26-Apr-12	26-Apr-12	2-May-12	22-Jun-12	23-Oct-11	23-Oct-11	
		0	291				300										309	
		FOD5-6	SWD4a FOD 8-1	FOD8-1	SWD4a	SOCC/SAR Vascular Plant Survey	SWD 3-2	FOD 7-2 SWD 3-3	CUM1	SWD3-3	FOD6-5	CUM1-1	FOD7-2	FOD7c	Vascular Plant Survey	FOD 7-4	SWD 3-2	
<b>MONOCOTYLEDONS</b>		<b>MONOCOTS</b>																
<i>Alisma</i>	<i>plantago-aquatica</i>	Common Water-plantain																
<b>Araceae</b>		<b>Arum Family</b>																
<i>Arisaema</i>	<i>triphillum</i>	Small Jack-in-the-pulpit																
<i>Calla</i>	<i>palustris</i>	Wild Calla																
<b>Cyperaceae</b>		<b>Sedge Family</b>																
<i>Carex</i>	<i>sp.</i>	Sedge species																
<i>Carex</i>	<i>albursina</i>	White Bear Sedge																
<i>Carex</i>	<i>amphibola</i>	Narrow-leaved Sedge																
<i>Carex</i>	<i>arctata</i>	Drooping Wood Sedge																
<i>Carex</i>	<i>bebbii</i>	Bebb's Sedge																
<i>Carex</i>	<i>blanda</i>	Woodland Sedge																
<i>Carex</i>	<i>comosa</i>	Bristly Sedge																
<i>Carex</i>	<i>crinita</i>	Fringed sedge																
<i>Carex</i>	<i>cristatella</i>	Crested Sedge																
<i>Carex</i>	<i>gracillima</i>	Graceful Sedge																
<i>Carex</i>	<i>granularis</i>	Meadow Sedge																
<i>Carex</i>	<i>grayi</i>	Gray's Sedge																
<i>Carex</i>	<i>interior</i>	Inland Sedge																
<i>Carex</i>	<i>intumescens</i>	Bladder Sedge																
<i>Carex</i>	<i>lupulina</i>	Hop Sedge																
<i>Carex</i>	<i>pedunculata</i>	Long-stalked Sedge																
<i>Carex</i>	<i>pensylvanica</i>	Pennsylvania Sedge																
<i>Carex</i>	<i>plantaginea</i>	Plantain-leaved Sedge																
<i>Carex</i>	<i>platyphylla</i>	Broad-leaved Sedge																
<i>Carex</i>	<i>projecta</i>	Necklace Sedge																
<i>Carex</i>	<i>punctata</i>	Dotted Sedge																
<i>Carex</i>	<i>radiata</i>	Radiate Sedge																
<i>Carex</i>	<i>retrorsa</i>	Retorse Sedge																
<i>Carex</i>	<i>rosea</i>	Stellate Sedge																
<i>Eleocharis</i>	<i>sp.</i>	Spikerush species																
<i>Carex</i>	<i>stipata</i>	Awl-fruited Sedge																
<i>Carex</i>	<i>stricta</i>	Tussock Sedge																
<i>Carex</i>	<i>tuckermanii</i>	Tuckerman's Sedge																
<i>Carex</i>	<i>vulpinoidea</i>	Fox Sedge																
<i>Schoenoplectus</i>	<i>atrovirens</i>	Dark-green Bulrush																
<i>Schoenoplectus</i>	<i>tabernaemontani</i>	American Great Bulrush/softs																
<i>Scirpus</i>	<i>cyperinus</i>	Wool-grass																
<b>Iridaceae</b>		<b>Iris Family</b>																
<i>Iris</i>	<i>versicolor</i>	Multi-coloured Blue-flag																
<i>Iris</i>	<i>sp.</i>	Iris species																
<b>Juncaceae</b>		<b>Rush Family</b>																
<i>Juncus</i>	<i>compressus</i>	Compressed Rush																

BOTANICAL NAME		COMMON NAME	290 GSH208&204 3	291 GSH2108	291 GSH2108	291 GSH2108	291 GSH2108	300 GSH2106	300 GSH 2110 (P2)	300 GSH2110 (P3)	300 GSH2108&211 0	300 GSH2108&211 0	300 GSH2108&211 0	300 GSH2108&211 0	300 GSH2114	300 GSH2108/GS H2110	309 GSH1015 (P1)	309 GSH1015 (P2)		
			25-Apr-12	7-Nov-11	26-Apr-12	26-Apr-12	22-Jun-12	21-Sep-12	7-Nov-11	7-Nov-11	26-Apr-12	26-Apr-12	26-Apr-12	26-Apr-12	2-May-12	22-Jun-12	23-Oct-11	23-Oct-11		
			0	291					300										309	
			FOD5-6	SWD4a FOD 8-1	FOD8-1	SWD4a	SOCC/SAR Vascular Plant Survey	SWD 3-2	FOD 7-2 SWD 3-3	CUM1	SWD3-3	FOD6-5	CUM1-1	FOD7-2	FOD7c	Vascular Plant Survey	FOD 7-4	SWD 3-2		
<i>Juncus</i>	<i>dudleyi</i>	Dudley's Rush																		
<i>Juncus</i>	<i>effusus</i>	Common rush																		
<i>Juncus</i>	<i>tenuis</i>	Path Rush																		
<b>Liliaceae</b>		<b>Lily Family</b>																		
<i>Allium</i>	<i>tricoccum</i>	Wild Leek	U																	
<i>Clintonia</i>	<i>borealis</i>	bluebead lily																		
<i>Erythronium</i>	<i>americanum ssp. americanum</i>	Yellow trout lilly	F		U															
<i>Erythronium</i>	<i>album</i>	White Trout Lily																		
<i>Lilium</i>	<i>sp.</i>	Lily species																		
<i>Maianthemum</i>	<i>canadense</i>	Wild Lily-of-the-valley	U																	
<i>Maianthemum</i>	<i>racemosum ssp. racemosum</i>	False Solomon's Seal			U															
<i>Maianthemum</i>	<i>stellatum</i>	Star-flowered Solomon's Sea																		
<i>Polygonatum</i>	<i>pubescens</i>	Hairy Solomon's Seal																		
<i>Streptopus</i>	<i>lanceolatus var roseus</i>	Rose twisted-stalk																		
<i>Trillium</i>	<i>erectum</i>	Purple Trillium	U		R															
<i>Trillium</i>	<i>grandiflorum</i>	White Trillium	F								R									
<i>Trillium</i>	<i>sp.</i>	Trillium species																		
<i>Uvularia</i>	<i>grandiflora</i>	Large-flowered Bellwort	R																	
<i>Uvularia</i>	<i>perfoliata</i>	Perfoliate Bellwort																		
<b>Orchidaceae</b>		<b>Orchid Family</b>																		
<i>Epipactis</i>	<i>helleborine</i>	Common Helleborine	U	√																
<b>Poaceae</b>		<b>Grass Family</b>																		
<i>Grass</i>	<i>sp.</i>	Grass species																		
<i>Agrostis</i>	<i>gigantea</i>	Red-top														F				
<i>Bromus</i>	<i>inermis ssp. inermis</i>	Awnless Brome								√										
<i>Bromus</i>	<i>sp.</i>	Brome species																		
<i>Dactylis</i>	<i>glomerata</i>	Orchard Grass					√		√							F				
<i>Echinochloa</i>	<i>crusgalli</i>	Common Barnyard Grass		√			√	√												
<i>Elymus</i>	<i>hystrix</i>	Bottle-brush Grass																		
<i>Elymus</i>	<i>repens</i>	Quack Grass																		
<i>Elymus</i>	<i>riparius</i>	River-bank Wild Rye																√		
<i>Elymus</i>	<i>virginicus var. virginicus</i>	Virginia Wild Rye		√																
<i>Glyceria</i>	<i>striata</i>	Fowl Manna Grass		√		R		√								R				
<i>Leersia</i>	<i>oryzoides</i>	Rice Cut Grass																		
<i>Leersia</i>	<i>virginica</i>	White Cut Grass																		
<i>Lolium</i>	<i>arundinaceum</i>	Tall Fescue																		
<i>Panicum</i>	<i>dichotomiflorum</i>	Fall Panicum																		
<i>Phalaris</i>	<i>arundinacea</i>	Reed Canary Grass			R	R		√		U						R				
<i>Phleum</i>	<i>pratense</i>	Timothy								√						U				
<i>Phragmites</i>	<i>australis</i>	Common Reed																		
<i>Poa</i>	<i>compressa</i>	Canada Blue Grass																		
<i>Poa</i>	<i>palustris</i>	Fowl Meadow Grass																		
<i>Poa</i>	<i>pratensis ssp. pratensis</i>	Kentucky Bluegrass							√							U				



<b>BOTANICAL NAME</b>	<b>COMMON NAME</b>	290 GSH2089&204 3	291 GSH2108	291 GSH2108	291 GSH2108	291 GSH2108	300 GSH2106	300 GSH 2110 (P2)	300 GSH2110 (P3)	300 GSH2108&211 0	300 GSH2108&211 0	300 GSH2108&211 0	300 GSH2108&211 0	300 GSH2114	300 GSH2108/GS H2110	309 GSH1015 (P1)	309 GSH1015 (P2)
		25-Apr-12	7-Nov-11	26-Apr-12	26-Apr-12	22-Jun-12	21-Sep-12	7-Nov-11	7-Nov-11	26-Apr-12	26-Apr-12	26-Apr-12	26-Apr-12	2-May-12	22-Jun-12	23-Oct-11	23-Oct-11
		0	291				300								309		
		FOD5-6	SWD4a FOD 8-1	FOD8-1	SWD4a	SOCC/SAR Vascular Plant Survey	SWD 3-2	FOD 7-2 SWD 3-3	CUM1	SWD3-3	FOD6-5	CUM1-1	FOD7-2	FOD7c	Vascular Plant Survey	FOD 7-4	SWD 3-2

**FLORISTIC SUMMARY & ASSESSMENT**

<b>Species Diversity</b>	
Total Species:	368
Native Species:	278
Exotic Species	90
Total Taxa in Region (List Region, Source)	10000
% Regional Taxa Recorded	3.68%
Regionally Significant Species	0
S1-S3 Species	5
S4 Species	14
S5 Species	253

**Co-efficient of Conservatism and Floral Quality Index**

Co-efficient of Conservatism (CC) (average)		4.46
CC 0 to 3	lowest sensitivity	81
CC 4 to 6	moderate sensitivity	155
CC 7 to 8	high sensitivity	38
CC 9 to 10	highest sensitivity	4
Floral Quality Index (FQI)		74.37

**Presence of Weedy & Invasive Species**

mean weediness		-1.67
weediness = -1	low potential invasiveness	49
weediness = -2	moderate potential invasiveness	22
weediness = -3	high potential invasiveness	19

**Presence of Wetland Species**

average wetness value		0.71
upland		89
facultative upland		89
facultative		69
facultative wetland		76
obligate wetland		44



BOTANICAL NAME	COMMON NAME	321 GSH2100/1012 (GE36/SMN15 P1)	321 GSH2100/1012 (GE36/SMN15 P2)	321 GSH2100/1012 (GE36/SMN15 P3)	321 GSH2100 (2nd visit) P1	321 GSH2100 (2nd visit) P2	321 GSH2100	321 GSH2100	321 GSH2100	326 GE16/SMN12 (P1)	326 GE16/SMN12 (P2)	326 GSH1126/1289 (P1)	326 GSH1126/1289 (P2)	326 GSH1126	326 GSH1126	326 GSH1126	326 GSH1126	
		20-Jul-11	20-Jul-11	20-Jul-11	5-Oct-11	5-Oct-11	23-Apr-12	23-Apr-12	23-Apr-12	20-Jul-11	20-Jul-11	22-Sep-11	22-Sep-11	26-Apr-12	26-Apr-12	26-Apr-12	21-Jun-12	
		321									326							
		FOD 6-5	SWD 3-1	CUP 3-1 OAO	FOD 6-5	SWD 3-2	FOD6-5	SWD3-3	OAO	CUP3c	FOD	FOD 5-6	FOD 5-2	FOD5-1	FOD5-6	CUP3c	SOCC/SAR Vascular Plant Survey	
<b>PTERIDOPHYTES</b>		<b>FERNS &amp; ALLIES</b>																
<b>Dennstaedtiaceae</b>		<b>Bracken Fern Family</b>																
<i>Pteridium</i>	<i>aquilinum var. latiusculum</i>	Eastern Bracken-fern																
<b>Dryopteridaceae</b>		<b>Wood Fern Family</b>																
<i>Athyrium</i>	<i>filix-femina var. angustum</i>	Northern Lady Fern																
<i>Cystopteris</i>	<i>bulbifera</i>	bulblet bladderfern																
<i>Dryopteris</i>	<i>carthusiana</i>	Spinulose Wood Fern																
<i>Dryopteris</i>	<i>intermedia</i>	Evergreen Wood Fern																
<i>Dryopteris</i>	<i>marginalis</i>	Marginal Wood Fern																
<i>Onoclea</i>	<i>sensibilis</i>	Sensitive Fern																
<i>Polystichum</i>	<i>acrostichoides</i>	Christmas Fern																
<b>Equisetaceae</b>		<b>Horsetail Family</b>																
<i>Equisetum</i>	<i>arvense</i>	Field Horsetail																
<i>Equisetum</i>	<i>hyemale var. affine</i>	Scouring-rush																
<i>Equisetum</i>	<i>pratense</i>	Meadow Horsetail																
<i>Equisetum</i>	<i>sp.</i>	Horestail species																
<b>Lycopodiaceae</b>		<b>Clubmoss Family</b>																
<i>Lycopodium</i>	<i>obscurum</i>	Ground-pine																
<b>Osmundaceae</b>		<b>Royal Fern Family</b>																
<i>Osmunda</i>	<i>regalis</i>	Royal Fern																
<b>Thelypteridaceae</b>		<b>Marsh Fern Family</b>																
<i>Thelypteris</i>	<i>noveboracensis</i>	New York Fern																
<i>Thelypteris</i>	<i>palustris var. pubescens</i>	Marsh Fern																
<b>GYMNOSPERMS</b>		<b>CONIFERS</b>																
<b>Cupressaceae</b>		<b>Cedar Family</b>																
<i>Juniperus</i>	<i>virginiana</i>	Eastern Red Cedar																
<i>Juniperus</i>	<i>communis</i>	Common Juniper																
<i>Thuja</i>	<i>occidentalis</i>	Eastern White Cedar																
<b>Pinaceae</b>		<b>Pine Family</b>																
<i>Picea</i>	<i>abies</i>	Norway Spruce																
<i>Abies</i>	<i>balsamea</i>	Balsam Fir																
<i>Picea</i>	<i>glauca</i>	White Spruce																
<i>Picea</i>	<i>pungens</i>	Colorado Spruce																
<i>Pinus</i>	<i>banksiana</i>	Jack Pine																
<i>Pinus</i>	<i>nigra</i>	Austrian Pine																
<i>Pinus</i>	<i>strobus</i>	Eastern White Pine																
<i>Pinus</i>	<i>sylvestris</i>	Scots Pine																
<i>Pinus</i>	<i>resinosa</i>	Red Pine																
<i>Tsuga</i>	<i>canadensis</i>	Eastern Hemlock																
<b>Taxaceae</b>		<b>Yew Family</b>																
<i>Taxus</i>	<i>canadensis</i>	American Yew																
<b>DICOTYLED+D308ONS</b>		<b>DICOTS</b>																
<b>Aceraceae</b>		<b>Maple Family</b>																







BOTANICAL NAME	COMMON NAME	321 GSH2100/1012 (GE36/SMN15 P1)	321 GSH2100/1012 (GE36/SMN15 P2)	321 GSH2100/1012 (GE36/SMN15 P3)	321 GSH2100 (2nd visit) P1	321 GSH2100 (2nd visit) P2	321 GSH2100	321 GSH2100	321 GSH2100	326 GE16/SMN12 (P1)	326 GE16/SMN12 (P2)	326 GSH1126/1289 (P1)	326 GSH1126/1289 (P2)	326 GSH1126	326 GSH1126	326 GSH1126	326 GSH1126	
		20-Jul-11	20-Jul-11	20-Jul-11	5-Oct-11	5-Oct-11	23-Apr-12	23-Apr-12	23-Apr-12	20-Jul-11	20-Jul-11	22-Sep-11	22-Sep-11	26-Apr-12	26-Apr-12	26-Apr-12	21-Jun-12	
		321									326							
		FOD 6-5	SWD 3-1	CUP 3-1 OAO	FOD 6-5	SWD 3-2	FOD6-5	SWD3-3	OAO	CUP3c	FOD	FOD 5-6	FOD 5-2	FOD5-1	FOD5-6	CUP3c	SOCC/SAR Vascular Plant Survey	
<b>Convolvulaceae</b>		<b>Morning-glory Family</b>																
<i>Convolvulus</i>	<i>arvensis</i>	Field Bindweed																
<b>Cornaceae</b>		<b>Dogwood Family</b>																
<i>Cornus</i>	<i>alternifolia</i>	Alternate-leaved Dogwood															R	
<i>Cornus</i>	<i>amomum ssp. obliqua</i>	Silky Dogwood	√															
<i>Cornus</i>	<i>racemosa</i>	Grey dogwood						U									R	
<i>Cornus</i>	<i>sericea</i>	Red-osier Dogwood																
<i>Cornus</i>	<i>rugosa</i>	Round-leaved Dogwood																
<b>Cucurbitaceae</b>		<b>Gourd Family</b>																
<i>Echinocystis</i>	<i>lobata</i>	Prickly Cucumber									√							
<b>Dipsacaceae</b>		<b>Teasel Family</b>																
<i>Dipsacus</i>	<i>fullonum ssp. sylvestris</i>	Wild Teasel																
<b>Elaeagnaceae</b>		<b>Oleaster Family</b>																
<i>Elaeagnus</i>	<i>angustifolia</i>	Russian Olive																
<i>Elaeagnus</i>	<i>umbellata</i>	Autum Olive															R	
<i>Sheperdia</i>	<i>canadensis</i>	Buffaloberry																
<b>Ericaceae</b>		<b>Heath Family</b>																
<i>Lotus</i>	<i>corniculatus</i>	Bird's-foot Trefoil		√														
<b>Euphorbiaceae</b>		<b>Spurge Family</b>																
<i>Acalypha</i>	<i>rhomboidea</i>	Three-seeded Mercury																
<b>Fabaceae</b>		<b>Pea Family</b>																
<i>Lotus</i>	<i>corniculatus</i>	Bird's-foot Trefoil																
<i>Medicago</i>	<i>lupulina</i>	Black Medick															U	
<i>Medicago</i>	<i>Sativa</i>	alfalfa																
<i>Melilotus</i>	<i>alba</i>	White Sweet-clover																
<i>Melilotus</i>	<i>officinalis</i>	Yellow Sweet-clover																
<i>Robinia</i>	<i>pseudo-acacia</i>	Black Locust																
<i>Trifolium</i>	<i>pratense</i>	Red Clover																
<i>Trifolium</i>	<i>sp.</i>	Clover species																
<i>Trifolium</i>	<i>repens</i>	White Clover		√														
<i>Vicia</i>	<i>cracca</i>	Tufted Vetch																
<b>Fagaceae</b>		<b>Beech Family</b>																
<i>Fagus</i>	<i>grandifolia</i>	American Beech		√			F			√	√	√	F	R			F	
<i>Quercus</i>	<i>alba</i>	White Oak															U	
<i>Quercus</i>	<i>macrocarpa</i>	Bur Oak																
<i>Quercus</i>	<i>rubra</i>	Red Oak																
<b>Fumariaceae</b>		<b>Fumitory Family</b>																
<i>Dicentra</i>	<i>canadensis</i>	Squirrel-corn												R				
<i>Dicentra</i>	<i>cucullaria</i>	Dutchman's-breeches												R				
<b>Geraniaceae</b>		<b>Geranium Family</b>																
<i>Geranium</i>	<i>maculatum</i>	Spotted Crane's-bill												R	R		F	
<i>Geranium</i>	<i>robertianum</i>	Herb-robert								√	√	√	U	R			U	

BOTANICAL NAME	COMMON NAME	321 GSH2100/1012 (GE36/SMN15 P1)	321 GSH2100/1012 (GE36/SMN15 P2)	321 GSH2100/1012 (GE36/SMN15 P3)	321 GSH2100 (2nd visit) P1	321 GSH2100 (2nd visit) P2	321 GSH2100	321 GSH2100	321 GSH2100	326 GE16/SMN12 (P1)	326 GE16/SMN12 (P2)	326 GSH1126/1289 (P1)	326 GSH1126/1289 (P2)	326 GSH1126	326 GSH1126	326 GSH1126	326 GSH1126		
		20-Jul-11	20-Jul-11	20-Jul-11	5-Oct-11	5-Oct-11	23-Apr-12	23-Apr-12	23-Apr-12	20-Jul-11	20-Jul-11	22-Sep-11	22-Sep-11	26-Apr-12	26-Apr-12	26-Apr-12	21-Jun-12		
		321									326								
		FOD 6-5	SWD 3-1	CUP 3-1 OAO	FOD 6-5	SWD 3-2	FOD6-5	SWD3-3	OAO	CUP3c	FOD	FOD 5-6	FOD 5-2	FOD5-1	FOD5-6	CUP3c	SOCC/SAR Vascular Plant Survey		
<b>Grossulariaceae</b>		<b>Currant Family</b>																	
<i>Ribes</i>	<i>americanum</i>	Wild Black Currant									√								
<i>Ribes</i>	<i>cynosbati</i>	Prickly Gooseberry								√		√		U	U		U		
<i>Ribes</i>	<i>lacustre</i>	Swamp Black Currant										√							
<i>Ribes</i>	<i>rubrum</i>	Red Currant																	
<i>Ribes</i>	<i>triste</i>	Wild Red Currant										√							
<i>Ribes</i>	<i>sp.</i>	Currant species																	
<b>Guttiferae</b>		<b>St. John's-wort Family</b>																	
<i>Hypericum</i>	<i>perforatum</i>	Common St. John's-wort																	
<i>Hypericum</i>	<i>punctatum</i>	Spotted St. John's-wort																	
<b>Hamamelidaceae</b>		<b>Witch-hazel Family</b>																	
<i>Hamamelis</i>	<i>virginiana</i>	Witch-hazel	√			√		U				√							
<b>Hydrophyllaceae</b>		<b>Water-leaf Family</b>																	
<i>Hydrophyllum</i>	<i>virginianum</i>	Virginia Water-leaf						F						U	U				
<b>Juglandaceae</b>		<b>Walnut Family</b>																	
<i>Carya</i>	<i>cordiformis</i>	Bitternut hickory															F		
<i>Carya</i>	<i>ovata var. ovata</i>	Shagbark Hickory			√						√	√	√						
<i>Carya</i>	<i>sp</i>	Hickory species																	
<i>Juglans</i>	<i>cinerea</i>	Butternut																	
<i>Juglans</i>	<i>nigra</i>	Black Walnut									√								
<b>Lamiaceae</b>		<b>Mint Family</b>																	
<i>Clinopodium</i>	<i>vulgare</i>	Wild Basil																	
<i>Leonurus</i>	<i>cardiaca ssp. cardiaca</i>	Common Motherwort															U		
<i>Lycopus</i>	<i>americanus</i>	Cut-leaved Water-horehound																	
<i>Lycopus</i>	<i>uniflorus</i>	Northern Water-horehound																	
<i>Mentha</i>	<i>arvensis</i>	American Wild Mint	√																
<i>Mentha</i>	<i>sp.</i>	species																	
<i>Prunella</i>	<i>vulgaris ssp. vulgaris</i>	Heal-all			√														
<i>Scutellaria</i>	<i>lateriflora</i>	Mad-dog Skullcap																	
<i>Satureja</i>	<i>vulgaris</i>	wild basil																	
<b>Lauraceae</b>		<b>Laurel Family</b>																	
<i>Lindera</i>	<i>benzoin</i>	Spicebush				√		U											
<b>Malvaceae</b>		<b>Mallow Family</b>																	
<i>Abutilon</i>	<i>theophrasti</i>	Velvet-leaf																	
<i>Malva</i>	<i>neglecta</i>	Cheeses																	
<b>Montiaceae</b>		<b>Montia Family</b>																	
<i>Claytonia</i>	<i>caroliniana</i>	Carolina Spring Beauty						R											
<i>Claytonia</i>	<i>virginica</i>	Virginia Spring Beauty																	
<b>Menispermaceae</b>		<b>Moonseed Family</b>																	
<i>Menispermum</i>	<i>canadense</i>	Moonseed																	
<b>Oleaceae</b>		<b>Olive Family</b>																	
<i>Fraxinus</i>	<i>americana</i>	White Ash	√		√	√				√	√	√	√	F	R				











BOTANICAL NAME	COMMON NAME	321	321	321	321	321	321	321	321	326	326	326	326	326	326	326	326
		GSH2100/1012 (GE36/SMN15 P1)	GSH2100/1012 (GE36/SMN15 P2)	GSH2100/1012 (GE36/SMN15 P3)	321 GSH2100 (2nd visit) P1	321 GSH2100 (2nd visit) P2	321 GSH2100	321 GSH2100	321 GSH2100	326 GE16/SMN12 (P1)	326 GE16/SMN12 (P2)	326 GSH1126/1289 (P1)	326 GSH1126/1289 (P2)	326 GSH1126	326 GSH1126	326 GSH1126	326 GSH1126
		20-Jul-11	20-Jul-11	20-Jul-11	5-Oct-11	5-Oct-11	23-Apr-12	23-Apr-12	23-Apr-12	20-Jul-11	20-Jul-11	22-Sep-11	22-Sep-11	26-Apr-12	26-Apr-12	26-Apr-12	21-Jun-12
		321									326						
		FOD 6-5	SWD 3-1	CUP 3-1 OAO	FOD 6-5	SWD 3-2	FOD6-5	SWD3-3	OAO	CUP3c	FOD	FOD 5-6	FOD 5-2	FOD5-1	FOD5-6	CUP3c	SOCC/SAR Vascular Plant Survey
<b>MONOCOTYLEDONS</b>		<b>MONOCOTS</b>															
<i>Alisma</i>	<i>plantago-aquatica</i>	Common Water-plantain															
<b>Araceae</b>		<b>Arum Family</b>															
<i>Arisaema</i>	<i>triphillum</i>	Small Jack-in-the-pulpit															
<i>Calla</i>	<i>palustris</i>	Wild Calla															
<b>Cyperaceae</b>		<b>Sedge Family</b>															
<i>Carex</i>	<i>sp.</i>	Sedge species															
<i>Carex</i>	<i>albursina</i>	White Bear Sedge															
<i>Carex</i>	<i>amphibola</i>	Narrow-leaved Sedge															
<i>Carex</i>	<i>arctata</i>	Drooping Wood Sedge															
<i>Carex</i>	<i>bebbii</i>	Bebb's Sedge															
<i>Carex</i>	<i>blanda</i>	Woodland Sedge															
<i>Carex</i>	<i>comosa</i>	Bristly Sedge															
<i>Carex</i>	<i>crinita</i>	Fringed sedge															
<i>Carex</i>	<i>cristatella</i>	Crested Sedge															
<i>Carex</i>	<i>gracillima</i>	Graceful Sedge															
<i>Carex</i>	<i>granularis</i>	Meadow Sedge															
<i>Carex</i>	<i>grayi</i>	Gray's Sedge															
<i>Carex</i>	<i>interior</i>	Inland Sedge															
<i>Carex</i>	<i>intumescens</i>	Bladder Sedge															
<i>Carex</i>	<i>lupulina</i>	Hop Sedge															
<i>Carex</i>	<i>pedunculata</i>	Long-stalked Sedge															
<i>Carex</i>	<i>pensylvanica</i>	Pennsylvania Sedge															
<i>Carex</i>	<i>plantaginea</i>	Plantain-leaved Sedge															
<i>Carex</i>	<i>platyphylla</i>	Broad-leaved Sedge															
<i>Carex</i>	<i>projecta</i>	Necklace Sedge															
<i>Carex</i>	<i>punctata</i>	Dotted Sedge															
<i>Carex</i>	<i>radiata</i>	Radiate Sedge															
<i>Carex</i>	<i>retrorsa</i>	Retorse Sedge															
<i>Carex</i>	<i>rosea</i>	Stellate Sedge															
<i>Eleocharis</i>	<i>sp.</i>	Spikerush species															
<i>Carex</i>	<i>stipata</i>	Awl-fruited Sedge															
<i>Carex</i>	<i>stricta</i>	Tussock Sedge															
<i>Carex</i>	<i>tuckermanii</i>	Tuckerman's Sedge															
<i>Carex</i>	<i>vulpinoidea</i>	Fox Sedge															
<i>Schoenoplectus</i>	<i>atrovirens</i>	Dark-green Bulrush															
<i>Schoenoplectus</i>	<i>tabernaemontani</i>	American Great Bulrush/softs															
<i>Scirpus</i>	<i>cyperinus</i>	Wool-grass															
<b>Iridaceae</b>		<b>Iris Family</b>															
<i>Iris</i>	<i>versicolor</i>	Multi-coloured Blue-flag															
<i>Iris</i>	<i>sp.</i>	Iris species															
<b>Juncaceae</b>		<b>Rush Family</b>															
<i>Juncus</i>	<i>compressus</i>	Compressed Rush															





<b>BOTANICAL NAME</b>	<b>COMMON NAME</b>	321 GSH2100/1012 (GE36/SMN15 P1)	321 GSH2100/1012 (GE36/SMN15 P2)	321 GSH2100/1012 (GE36/SMN15 P3)	321 GSH2100 (2nd visit) P1	321 GSH2100 (2nd visit) P2	321 GSH2100	321 GSH2100	321 GSH2100	326 GE16/SMN12 (P1)	326 GE16/SMN12 (P2)	326 GSH1126/1289 (P1)	326 GSH1126/1289 (P2)	326 GSH1126	326 GSH1126	326 GSH1126	326 GSH1126	
		20-Jul-11	20-Jul-11	20-Jul-11	5-Oct-11	5-Oct-11	23-Apr-12	23-Apr-12	23-Apr-12	20-Jul-11	20-Jul-11	22-Sep-11	22-Sep-11	26-Apr-12	26-Apr-12	26-Apr-12	21-Jun-12	
		321									326							
		FOD 6-5	SWD 3-1	CUP 3-1 OAO	FOD 6-5	SWD 3-2	FOD6-5	SWD3-3	OAO	CUP3c	FOD	FOD 5-6	FOD 5-2	FOD5-1	FOD5-6	CUP3c	SOCC/SAR Vascular Plant Survey	

**FLORISTIC SUMMARY & ASSESSMENT**

<b>Species Diversity</b>	
Total Species:	368
Native Species:	278
Exotic Species	90
Total Taxa in Region (List Region, Source)	10000
% Regional Taxa Recorded	3.68%
Regionally Significant Species	0
S1-S3 Species	5
S4 Species	14
S5 Species	253

**Co-efficient of Conservatism and Floral Quality Index**

Co-efficient of Conservatism (CC) (average)		4.46
CC 0 to 3	lowest sensitivity	81
CC 4 to 6	moderate sensitivity	155
CC 7 to 8	high sensitivity	38
CC 9 to 10	highest sensitivity	4
Floral Quality Index (FQI)		74.37

**Presence of Weedy & Invasive Species**

mean weediness		-1.67
weediness = -1	low potential invasiveness	49
weediness = -2	moderate potential invasiveness	22
weediness = -3	high potential invasiveness	19

**Presence of Wetland Species**

average wetness value		0.71
upland		89
facultative upland		89
facultative		69
facultative wetland		76
obligate wetland		44

BOTANICAL NAME	COMMON NAME	331 GSH1347	339 GSH1123	339 GSH1162	339 GSH1162/1123 (Visit 2)	342 GSH1049	346 GSH1041	346 GSH1041	346 GSH1041	346&349 GSH1041	346&349 GSH1041	346&349 GSH1041	349 GSH1041	346&349 GSH1041	352 GSH1040 (P1)	358 GSH1119 (P-A)	358 GSH1119 (P-B)	361_GSH1039 & 1310	
		4-Jul-12	7-Sep-11	7-Sep-11	8-Nov-12	16-Aug-11	12-Dec-11	12-Dec-11	3-Jul-12	3-Jul-12	3-Jul-12	12-Dec-12	3-Jul-12	16-Aug-11	20-Sep-11	20-Sep-11	12-Dec-12		
		331	339			342	346						349		352	358		361	
		FOD5-2	FOD 5-2	SWD 3-3	FOD 5-2 SWD 3-3	FOD5-5	FOD4g	CUP3-2	FOD4g	CUP3-2	CUM1-1	FOD7-2	FOD7-2	FOD 5-2	FOD 5-2	MAM 2-10	CUW1b		
<b>PTERIDOPHYTES</b>		<b>FERNS &amp; ALLIES</b>																	
<b>Dennstaedtiaceae</b>		<b>Bracken Fern Family</b>																	
<i>Pteridium</i>	<i>aquilinum var. latiusculum</i>	Eastern Bracken-fern																	
<b>Dryopteridaceae</b>		<b>Wood Fern Family</b>																	
<i>Athyrium</i>	<i>filix-femina var. angustum</i>	Northern Lady Fern																	
<i>Cystopteris</i>	<i>bulbifera</i>	bulblet bladderfern																	
<i>Dryopteris</i>	<i>carthusiana</i>	Spinulose Wood Fern																	
<i>Dryopteris</i>	<i>intermedia</i>	Evergreen Wood Fern																	
<i>Dryopteris</i>	<i>marginalis</i>	Marginal Wood Fern																	
<i>Onoclea</i>	<i>sensibilis</i>	Sensitive Fern																	
<i>Polystichum</i>	<i>acrostichoides</i>	Christmas Fern																	
<b>Equisetaceae</b>		<b>Horsetail Family</b>																	
<i>Equisetum</i>	<i>arvense</i>	Field Horsetail																	
<i>Equisetum</i>	<i>hyemale var. affine</i>	Scouring-rush																	
<i>Equisetum</i>	<i>pratense</i>	Meadow Horsetail																	
<i>Equisetum</i>	<i>sp.</i>	Horestail species																	
<b>Lycopodiaceae</b>		<b>Clubmoss Family</b>																	
<i>Lycopodium</i>	<i>obscurum</i>	Ground-pine																	
<b>Osmundaceae</b>		<b>Royal Fern Family</b>																	
<i>Osmunda</i>	<i>regalis</i>	Royal Fern																	
<b>Thelypteridaceae</b>		<b>Marsh Fern Family</b>																	
<i>Thelypteris</i>	<i>noveboracensis</i>	New York Fern																	
<i>Thelypteris</i>	<i>palustris var. pubescens</i>	Marsh Fern																	
<b>GYMNOSPERMS</b>		<b>CONIFERS</b>																	
<b>Cupressaceae</b>		<b>Cedar Family</b>																	
<i>Juniperus</i>	<i>virginiana</i>	Eastern Red Cedar																	
<i>Juniperus</i>	<i>communis</i>	Common Juniper																	
<i>Thuja</i>	<i>occidentalis</i>	Eastern White Cedar																	
<b>Pinaceae</b>		<b>Pine Family</b>																	
<i>Picea</i>	<i>abies</i>	Norway Spruce																	
<i>Abies</i>	<i>balsamea</i>	Balsam Fir																	
<i>Picea</i>	<i>glauca</i>	White Spruce																	
<i>Picea</i>	<i>pungens</i>	Colorado Spruce																	
<i>Pinus</i>	<i>banksiana</i>	Jack Pine																	
<i>Pinus</i>	<i>nigra</i>	Austrian Pine																	
<i>Pinus</i>	<i>strobus</i>	Eastern White Pine																	
<i>Pinus</i>	<i>sylvestris</i>	Scots Pine																	
<i>Pinus</i>	<i>resinosa</i>	Red Pine																	
<i>Tsuga</i>	<i>canadensis</i>	Eastern Hemlock																	
<b>Taxaceae</b>		<b>Yew Family</b>																	
<i>Taxus</i>	<i>canadensis</i>	American Yew																	
<b>DICOTYLED+D308ONS</b>		<b>DICOTS</b>																	
<b>Aceraceae</b>		<b>Maple Family</b>																	









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		331	339			342	346						349		352	358		361
		FOD5-2	FOD 5-2	SWD 3-3	FOD 5-2 SWD 3-3	FOD5-5	FOD4g	CUP3-2	FOD4g	CUP3-2	CUM1-1	FOD7-2	FOD7-2	FOD 5-2	FOD 5-2	MAM 2-10	CUW1b	
<b>Convolvulaceae</b>		<b>Morning-glory Family</b>																
<i>Convolvulus</i>	<i>arvensis</i>	Field Bindweed																
<b>Cornaceae</b>		<b>Dogwood Family</b>																
<i>Cornus</i>	<i>alternifolia</i>	Alternate-leaved Dogwood					√		U					U				√
<i>Cornus</i>	<i>amomum ssp. obliqua</i>	Silky Dogwood																√
<i>Cornus</i>	<i>racemosa</i>	Grey dogwood													√			
<i>Cornus</i>	<i>sericea</i>	Red-osier Dogwood			√										√			
<i>Cornus</i>	<i>rugosa</i>	Round-leaved Dogwood																
<b>Cucurbitaceae</b>		<b>Gourd Family</b>																
<i>Echinocystis</i>	<i>lobata</i>	Prickly Cucumber	U			√												
<b>Dipsacaceae</b>		<b>Teasel Family</b>																
<i>Dipsacus</i>	<i>fullonum ssp. sylvestris</i>	Wild Teasel										R						
<b>Elaeagnaceae</b>		<b>Oleaster Family</b>																
<i>Elaeagnus</i>	<i>angustifolia</i>	Russian Olive																
<i>Elaeagnus</i>	<i>umbellata</i>	Autum Olive																
<i>Sheperdia</i>	<i>canadensis</i>	Buffaloberry																
<b>Ericaceae</b>		<b>Heath Family</b>																
<i>Lotus</i>	<i>corniculatus</i>	Bird's-foot Trefoil																
<b>Euphorbiaceae</b>		<b>Spurge Family</b>																
<i>Acalypha</i>	<i>rhomboidea</i>	Three-seeded Mercury																
<b>Fabaceae</b>		<b>Pea Family</b>																
<i>Lotus</i>	<i>corniculatus</i>	Bird's-foot Trefoil																
<i>Medicago</i>	<i>lupulina</i>	Black Medick																
<i>Medicago</i>	<i>Sativa</i>	alfalfa																
<i>Melilotus</i>	<i>alba</i>	White Sweet-clover																
<i>Melilotus</i>	<i>officinalis</i>	Yellow Sweet-clover																
<i>Robinia</i>	<i>pseudo-acacia</i>	Black Locust																
<i>Trifolium</i>	<i>pratense</i>	Red Clover			√													
<i>Trifolium</i>	<i>sp.</i>	Clover species				√												
<i>Trifolium</i>	<i>repens</i>	White Clover																
<i>Vicia</i>	<i>cracca</i>	Tufted Vetch																
<b>Fagaceae</b>		<b>Beech Family</b>																
<i>Fagus</i>	<i>grandifolia</i>	American Beech	D	√	√	√								√	√			
<i>Quercus</i>	<i>alba</i>	White Oak																
<i>Quercus</i>	<i>macrocarpa</i>	Bur Oak																
<i>Quercus</i>	<i>rubra</i>	Red Oak																
<b>Fumariaceae</b>		<b>Fumitory Family</b>																
<i>Dicentra</i>	<i>canadensis</i>	Squirrel-corn																
<i>Dicentra</i>	<i>cucullaria</i>	Dutchman's-breeches																
<b>Geraniaceae</b>		<b>Geranium Family</b>																
<i>Geranium</i>	<i>maculatum</i>	Spotted Crane's-bill																
<i>Geranium</i>	<i>robertianum</i>	Herb-robert		√		√					√	U	√	√				

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<b>Grossulariaceae</b>		<b>Currant Family</b>																
<i>Ribes</i>	<i>americanum</i>																	
<i>Ribes</i>	<i>cynosbati</i>		√			√										√		
<i>Ribes</i>	<i>lacustre</i>					√								√				
<i>Ribes</i>	<i>rubrum</i>																	
<i>Ribes</i>	<i>triste</i>													√				
<i>Ribes</i>	<i>sp.</i>																	
<b>Guttiferae</b>		<b>St. John's-wort Family</b>																
<i>Hypericum</i>	<i>perforatum</i>																	
<i>Hypericum</i>	<i>punctatum</i>																	
<b>Hamamelidaceae</b>		<b>Witch-hazel Family</b>																
<i>Hamamelis</i>	<i>virginiana</i>						√		R									
<b>Hydrophyllaceae</b>		<b>Water-leaf Family</b>																
<i>Hydrophyllum</i>	<i>virginianum</i>																	
<b>Juglandaceae</b>		<b>Walnut Family</b>																
<i>Carya</i>	<i>cordiformis</i>		√			√									√			√
<i>Carya</i>	<i>ovata var. ovata</i>					√									√			
<i>Carya</i>	<i>sp.</i>																	
<i>Juglans</i>	<i>cinerea</i>																	
<i>Juglans</i>	<i>nigra</i>												√	R				
<b>Lamiaceae</b>		<b>Mint Family</b>																
<i>Clinopodium</i>	<i>vulgare</i>		√															
<i>Leonurus</i>	<i>cardiaca ssp. cardiaca</i>																	
<i>Lycopus</i>	<i>americanus</i>														√			
<i>Lycopus</i>	<i>uniflorus</i>				√													
<i>Mentha</i>	<i>arvensis</i>																	
<i>Mentha</i>	<i>sp.</i>																	
<i>Prunella</i>	<i>vulgaris ssp. vulgaris</i>		√												√			
<i>Scutellaria</i>	<i>lateriflora</i>																	
<i>Satureja</i>	<i>vulgaris</i>																	
<b>Lauraceae</b>		<b>Laurel Family</b>																
<i>Lindera</i>	<i>benzoin</i>				√				D						U			
<b>Malvaceae</b>		<b>Mallow Family</b>																
<i>Abutilon</i>	<i>theophrasti</i>																	√
<i>Malva</i>	<i>neglecta</i>																	
<b>Montiaceae</b>		<b>Montia Family</b>																
<i>Claytonia</i>	<i>caroliniana</i>																	
<i>Claytonia</i>	<i>virginica</i>																	
<b>Menispermaceae</b>		<b>Moonseed Family</b>																
<i>Menispermum</i>	<i>canadense</i>															√		
<b>Oleaceae</b>		<b>Olive Family</b>																
<i>Fraxinus</i>	<i>americana</i>		√			√								√	√			











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<b>MONOCOTYLEDONS</b>		<b>MONOCOTS</b>																
<i>Alisma</i>	<i>plantago-aquatica</i>	Common Water-plantain																
<b>Araceae</b>		<b>Arum Family</b>																
<i>Arisaema</i>	<i>triphillum</i>	U	√							R				√				
<i>Calla</i>	<i>palustris</i>	Wild Calla																
<b>Cyperaceae</b>		<b>Sedge Family</b>																
<i>Carex</i>	<i>sp.</i>	Sedge species																
<i>Carex</i>	<i>albursina</i>	White Bear Sedge																
<i>Carex</i>	<i>amphibola</i>	Narrow-leaved Sedge																
<i>Carex</i>	<i>arctata</i>	Drooping Wood Sedge																
<i>Carex</i>	<i>bebbii</i>	Bebb's Sedge																
<i>Carex</i>	<i>blanda</i>	Woodland Sedge																
<i>Carex</i>	<i>comosa</i>	Bristly Sedge																
<i>Carex</i>	<i>crinita</i>	Fringed sedge																
<i>Carex</i>	<i>cristatella</i>	Crested Sedge																
<i>Carex</i>	<i>gracillima</i>	Graceful Sedge																
<i>Carex</i>	<i>granularis</i>	Meadow Sedge																
<i>Carex</i>	<i>grayi</i>	Gray's Sedge																
<i>Carex</i>	<i>interior</i>	Inland Sedge																
<i>Carex</i>	<i>intumescens</i>		√															
<i>Carex</i>	<i>lupulina</i>				√	√								√				
<i>Carex</i>	<i>pedunculata</i>	Long-stalked Sedge																
<i>Carex</i>	<i>pensylvanica</i>		√															
<i>Carex</i>	<i>plantaginea</i>	Plantain-leaved Sedge																
<i>Carex</i>	<i>platyphylla</i>		√														√	
<i>Carex</i>	<i>projecta</i>	Necklace Sedge																
<i>Carex</i>	<i>punctata</i>	Dotted Sedge																
<i>Carex</i>	<i>radiata</i>		√															
<i>Carex</i>	<i>retrorsa</i>			√														
<i>Carex</i>	<i>rosea</i>	Stellate Sedge																
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<i>Carex</i>	<i>vulpinoidea</i>	Fox Sedge																
<i>Schoenoplectus</i>	<i>atrovirens</i>					√								√				
<i>Schoenoplectus</i>	<i>tabernaemontani</i>	American Great Bulrush/softs																
<i>Scirpus</i>	<i>cyperinus</i>			√														
<b>Iridaceae</b>		<b>Iris Family</b>																
<i>Iris</i>	<i>versicolor</i>	Multi-coloured Blue-flag																
<i>Iris</i>	<i>sp.</i>	Iris species																
<b>Juncaceae</b>		<b>Rush Family</b>																
<i>Juncus</i>	<i>compressus</i>	Compressed Rush																





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Floral Quality Index (FQI)		74.37

**Presence of Weedy & Invasive Species**

mean weediness		-1.67
weediness = -1	low potential invasiveness	49
weediness = -2	moderate potential invasiveness	22
weediness = -3	high potential invasiveness	19

**Presence of Wetland Species**

average wetness value		0.71
upland		89
facultative upland		89
facultative		69
facultative wetland		76
obligate wetland		44

BOTANICAL NAME	COMMON NAME	361 GSH1310	362 GSH1310	362 GSH1310	364 GSH1006 (GE 6/SMN4 P7)	364 GSH1358 (V1)	364 GSH1358 (V2)	364 GSH1006	364 GSH1006	369 GSH1038 (P1)	370 GSH1142	372 GSH1115	373 GSH1059	375 GSH1388/1018 (P1)	375 GSH1018/1388 (P2)	375 GSH1018 (P3)	375 GSH1362/1018 (P4)
		3-Jul-12	7-Jun-12	7-Jun-12		8-Sep-11	8-Sep-11	25-Apr-12	25-Apr-12	23-Sep-11	11-Jun-12	26-Apr-12	27-Sep-11	5-Oct-11	5-Oct-11	5-Oct-11	5-Oct-11
		31	362		364				369	370	372	373					
		FOD7-2	FOD8-1	FOD6	FOD 6-5	FOD 5-1	MAM 2-2	FOD6-5	SWD2-2	CUW1e	CUP2a	FOD5-6	CUW1h CUM1-1	MAM 2-10	FOD 6-5	FOD 6-5	FOD 6-5
<b>PTERIDOPHYTES</b>		<b>FERNS &amp; ALLIES</b>															
<b>Dennstaedtiaceae</b>		<b>Bracken Fern Family</b>															
<i>Pteridium</i>	<i>aquilinum var. latiusculum</i>																
<b>Dryopteridaceae</b>		<b>Wood Fern Family</b>															
<i>Athyrium</i>	<i>filix-femina var. angustum</i>																
<i>Cystopteris</i>	<i>bulbifera</i>																
<i>Dryopteris</i>	<i>carthusiana</i>												√				
<i>Dryopteris</i>	<i>intermedia</i>							U									
<i>Dryopteris</i>	<i>marginalis</i>											R					
<i>Onoclea</i>	<i>sensibilis</i>				√			U								√	
<i>Polystichum</i>	<i>acrostichoides</i>																
<b>Equisetaceae</b>		<b>Horsetail Family</b>															
<i>Equisetum</i>	<i>arvense</i>																
<i>Equisetum</i>	<i>hyemale var. affine</i>																
<i>Equisetum</i>	<i>pratense</i>																
<i>Equisetum</i>	<i>sp.</i>																
<b>Lycopodiaceae</b>		<b>Clubmoss Family</b>															
<i>Lycopodium</i>	<i>obscurum</i>																
<b>Osmundaceae</b>		<b>Royal Fern Family</b>															
<i>Osmunda</i>	<i>regalis</i>																
<b>Thelypteridaceae</b>		<b>Marsh Fern Family</b>															
<i>Thelypteris</i>	<i>noveboracensis</i>																
<i>Thelypteris</i>	<i>palustris var. pubescens</i>																
<b>GYMNOSPERMS</b>		<b>CONIFERS</b>															
<b>Cupressaceae</b>		<b>Cedar Family</b>															
<i>Juniperus</i>	<i>virginiana</i>																
<i>Juniperus</i>	<i>communis</i>																
<i>Thuja</i>	<i>occidentalis</i>										U						
<b>Pinaceae</b>		<b>Pine Family</b>															
<i>Picea</i>	<i>abies</i>																
<i>Abies</i>	<i>balsamea</i>																
<i>Picea</i>	<i>glauca</i>										U						
<i>Picea</i>	<i>pungens</i>																
<i>Pinus</i>	<i>banksiana</i>																
<i>Pinus</i>	<i>nigra</i>																
<i>Pinus</i>	<i>strobus</i>										D						
<i>Pinus</i>	<i>sylvestris</i>																
<i>Pinus</i>	<i>resinosa</i>																
<i>Tsuga</i>	<i>canadensis</i>				√			U							√		
<b>Taxaceae</b>		<b>Yew Family</b>															
<i>Taxus</i>	<i>canadensis</i>																
<b>DICOTYLED+D308ONS</b>		<b>DICOTS</b>															
<b>Aceraceae</b>		<b>Maple Family</b>															

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				3-Jul-12	7-Jun-12	7-Jun-12		8-Sep-11	8-Sep-11	25-Apr-12	25-Apr-12	23-Sep-11	11-Jun-12	26-Apr-12	27-Sep-11	5-Oct-11	5-Oct-11	5-Oct-11	5-Oct-11	
				361	362		364					369	370	372	373					
				FOD7-2	FOD8-1	FOD6	FOD 6-5	FOD 5-1	MAM 2-2	FOD6-5	SWD2-2	CUW1e	CUP2a	FOD5-6	CUW1h CUM1-1	MAM 2-10	FOD 6-5	FOD 6-5	FOD 6-5	
<i>Acer</i>	<i>negundo</i>	Manitoba Maple													√					
<i>Acer</i>	<i>rubrum</i>	Red Maple																		
<i>Acer</i>	<i>saccharinum</i>	Silver Maple												F						
<i>Acer</i>	<i>saccharum</i>	Sugar Maple				√	√		D		√					√	√	√		
<i>Acer X</i>	<i>freemanii</i>	Freeman's Maple	F			√														
<i>Acer</i>	<i>platanoides</i>	Norway Maple																		
<b>Amaranthaceae</b>		<b>Amaranth Family</b>																		
<i>Amaranthus</i>	<i>retroflexus</i>	Green Amaranth																		
<b>Anacardiaceae</b>		<b>Sumac or Cashew Family</b>																		
<i>Toxicodendron</i>	<i>rydbergii</i>	Ground Poison-ivy							U					U						
<i>Toxicodendron</i>	<i>radicans ssp. negundo</i>	Climbing Poison-ivy				√	√		F		√		R			√	√	√		
<i>Rhus</i>	<i>Glabra</i>	Smooth Sumac																		
<i>Rhus</i>	<i>hirta</i>	Staghorn Sumac									√									
<b>Apiaceae</b>		<b>Carrot or Parsley Family</b>																		
<i>Angelica</i>	<i>atropurpurea</i>	Purple Angelica																		
<i>Angelica</i>	<i>sylvestris</i>	woodland angelica																		
<i>Cicuta</i>	<i>maculata</i>	Spotted Water-hemlock																		
<i>Cicuta</i>	<i>Virosa</i>	Water Hemlock																		
<i>Daucus</i>	<i>carota</i>	Wild Carrot					√				√			√						
<i>Sium</i>	<i>suave</i>	Hemlock Water-parsnip																		
<b>Apocynaceae</b>		<b>Dogbane Family</b>																		
<i>Apocynum</i>	<i>cannabinum</i>	Indian Hemp																		
<i>Vinca</i>	<i>minor</i>	Periwinkle																		
<b>Aquifoliaceae</b>		<b>Holly Family</b>																		
<i>Ilex</i>	<i>verticillata</i>	Winterberry																		
<b>Araliaceae</b>		<b>Ginseng Family</b>																		
<i>Aralia</i>	<i>nudicaulis</i>	Wild Sarsaparilla																		
<b>Aristolochiaceae</b>		<b>Duchman's-pipe Family</b>																		
<i>Asarum</i>	<i>canadense</i>	Wild Ginger				√			U											
<b>Asclepiadaceae</b>		<b>Milkweed Family</b>																		
<i>Asclepias</i>	<i>incarnata ssp. incarnata</i>	Swamp Milkweed																		
<i>Asclepias</i>	<i>syriaca</i>	Common Milkweed												√						
<b>Asteraceae</b>		<b>Composite or Aster Family</b>																		
<i>Achillea</i>	<i>millefolium var. millefolium</i>	Common Yarrow												√						
<i>Ambrosia</i>	<i>artemisiifolia</i>	Common Ragweed												√						
<i>Ambrosia</i>	<i>trifida</i>	Giant Ragweed																		
<i>Arctium</i>	<i>minus</i>	Common Burdock					√		R		√		√							
<i>Symphotrichum</i>	<i>sp.</i>	Aster species		R		√														
<i>Symphotrichum</i>	<i>cordifolium</i>	Heart-leaved Aster							U											
<i>Symphotrichum</i>	<i>ericoides</i>	White Heath Aster												√						
<i>Symphotrichum</i>	<i>lanceolatum</i>	Tall White Aster					√								√					
<i>Symphotrichum</i>	<i>lanceolatum</i>	Panicled Aster												√						



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				3-Jul-12	7-Jun-12	7-Jun-12		8-Sep-11	8-Sep-11	25-Apr-12	25-Apr-12	23-Sep-11	11-Jun-12	26-Apr-12	27-Sep-11	5-Oct-11	5-Oct-11	5-Oct-11	5-Oct-11	
				31	362		364					369	370	372	373					
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<i>Berberis</i>	<i>thunbergii</i>	Japanese Barberry																		
<i>Caulophyllum</i>	<i>thalictroides</i>	Blue Cohosh				√	√			U										
<i>Podophyllum</i>	<i>peltatum</i>	May-apple								U				R						
<b>Betulaceae</b>		<b>Birch Family</b>																		
<i>Betula</i>	<i>alleghaniensis</i>	Yellow Birch				√				U	R									
<i>Betula</i>	<i>papyrifera</i>	White Birch																		
<i>Carpinus</i>	<i>caroliniana ssp. virginiana</i>	Blue Beech						√		R							√	√	√	
<i>Ostrya</i>	<i>virginiana</i>	Ironwood			F	√	√										√	√		
<b>Brassicaceae</b>		<b>Mustard Family</b>																		
<i>Alliaria</i>	<i>petiolata</i>	Garlic Mustard				√	√													
<i>Brassica</i>	<i>juncea</i>	Indian mustard																		
<i>Brassica</i>	<i>rapa</i>	Wild Turnip																		
<i>Brassica</i>	<i>sp.</i>	Mustard species																		
<i>Brassica</i>	<i>nigra</i>	Black Mustard																		
<i>Capsella</i>	<i>bursa-pastoris</i>	Shepherd's Purse													√					
	<i>concatenata</i>	Cut-leaved Toothwort												R						
<i>Cardamine</i>	<i>diphylla</i>	Two-leaved Toothwort								R				F						
<i>Erysimum</i>	<i>cheiranthoides</i>	Wormseed Mustard																		
<i>Hesperis</i>	<i>matronalis</i>	Dame's Rocket																		
<i>Lepidium</i>	<i>campestre</i>	Field Cress																		
<i>Rorippa</i>	<i>nasturtium-aquaticum</i>	Water-cress																		
<b>Campanulaceae</b>		<b>Bellflower Family</b>																		
<i>Lobelia</i>	<i>siphilitica</i>	Great Lobelia																		
<b>Caprifoliaceae</b>		<b>Honeysuckle Family</b>																		
<i>Lonicera</i>	<i>canadensis</i>	American Fly Honeysuckle																√		
<i>Lonicera</i>	<i>dioica</i>	Glaucous Honeysuckle																		
<i>Lonicera</i>	<i>tatarica</i>	Tartarian Honeysuckle																		
<i>Sambucus</i>	<i>canadensis</i>	Common Elderberry						√												
<i>Sambucus</i>	<i>nigra</i>	European Black Elderberry																		
<i>Sambucus</i>	<i>racemosa var. racemosa</i>	Red-berried Elderberry								R										
<i>Viburnum</i>	<i>acerifolium</i>	Maple-leaved Viburnum																		
<i>Viburnum</i>	<i>lentago</i>	Nannyberry																		
<i>Viburnum</i>	<i>opulus</i>	Gelder Rose																		
<i>Viburnum</i>	<i>rafinesquianum</i>	Downy Arrow-wood																		
<b>Caryophyllaceae</b>		<b>Pink Family</b>																		
<i>Silene</i>	<i>vulgaris</i>	Bladder Campion																		
<b>Celastraceae</b>		<b>Staff-tree Family</b>																		
<i>Celastrus</i>	<i>scandens</i>	Climbing Bittersweet																		
<i>Euonymus</i>	<i>atropurpurea var. atropurpurea</i>	Burning Bush																		
<i>Euonymus</i>	<i>obovata</i>	Running Strawberry-bush												U						
<b>Chenopodiaceae</b>		<b>Goosefoot Family</b>																		
<i>Chenopodium</i>	<i>album var. album</i>	Lamb's Quarters													√					
<i>Cycloloma</i>	<i>atriplicifolium</i>	Winged Pigweed													√					



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<b>Convolvulaceae</b>		<b>Morning-glory Family</b>															
<i>Convolvulus</i>	<i>arvensis</i>												√				
<b>Cornaceae</b>		<b>Dogwood Family</b>															
<i>Cornus</i>	<i>alternifolia</i>		R						R								
<i>Cornus</i>	<i>amomum ssp. obliqua</i>														√		
<i>Cornus</i>	<i>racemosa</i>																
<i>Cornus</i>	<i>sericea</i>				√							R	√	√			
<i>Cornus</i>	<i>rugosa</i>																
<b>Cucurbitaceae</b>		<b>Gourd Family</b>															
<i>Echinocystis</i>	<i>lobata</i>																
<b>Dipsacaceae</b>		<b>Teasel Family</b>															
<i>Dipsacus</i>	<i>fullonum ssp. sylvestris</i>																
<b>Elaeagnaceae</b>		<b>Oleaster Family</b>															
<i>Elaeagnus</i>	<i>angustifolia</i>																
<i>Elaeagnus</i>	<i>umbellata</i>																
<i>Shepherdia</i>	<i>canadensis</i>											U					
<b>Ericaceae</b>		<b>Heath Family</b>															
<i>Lotus</i>	<i>corniculatus</i>																
<b>Euphorbiaceae</b>		<b>Spurge Family</b>															
<i>Acalypha</i>	<i>rhomboidea</i>																
<b>Fabaceae</b>		<b>Pea Family</b>															
<i>Lotus</i>	<i>corniculatus</i>																
<i>Medicago</i>	<i>lupulina</i>																
<i>Medicago</i>	<i>Sativa</i>																
<i>Melilotus</i>	<i>alba</i>																
<i>Melilotus</i>	<i>officinalis</i>																
<i>Robinia</i>	<i>pseudo-acacia</i>																
<i>Trifolium</i>	<i>pratense</i>																
<i>Trifolium</i>	<i>sp.</i>																
<i>Trifolium</i>	<i>repens</i>																
<i>Vicia</i>	<i>cracca</i>												√				
<b>Fagaceae</b>		<b>Beech Family</b>															
<i>Fagus</i>	<i>grandifolia</i>				√	√		F				U				√	√
<i>Quercus</i>	<i>alba</i>																
<i>Quercus</i>	<i>macrocarpa</i>																
<i>Quercus</i>	<i>rubra</i>																
<b>Fumariaceae</b>		<b>Fumitory Family</b>															
<i>Dicentra</i>	<i>canadensis</i>								U								
<i>Dicentra</i>	<i>cucullaria</i>																
<b>Geraniaceae</b>		<b>Geranium Family</b>															
<i>Geranium</i>	<i>maculatum</i>					√						U					
<i>Geranium</i>	<i>robertianum</i>				√	√						R					

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<b>Grossulariaceae</b>		<b>Currant Family</b>															
<i>Ribes</i>	<i>americanum</i>	Wild Black Currant										U			√		
<i>Ribes</i>	<i>cynosbati</i>	Prickly Gooseberry			√							U	√				
<i>Ribes</i>	<i>lacustre</i>	Swamp Black Currant						U	R			R					
<i>Ribes</i>	<i>rubrum</i>	Red Currant															
<i>Ribes</i>	<i>triste</i>	Wild Red Currant															
<i>Ribes</i>	<i>sp.</i>	Currant species															
<b>Guttiferae</b>		<b>St. John's-wort Family</b>															
<i>Hypericum</i>	<i>perforatum</i>	Common St. John's-wort															
<i>Hypericum</i>	<i>punctatum</i>	Spotted St. John's-wort															
<b>Hamamelidaceae</b>		<b>Witch-hazel Family</b>															
<i>Hamamelis</i>	<i>virginiana</i>	Witch-hazel															
<b>Hydrophyllaceae</b>		<b>Water-leaf Family</b>															
<i>Hydrophyllum</i>	<i>virginianum</i>	Virginia Water-leaf						R				U				√	
<b>Juglandaceae</b>		<b>Walnut Family</b>															
<i>Carya</i>	<i>cordiformis</i>	Bitternut hickory				√										√	√
<i>Carya</i>	<i>ovata var. ovata</i>	Shagbark Hickory													√	√	√
<i>Carya</i>	<i>sp</i>	Hickory species															
<i>Juglans</i>	<i>cinerea</i>	Butternut															
<i>Juglans</i>	<i>nigra</i>	Black Walnut															
<b>Lamiaceae</b>		<b>Mint Family</b>															
<i>Clinopodium</i>	<i>vulgare</i>	Wild Basil											√				
<i>Leonurus</i>	<i>cardiaca ssp. cardiaca</i>	Common Motherwort															
<i>Lycopus</i>	<i>americanus</i>	Cut-leaved Water-horehound			√												
<i>Lycopus</i>	<i>uniflorus</i>	Northern Water-horehound															
<i>Mentha</i>	<i>arvensis</i>	American Wild Mint															
<i>Mentha</i>	<i>sp.</i>	species															
<i>Prunella</i>	<i>vulgaris ssp. vulgaris</i>	Heal-all															
<i>Scutellaria</i>	<i>lateriflora</i>	Mad-dog Skullcap															
<i>Satureja</i>	<i>vulgaris</i>	wild basil															
<b>Lauraceae</b>		<b>Laurel Family</b>															
<i>Lindera</i>	<i>benzoin</i>	Spicebush			√			F	D								√
<b>Malvaceae</b>		<b>Mallow Family</b>															
<i>Abutilon</i>	<i>theophrasti</i>	Velvet-leaf											√				
<i>Malva</i>	<i>neglecta</i>	Cheeses															
<b>Montiaceae</b>		<b>Montia Family</b>															
<i>Claytonia</i>	<i>caroliniana</i>	Carolina Spring Beauty															
<i>Claytonia</i>	<i>virginica</i>	Virginia Spring Beauty															
<b>Menispermaceae</b>		<b>Moonseed Family</b>															
<i>Menispermum</i>	<i>canadense</i>	Moonseed															
<b>Oleaceae</b>		<b>Olive Family</b>															
<i>Fraxinus</i>	<i>americana</i>	White Ash			√	√		F		√		F		√	√	√	√









BOTANICAL NAME	COMMON NAME	361 GSH1310	362 GSH1310	362 GSH1310	364 GSH1006 (GE 6/SMN4 P7)	364 GSH1358 (V1)	364 GSH1358 (V2)	364 GSH1006	364 GSH1006	369 GSH1038 (P1)	370 GSH1142	372 GSH1115	373 GSH1059	375 GSH1388/1018 (P1)	375 GSH1018/1388 (P2)	375 GSH1018 (P3)	375 GSH1362/1018 (P4)
		3-Jul-12	7-Jun-12	7-Jun-12		8-Sep-11	8-Sep-11	25-Apr-12	25-Apr-12	23-Sep-11	11-Jun-12	26-Apr-12	27-Sep-11	5-Oct-11	5-Oct-11	5-Oct-11	5-Oct-11
		361	362		364				369	370	372	373					
		FOD7-2	FOD8-1	FOD6	FOD 6-5	FOD 5-1	MAM 2-2	FOD6-5	SWD2-2	CUW1e	CUP2a	FOD5-6	CUW1h CUM1-1	MAM 2-10	FOD 6-5	FOD 6-5	FOD 6-5
<b>MONOCOTYLEDONS</b>		<b>MONOCOTS</b>															
<i>Alisma</i>	<i>plantago-aquatica</i>	Common Water-plantain															
<b>Araceae</b>		<b>Arum Family</b>															
<i>Arisaema</i>	<i>triphillum</i>	Small Jack-in-the-pulpit															
<i>Calla</i>	<i>palustris</i>	Wild Calla															
<b>Cyperaceae</b>		<b>Sedge Family</b>															
<i>Carex</i>	<i>sp.</i>	Sedge species															
<i>Carex</i>	<i>albursina</i>	White Bear Sedge															
<i>Carex</i>	<i>amphibola</i>	Narrow-leaved Sedge															
<i>Carex</i>	<i>arctata</i>	Drooping Wood Sedge															
<i>Carex</i>	<i>bebbii</i>	Bebb's Sedge															
<i>Carex</i>	<i>blanda</i>	Woodland Sedge															
<i>Carex</i>	<i>comosa</i>	Bristly Sedge															
<i>Carex</i>	<i>crinita</i>	Fringed sedge															
<i>Carex</i>	<i>crstatella</i>	Crested Sedge															
<i>Carex</i>	<i>gracillima</i>	Graceful Sedge															
<i>Carex</i>	<i>granularis</i>	Meadow Sedge															
<i>Carex</i>	<i>grayi</i>	Gray's Sedge															
<i>Carex</i>	<i>interior</i>	Inland Sedge															
<i>Carex</i>	<i>intumescens</i>	Bladder Sedge															
<i>Carex</i>	<i>lupulina</i>	Hop Sedge															
<i>Carex</i>	<i>pedunculata</i>	Long-stalked Sedge															
<i>Carex</i>	<i>pensylvanica</i>	Pennsylvania Sedge															
<i>Carex</i>	<i>plantaginea</i>	Plantain-leaved Sedge															
<i>Carex</i>	<i>platyphylla</i>	Broad-leaved Sedge															
<i>Carex</i>	<i>projecta</i>	Necklace Sedge															
<i>Carex</i>	<i>punctata</i>	Dotted Sedge															
<i>Carex</i>	<i>radiata</i>	Radiate Sedge															
<i>Carex</i>	<i>retrorsa</i>	Retorse Sedge															
<i>Carex</i>	<i>rosea</i>	Stellate Sedge															
<i>Eleocharis</i>	<i>sp.</i>	Spikerush species															
<i>Carex</i>	<i>stipata</i>	Awl-fruited Sedge															
<i>Carex</i>	<i>stricta</i>	Tussock Sedge															
<i>Carex</i>	<i>tuckermanii</i>	Tuckerman's Sedge															
<i>Carex</i>	<i>vulpinoidea</i>	Fox Sedge															
<i>Schoenoplectus</i>	<i>atrovirens</i>	Dark-green Bulrush															
<i>Schoenoplectus</i>	<i>tabernaemontani</i>	American Great Bulrush/softs															
<i>Scirpus</i>	<i>cyperinus</i>	Wool-grass															
<b>Iridaceae</b>		<b>Iris Family</b>															
<i>Iris</i>	<i>versicolor</i>	Multi-coloured Blue-flag															
<i>Iris</i>	<i>sp.</i>	Iris species															
<b>Juncaceae</b>		<b>Rush Family</b>															
<i>Juncus</i>	<i>compressus</i>	Compressed Rush															

BOTANICAL NAME		COMMON NAME	361 GSH1310	362 GSH1310	362 GSH1310	364 GSH1006 (GE 6/SMN4 P7)	364 GSH1358 (V1)	364 GSH1358 (V2)	364 GSH1006	364 GSH1006	369 GSH1038 (P1)	370 GSH1142	372 GSH1115	373 GSH1059	375 GSH1388/1018 (P1)	375 GSH1018/1388 (P2)	375 GSH1018 (P3)	375 GSH1362/1018 (P4)
			3-Jul-12	7-Jun-12	7-Jun-12		8-Sep-11	8-Sep-11	25-Apr-12	25-Apr-12	23-Sep-11	11-Jun-12	26-Apr-12	27-Sep-11	5-Oct-11	5-Oct-11	5-Oct-11	5-Oct-11
			31	362		364				369	370	372	373					
			FOD7-2	FOD8-1	FOD6	FOD 6-5	FOD 5-1	MAM 2-2	FOD6-5	SWD2-2	CUW1e	CUP2a	FOD5-6	CUW1h CUM1-1	MAM 2-10	FOD 6-5	FOD 6-5	FOD 6-5
<i>Juncus</i>	<i>dudleyi</i>	Dudley's Rush																
<i>Juncus</i>	<i>effusus</i>	Common rush													√			
<i>Juncus</i>	<i>tenuis</i>	Path Rush																
<b>Liliaceae</b>		<b>Lily Family</b>																
<i>Allium</i>	<i>tricoccum</i>	Wild Leek					√		U				R					√
<i>Clintonia</i>	<i>borealis</i>	bluebead lily																
<i>Erythronium</i>	<i>americanum ssp. americanum</i>	Yellow trout lilly							F				F					
<i>Erythronium</i>	<i>albidum</i>	White Trout Lily																
<i>Lilium</i>	<i>sp.</i>	Lily species																
<i>Maianthemum</i>	<i>canadense</i>	Wild Lily-of-the-valley				√	√											
<i>Maianthemum</i>	<i>racemosum ssp. racemosum</i>	False Solomon's Seal				√	√		F				R					√
<i>Maianthemum</i>	<i>stellatum</i>	Star-flowered Solomon's Seal																
<i>Polygonatum</i>	<i>pubescens</i>	Hairy Solomon's Seal																
<i>Streptopus</i>	<i>lanceolatus var roseus</i>	Rose twisted-stalk																
<i>Trillium</i>	<i>erectum</i>	Purple Trillium				√							R					
<i>Trillium</i>	<i>grandiflorum</i>	White Trillium				√							U					
<i>Trillium</i>	<i>sp.</i>	Trillium species																
<i>Uvularia</i>	<i>grandiflora</i>	Large-flowered Bellwort				√			U									
<i>Uvularia</i>	<i>perfoliata</i>	Perfoliate Bellwort													√			
<b>Orchidaceae</b>		<b>Orchid Family</b>																
<i>Epipactis</i>	<i>helleborine</i>	Common Helleborine					√		U									
<b>Poaceae</b>		<b>Grass Family</b>																
<i>Grass</i>	<i>sp.</i>	Grass species		R														
<i>Agrostis</i>	<i>gigantea</i>	Red-top																
<i>Bromus</i>	<i>inermis ssp. inermis</i>	Awnless Brome										F		√				
<i>Bromus</i>	<i>sp.</i>	Brome species												√				
<i>Dactylis</i>	<i>glomerata</i>	Orchard Grass												√				
<i>Echinochloa</i>	<i>crusgalli</i>	Common Barnyard Grass																
<i>Elymus</i>	<i>hystrix</i>	Bottle-brush Grass																
<i>Elymus</i>	<i>repens</i>	Quack Grass																
<i>Elymus</i>	<i>riparius</i>	River-bank Wild Rye																
<i>Elymus</i>	<i>virginicus var. virginicus</i>	Virginia Wild Rye																
<i>Glyceria</i>	<i>striata</i>	Fowl Manna Grass					√	√						√			√	
<i>Leersia</i>	<i>oryzoides</i>	Rice Cut Grass																
<i>Leersia</i>	<i>virginica</i>	White Cut Grass																
<i>Lolium</i>	<i>arundinaceum</i>	Tall Fescue												√				
<i>Panicum</i>	<i>dichotomiflorum</i>	Fall Panicum																
<i>Phalaris</i>	<i>arundinacea</i>	Reed Canary Grass						√		√			√	√	√			
<i>Phleum</i>	<i>pratense</i>	Timothy								√			√	√				
<i>Phragmites</i>	<i>australis</i>	Common Reed													√			
<i>Poa</i>	<i>compressa</i>	Canada Blue Grass									√							
<i>Poa</i>	<i>palustris</i>	Fowl Meadow Grass																
<i>Poa</i>	<i>pratensis ssp. pratensis</i>	Kentucky Bluegrass												√				





<b>BOTANICAL NAME</b>	<b>COMMON NAME</b>	361 GSH1310	362 GSH1310	362 GSH1310	364 GSH1006 (GE 6/S/MN4 P7)	364 GSH1358 (V1)	364 GSH1358 (V2)	364 GSH1006	364 GSH1006	369 GSH1038 (P1)	370 GSH1142	372 GSH1115	373 GSH1059	375 GSH1388/1018 (P1)	375 GSH1018/1388 (P2)	375 GSH1018 (P3)	375 GSH1362/1018 (P4)
		3-Jul-12	7-Jun-12	7-Jun-12		8-Sep-11	8-Sep-11	25-Apr-12	25-Apr-12	23-Sep-11	11-Jun-12	26-Apr-12	27-Sep-11	5-Oct-11	5-Oct-11	5-Oct-11	5-Oct-11
		361	362			364				369	370	372	373				
		FOD7-2	FOD8-1	FOD6	FOD 6-5	FOD 5-1	MAM 2-2	FOD6-5	SWD2-2	CUW1e	CUP2a	FOD5-6	CUW1h CUM1-1	MAM 2-10	FOD 6-5	FOD 6-5	FOD 6-5

**FLORISTIC SUMMARY & ASSESSMENT**

<b>Species Diversity</b>	
Total Species:	368
Native Species:	278
Exotic Species	90
Total Taxa in Region (List Region, Source)	10000
% Regional Taxa Recorded	3.68%
Regionally Significant Species	0
S1-S3 Species	5
S4 Species	14
S5 Species	253

**Co-efficient of Conservatism and Floral Quality Index**

Co-efficient of Conservatism (CC) (average)		4.46
CC 0 to 3	lowest sensitivity	81
CC 4 to 6	moderate sensitivity	155
CC 7 to 8	high sensitivity	38
CC 9 to 10	highest sensitivity	4
Floral Quality Index (FQI)		74.37

**Presence of Weedy & Invasive Species**

mean weediness		-1.67
weediness = -1	low potential invasiveness	49
weediness = -2	moderate potential invasiveness	22
weediness = -3	high potential invasiveness	19

**Presence of Wetland Species**

average wetness value		0.71
upland		89
facultative upland		89
facultative		69
facultative wetland		76
obligate wetland		44

BOTANICAL NAME	COMMON NAME	375 GSH1018/1362 /1388/1390 (P5)	375 GSH1388 (P6)	375 GSH1388/1390 (P7)	375 GSH1362/1390 /1018/1388	375 GSH1018/1388	375 GSH1018/1388	375 GSH1018/1388	375 GSH1362	379 GSH1430 (P-A)	379 GSH1430 (P-B)	379 GSH1430	379 GSH1430	392 GSH1060 (GE 4 P8)	392 GSH1043 (P1)	392 GSH1043/1060 (P2)	392 GSH1043/1060 (P2)
		5-Oct-11	5-Oct-11	5-Oct-11	29-Nov-11	12-Dec-11	12-Dec-11	12-Dec-11	1-May-12	27-Sep-11	8-Nov-11	23-Apr-12	23-Apr-12	2-Jun-11	15-Aug-11	15-Aug-11	15-Aug-11
		375									379						
		MAM 2a	FOM 6-1	FOD 6-5	FOD 5-1	SWD3-3	FOD6-1	SWD2-2	FOD6-5	CUP 3-1 CUP 3-2	MAM 2-2	MAM 2-2	CUP3-1	FOD5-1 SWD3	FOD 6-5	FOD 6-5	SWD 2-1
<b>PTERIDOPHYTES</b>		<b>FERNS &amp; ALLIES</b>															
<b>Dennstaedtiaceae</b>		<b>Bracken Fern Family</b>															
<i>Pteridium</i>	<i>aquilinum var. latiusculum</i>																
<b>Dryopteridaceae</b>		<b>Wood Fern Family</b>															
<i>Athyrium</i>	<i>filix-femina var. angustum</i>		√	√													√
<i>Cystopteris</i>	<i>bulbifera</i>																
<i>Dryopteris</i>	<i>carthusiana</i>		√	√		√		√									
<i>Dryopteris</i>	<i>intermedia</i>																
<i>Dryopteris</i>	<i>marginalis</i>																√
<i>Onoclea</i>	<i>sensibilis</i>				√	√								√		√	
<i>Polystichum</i>	<i>acrostichoides</i>																
<b>Equisetaceae</b>		<b>Horsetail Family</b>															
<i>Equisetum</i>	<i>arvense</i>				√												
<i>Equisetum</i>	<i>hyemale var. affine</i>																
<i>Equisetum</i>	<i>pratense</i>	√															
<i>Equisetum</i>	<i>sp.</i>																
<b>Lycopodiaceae</b>		<b>Clubmoss Family</b>															
<i>Lycopodium</i>	<i>obscurum</i>				√												
<b>Osmundaceae</b>		<b>Royal Fern Family</b>															
<i>Osmunda</i>	<i>regalis</i>																
<b>Thelypteridaceae</b>		<b>Marsh Fern Family</b>															
<i>Thelypteris</i>	<i>noveboracensis</i>																
<i>Thelypteris</i>	<i>palustris var. pubescens</i>	√															
<b>GYMNOSPERMS</b>		<b>CONIFERS</b>															
<b>Cupressaceae</b>		<b>Cedar Family</b>															
<i>Juniperus</i>	<i>virginiana</i>																
<i>Juniperus</i>	<i>communis</i>																
<i>Thuja</i>	<i>occidentalis</i>									√	√		R				
<b>Pinaceae</b>		<b>Pine Family</b>															
<i>Picea</i>	<i>abies</i>																
<i>Abies</i>	<i>balsamea</i>					√							U				
<i>Picea</i>	<i>glauca</i>																
<i>Picea</i>	<i>pungens</i>																
<i>Pinus</i>	<i>banksiana</i>																
<i>Pinus</i>	<i>nigra</i>																
<i>Pinus</i>	<i>strobus</i>									√	√		U				
<i>Pinus</i>	<i>sylvestris</i>																
<i>Pinus</i>	<i>resinosa</i>									√	√		D				
<i>Tsuga</i>	<i>canadensis</i>		√			√	√	√						√		√	
<b>Taxaceae</b>		<b>Yew Family</b>															
<i>Taxus</i>	<i>canadensis</i>					√	√										
<b>DICOTYLED+D308ONS</b>		<b>DICOTS</b>															
<b>Aceraceae</b>		<b>Maple Family</b>															







BOTANICAL NAME	COMMON NAME	375 GSH1018/1362 /1388/1390 (P5)	375 GSH1388 (P6)	375 GSH1388/1390 (P7)	375 GSH1362/1390 /1018/1388	375 GSH1018/1388	375 GSH1018/1388	375 GSH1018/1388	375 GSH1018/1388	375 GSH1362	379 GSH1430 (P-A)	379 GSH1430 (P-B)	379 GSH1430	379 GSH1430	392 GSH1060 (GE 4 P8)	392 GSH1043 (P1)	392 GSH1043/1060 (P2)	392 GSH1043/1060 (P2)	
		5-Oct-11	5-Oct-11	5-Oct-11	29-Nov-11	12-Dec-11	12-Dec-11	12-Dec-11	1-May-12	27-Sep-11	8-Nov-11	23-Apr-12	23-Apr-12	2-Jun-11	15-Aug-11	15-Aug-11	15-Aug-11		
		375								379									
		MAM 2a	FOM 6-1	FOD 6-5	FOD 5-1	SWD3-3	FOD6-1	SWD2-2	FOD6-5	CUP 3-1 CUP 3-2	MAM 2-2	MAM 2-2	CUP3-1	FOD5-1 SWD3	FOD 6-5	FOD 6-5	SWD 2-1		
<b>Convolvulaceae</b>		<b>Morning-glory Family</b>																	
<i>Convolvulus</i>	<i>arvensis</i>	Field Bindweed																	
<b>Cornaceae</b>		<b>Dogwood Family</b>																	
<i>Cornus</i>	<i>alternifolia</i>	Alternate-leaved Dogwood		v				v									v		
<i>Cornus</i>	<i>amomum ssp. obliqua</i>	Silky Dogwood							v			v							
<i>Cornus</i>	<i>racemosa</i>	Grey dogwood									v	v							
<i>Cornus</i>	<i>sericea</i>	Red-osier Dogwood	v				v							U					
<i>Cornus</i>	<i>rugosa</i>	Round-leaved Dogwood																	
<b>Cucurbitaceae</b>		<b>Gourd Family</b>																	
<i>Echinocystis</i>	<i>lobata</i>	Prickly Cucumber										v							
<b>Dipsacaceae</b>		<b>Teasel Family</b>																	
<i>Dipsacus</i>	<i>fullonum ssp. sylvestris</i>	Wild Teasel																	
<b>Elaeagnaceae</b>		<b>Oleaster Family</b>																	
<i>Elaeagnus</i>	<i>angustifolia</i>	Russian Olive																	
<i>Elaeagnus</i>	<i>umbellata</i>	Autum Olive																	
<i>Shepherdia</i>	<i>canadensis</i>	Buffaloberry																	
<b>Ericaceae</b>		<b>Heath Family</b>																	
<i>Lotus</i>	<i>corniculatus</i>	Bird's-foot Trefoil																	
<b>Euphorbiaceae</b>		<b>Spurge Family</b>																	
<i>Acalypha</i>	<i>rhomboidea</i>	Three-seeded Mercury																	
<b>Fabaceae</b>		<b>Pea Family</b>																	
<i>Lotus</i>	<i>corniculatus</i>	Bird's-foot Trefoil																	
<i>Medicago</i>	<i>lupulina</i>	Black Medick																	
<i>Medicago</i>	<i>Sativa</i>	alfalfa																	
<i>Melilotus</i>	<i>alba</i>	White Sweet-clover																	
<i>Melilotus</i>	<i>officinalis</i>	Yellow Sweet-clover																	
<i>Robinia</i>	<i>pseudo-acacia</i>	Black Locust																	
<i>Trifolium</i>	<i>pratense</i>	Red Clover																	
<i>Trifolium</i>	<i>sp.</i>	Clover species																	
<i>Trifolium</i>	<i>repens</i>	White Clover																	
<i>Vicia</i>	<i>cracca</i>	Tufted Vetch																	
<b>Fagaceae</b>		<b>Beech Family</b>																	
<i>Fagus</i>	<i>grandifolia</i>	American Beech		v	v			v		F							v		
<i>Quercus</i>	<i>alba</i>	White Oak																	
<i>Quercus</i>	<i>macrocarpa</i>	Bur Oak																	
<i>Quercus</i>	<i>rubra</i>	Red Oak																	
<b>Fumariaceae</b>		<b>Fumitory Family</b>																	
<i>Dicentra</i>	<i>canadensis</i>	Squirrel-corn																	
<i>Dicentra</i>	<i>cucullaria</i>	Dutchman's-breeches								R									
<b>Geraniaceae</b>		<b>Geranium Family</b>																	
<i>Geranium</i>	<i>maculatum</i>	Spotted Crane's-bill																	
<i>Geranium</i>	<i>robertianum</i>	Herb-robert								v	v		F	v	v				

BOTANICAL NAME	COMMON NAME	375 GSH1018/1362 /1388/1390 (P5)	375 GSH1388 (P6)	375 GSH1388/1390 (P7)	375 GSH1362/1390 /1018/1388	375 GSH1018/1388	375 GSH1018/1388	375 GSH1018/1388	375 GSH1362	379 GSH1430 (P-A)	379 GSH1430 (P-B)	379 GSH1430	379 GSH1430	392 GSH1060 (GE 4 P8)	392 GSH1043 (P1)	392 GSH1043/1060 (P2)	392 GSH1043/1060 (P2)
		5-Oct-11	5-Oct-11	5-Oct-11	29-Nov-11	12-Dec-11	12-Dec-11	12-Dec-11	1-May-12	27-Sep-11	8-Nov-11	23-Apr-12	23-Apr-12	2-Jun-11	15-Aug-11	15-Aug-11	15-Aug-11
		375								379							
		MAM 2a	FOM 6-1	FOD 6-5	FOD 5-1	SWD3-3	FOD6-1	SWD2-2	FOD6-5	CUP 3-1 CUP 3-2	MAM 2-2	MAM 2-2	CUP3-1	FOD5-1 SWD3	FOD 6-5	FOD 6-5	SWD 2-1
<b>Grossulariaceae</b>		<b>Currant Family</b>															
<i>Ribes</i>	<i>americanum</i>			v					R		v	R	U				
<i>Ribes</i>	<i>cynosbati</i>								R								
<i>Ribes</i>	<i>lacustre</i>																
<i>Ribes</i>	<i>rubrum</i>																
<i>Ribes</i>	<i>triste</i>														v		
<i>Ribes</i>	<i>sp.</i>																
<b>Guttiferae</b>		<b>St. John's-wort Family</b>															
<i>Hypericum</i>	<i>perforatum</i>																
<i>Hypericum</i>	<i>punctatum</i>																
<b>Hamamelidaceae</b>		<b>Witch-hazel Family</b>															
<i>Hamamelis</i>	<i>virginiana</i>																
<b>Hydrophyllaceae</b>		<b>Water-leaf Family</b>															
<i>Hydrophyllum</i>	<i>virginianum</i>																
<b>Juglandaceae</b>		<b>Walnut Family</b>															
<i>Carya</i>	<i>cordiformis</i>		v			v	v	v		v	v						
<i>Carya</i>	<i>ovata var. ovata</i>			v											v		
<i>Carya</i>	<i>sp</i>																
<i>Juglans</i>	<i>cinerea</i>																
<i>Juglans</i>	<i>nigra</i>															v	
<b>Lamiaceae</b>		<b>Mint Family</b>															
<i>Clinopodium</i>	<i>vulgare</i>																
<i>Leonurus</i>	<i>cardiaca ssp. cardiaca</i>																v
<i>Lycopus</i>	<i>americanus</i>					v								v			
<i>Lycopus</i>	<i>uniflorus</i>	v															
<i>Mentha</i>	<i>arvensis</i>				v												
<i>Mentha</i>	<i>sp.</i>																
<i>Prunella</i>	<i>vulgaris ssp. vulgaris</i>	v					v								v		
<i>Scutellaria</i>	<i>lateriflora</i>																
<i>Satureja</i>	<i>vulgaris</i>																
<b>Lauraceae</b>		<b>Laurel Family</b>															
<i>Lindera</i>	<i>benzoin</i>		v	v										v			
<b>Malvaceae</b>		<b>Mallow Family</b>															
<i>Abutilon</i>	<i>theophrasti</i>																
<i>Malva</i>	<i>neglecta</i>																
<b>Montiaceae</b>		<b>Montia Family</b>															
<i>Claytonia</i>	<i>caroliniana</i>																R
<i>Claytonia</i>	<i>virginica</i>																
<b>Menispermaceae</b>		<b>Moonseed Family</b>															
<i>Menispermum</i>	<i>canadense</i>																
<b>Oleaceae</b>		<b>Olive Family</b>															
<i>Fraxinus</i>	<i>americana</i>		v	v			v		F	v	v		D	v	v	v	

















<b>BOTANICAL NAME</b>	<b>COMMON NAME</b>	375 GSH1018/1362 /1388/1390 (P5)	375 GSH1388 (P6)	375 GSH1388/1390 (P7)	375 GSH1362/1390 /1018/1388	375 GSH1018/1388	375 GSH1018/1388	375 GSH1018/1388	375 GSH1362	379 GSH1430 (P-A)	379 GSH1430 (P-B)	379 GSH1430	379 GSH1430	392 GSH1060 (GE 4 P8)	392 GSH1043 (P1)	392 GSH1043/1060 (P2)	392 GSH1043/1060 (P2)	
		5-Oct-11	5-Oct-11	5-Oct-11	29-Nov-11	12-Dec-11	12-Dec-11	12-Dec-11	1-May-12	27-Sep-11	8-Nov-11	23-Apr-12	23-Apr-12	2-Jun-11	15-Aug-11	15-Aug-11	15-Aug-11	
		375								379								
		MAM 2a	FOM 6-1	FOD 6-5	FOD 5-1	SWD3-3	FOD6-1	SWD2-2	FOD6-5	CUP 3-1 CUP 3-2	MAM 2-2	MAM 2-2	CUP3-1	FOD5-1 SWD3	FOD 6-5	FOD 6-5	SWD 2-1	

**FLORISTIC SUMMARY & ASSESSMENT**

<b>Species Diversity</b>	
Total Species:	<b>368</b>
Native Species:	<b>278</b>
Exotic Species	<b>90</b>
Total Taxa in Region (List Region, Source)	10000
% Regional Taxa Recorded	3.68%
Regionally Significant Species	0
S1-S3 Species	5
S4 Species	14
S5 Species	253

**Co-efficient of Conservatism and Floral Quality Index**

Co-efficient of Conservatism (CC) (average)		<b>4.46</b>
CC 0 to 3	lowest sensitivity	81
CC 4 to 6	moderate sensitivity	155
CC 7 to 8	high sensitivity	38
CC 9 to 10	highest sensitivity	4
<b>Floral Quality Index (FQI)</b>		<b>74.37</b>

**Presence of Weedy & Invasive Species**

mean weediness		<b>-1.67</b>
weediness = -1	low potential invasiveness	49
weediness = -2	moderate potential invasiveness	22
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**Presence of Wetland Species**

average wetness value		<b>0.71</b>
upland		89
facultative upland		89
facultative		69
facultative wetland		76
obligate wetland		44



BOTANICAL NAME	COMMON NAME	392 GSH1060 (P3)	392 GSH1043(P4)	392 GSH1043 (P5)	392 GSH1043&106 0&1008	392 GSH1043&106 0&1008	609 GSH2394/2717	609 GSH2394/2717	609 GSH2953	611 GSH2411	635 GSH2369/2371	635 GSH2369/2371	636 GSH2613/2480	636 GSH2613/2480	637 GSH2370	637 GSH2370	637 GSH2370
		15-Aug-11	12-Dec-11	12-Dec-11	23-Apr-12	23-Apr-12	31-May-12	31-May-12	21-Jun-12	12-Jul-12	5-Jun-12	5-Jun-12	3-May-12	3-May-12	31-May-12	31-May-12	31-May-12
		392					609			611	635		636		637		
		FOD 5-2	FOD 5-2	SWD 3-3	FOD5-2	SWD3-3	SWD2-2	SWT2-2	SOCC/SAR Vascular Plant Survey	FOD6-5	CUT1j	CUM1-1	CUM1-1	SWD2-2	CUP3a	CUM1-1	CUP3b
<b>PTERIDOPHYTES</b>		<b>FERNS &amp; ALLIES</b>															
<b>Dennstaedtiaceae</b>		<b>Bracken Fern Family</b>															
<i>Pteridium</i>	<i>aquilinum var. latiusculum</i>	Eastern Bracken-fern															
<b>Dryopteridaceae</b>		<b>Wood Fern Family</b>															
<i>Athyrium</i>	<i>filix-femina var. angustum</i>	Northern Lady Fern															
<i>Cystopteris</i>	<i>bulbifera</i>	bulblet bladderfern															
<i>Dryopteris</i>	<i>carthusiana</i>	Spinulose Wood Fern															
<i>Dryopteris</i>	<i>intermedia</i>	Evergreen Wood Fern															
<i>Dryopteris</i>	<i>marginalis</i>	Marginal Wood Fern															
<i>Onoclea</i>	<i>sensibilis</i>	Sensitive Fern															
<i>Polystichum</i>	<i>acrostichoides</i>	Christmas Fern															
<b>Equisetaceae</b>		<b>Horsetail Family</b>															
<i>Equisetum</i>	<i>arvense</i>	Field Horsetail															
<i>Equisetum</i>	<i>hyemale var. affine</i>	Scouring-rush															
<i>Equisetum</i>	<i>pratense</i>	Meadow Horsetail															
<i>Equisetum</i>	<i>sp.</i>	Horestail species															
<b>Lycopodiaceae</b>		<b>Clubmoss Family</b>															
<i>Lycopodium</i>	<i>obscurum</i>	Ground-pine															
<b>Osmundaceae</b>		<b>Royal Fern Family</b>															
<i>Osmunda</i>	<i>regalis</i>	Royal Fern															
<b>Thelypteridaceae</b>		<b>Marsh Fern Family</b>															
<i>Thelypteris</i>	<i>noveboracensis</i>	New York Fern															
<i>Thelypteris</i>	<i>palustris var. pubescens</i>	Marsh Fern															
<b>GYMNOSPERMS</b>		<b>CONIFERS</b>															
<b>Cupressaceae</b>		<b>Cedar Family</b>															
<i>Juniperus</i>	<i>virginiana</i>	Eastern Red Cedar															
<i>Juniperus</i>	<i>communis</i>	Common Juniper															
<i>Thuja</i>	<i>occidentalis</i>	Eastern White Cedar															
<b>Pinaceae</b>		<b>Pine Family</b>															
<i>Picea</i>	<i>abies</i>	Norway Spruce															
<i>Abies</i>	<i>balsamea</i>	Balsam Fir															
<i>Picea</i>	<i>glauca</i>	White Spruce															
<i>Picea</i>	<i>pungens</i>	Colorado Spruce															
<i>Pinus</i>	<i>banksiana</i>	Jack Pine															
<i>Pinus</i>	<i>nigra</i>	Austrian Pine															
<i>Pinus</i>	<i>strobus</i>	Eastern White Pine															
<i>Pinus</i>	<i>sylvestris</i>	Scots Pine															
<i>Pinus</i>	<i>resinosa</i>	Red Pine															
<i>Tsuga</i>	<i>canadensis</i>	Eastern Hemlock															
<b>Taxaceae</b>		<b>Yew Family</b>															
<i>Taxus</i>	<i>canadensis</i>	American Yew															
<b>DICOTYLED+D308ONS</b>		<b>DICOTS</b>															
<b>Aceraceae</b>		<b>Maple Family</b>															









BOTANICAL NAME	COMMON NAME	392 GSH1060 (P3)	392 GSH1043(P4)	392 GSH1043 (P5)	392 GSH1043&106 0&1008	392 GSH1043&106 0&1008	609 GSH2394/2717	609 GSH2394/2717	609 GSH2953	611 GSH2411	635 GSH2369/2371	635 GSH2369/2371	636 GSH2613/2480	636 GSH2613/2480	637 GSH2370	637 GSH2370	637 GSH2370
		15-Aug-11	12-Dec-11	12-Dec-11	23-Apr-12	23-Apr-12	31-May-12	31-May-12	21-Jun-12	12-Jul-12	5-Jun-12	5-Jun-12	3-May-12	3-May-12	31-May-12	31-May-12	31-May-12
		392					609			611	635		636		637		
		FOD 5-2	FOD 5-2	SWD 3-3	FOD5-2	SWD3-3	SWD2-2	SWT2-2	SOCC/SAR Vascular Plant Survey	FOD6-5	CUT1j	CUM1-1	CUM1-1	SWD2-2	CUP3a	CUM1-1	CUP3b
<b>Grossulariaceae</b>		<b>Currant Family</b>															
<i>Ribes</i>	<i>americanum</i>	Wild Black Currant								R				U			
<i>Ribes</i>	<i>cynosbati</i>	Prickly Gooseberry															
<i>Ribes</i>	<i>lacustre</i>	Swamp Black Currant															
<i>Ribes</i>	<i>rubrum</i>	Red Currant															
<i>Ribes</i>	<i>triste</i>	Wild Red Currant															
<i>Ribes</i>	<i>sp.</i>	Currant species															
<b>Guttiferae</b>		<b>St. John's-wort Family</b>															
<i>Hypericum</i>	<i>perforatum</i>	Common St. John's-wort															
<i>Hypericum</i>	<i>punctatum</i>	Spotted St. John's-wort															
<b>Hamamelidaceae</b>		<b>Witch-hazel Family</b>															
<i>Hamamelis</i>	<i>virginiana</i>	Witch-hazel															
<b>Hydrophyllaceae</b>		<b>Water-leaf Family</b>															
<i>Hydrophyllum</i>	<i>virginianum</i>	Virginia Water-leaf															
<b>Juglandaceae</b>		<b>Walnut Family</b>															
<i>Carya</i>	<i>cordiformis</i>	Bitternut hickory		√													
<i>Carya</i>	<i>ovata var. ovata</i>	Shagbark Hickory															
<i>Carya</i>	<i>sp</i>	Hickory species															
<i>Juglans</i>	<i>cinerea</i>	Butternut															
<i>Juglans</i>	<i>nigra</i>	Black Walnut					R								U		
<b>Lamiaceae</b>		<b>Mint Family</b>															
<i>Clinopodium</i>	<i>vulgare</i>	Wild Basil															
<i>Leonurus</i>	<i>cardiaca ssp. cardiaca</i>	Common Motherwort		√													
<i>Lycopus</i>	<i>americanus</i>	Cut-leaved Water-horehound															
<i>Lycopus</i>	<i>uniflorus</i>	Northern Water-horehound															
<i>Mentha</i>	<i>arvensis</i>	American Wild Mint															
<i>Mentha</i>	<i>sp.</i>	species														U	
<i>Prunella</i>	<i>vulgaris ssp. vulgaris</i>	Heal-all								R							
<i>Scutellaria</i>	<i>lateriflora</i>	Mad-dog Skullcap															
<i>Satureja</i>	<i>vulgaris</i>	wild basil															
<b>Lauraceae</b>		<b>Laurel Family</b>															
<i>Lindera</i>	<i>benzoin</i>	Spicebush															
<b>Malvaceae</b>		<b>Mallow Family</b>															
<i>Abutilon</i>	<i>theophrasti</i>	Velvet-leaf															
<i>Malva</i>	<i>neglecta</i>	Cheeses															
<b>Montiaceae</b>		<b>Montia Family</b>															
<i>Claytonia</i>	<i>caroliniana</i>	Carolina Spring Beauty															
<i>Claytonia</i>	<i>virginica</i>	Virginia Spring Beauty															
<b>Menispermaceae</b>		<b>Moonseed Family</b>															
<i>Menispermum</i>	<i>canadense</i>	Moonseed															
<b>Oleaceae</b>		<b>Olive Family</b>															
<i>Fraxinus</i>	<i>americana</i>	White Ash		√		U				U							













BOTANICAL NAME		COMMON NAME	392 GSH1060 (P3)	392 GSH1043(P4)	392 GSH1043 (P5)	392 GSH1043&106 0&1008	392 GSH1043&106 0&1008	609 GSH2394/2717	609 GSH2394/2717	609 GSH2953	611 GSH2411	635 GSH2369/2371	635 GSH2369/2371	636 GSH2613/2480	636 GSH2613/2480	637 GSH2370	637 GSH2370	637 GSH2370	
			15-Aug-11	12-Dec-11	12-Dec-11	23-Apr-12	23-Apr-12	31-May-12	31-May-12	21-Jun-12	12-Jul-12	5-Jun-12	5-Jun-12	3-May-12	3-May-12	31-May-12	31-May-12	31-May-12	
			392					609				611	635		636		637		
			FOD 5-2	FOD 5-2	SWD 3-3	FOD5-2	SWD3-3	SWD2-2	SWT2-2	SOCC/SAR Vascular Plant Survey	FOD6-5	CUT1j	CUM1-1	CUM1-1	SWD2-2	CUP3a	CUM1-1	CUP3b	
<i>Juncus</i>	<i>dudleyi</i>	Dudley's Rush																	
<i>Juncus</i>	<i>effusus</i>	Common rush																	
<i>Juncus</i>	<i>tenuis</i>	Path Rush																	
<b>Liliaceae</b>		<b>Lily Family</b>																	
<i>Allium</i>	<i>triccocum</i>	Wild Leek				U													
<i>Clintonia</i>	<i>borealis</i>	bluebead lily																	
<i>Erythronium</i>	<i>americanum ssp. americanum</i>	Yellow trout lilly				D										R			
<i>Erythronium</i>	<i>albidum</i>	White Trout Lily																	
<i>Lilium</i>	<i>sp.</i>	Lily species																	
<i>Maianthemum</i>	<i>canadense</i>	Wild Lily-of-the-valley																	
<i>Maianthemum</i>	<i>racemosum ssp. racemosum</i>	False Solomon's Seal														U			
<i>Maianthemum</i>	<i>stellatum</i>	Star-flowered Solomon's Sea																	
<i>Polygonatum</i>	<i>pubescens</i>	Hairy Solomon's Seal		√															
<i>Streptopus</i>	<i>lanceolatus var roseus</i>	Rose twisted-stalk																	
<i>Trillium</i>	<i>erectum</i>	Purple Trillium				U													
<i>Trillium</i>	<i>grandiflorum</i>	White Trillium				F													
<i>Trillium</i>	<i>sp.</i>	Trillium species																	
<i>Uvularia</i>	<i>grandiflora</i>	Large-flowered Bellwort				U													
<i>Uvularia</i>	<i>perfoliata</i>	Perfoliate Bellwort																	
<b>Orchidaceae</b>		<b>Orchid Family</b>																	
<i>Epipactis</i>	<i>helleborine</i>	Common Helleborine				U					U								
<b>Poaceae</b>		<b>Grass Family</b>																	
<i>Grass</i>	<i>sp.</i>	Grass species																	
<i>Agrostis</i>	<i>gigantea</i>	Red-top																	
<i>Bromus</i>	<i>inermis ssp. inermis</i>	Awnless Brome						R		F	R								
<i>Bromus</i>	<i>sp.</i>	Brome species																	
<i>Dactylis</i>	<i>glomerata</i>	Orchard Grass						R		U						U	U		
<i>Echinochloa</i>	<i>crusgalli</i>	Common Barnyard Grass																	
<i>Elymus</i>	<i>hystrix</i>	Bottle-brush Grass																	
<i>Elymus</i>	<i>repens</i>	Quack Grass																	
<i>Elymus</i>	<i>riparius</i>	River-bank Wild Rye																	
<i>Elymus</i>	<i>virginicus var. virginicus</i>	Virginia Wild Rye																	
<i>Glyceria</i>	<i>striata</i>	Fowl Manna Grass			√														
<i>Leersia</i>	<i>oryzoides</i>	Rice Cut Grass																	
<i>Leersia</i>	<i>virginica</i>	White Cut Grass																	
<i>Lolium</i>	<i>arundinaceum</i>	Tall Fescue																	
<i>Panicum</i>	<i>dichotomiflorum</i>	Fall Panicum																	
<i>Phalaris</i>	<i>arundinacea</i>	Reed Canary Grass						R	D			D					F		
<i>Phleum</i>	<i>pratense</i>	Timothy																	
<i>Phragmites</i>	<i>australis</i>	Common Reed																	
<i>Poa</i>	<i>compressa</i>	Canada Blue Grass																	
<i>Poa</i>	<i>palustris</i>	Fowl Meadow Grass																	
<i>Poa</i>	<i>pratensis ssp. pratensis</i>	Kentucky Bluegrass														R			



<b>BOTANICAL NAME</b>	<b>COMMON NAME</b>	392 GSH1060 (P3)	392 GSH1043(P4)	392 GSH1043 (P5)	392 GSH1043&106 0&1008	392 GSH1043&106 0&1008	609 GSH2394/2717	609 GSH2394/2717	609 GSH2953	611 GSH2411	635 GSH2369/2371	635 GSH2369/2371	636 GSH2613/2480	636 GSH2613/2480	637 GSH2370	637 GSH2370	637 GSH2370
		15-Aug-11	12-Dec-11	12-Dec-11	23-Apr-12	23-Apr-12	31-May-12	31-May-12	21-Jun-12	12-Jul-12	5-Jun-12	5-Jun-12	3-May-12	3-May-12	31-May-12	31-May-12	31-May-12
		392					609			611	635		636		637		
		FOD 5-2	FOD 5-2	SWD 3-3	FOD5-2	SWD3-3	SWD2-2	SWT2-2	SOCC/SAR Vascular Plant Survey	FOD6-5	CUT1j	CUM1-1	CUM1-1	SWD2-2	CUP3a	CUM1-1	CUP3b

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BOTANICAL NAME	COMMON NAME	648	648	648	648	648	648	661	661	662	695	701	701	701	702	702	720	
		GSH2485/2548 /2585	GSH2485/2548 /2585	GSH2485/2548 /2585	GSH2485/2548 /2585	GSH2485/2548 /2585	GSH2485/2548 /2585	GSH2485/2548 /2585	661 GSH2433	661 GSH2433	662 GSH2432/2435	695 GSH2769/3019	701 GSH3038/2767	701 GSH3038&2767	701 GSH3038&2767	702 GSH3032/2838	702 GSH3038&2838	720 GSH3062
		5-Jun-12	5-Jun-12	5-Jun-12	5-Jun-12	5-Jun-12	28-Jun-12	1-Jun-12	5-Jun-12	31-May-12	3-May-12	3-May-12	4-Jul-12	4-Jul-12	8-May-12	21-Jun-12	7-May-12	
		648						661		662	695	701			702			
		FOD9-4	CUM1-1	FOD8-1	CUP3	CUT1	CUM1-1	FOD5-1	FOD5-1	FOD5-6	FOD5-6	FOD5-8	FOD5-8	SWD3-3	FOD9-1	SOCC/SAR Vascular Plant Survey	FOD7	
<b>PTERIDOPHYTES</b>		<b>FERNS &amp; ALLIES</b>																
<b>Dennstaedtiaceae</b>		<b>Bracken Fern Family</b>																
<i>Pteridium</i>	<i>aquilinum var. latiusculum</i>	Eastern Bracken-fern																
<b>Dryopteridaceae</b>		<b>Wood Fern Family</b>																
<i>Athyrium</i>	<i>filix-femina var. angustum</i>	Northern Lady Fern																
<i>Cystopteris</i>	<i>bulbifera</i>	bulblet bladderfern																
<i>Dryopteris</i>	<i>carthusiana</i>	Spinulose Wood Fern																
<i>Dryopteris</i>	<i>intermedia</i>	Evergreen Wood Fern																
<i>Dryopteris</i>	<i>marginalis</i>	Marginal Wood Fern																
<i>Onoclea</i>	<i>sensibilis</i>	Sensitive Fern																
<i>Polystichum</i>	<i>acrostichoides</i>	Christmas Fern																
<b>Equisetaceae</b>		<b>Horsetail Family</b>																
<i>Equisetum</i>	<i>arvense</i>	Field Horsetail																
<i>Equisetum</i>	<i>hyemale var. affine</i>	Scouring-rush																
<i>Equisetum</i>	<i>pratense</i>	Meadow Horsetail																
<i>Equisetum</i>	<i>sp.</i>	Horestail species																
<b>Lycopodiaceae</b>		<b>Clubmoss Family</b>																
<i>Lycopodium</i>	<i>obscurum</i>	Ground-pine																
<b>Osmundaceae</b>		<b>Royal Fern Family</b>																
<i>Osmunda</i>	<i>regalis</i>	Royal Fern																
<b>Thelypteridaceae</b>		<b>Marsh Fern Family</b>																
<i>Thelypteris</i>	<i>noveboracensis</i>	New York Fern																
<i>Thelypteris</i>	<i>palustris var. pubescens</i>	Marsh Fern																
<b>GYMNOSPERMS</b>		<b>CONIFERS</b>																
<b>Cupressaceae</b>		<b>Cedar Family</b>																
<i>Juniperus</i>	<i>virginiana</i>	Eastern Red Cedar																
<i>Juniperus</i>	<i>communis</i>	Common Juniper																
<i>Thuja</i>	<i>occidentalis</i>	Eastern White Cedar																
<b>Pinaceae</b>		<b>Pine Family</b>																
<i>Picea</i>	<i>abies</i>	Norway Spruce																
<i>Abies</i>	<i>balsamea</i>	Balsam Fir																
<i>Picea</i>	<i>glauca</i>	White Spruce																
<i>Picea</i>	<i>pungens</i>	Colorado Spruce																
<i>Pinus</i>	<i>banksiana</i>	Jack Pine																
<i>Pinus</i>	<i>nigra</i>	Austrian Pine																
<i>Pinus</i>	<i>strobus</i>	Eastern White Pine																
<i>Pinus</i>	<i>sylvestris</i>	Scots Pine																
<i>Pinus</i>	<i>resinosa</i>	Red Pine																
<i>Tsuga</i>	<i>canadensis</i>	Eastern Hemlock																
<b>Taxaceae</b>		<b>Yew Family</b>																
<i>Taxus</i>	<i>canadensis</i>	American Yew																
<b>DICOTYLED+D308ONS</b>		<b>DICOTS</b>																
<b>Aceraceae</b>		<b>Maple Family</b>																









BOTANICAL NAME	COMMON NAME	648	648	648	648	648	648	661	661	662	695	701	701	701	702	702	720	
		GSH2485/2548 /2585	GSH2485/2548 /2585	GSH2485/2548 /2585	GSH2485/2548 /2585	GSH2485/2548 /2585	GSH2485/2548 /2585	GSH2485/2548 /2585	GSH2433	GSH2433	GSH2432/2435	GSH2769/3019	GSH3038/2767	GSH3038&2767	GSH3038&2767	GSH3032/2838	GSH3038&2838	GSH3062
		5-Jun-12	5-Jun-12	5-Jun-12	5-Jun-12	5-Jun-12	28-Jun-12	1-Jun-12	5-Jun-12	31-May-12	3-May-12	3-May-12	4-Jul-12	4-Jul-12	8-May-12	21-Jun-12	7-May-12	
		648						661		662	695	701			702			
		FOD9-4	CUM1-1	FOD8-1	CUP3	CUT1	CUM1-1	FOD5-1	FOD5-1	FOD5-6	FOD5-6	FOD5-8	FOD5-8	SWD3-3	FOD9-1	SOCC/SAR Vascular Plant Survey	FOD7	
<b>Convolvulaceae</b>		<b>Morning-glory Family</b>																
<i>Convolvulus</i>	<i>arvensis</i>						U											
<b>Cornaceae</b>		<b>Dogwood Family</b>																
<i>Cornus</i>	<i>alternifolia</i>												U					
<i>Cornus</i>	<i>amomum ssp. obliqua</i>																	
<i>Cornus</i>	<i>racemosa</i>							U		R			U				R	
<i>Cornus</i>	<i>sericea</i>						R	U			R	R						
<i>Cornus</i>	<i>rugosa</i>																	
<b>Cucurbitaceae</b>		<b>Gourd Family</b>																
<i>Echinocystis</i>	<i>lobata</i>				U													
<b>Dipsacaceae</b>		<b>Teasel Family</b>																
<i>Dipsacus</i>	<i>fullonum ssp. sylvestris</i>						R											
<b>Elaeagnaceae</b>		<b>Oleaster Family</b>																
<i>Elaeagnus</i>	<i>angustifolia</i>																	
<i>Elaeagnus</i>	<i>umbellata</i>																	
<i>Shepherdia</i>	<i>canadensis</i>																	
<b>Ericaceae</b>		<b>Heath Family</b>																
<i>Lotus</i>	<i>corniculatus</i>						R											
<b>Euphorbiaceae</b>		<b>Spurge Family</b>																
<i>Acalypha</i>	<i>rhomboidea</i>																	
<b>Fabaceae</b>		<b>Pea Family</b>																
<i>Lotus</i>	<i>corniculatus</i>																	
<i>Medicago</i>	<i>lupulina</i>				U											R		
<i>Medicago</i>	<i>Sativa</i>							R										
<i>Melilotus</i>	<i>alba</i>																	
<i>Melilotus</i>	<i>officinalis</i>																	
<i>Robinia</i>	<i>pseudo-acacia</i>																	
<i>Trifolium</i>	<i>pratense</i>															R		
<i>Trifolium</i>	<i>sp.</i>																	
<i>Trifolium</i>	<i>repens</i>																	
<i>Vicia</i>	<i>cracca</i>						R											
<b>Fagaceae</b>		<b>Beech Family</b>																
<i>Fagus</i>	<i>grandifolia</i>	R								R		U	F					
<i>Quercus</i>	<i>alba</i>														F			
<i>Quercus</i>	<i>macrocarpa</i>									F								
<i>Quercus</i>	<i>rubra</i>													R				
<b>Fumariaceae</b>		<b>Fumitory Family</b>																
<i>Dicentra</i>	<i>canadensis</i>																	
<i>Dicentra</i>	<i>cucullaria</i>																	
<b>Geraniaceae</b>		<b>Geranium Family</b>																
<i>Geranium</i>	<i>maculatum</i>	R								U			F		U		U	
<i>Geranium</i>	<i>robertianum</i>								R	R					U		U	

BOTANICAL NAME	COMMON NAME	648	648	648	648	648	648	661	661	662	695	701	701	701	702	702	720	
		GSH2485/2548 /2585	GSH2485/2548 /2585	GSH2485/2548 /2585	GSH2485/2548 /2585	GSH2485/2548 /2585	GSH2485/2548 /2585	GSH2485/2548 /2585	661 GSH2433	661 GSH2433	662 GSH2432/2435	695 GSH2769/3019	701 GSH3038/2767	701 GSH3038&2767	701 GSH3038&2767	702 GSH3032/2838	702 GSH3038&2838	720 GSH3062
		5-Jun-12	5-Jun-12	5-Jun-12	5-Jun-12	5-Jun-12	28-Jun-12	1-Jun-12	5-Jun-12	31-May-12	3-May-12	3-May-12	4-Jul-12	4-Jul-12	8-May-12	21-Jun-12	7-May-12	
		648						661		662	695	701			702			
		FOD9-4	CUM1-1	FOD8-1	CUP3	CUT1	CUM1-1	FOD5-1	FOD5-1	FOD5-6	FOD5-6	FOD5-8	FOD5-8	SWD3-3	FOD9-1	SOCC/SAR Vascular Plant Survey	FOD7	
<b>Grossulariaceae</b>		<b>Currant Family</b>																
<i>Ribes</i>	<i>americanum</i>	Wild Black Currant	U							R			U		U		U	
<i>Ribes</i>	<i>cynosbati</i>	Prickly Gooseberry	U								U							
<i>Ribes</i>	<i>lacustre</i>	Swamp Black Currant																
<i>Ribes</i>	<i>rubrum</i>	Red Currant																
<i>Ribes</i>	<i>triste</i>	Wild Red Currant																
<i>Ribes</i>	<i>sp.</i>	Currant species																
<b>Guttiferae</b>		<b>St. John's-wort Family</b>																
<i>Hypericum</i>	<i>perforatum</i>	Common St. John's-wort					R											
<i>Hypericum</i>	<i>punctatum</i>	Spotted St. John's-wort																
<b>Hamamelidaceae</b>		<b>Witch-hazel Family</b>																
<i>Hamamelis</i>	<i>virginiana</i>	Witch-hazel																
<b>Hydrophyllaceae</b>		<b>Water-leaf Family</b>																
<i>Hydrophyllum</i>	<i>virginianum</i>	Virginia Water-leaf																
<b>Juglandaceae</b>		<b>Walnut Family</b>																
<i>Carya</i>	<i>cordiformis</i>	Bitternut hickory								R	R		R		U			
<i>Carya</i>	<i>ovata var. ovata</i>	Shagbark Hickory							F									
<i>Carya</i>	<i>sp</i>	Hickory species																
<i>Juglans</i>	<i>cinerea</i>	Butternut																
<i>Juglans</i>	<i>nigra</i>	Black Walnut						U	R									
<b>Lamiaceae</b>		<b>Mint Family</b>																
<i>Clinopodium</i>	<i>vulgare</i>	Wild Basil																
<i>Leonurus</i>	<i>cardiaca ssp. cardiaca</i>	Common Motherwort																
<i>Lycopus</i>	<i>americanus</i>	Cut-leaved Water-horehound																
<i>Lycopus</i>	<i>uniflorus</i>	Northern Water-horehound																
<i>Mentha</i>	<i>arvensis</i>	American Wild Mint																
<i>Mentha</i>	<i>sp.</i>	species																
<i>Prunella</i>	<i>vulgaris ssp. vulgaris</i>	Heal-all																
<i>Scutellaria</i>	<i>lateriflora</i>	Mad-dog Skullcap																
<i>Satureja</i>	<i>vulgaris</i>	wild basil																
<b>Lauraceae</b>		<b>Laurel Family</b>																
<i>Lindera</i>	<i>benzoin</i>	Spicebush											U					
<b>Malvaceae</b>		<b>Mallow Family</b>																
<i>Abutilon</i>	<i>theophrasti</i>	Velvet-leaf																
<i>Malva</i>	<i>neglecta</i>	Cheeses																
<b>Montiaceae</b>		<b>Montia Family</b>																
<i>Claytonia</i>	<i>caroliniana</i>	Carolina Spring Beauty																
<i>Claytonia</i>	<i>virginica</i>	Virginia Spring Beauty																
<b>Menispermaceae</b>		<b>Moonseed Family</b>																
<i>Menispermum</i>	<i>canadense</i>	Moonseed																
<b>Oleaceae</b>		<b>Olive Family</b>																
<i>Fraxinus</i>	<i>americana</i>	White Ash						F	F			F	F			F		











BOTANICAL NAME	COMMON NAME	648	648	648	648	648	648	661	661	662	695	701	701	701	702	702	720						
		GSH2485/2548 /2585	GSH2485/2548 /2585	GSH2485/2548 /2585	GSH2485/2548 /2585	GSH2485/2548 /2585	GSH2485/2548 /2585	GSH2485/2548 /2585	661 GSH2433	661 GSH2433	662 GSH2432/2435	695 GSH2769/3019	701 GSH3038/2767	701 GSH3038&2767	701 GSH3038&2767	702 GSH3032/2838	702 GSH3038&2838	720 GSH3062					
		5-Jun-12	5-Jun-12	5-Jun-12	5-Jun-12	5-Jun-12	28-Jun-12	1-Jun-12	5-Jun-12	31-May-12	3-May-12	3-May-12	4-Jul-12	4-Jul-12	8-May-12	21-Jun-12	7-May-12						
		648						661		662	695	701			702								
		FOD9-4	CUM1-1	FOD8-1	CUP3	CUT1	CUM1-1	FOD5-1	FOD5-1	FOD5-6	FOD5-6	FOD5-8	FOD5-8	SWD3-3	FOD9-1	SOCC/SAR Vascular Plant Survey	FOD7						
<b>MONOCOTYLEDONS</b>		<b>MONOCOTS</b>																					
<i>Alisma</i>	<i>plantago-aquatica</i>	Common Water-plantain																					
<b>Araceae</b>		<b>Arum Family</b>																					
<i>Arisaema</i>	<i>triphillum</i>	U														R		F		R		R	
<i>Calla</i>	<i>palustris</i>	Wild Calla																					
<b>Cyperaceae</b>		<b>Sedge Family</b>																					
<i>Carex</i>	<i>sp.</i>	Sedge species																					
<i>Carex</i>	<i>albursina</i>	White Bear Sedge																					
<i>Carex</i>	<i>amphibola</i>	Narrow-leaved Sedge																					
<i>Carex</i>	<i>arctata</i>	Drooping Wood Sedge																					
<i>Carex</i>	<i>bebbii</i>	Bebb's Sedge																					
<i>Carex</i>	<i>blanda</i>	Woodland Sedge																					
<i>Carex</i>	<i>comosa</i>	Bristly Sedge																					
<i>Carex</i>	<i>crinita</i>	Fringed sedge																					
<i>Carex</i>	<i>cristatella</i>	Crested Sedge																					
<i>Carex</i>	<i>gracillima</i>	Graceful Sedge																					
<i>Carex</i>	<i>granularis</i>	Meadow Sedge																					
<i>Carex</i>	<i>grayi</i>	Gray's Sedge																					
<i>Carex</i>	<i>interior</i>	Inland Sedge																					
<i>Carex</i>	<i>intumescens</i>	Bladder Sedge																					
<i>Carex</i>	<i>lupulina</i>	Hop Sedge																					
<i>Carex</i>	<i>pedunculata</i>	Long-stalked Sedge																					
<i>Carex</i>	<i>pensylvanica</i>	Pennsylvania Sedge																					
<i>Carex</i>	<i>plantaginea</i>	Plantain-leaved Sedge																					
<i>Carex</i>	<i>platyphylla</i>	Broad-leaved Sedge																					
<i>Carex</i>	<i>projecta</i>	Necklace Sedge																					
<i>Carex</i>	<i>punctata</i>	Dotted Sedge																					
<i>Carex</i>	<i>radiata</i>	Radiate Sedge																					
<i>Carex</i>	<i>retrorsa</i>	Retorse Sedge																					
<i>Carex</i>	<i>rosea</i>	Stellate Sedge																					
<i>Eleocharis</i>	<i>sp.</i>	Spikerush species																					
<i>Carex</i>	<i>stipata</i>	Awl-fruited Sedge																					
<i>Carex</i>	<i>stricta</i>	Tussock Sedge																					
<i>Carex</i>	<i>tuckermanii</i>	Tuckerman's Sedge																					
<i>Carex</i>	<i>vulpinoidea</i>	Fox Sedge																					
<i>Schoenoplectus</i>	<i>atrovirens</i>	Dark-green Bulrush																					
<i>Schoenoplectus</i>	<i>tabernaemontani</i>	American Great Bulrush/softs																					
<i>Scirpus</i>	<i>cyperinus</i>	Wool-grass																					
<b>Iridaceae</b>		<b>Iris Family</b>																					
<i>Iris</i>	<i>versicolor</i>	Multi-coloured Blue-flag																					
<i>Iris</i>	<i>sp.</i>	Iris species																					
<b>Juncaceae</b>		<b>Rush Family</b>																					
<i>Juncus</i>	<i>compressus</i>	Compressed Rush																					





<b>BOTANICAL NAME</b>	<b>COMMON NAME</b>	648 GSH2485/2548 /2585	648 GSH2485/2548 /2585	648 GSH2485/2548 /2585	648 GSH2485/2548 /2585	648 GSH2485/2548 /2585	648 GSH2485/2548 /2585	661 GSH2433	661 GSH2433	662 GSH2432/2435	695 GSH2769/3019	701 GSH3038/2767	701 GSH3038&&276 7	701 GSH3038&&276 7	702 GSH3032/2838	702 GSH3038&&283 8	720 GSH3062
		5-Jun-12	5-Jun-12	5-Jun-12	5-Jun-12	5-Jun-12	28-Jun-12	1-Jun-12	5-Jun-12	31-May-12	3-May-12	3-May-12	4-Jul-12	4-Jul-12	8-May-12	21-Jun-12	7-May-12
		648						661		662	695	701			702		
		FOD9-4	CUM1-1	FOD8-1	CUP3	CUT1	CUM1-1	FOD5-1	FOD5-1	FOD5-6	FOD5-6	FOD5-8	FOD5-8	SWD3-3	FOD9-1	SOCC/SAR Vascular Plant Survey	FOD7

**FLORISTIC SUMMARY & ASSESSMENT**

<b>Species Diversity</b>	
Total Species:	368
Native Species:	278
Exotic Species	90
Total Taxa in Region (List Region, Source)	10000
% Regional Taxa Recorded	3.68%
Regionally Significant Species	0
S1-S3 Species	5
S4 Species	14
S5 Species	253

**Co-efficient of Conservatism and Floral Quality Index**

Co-efficient of Conservatism (CC) (average)		4.46
CC 0 to 3	lowest sensitivity	81
CC 4 to 6	moderate sensitivity	155
CC 7 to 8	high sensitivity	38
CC 9 to 10	highest sensitivity	4
Floral Quality Index (FQI)		74.37

**Presence of Weedy & Invasive Species**

mean weediness		-1.67
weediness = -1	low potential invasiveness	49
weediness = -2	moderate potential invasiveness	22
weediness = -3	high potential invasiveness	19

**Presence of Wetland Species**

average wetness value		0.71
upland		89
facultative upland		89
facultative		69
facultative wetland		76
obligate wetland		44

BOTANICAL NAME	COMMON NAME	720 GSH3062	720 GSH3062	721 GSH2590	721 GSH2590	722 GSH3067/2591	722 GSH3067/2591	723 GSH2399/3068/2843/2962	738 GSH2588/2587/2441	738 GSH2588/2587/2441	738 GSH2588/2587/2441	738 GSH2588/2587/2441	738 GSH2588/2587/2441	738 GSH2588&2587&2441	738 GSH2588&2587&2441	738 GSH2588&2587&2441	738 GSH2588&2587&2441	
		7-May-12	7-May-12	6-Jun-12	6-Jun-12	6-Jun-12	29-Jun-12	6-Jun-12	8-May-12	8-May-12	8-May-12	8-May-12	8-May-12	8-May-12	21-Jun-12	21-Jun-12	21-Jun-12	21-Jun-12
		720		721		722		723	738									
		CUM1-1	FOD6-5	FOD6-5	FOD7-1	SWD3-3	SWD3-3	FOD6-5	MAM2-2	CUT1k	FOD7	SWD4-1	CUM1-1	SOCC/SARVascular Plant Survey SWD	SOCC/SARVascular Plant Survey CUM	SOCC/SARVascular Plant Survey CUT	SOCC/SARVascular Plant Survey FOD	
<b>PTERIDOPHYTES</b>		<b>FERNS &amp; ALLIES</b>																
<b>Dennstaedtiaceae</b>		<b>Bracken Fern Family</b>																
<i>Pteridium</i>	<i>aquilinum var. latiusculum</i>																	
<b>Dryopteridaceae</b>		<b>Wood Fern Family</b>																
<i>Athyrium</i>	<i>filix-femina var. angustum</i>																	
<i>Cystopteris</i>	<i>bulbifera</i>																	
<i>Dryopteris</i>	<i>carthusiana</i>																	
<i>Dryopteris</i>	<i>intermedia</i>																	
<i>Dryopteris</i>	<i>marginalis</i>																	
<i>Onoclea</i>	<i>sensibilis</i>			R	R													
<i>Polystichum</i>	<i>acrostichoides</i>																	
<b>Equisetaceae</b>		<b>Horsetail Family</b>																
<i>Equisetum</i>	<i>arvense</i>																	
<i>Equisetum</i>	<i>hyemale var. affine</i>																	
<i>Equisetum</i>	<i>pratense</i>																	
<i>Equisetum</i>	<i>sp.</i>																	
<b>Lycopodiaceae</b>		<b>Clubmoss Family</b>																
<i>Lycopodium</i>	<i>obscurum</i>																	
<b>Osmundaceae</b>		<b>Royal Fern Family</b>																
<i>Osmunda</i>	<i>regalis</i>																	
<b>Thelypteridaceae</b>		<b>Marsh Fern Family</b>																
<i>Thelypteris</i>	<i>noveboracensis</i>																	
<i>Thelypteris</i>	<i>palustris var. pubescens</i>																	
<b>GYMNOSPERMS</b>		<b>CONIFERS</b>																
<b>Cupressaceae</b>		<b>Cedar Family</b>																
<i>Juniperus</i>	<i>virginiana</i>																	
<i>Juniperus</i>	<i>communis</i>																	
<i>Thuja</i>	<i>occidentalis</i>																	
<b>Pinaceae</b>		<b>Pine Family</b>																
<i>Picea</i>	<i>abies</i>																v	
<i>Abies</i>	<i>balsamea</i>																	
<i>Picea</i>	<i>glauca</i>																	
<i>Picea</i>	<i>pungens</i>																	
<i>Pinus</i>	<i>banksiana</i>																	
<i>Pinus</i>	<i>nigra</i>																	
<i>Pinus</i>	<i>strobus</i>																	
<i>Pinus</i>	<i>sylvestris</i>																	
<i>Pinus</i>	<i>resinosa</i>																	
<i>Tsuga</i>	<i>canadensis</i>																	
<b>Taxaceae</b>		<b>Yew Family</b>																
<i>Taxus</i>	<i>canadensis</i>																	
<b>DICOTYLED+D308ONS</b>		<b>DICOTS</b>																
<b>Aceraceae</b>		<b>Maple Family</b>																





















BOTANICAL NAME	COMMON NAME	720 GSH3062	720 GSH3062	721 GSH2590	721 GSH2590	722 GSH3067/2591	722 GSH3067/2591	723 GSH2399/3068/2843/2962	738 GSH2588/2587/2441	738 GSH2588/2587/2441	738 GSH2588/2587/2441	738 GSH2588/2587/2441	738 GSH2588/2587/2441	738 GSH2588&2587&2441	738 GSH2588&2587&2441	738 GSH2588&2587&2441	738 GSH2588&2587&2441	
		7-May-12	7-May-12	6-Jun-12	6-Jun-12	6-Jun-12	29-Jun-12	6-Jun-12	8-May-12	8-May-12	8-May-12	8-May-12	8-May-12	8-May-12	21-Jun-12	21-Jun-12	21-Jun-12	21-Jun-12
		720		721		722		723	738									
		CUM1-1	FOD6-5	FOD6-5	FOD7-1	SWD3-3	SWD3-3	FOD6-5	MAM2-2	CUT1k	FOD7	SWD4-1	CUM1-1	SOCC/SARVascular Plant Survey SWD	SOCC/SARVascular Plant Survey CUM	SOCC/SARVascular Plant Survey CUT	SOCC/SARVascular Plant Survey FOD	
<b>MONOCOTYLEDONS</b>		<b>MONOCOTS</b>																
<i>Alisma</i>	<i>plantago-aquatica</i>	Common Water-plantain																
<b>Araceae</b>		<b>Arum Family</b>																
<i>Arisaema</i>	<i>triphillum</i>		R	U	U		R	R										
<i>Calla</i>	<i>palustris</i>	Wild Calla																
<b>Cyperaceae</b>		<b>Sedge Family</b>																
<i>Carex</i>	<i>sp.</i>	Sedge species																
<i>Carex</i>	<i>albursina</i>	White Bear Sedge																
<i>Carex</i>	<i>amphibola</i>	Narrow-leaved Sedge																
<i>Carex</i>	<i>arctata</i>	Drooping Wood Sedge																
<i>Carex</i>	<i>bebbii</i>	Bebb's Sedge																
<i>Carex</i>	<i>blanda</i>	Woodland Sedge																
<i>Carex</i>	<i>comosa</i>	Bristly Sedge																
<i>Carex</i>	<i>crinita</i>	Fringed sedge																
<i>Carex</i>	<i>cristatella</i>	Crested Sedge																
<i>Carex</i>	<i>gracillima</i>	Graceful Sedge																
<i>Carex</i>	<i>granularis</i>	Meadow Sedge																
<i>Carex</i>	<i>grayi</i>	Gray's Sedge																
<i>Carex</i>	<i>interior</i>	Inland Sedge																
<i>Carex</i>	<i>intumescens</i>	Bladder Sedge																
<i>Carex</i>	<i>lupulina</i>	Hop Sedge																
<i>Carex</i>	<i>pedunculata</i>	Long-stalked Sedge																
<i>Carex</i>	<i>pensylvanica</i>	Pennsylvania Sedge																
<i>Carex</i>	<i>plantaginea</i>	Plantain-leaved Sedge																
<i>Carex</i>	<i>platyphylla</i>	Broad-leaved Sedge																
<i>Carex</i>	<i>projecta</i>	Necklace Sedge																
<i>Carex</i>	<i>punctata</i>	Dotted Sedge																
<i>Carex</i>	<i>radiata</i>	Radiate Sedge																
<i>Carex</i>	<i>retrorsa</i>	Retorse Sedge																
<i>Carex</i>	<i>rosea</i>	Stellate Sedge																
<i>Eleocharis</i>	<i>sp.</i>	Spikerush species																
<i>Carex</i>	<i>stipata</i>	Awl-fruited Sedge																
<i>Carex</i>	<i>stricta</i>	Tussock Sedge																
<i>Carex</i>	<i>tuckermanii</i>	Tuckerman's Sedge																
<i>Carex</i>	<i>vulpinoidea</i>	Fox Sedge																
<i>Schoenoplectus</i>	<i>atrovirens</i>	Dark-green Bulrush																
<i>Schoenoplectus</i>	<i>tabernaemontani</i>	American Great Bulrush/softs																
<i>Scirpus</i>	<i>cyperinus</i>	Wool-grass																
<b>Iridaceae</b>		<b>Iris Family</b>																
<i>Iris</i>	<i>versicolor</i>	Multi-coloured Blue-flag																
<i>Iris</i>	<i>sp.</i>	Iris species																
<b>Juncaceae</b>		<b>Rush Family</b>																
<i>Juncus</i>	<i>compressus</i>	Compressed Rush																







<b>BOTANICAL NAME</b>	<b>COMMON NAME</b>	720 GSH3062	720 GSH3062	721 GSH2590	721 GSH2590	722 GSH3067/2591	722 GSH3067/2591	723 GSH2399/3068 /2843/2962	738 GSH2588/2587 /2441	738 GSH2588/2587 /2441	738 GSH2588/2587 /2441	738 GSH2588/2587 /2441	738 GSH2588/2587 /2441	738 GSH2588&2587&2441	738 GSH2588&2587&2441	738 GSH2588&2587&2441	738 GSH2588&2587&2441	
		7-May-12	7-May-12	6-Jun-12	6-Jun-12	6-Jun-12	29-Jun-12	6-Jun-12	8-May-12	8-May-12	8-May-12	8-May-12	8-May-12	21-Jun-12	21-Jun-12	21-Jun-12	21-Jun-12	
		720		721		722		723	738									
		CUM1-1	FOD6-5	FOD6-5	FOD7-1	SWD3-3	SWD3-3	FOD6-5	MAM2-2	CUT1k	FOD7	SWD4-1	CUM1-1	SOCC/SARVascular Plant Survey SWD	SOCC/SARVascular Plant Survey CUM	SOCC/SARVascular Plant Survey CUT	SOCC/SARVascular Plant Survey FOD	

**FLORISTIC SUMMARY & ASSESSMENT**

<b>Species Diversity</b>	
Total Species:	368
Native Species:	278
Exotic Species	90
Total Taxa in Region (List Region, Source)	10000
% Regional Taxa Recorded	3.68%
Regionally Significant Species	0
S1-S3 Species	5
S4 Species	14
S5 Species	253

**Co-efficient of Conservatism and Floral Quality Index**

Co-efficient of Conservatism (CC) (average)		4.46
CC 0 to 3	lowest sensitivity	81
CC 4 to 6	moderate sensitivity	155
CC 7 to 8	high sensitivity	38
CC 9 to 10	highest sensitivity	4
Floral Quality Index (FQI)		74.37

**Presence of Weedy & Invasive Species**

mean weediness		-1.67
weediness = -1	low potential invasiveness	49
weediness = -2	moderate potential invasiveness	22
weediness = -3	high potential invasiveness	19

**Presence of Wetland Species**

average wetness value		0.71
upland		89
facultative upland		89
facultative		69
facultative wetland		76
obligate wetland		44

BOTANICAL NAME	COMMON NAME	738 GSH2588&258 7&2441	738 GSH2588&258 7&2441	738 GSH2588&258 7&2441	738 GSH2588&258 7&2441	738 GSH2588&258 7&2441	739 GSH2914	739 GSH2914	739 GSH2914	739 GSH2914	754 GSH2119	754 GSH2119	754 GSH2119	757 GSH1006	757 GSH1006	757 GSH1006	759 GSH2100
		3-Jul-12	3-Jul-12	3-Jul-12	3-Jul-12	3-Jul-12	3-May-12	5-Jul-12	5-Jul-12	5-Jul-12	2-May-12	2-May-12	2-May-12	1-Jun-11	25-Apr-12	25-Apr-12	20-Jul-11
							739				754			757			759
		FOD5-6	SWD4-1	FOD5-8	CUM1-1	CUT1	MAM2-2	MAM2-2	SWT2-2	FOD5-8	SWT2b SWD4-1	SWD6_3	MAM3_2	FOD6-5	FOD6-5	SWD2-2	CUP3-1
<b>PTERIDOPHYTES</b>		<b>FERNS &amp; ALLIES</b>															
<b>Dennstaedtiaceae</b>		<b>Bracken Fern Family</b>															
<i>Pteridium</i>	<i>aquilinum var. latiusculum</i>																
<b>Dryopteridaceae</b>		<b>Wood Fern Family</b>															
<i>Athyrium</i>	<i>filix-femina var. angustum</i>																
<i>Cystopteris</i>	<i>bulbifera</i>																
<i>Dryopteris</i>	<i>carthusiana</i>																
<i>Dryopteris</i>	<i>intermedia</i>														U		
<i>Dryopteris</i>	<i>marginalis</i>																
<i>Onoclea</i>	<i>sensibilis</i>											R			U		
<i>Polystichum</i>	<i>acrostichoides</i>																
<b>Equisetaceae</b>		<b>Horsetail Family</b>															
<i>Equisetum</i>	<i>arvense</i>																
<i>Equisetum</i>	<i>hyemale var. affine</i>																
<i>Equisetum</i>	<i>pratense</i>																
<i>Equisetum</i>	<i>sp.</i>																
<b>Lycopodiaceae</b>		<b>Clubmoss Family</b>															
<i>Lycopodium</i>	<i>obscurum</i>																
<b>Osmundaceae</b>		<b>Royal Fern Family</b>															
<i>Osmunda</i>	<i>regalis</i>																
<b>Thelypteridaceae</b>		<b>Marsh Fern Family</b>															
<i>Thelypteris</i>	<i>noveboracensis</i>																
<i>Thelypteris</i>	<i>palustris var. pubescens</i>																
<b>GYMNOSPERMS</b>		<b>CONIFERS</b>															
<b>Cupressaceae</b>		<b>Cedar Family</b>															
<i>Juniperus</i>	<i>virginiana</i>																
<i>Juniperus</i>	<i>communis</i>																
<i>Thuja</i>	<i>occidentalis</i>								R								
<b>Pinaceae</b>		<b>Pine Family</b>															
<i>Picea</i>	<i>abies</i>																√
<i>Abies</i>	<i>balsamea</i>																
<i>Picea</i>	<i>glauca</i>																√
<i>Picea</i>	<i>pungens</i>																
<i>Pinus</i>	<i>banksiana</i>																
<i>Pinus</i>	<i>nigra</i>																√
<i>Pinus</i>	<i>strobus</i>																
<i>Pinus</i>	<i>sylvestris</i>																
<i>Pinus</i>	<i>resinosa</i>																√
<i>Tsuga</i>	<i>canadensis</i>														U		
<b>Taxaceae</b>		<b>Yew Family</b>															
<i>Taxus</i>	<i>canadensis</i>																
<b>DICOTYLED+D308ONS</b>		<b>DICOTS</b>															
<b>Aceraceae</b>		<b>Maple Family</b>															







BOTANICAL NAME	COMMON NAME	738 GSH2588&258 7&2441	738 GSH2588&258 7&2441	738 GSH2588&258 7&2441	738 GSH2588&258 7&2441	738 GSH2588&258 7&2441	739 GSH2914	739 GSH2914	739 GSH2914	739 GSH2914	754 GSH2119	754 GSH2119	754 GSH2119	757 GSH1006	757 GSH1006	757 GSH1006	759 GSH2100
		3-Jul-12	3-Jul-12	3-Jul-12	3-Jul-12	3-Jul-12	3-May-12	5-Jul-12	5-Jul-12	5-Jul-12	2-May-12	2-May-12	2-May-12	1-Jun-11	25-Apr-12	25-Apr-12	20-Jul-11
							739				754			757			759
		FOD5-6	SWD4-1	FOD5-8	CUM1-1	CUT1	MAM2-2	MAM2-2	SWT2-2	FOD5-8	SWT2b SWD4-1	SWD6_3	MAM3_2	FOD6-5	FOD6-5	SWD2-2	CUP3-1
<b>Convolvulaceae</b>		<b>Morning-glory Family</b>															
<i>Convolvulus</i>	<i>arvensis</i>				F												
<b>Cornaceae</b>		<b>Dogwood Family</b>															
<i>Cornus</i>	<i>alternifolia</i>		R													R	
<i>Cornus</i>	<i>amomum ssp. obliqua</i>																
<i>Cornus</i>	<i>racemosa</i>	R						R	R		F						
<i>Cornus</i>	<i>sericea</i>					U		R	R		F						
<i>Cornus</i>	<i>rugosa</i>																
<b>Cucurbitaceae</b>		<b>Gourd Family</b>															
<i>Echinocystis</i>	<i>lobata</i>		R				R	R									
<b>Dipsacaceae</b>		<b>Teasel Family</b>															
<i>Dipsacus</i>	<i>fullonum ssp. sylvestris</i>																
<b>Elaeagnaceae</b>		<b>Oleaster Family</b>															
<i>Elaeagnus</i>	<i>angustifolia</i>																
<i>Elaeagnus</i>	<i>umbellata</i>																
<i>Shepherdia</i>	<i>canadensis</i>																
<b>Ericaceae</b>		<b>Heath Family</b>															
<i>Lotus</i>	<i>corniculatus</i>																√
<b>Euphorbiaceae</b>		<b>Spurge Family</b>															
<i>Acalypha</i>	<i>rhomboidea</i>																
<b>Fabaceae</b>		<b>Pea Family</b>															
<i>Lotus</i>	<i>corniculatus</i>																√
<i>Medicago</i>	<i>lupulina</i>																
<i>Medicago</i>	<i>Sativa</i>																
<i>Melilotus</i>	<i>alba</i>																
<i>Melilotus</i>	<i>officinalis</i>						R										
<i>Robinia</i>	<i>pseudo-acacia</i>																
<i>Trifolium</i>	<i>pratense</i>																
<i>Trifolium</i>	<i>sp.</i>																
<i>Trifolium</i>	<i>repens</i>																√
<i>Vicia</i>	<i>cracca</i>				F												
<b>Fagaceae</b>		<b>Beech Family</b>															
<i>Fagus</i>	<i>grandifolia</i>	U								R					F		
<i>Quercus</i>	<i>alba</i>																
<i>Quercus</i>	<i>macrocarpa</i>																
<i>Quercus</i>	<i>rubra</i>																
<b>Fumariaceae</b>		<b>Fumitory Family</b>															
<i>Dicentra</i>	<i>canadensis</i>															U	
<i>Dicentra</i>	<i>cucullaria</i>																
<b>Geraniaceae</b>		<b>Geranium Family</b>															
<i>Geranium</i>	<i>maculatum</i>									U		R					
<i>Geranium</i>	<i>robertianum</i>			R						R				√			

BOTANICAL NAME	COMMON NAME	738 GSH2588&258 7&2441	738 GSH2588&258 7&2441	738 GSH2588&258 7&2441	738 GSH2588&258 7&2441	738 GSH2588&258 7&2441	739 GSH2914	739 GSH2914	739 GSH2914	739 GSH2914	754 GSH2119	754 GSH2119	754 GSH2119	757 GSH1006	757 GSH1006	757 GSH1006	759 GSH2100	
		3-Jul-12	3-Jul-12	3-Jul-12	3-Jul-12	3-Jul-12	3-May-12	5-Jul-12	5-Jul-12	5-Jul-12	2-May-12	2-May-12	2-May-12	1-Jun-11	25-Apr-12	25-Apr-12	20-Jul-11	
								739				754			757			759
		FOD5-6	SWD4-1	FOD5-8	CUM1-1	CUT1	MAM2-2	MAM2-2	SWT2-2	FOD5-8	SWT2b SWD4-1	SWD6_3	MAM3_2	FOD6-5	FOD6-5	SWD2-2	CUP3-1	
<b>Grossulariaceae</b>		<b>Currant Family</b>																
<i>Ribes</i>	<i>americanum</i>	Wild Black Currant	F															
<i>Ribes</i>	<i>cynosbati</i>	Prickly Gooseberry					U											
<i>Ribes</i>	<i>lacustre</i>	Swamp Black Currant									U			U	R			
<i>Ribes</i>	<i>rubrum</i>	Red Currant																
<i>Ribes</i>	<i>triste</i>	Wild Red Currant																
<i>Ribes</i>	<i>sp.</i>	Currant species																
<b>Guttiferae</b>		<b>St. John's-wort Family</b>																
<i>Hypericum</i>	<i>perforatum</i>	Common St. John's-wort																
<i>Hypericum</i>	<i>punctatum</i>	Spotted St. John's-wort																
<b>Hamamelidaceae</b>		<b>Witch-hazel Family</b>																
<i>Hamamelis</i>	<i>virginiana</i>	Witch-hazel																
<b>Hydrophyllaceae</b>		<b>Water-leaf Family</b>																
<i>Hydrophyllum</i>	<i>virginianum</i>	Virginia Water-leaf													R			
<b>Juglandaceae</b>		<b>Walnut Family</b>																
<i>Carya</i>	<i>cordiformis</i>	Bitternut hickory																
<i>Carya</i>	<i>ovata var. ovata</i>	Shagbark Hickory																
<i>Carya</i>	<i>sp</i>	Hickory species																
<i>Juglans</i>	<i>cinerea</i>	Butternut	R	R														
<i>Juglans</i>	<i>nigra</i>	Black Walnut				R			R									
<b>Lamiaceae</b>		<b>Mint Family</b>																
<i>Clinopodium</i>	<i>vulgare</i>	Wild Basil																
<i>Leonurus</i>	<i>cardiaca ssp. cardiaca</i>	Common Motherwort																
<i>Lycopus</i>	<i>americanus</i>	Cut-leaved Water-horehound												√				
<i>Lycopus</i>	<i>uniflorus</i>	Northern Water-horehound																
<i>Mentha</i>	<i>arvensis</i>	American Wild Mint																
<i>Mentha</i>	<i>sp.</i>	species																
<i>Prunella</i>	<i>vulgaris ssp. vulgaris</i>	Heal-all															√	
<i>Scutellaria</i>	<i>lateriflora</i>	Mad-dog Skullcap																
<i>Satureja</i>	<i>vulgaris</i>	wild basil				F												
<b>Lauraceae</b>		<b>Laurel Family</b>																
<i>Lindera</i>	<i>benzoin</i>	Spicebush													F	D		
<b>Malvaceae</b>		<b>Mallow Family</b>																
<i>Abutilon</i>	<i>theophrasti</i>	Velvet-leaf																
<i>Malva</i>	<i>neglecta</i>	Cheeses																
<b>Montiaceae</b>		<b>Montia Family</b>																
<i>Claytonia</i>	<i>caroliniana</i>	Carolina Spring Beauty																
<i>Claytonia</i>	<i>virginica</i>	Virginia Spring Beauty																
<b>Menispermaceae</b>		<b>Moonseed Family</b>																
<i>Menispermum</i>	<i>canadense</i>	Moonseed																
<b>Oleaceae</b>		<b>Olive Family</b>																
<i>Fraxinus</i>	<i>americana</i>	White Ash			F					F					F		√	







BOTANICAL NAME		COMMON NAME		738 GSH2588&258 7&2441	738 GSH2588&258 7&2441	738 GSH2588&258 7&2441	738 GSH2588&258 7&2441	738 GSH2588&258 7&2441	739 GSH2914	739 GSH2914	739 GSH2914	739 GSH2914	754 GSH2119	754 GSH2119	754 GSH2119	757 GSH1006	757 GSH1006	757 GSH1006	759 GSH2100	
				3-Jul-12	3-Jul-12	3-Jul-12	3-Jul-12	3-Jul-12	3-May-12	5-Jul-12	5-Jul-12	5-Jul-12	5-Jul-12	2-May-12	2-May-12	2-May-12	1-Jun-11	25-Apr-12	25-Apr-12	20-Jul-11
									739					754			757			759
				FOD5-6	SWD4-1	FOD5-8	CUM1-1	CUT1	MAM2-2	MAM2-2	SWT2-2	FOD5-8	SWT2b SWD4-1	SWD6_3	MAM3_2	FOD6-5	FOD6-5	SWD2-2	CUP3-1	
<i>Potentilla</i>	<i>recta</i>	Rough-fruited Cinquefoil																		
<i>Prunus</i>	<i>avium</i>	Sweet Cherry																		
<i>Prunus</i>	<i>cerasus</i>	Sour Cherry																		
<i>Prunus</i>	<i>pensylvanica</i>	Pin Cherry					R													
<i>Prunus</i>	<i>serotina</i>	Black Cherry	U		R							U					R			
<i>Prunus</i>	<i>virginiana</i>	Choke Cherry	R		F							F		U			F			
<i>Prunus</i>	<i>sp.</i>	Cherry species																		
<i>Pyrus</i>	<i>communis</i>	Common Pear																		
<i>Physocarpus</i>	<i>opulifolius</i>	Ninebark																		
<i>Rosa</i>	<i>blanda</i>	Smooth Rose																		
<i>Rosa</i>	<i>multiflora</i>	Multiflora Rose																		
<i>Rosa</i>	<i>sp.</i>	Rose species																		
<i>Rubus</i>	<i>allegheensis</i>	Alleghany Blackberry	U																	
<i>Rubus</i>	<i>canadensis</i>	Millspaugh's Blackberry																		
<i>Rubus</i>	<i>idaeus</i>	Red Raspberry	U							R	R						U			
<i>Rubus</i>	<i>occidentalis</i>	Black raspberry						U		R	U						U			
<i>Rubus</i>	<i>odoratus</i>	Purple-fl. Raspberry																		
<i>Rubus</i>	<i>pubescens</i>	Dwarf Raspberry																		
<i>Rubus</i>	<i>sp.</i>	Raspberry species																		
<i>Sorbus</i>	<i>aucuparia</i>	Eur. Mountain Ash																		
<b>Rubiaceae</b>		<b>Madder Family</b>																		
<i>Cephalanthus</i>	<i>occidentalis</i>	Eastern Buttonbush																		
<i>Galium</i>	<i>aparine</i>	Cleavers																		
<i>Galium</i>	<i>asprellum</i>	Rough Bedstraw																		
<i>Galium</i>	<i>mollugo</i>	White Bedstraw				U				R										
<i>Galium</i>	<i>triflorum</i>	Sweet-scented Bedstraw																		
<i>Galium</i>	<i>sp.</i>	Bedstraw species																		
<i>Mitchella</i>	<i>repens</i>	Creeping Partridge-berry																		
<b>Rutaceae</b>		<b>Rue Family</b>																		
<i>Zanthoxylum</i>	<i>americanum</i>	American Prickly-ash																		
<b>Salicaceae</b>		<b>Willow Family</b>																		
<i>Populus</i>	<i>alba</i>	Silver Poplar																		
<i>Populus</i>	<i>balsamifera ssp. balsamifera</i>	Balsam Poplar																		
<i>Populus</i>	<i>deltoides ssp. deltoides</i>	Eastern Cottonwood					U			R	R	F	U						√	
<i>Populus</i>	<i>grandidentata</i>	Large-tooth Aspen																R		
<i>Populus</i>	<i>tremuloides</i>	Trembling Aspen	R		R							R								
<i>Salix</i>	<i>sp.</i>	Willow species																		
<i>Salix</i>	<i>alba</i>	White Willow																	√	
<i>Salix</i>	<i>amygdaloides</i>	Peach-leaved Willow																		
<i>Salix</i>	<i>bebbiana</i>	Long-beaked Willow																		
<i>Salix</i>	<i>discolor</i>	Pussy Willow																	√	
<i>Salix</i>	<i>eriocephala</i>	Missouri Willow																	√	
<i>Salix</i>	<i>exigua</i>	Sandbar Willow												U					√	









<b>BOTANICAL NAME</b>	<b>COMMON NAME</b>	738 GSH2588&258 7&2441	738 GSH2588&258 7&2441	738 GSH2588&258 7&2441	738 GSH2588&258 7&2441	738 GSH2588&258 7&2441	739 GSH2914	739 GSH2914	739 GSH2914	739 GSH2914	754 GSH2119	754 GSH2119	754 GSH2119	757 GSH1006	757 GSH1006	757 GSH1006	759 GSH2100
		3-Jul-12	3-Jul-12	3-Jul-12	3-Jul-12	3-Jul-12	3-May-12	5-Jul-12	5-Jul-12	5-Jul-12	2-May-12	2-May-12	2-May-12	1-Jun-11	25-Apr-12	25-Apr-12	20-Jul-11
							739			754			757			759	
		FOD5-6	SWD4-1	FOD5-8	CUM1-1	CUT1	MAM2-2	MAM2-2	SWT2-2	FOD5-8	SWT2b SWD4-1	SWD6_3	MAM3_2	FOD6-5	FOD6-5	SWD2-2	CUP3-1

**FLORISTIC SUMMARY & ASSESSMENT**

<b>Species Diversity</b>	
Total Species:	368
Native Species:	278
Exotic Species	90
Total Taxa in Region (List Region, Source)	10000
% Regional Taxa Recorded	3.68%
Regionally Significant Species	0
S1-S3 Species	5
S4 Species	14
S5 Species	253

**Co-efficient of Conservatism and Floral Quality Index**

Co-efficient of Conservatism (CC) (average)		4.46
CC 0 to 3	lowest sensitivity	81
CC 4 to 6	moderate sensitivity	155
CC 7 to 8	high sensitivity	38
CC 9 to 10	highest sensitivity	4
Floral Quality Index (FQI)		74.37

**Presence of Weedy & Invasive Species**

mean weediness		-1.67
weediness = -1	low potential invasiveness	49
weediness = -2	moderate potential invasiveness	22
weediness = -3	high potential invasiveness	19

**Presence of Wetland Species**

average wetness value		0.71
upland		89
facultative upland		89
facultative		69
facultative wetland		76
obligate wetland		44



# Appendix I

## Wildlife Species List



## Appendix I: Incidental Wildlife - Breeding Birds

Common Name	Scientific Name	Status							Area-sensitive (OMNR <sup>c</sup> )	Significant in Region 6 (south-central)	Significant in Region 7 (south)	Huron	
		Species at Risk (national) <sup>a</sup>	SARA (Species at Risk Act) status	SARA Schedule	Species at Risk (SARO) <sup>a</sup>	Provincially Rare (NHIC breeding season SRANK) <sup>b</sup>	Identified in Partners in Flight Ontario BCR 13 Landbird Conservation Plan	Level				Habitat	
American Crow	<i>Corvus brachyrhynchos</i>												
American Goldfinch	<i>Carduelis tristis</i>											Level 3	Open Country
American Pipit	<i>Anthus rubescens</i>												
American Robin	<i>Turdus migratorius</i>												
American Tree Sparrow	<i>Spizella arborea</i>												
American Woodcock	<i>Scolopax minor</i>											Level 4	Forest
Baltimore Oriole	<i>Icterus galbula</i>						√						
Belted Kingfisher	<i>Ceryle alcyon</i>						√						
Black-and-white Warbler	<i>Mniotilta varia</i>							A				Level 3	Forest
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>						√					Level 2	Forest
Black-capped Chickadee	<i>Poecile atricapillus</i>											Level 4	Forest
Blackpoll Warbler	<i>Dendroica striata</i>												
Blue Jay	<i>Cyanocitta cristata</i>												
Blue-winged Warbler	<i>Vermivora pinus</i>						√					Level 1	Forest
Brown Thrasher	<i>Toxostoma rufum</i>						√					Level 1	Open Country
Brown-headed Cowbird	<i>Molothrus ater</i>												
Canada Goose	<i>Branta canadensis</i>												
Cedar Waxwing	<i>Bombycilla cedrorum</i>												
Chipping Sparrow	<i>Spizella passerina</i>												
Common Grackle	<i>Quiscalus quiscula</i>												
Common Yellowthroat	<i>Geothlypis trichas</i>												
Cooper's Hawk	<i>Accipiter cooperi</i>	NAR						A				Level 3	Forest
Dark-eyed Junco	<i>Junco hyemalis</i>								Y	Y			
Downy Woodpecker	<i>Picoides pubescens</i>												
Eastern Kingbird	<i>Tyrannus tyrannus</i>						√					Level 3	Open Country
Eastern Phoebe	<i>Sayornis phoebe</i>											Level 3	Forest
Eastern Wood-Pewee	<i>Contopus virens</i>						√						
Field Sparrow	<i>Spizella pusilla</i>						√					Level 3	Open Country
Gray Catbird	<i>Dumetella carolinensis</i>											Level 4	Forest
Great Blue Heron	<i>Ardea herodias</i>												
Great Crested Flycatcher	<i>Myiarchus crinitus</i>												
Hairy Woodpecker	<i>Picoides villosus</i>							A					
Horned Lark	<i>Eremophila alpestris</i>											Level 3	Open Country
House Wren	<i>Troglodytes aedon</i>												
Indigo Bunting	<i>Passerina cyanea</i>												
Killdeer	<i>Charadrius vociferus</i>												
Magnolia Warbler	<i>Dendroica magnolia</i>							A		Y		Level 1	Forest
Mallard	<i>Anas platyrhynchos</i>												
Mourning Dove	<i>Zenaidura macroura</i>												
Northern Cardinal	<i>Cardinalis cardinalis</i>												
Northern Flicker	<i>Colaptes auratus</i>						√						
Northern Harrier	<i>Circus cyaneus</i>	NAR					√	A				Level 4	Marsh
Ovenbird	<i>Seiurus aurocapillus</i>							A				Level 4	Forest
Pileated Woodpecker	<i>Dryocopus pileatus</i>							A				Level 2	Forest
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>											Level 2	Forest
Red-eyed Vireo	<i>Vireo olivaceus</i>												
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	THR	THR	Schedule 1	SC	S3	√					Level 1	Forest
Red-tailed Hawk	<i>Buteo jamaicensis</i>	NAR											
Red-winged Blackbird	<i>Agelaius phoeniceus</i>												
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>						√						
Ruby-crowned Kinglet	<i>Regulus calendula</i>								Y	Y		Level 4	Forest
Ruby-throated Hummingbird	<i>Archilochus colubris</i>											Level 3	Forest
Ruffed Grouse	<i>Bonasa umbellus</i>											Level 3	Forest
Rusty Blackbird	<i>Euphagus carolinus</i>	SC	SC	Schedule 1					Y				
Savannah Sparrow	<i>Passerculus sandwichensis</i>						√	A				Level 1	Open Country
Snow Bunting	<i>Plectrophenax nivalis</i>												
Song Sparrow	<i>Melospiza melodia</i>												
Swamp Sparrow	<i>Melospiza georgiana</i>											Level 2	Marsh
Tree Swallow	<i>Tachycineta bicolor</i>												
Trumpeter Swan	<i>Cygnus buccinator</i>	NAR				S2S3							
Turkey Vulture	<i>Cathartes aura</i>											Level 3	Forest
Vesper Sparrow	<i>Poocetes gramineus</i>						√					Level 2	Open Country
Warbling Vireo	<i>Vireo gilvus</i>												
White-breasted Nuthatch	<i>Sitta carolinensis</i>							A					
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>												
White-throated Sparrow	<i>Zonotrichia albicollis</i>											Level 2	Forest
Wild Turkey	<i>Meleagris gallopavo</i>												
Willow Flycatcher	<i>Empidonax traillii</i>						√						
Wood Duck	<i>Aix sponsa</i>											Level 4	Forest
Wood Thrush	<i>Hylocichla mustelina</i>						√					Level 4	Forest
Yellow Warbler	<i>Dendroica petechia</i>												
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>							A				Level 1	Forest
Yellow-rumped Warbler	<i>Dendroica coronata</i>									Y		Level 4	Forest
Yellow-throated Vireo	<i>Vireo flavifrons</i>							A					

### KEY

<sup>a</sup> National Species at Risk are those listed by COSEWIC = Committee on the Status of Endangered Wildlife in Canada

Provincial Species at Risk are those listed by COSSARO = Committee on the Status of Species at Risk in Ontario  
END = Endangered, THR = Threatened, SC = Special Concern

<sup>b</sup> SRANK (from Natural Heritage Information Centre) shown for breeding status if: S1 (Critically Imperiled, often < 5 occurrences), S2 (Imperiled, often < 20 occurrences), S3 (Vulnerable, often 80 or fewer), S3S4 (uncertain between S3 and S4), or T (tracked species) that are S4 or S5; SRANK not shown if: S4 (apparently secure, uncommon), S5 (secure, common).

Area-sensitive sources:

<sup>c</sup> Ontario Ministry of Natural Resources (OMNR). 2000. Significant Wildlife Habitat Technical Guide (Appendix G). 151 p plus appendices.

<sup>d</sup> Ontario Ministry of Natural Resources (OMNR). 1993 (Revised 1994, 2002 draft). Ontario Wetland Evaluation System, Southern Manual. 3rd Edition. NEST Technical Manual TM-002. 173 pp.

Appendix I: Incidental Wildlife

Taxon	Common Name	Scientific Name	Status					Tracked by NHIC	
			G Rank <sup>1</sup>	S Rank <sup>2</sup>	COSEWIC	SARA	SARA		MNR/SARO
Crustaceans	Chimney Crayfish	<i>Cambarus diogenes</i>	G5	S3					
Hemiptera	Annual Cicada								
Herpetofauna	Eastern Newt/Red-spotted Newt	<i>Notophthalmus viridescens</i>	G5T5	S5					
	Eastern Red-backed Salamander	<i>Plethodon cinereus</i>	G5	S5					
	American Toad	<i>Bufo (Anaxyrus) americanus</i>	G5	S5					
	Spring Peeper	<i>Pseudacris crucifer</i>	G5	S5					
	Green Frog	<i>Rana (Lithobates) clamitans</i>	G5	S5					
	Northern Leopard Frog	<i>Rana (Lithobates) pipiens</i>	G5	S5	NAR				
	Wood Frog	<i>Rana (Lithobates) sylvatica</i>	G5	S5					
Lepidoptera	Eastern Comma	<i>Polygonia comma</i>	G5	S5					
	Grey Comma	<i>Polygonia progne</i>	G4G5	S5					
	Milbert's Tortoiseshell	<i>Aglais milberti</i>	G5	S5					
	Red Admiral	<i>Vanessa atalanta</i>	G5	S5					
	Red-spotted Purple	<i>Limenitis arthemis astyanax</i>	G5T5	S5					
	Monarch	<i>Danaus plexippus</i>	G5	S2N,S4B	SC	SC	Schedule 1	SC	√
	Giant Swallowtail	<i>Papilio cresphontes</i>	G5	S3					√
	Eastern Tiger Swallowtail	<i>Papilio glaucus</i>	G5	S5					
	Cabbage White	<i>Pieris rapae</i>	G5	SNA					
	Clouded Sulphur	<i>Colias philodice</i>	G5	S5					
	Orange Sulphur	<i>Colias eurytheme</i>	G5	S5					
Mammals	White-tailed Deer	<i>Odocoileus virginianus</i>	G5	S5					
	Coyote	<i>Canis latrans</i>	G5	S5					
	Red Fox	<i>Vulpes vulpes</i>	G5	S5					
	Raccoon	<i>Procyon lotor</i>	G5	S5					
	Eastern Cottontail	<i>Sylvilagus floridanus</i>	G5	S5					
	Eastern Chipmunk	<i>Tamias striatus</i>	G5	S5					
	Groundhog/Woodchuck	<i>Marmota monax</i>	G5	S5					
	Gray Squirrel	<i>Sciurus carolinensis</i>	G5	S5					
	Meadow Vole	<i>Microtus pennsylvanicus</i>	G5	S5					
Odonata	Common Green Darner	<i>Anax junius</i>	G5	S5					
	Yellow-legged Meadowhawk	<i>Sympetrum vicinum</i>	G5	S5					
	Ebony Jewelwing	<i>Calopteryx maculata</i>	G5	S5					
Reptiles	Eastern Gartersnake	<i>Thamnophis sirtalis sirtalis</i>	G5T5	S5					

<sup>1</sup> **G-rank:** G rank Global ranks are assigned by a consensus of the network of CDCs, scientific experts, and The Nature Conservancy to designate a rarity rank based on the range-wide status of a species, subspecies or variety.  
G1 Extremely rare; usually 5 or fewer occurrences in the overall range or very few remaining individuals; or because of some factor(s) making it especially vulnerable to extinction.  
G2 Very rare; usually between 5 and 20 occurrences in the overall range or with many individuals in fewer occurrences; or because of some factor(s) making it vulnerable to extinction.  
G3 Rare to uncommon; usually between 20 and 100 occurrences; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances.  
G4 Common; usually more than 100 occurrences; usually not susceptible to immediate threats.  
G5 Very common; demonstrably secure under present conditions  
G? Not Yet Ranked; or if following a ranking, Rank Uncertain (e.g. G3?). S? Species have not had a rank assigned.  
T Denotes that the rank applies to a subspecies or variety.

<sup>2</sup> **S-rank:** The Natural Heritage provincial ranking system (provincial S-rank) is used by the MNR Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. Definitions are as follows:  
S1 Extremely rare in Ontario; usually 5 or fewer occurrences in the province or very few remaining individuals; often especially vulnerable to extirpation.  
S2 Very rare in Ontario; usually between 5 and 20 occurrences in the province or with many individuals in fewer occurrences; often susceptible to extirpation.  
S3 Rare to uncommon in Ontario; usually between 20 and 100 occurrences in the province; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances.  
S4 Most species with an S3 rank are assigned to the watch list, unless they have a relatively high global rank.  
S5 Common and apparently secure in Ontario; usually with more than 100 occurrences in the province.  
SNA Very common and demonstrably secure in Ontario.  
SNA Not Applicable —A conservation status rank is not applicable because the species is not a suitable target for conservation activities