Environment



Varna Wind, Inc. **Bluewater Wind Energy Centre**

Natural Heritage Assessment and Environmental Impact Study Report Second Amendment

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Glossary of Terms

Area of Investigation	Area encompasses by 120 m setback from Project Location boundary
CA	Conservation Authority
EIS	Environmental Impact Study
MOE	Ministry of Environment
MNR	Ministry of Natural Resources
NHA	. Natural Heritage Assessment
O. Reg. 359/09	Ontario Regulation 359/09
POI	Point of Interconnect
Project Location	The area encompassing all construction activities and project components
Project Study Area	Wind Energy Centre Study Area and Transmission Line Study Area
REA	Renewable Energy Approval

1. Introduction

Varna Wind, Inc., a wholly owned subsidiary of NextEra Energy Canada, ULC (NextEra) is proposing to construct a wind energy centre project in the Municipalities of Bluewater and Huron East in Huron County, Ontario. AECOM Canada Ltd. (AECOM) was retained by NextEra to prepare a Natural Heritage Assessment (NHA) and Environmental Impact Study (EIS) for the proposed Bluewater Wind Energy Centre (the Project), in accordance with the requirements of the Renewable Energy Approval (REA) process and O. Reg. 359/09.

The Ontario Ministry of Natural Resources (MNR) issued a confirmation letter (**Appendix A**) for the Bluewater Wind Energy Centre Natural Heritage Assessment and Environmental Impact Study Report (AECOM, 2012) on March 28, 2012. AECOM later prepared a Natural Heritage Assessment and Environmental Impact Study Report Amendment (AECOM, 2013) in order to fulfill the requirements of the Renewable Energy Approval (REA) process and O. Reg. 359/09 with respect to modifications to the Project Location proposed after the original submission of the NHA and EIS to MNR. The MNR issued a confirmation letter (**Appendix A**) for the Bluewater Wind Energy Centre Natural Heritage Assessment and Environmental Impact Study Report Amendment (AECOM, 2013) on January 11, 2013. The Ministry of Environment (MOE) issued a Renewable Energy Approval (No. 7483-94DPRF) for the Project on April 22, 2013. The Natural Heritage Assessment and Environmental Impact Study Report and the first Amendment are hereafter collectively referred to as the approved NHA and EIS.

This NHA Amendment has been prepared as a modification to the approved NHA and EIS in accordance with the requirements of the REA process and O. Reg. 359/09, with respect to modifications to the Project Location proposed after MNR confirmation of the NHA and EIS, and after MOE issued the REA (**Figure 1**).

1.1 Overview of Project Changes

All of the proposed Project Location modifications are summarized in **Table 1**. For each proposed modification, a map showing the revised Project Location and associated 120 m Area of Investigation (dated August 2013), referenced against the Project Location and associated 120 m Area of Investigation in the approved NHA and EIS (dated January 2013) is included in this NHA Amendment (refer to **Table 1** for corresponding Figure numbers). Features (*i.e.*, woodlands, wetlands, significant wildlife habitat and/or Areas of Natural and Scientific Interest) identified in the approved NHA and EIS are provided in the table below for each Natural Area potentially affected by the proposed modifications. Changes in the minimum distance from Features within 120 m of each modification to the Project Location are also provided in the table below.

Proposed Modification	Rationale for Proposed Modification	Features in Proximity to Proposed Modification	Мар
A1: Addition of road to Turbine 7 to travel north towards Crystal Springs Road.	New infrastructure or construction disturbance area added or changed to optimize project design/ constructability	 Access road remains within 120 m of Natural Area 544. Features within 120 m of this modification include: Woodland Feature T (reduced to 5 m) Candidate Significant Wildlife Habitat: Bat Maternity Colony BMC-03 (reduced to 5 m) Generalized Candidate Significant Wildlife Habitat: Species of Conservation Concern Habitat (reduced to 5 m) 	Figure 1A
		 Access road remains within 120 m of Natural Area 541. Features within 120 m of this modification include: Woodland Feature Q (no change) Wetland Feature 1 (no change) Candidate Significant Wildlife Habitat: Bat Maternity Colony BMC-04 (no change) Generalized Candidate Significant Wildlife Habitat: Species of Conservation Concern Habitat (no change) 	

Table 1	Modifications to the Bluewater	Wind Energy Centre Project Location
		wind Lifergy Centre Project Location

Proposed Modification	Rationale for Proposed Modification	Features in Proximity to Proposed Modification	Мар
A2: Removal of construction disturbance area to the southeast of Turbine 10.	Construction disturbance area modified to reduce or eliminate impacts to CA regulation limit	 Turbine construction disturbance area remains with 120 m of Natural Area 518. Features within 120 m of this modification include: Woodland Feature N (no change) Generalized Candidate Significant Wildlife Habitat: Woodland Raptor Nesting Habitat and Species of Conservation Concern Habitat (no change) 	Figure 1A
		 Turbine construction disturbance area remains within 120 m of Natural Area 525. Features within 120 m of this modification include: Woodland Feature O (no change) Generalized Candidate Significant Wildlife Habitat: Species of Conservation Concern Habitat (no change) 	
B1: Addition of construction disturbance area to the north of Turbine 32.	New infrastructure or construction disturbance area added or changed to optimize project design/ constructability	 Turbine construction disturbance area remains within 120 m of Natural Area 534. Features within 120 m of this modification include: Wetland Feature 7 (no change) Woodland Feature AK (no change) Candidate Significant Wildlife Habitat: Amphibian Woodland Breeding Habitat AWO-10 (no change) Bat Maternity Colony BMC-14 (no change) Generalized Candidate Significant Wildlife Habitat: Amphibian Woodland Breeding Habitat, Seeps and Springs, and Species of Conservation Concern Habitat (no change) 	Figure 1B
B2: Addition of construction disturbance area to the east of Turbine 41.	New infrastructure or construction disturbance area added or changed to optimize project design/ constructability	 Turbine construction disturbance area remains within 120 m of Natural Area 514. Features within 120 m of this modification include: Wetland Feature 6 (no change) Woodland Feature AJ (no change) Candidate Significant Wildlife Habitat: Bat Maternity Colony BMC-15 (no change) Generalized Candidate Significant Wildlife Habitat: Bat Maternity Colony and Species of Conservation Concern Habitat (no change) 	Figure 1B
C1: Addition of construction disturbance area to the west of Turbine 2.	New infrastructure or construction disturbance area added or changed to optimize project design/ constructability	None (no Natural Areas are within 120 m of this modification).	Figure 1C
C2: Addition of construction disturbance area to the south and east of Turbine 14.	New infrastructure or construction disturbance area added or changed to optimize project design/ constructability	None (no Natural Areas are within 120 m of this modification).	Figure 1C
D1: Removal of construction disturbance area to the southwest of Turbine 3.	Construction disturbance area modified to reduce or eliminate impacts to CA regulation limit	None (no Natural Areas are within 120 m of this modification).	Figure 1D
D2: Addition of construction disturbance area to the south of Turbine 17.	New infrastructure or construction disturbance area added or changed to optimize project design/ constructability	 Turbine construction disturbance area remains within 120 m of Natural Area 463. Features within 120 m of this modification include: Woodland Feature F (no change) Candidate Significant Wildlife Habitat: Amphibian Woodland Breeding Habitat AWO-01 (no change) Bat Maternity Colony BMC-07 (no change) Generalized Candidate Significant Wildlife Habitat: Amphibian Woodland Breeding Habitat and Species of Conservation Concern Habitat (no change) 	Figure 1D
D3: Addition of construction disturbance area to the east of Turbine 4.	New infrastructure or construction disturbance area added or changed to optimize project design/ constructability	None (no Natural Areas are within 120 m of this modification).	Figure 1D

Table 1. Modifications to the Bluewater Wind Energy Centre Project Location

Table 1. Modifications to the Bluewater Wind Energy Centre Project Location

Proposed Modification	Rationale for Proposed Modification	Features in Proximity to Proposed Modification	Мар
E1: Addition of construction disturbance area for the transmission line in the municipal road right-of-way along Centennial Road.	New infrastructure or construction disturbance area added or changed to optimize project design/ constructability	 Transmission line construction disturbance area remains within 120 m of Natural Area 510. Features within 120 m of this modification include: Wetland Feature 5 (no change) Woodland Feature Y (no change) Generalized Candidate Significant Wildlife Habitat: Mature Forest Stand, Amphibian Woodland Breeding Habitat, Seeps and Springs, and Species of Conservation Concern Habitat (no change) 	
E2: Addition of construction disturbance area for the transmission line in the municipal road right-of-way along Centennial Road.	New infrastructure or construction disturbance area added or changed to optimize project design/ constructability	 Transmission line construction disturbance area remains within 120 m of Natural Area 488. Features within 120 m of this modification include: Wetland Feature 6 (no change) Woodland Feature AJ (no change) Generalized Candidate Significant Wildlife Habitat: Bat Maternity Colony (no change) Transmission line construction disturbance area is within 120 m of Natural Area 514. Features within 120 m of this modification include: Wetland Feature 6 (no change) Woodland Feature AJ (no change) Woodland Feature AJ (no change) Candidate Significant Wildlife Habitat: Bat Maternity Colony BMC-15 (no change) Generalized Candidate Significant Wildlife Habitat: Bat Maternity Colony, Mature Forest Stand and Species of Conservation Concern Habitat (no change) 	Figure 1E
E3: Addition of construction disturbance area to the north of Turbine 36.	New infrastructure or construction disturbance area added or changed to optimize project design/ constructability	None (no Natural Areas are within 120 m of this modification).	Figure 1E
E4: Addition of construction disturbance area for the transmission line on private property to the north of Centennial Road.	New infrastructure or construction disturbance area added or changed to optimize project design/ constructability	 Transmission line construction disturbance area remains within 120 m of Natural Area. Features within 120 m of this modification include: Woodland Feature AL (no change) Generalized Candidate Significant Wildlife Habitat: Bat Maternity Colony and Species of Conservation Concern Habitat (no change) 	Figure 1E
E5: Addition of construction disturbance area for the transmission line in the municipal road right-of-way along Centennial Road.	New infrastructure or construction disturbance area added or changed to optimize project design/ constructability	 Transmission line construction disturbance area remains within 120 m of Natural Area 520. Features within 120 m of this modification include: Woodland Feature AL (no change) Generalized Candidate Significant Wildlife Habitat: Bat Maternity Colony and Species of Conservation Concern Habitat (no change) Transmission line construction disturbance area remains within 120 m of Natural Area 494. Features within 120 m of this modification include: Wetland Feature 7 (no change) Woodland Feature AL (no change) Generalized Candidate Significant Wildlife Habitat: Amphibian Wetland Breeding Habitat, Bat Maternity Colony and Species of Conservation Concern Habitat (no change) 	Figure 1E
F1: Addition of construction	New infrastructure or	 Transmission line construction disturbance area remains within 120 m of Natural Area 512. Features within 120 m of this modification include: Woodland Feature AL (no change) Generalized Candidate Significant Wildlife Habitat: Bat Maternity Colony and Species of Conservation Concern Habitat (no change) Transmission line construction disturbance area remains within 120 m of 	Figure 1F
disturbance area for the transmission line in the municipal road right-of-way along Centennial Road.	construction disturbance area added or changed to optimize project design/ constructability	 Natural Area 494. Features within 120 m of this modification include: Wetland Feature 7 (no change) Woodland Feature AL (no change) Generalized Candidate Significant Wildlife Habitat: Amphibian Wetland Breeding Habitat, Bat Maternity Colony and Species of Conservation Concern Habitat (no change) Transmission line construction disturbance area remains within 120 m of 	
		 Natural Area 512. Features within 120 m of this modification include: Woodland Feature AL (no change) Generalized Candidate Significant Wildlife Habitat: Bat Maternity Colony and Species of Conservation Concern Habitat (no change) 	

Proposed Modification	Rationale for Proposed Modification	Features in Proximity to Proposed Modification	Мар
F2: Addition of construction disturbance area for the transmission line on private property to the north of Centennial Road.	New infrastructure or construction disturbance area added or changed to optimize project design/ constructability	None (no Natural Areas are within 120 m of this modification).	Figure 1F
F3: Addition of construction disturbance area for the transmission line in the municipal road right-of-way along Centennial Road.	New infrastructure or construction disturbance area added or changed to optimize project design/ constructability	 Transmission line construction disturbance area remains within 120 m of Natural Area 551. Features within 120 m of this modification include: Woodland Feature AO (no change) Candidate Significant Wildlife Habitat: Bird Species of Conservation Concern (Red-headed Woodpecker) Habitat SCB-02 (no change) Generalized Candidate Significant Wildlife Habitat: Bat Maternity Colony and Species of Conservation Concern Habitat (no change) Transmission line construction disturbance area remains within 120 m of Natural Area 552. Features within 120 m of this modification include: Woodland Feature AO (no change) Generalized Candidate Significant Wildlife Habitat: Bat Maternity Colony and Species of Conservation Concern Habitat (no change) 	Figure 1F
G1: Addition of construction disturbance area for the transmission line in the municipal road right-of-way along Centennial Road.	New infrastructure or construction disturbance area added or changed to optimize project design/ constructability	 Transmission line construction disturbance area remains within 120 m of Natural Area 552. Features within 120 m of this modification include: Woodland Feature AO (no change) Generalized Candidate Significant Wildlife Habitat: Bat Maternity Colony and Species of Conservation Concern Habitat (no change) Transmission line construction disturbance area is within 120 m of 	Figure 1G
G2: Addition of construction disturbance area for the transmission line in the municipal road right-of-way along Centennial Road.	New infrastructure or construction disturbance area added or changed to optimize project design/ constructability	 Natural Area 553. No significant features are within Natural Area 553. Transmission line construction disturbance area remains within 120 m of Natural Area 556. Features within 120 m of this modification include: Woodland Feature AP (no change) Generalized Candidate Significant Wildlife Habitat: Bat Maternity Colony and Species of Conservation Concern Habitat (no change) Transmission line construction disturbance area remains within 120 m of Natural Area 555. Features within 120 m of this modification include: Woodland Feature AP (no change) Generalized Candidate Significant Wildlife Habitat: Bat Maternity Colony and Species of Conservation Concern Habitat (no change) Generalized Candidate Significant Wildlife Habitat: Bat Maternity Colony and Species of Conservation Concern Habitat (no change) 	Figure 1G
G3: Addition of construction disturbance area for the transmission line in the municipal road right-of-way along Centennial Road.	New infrastructure or construction disturbance area added or changed to optimize project design/ constructability	None (no Natural Areas are within 120 m of this modification).	Figure 1G
G4: Addition of construction disturbance area for the transmission line in the municipal road right-of-way along Centennial Road.	New infrastructure or construction disturbance area added or changed to optimize project design/ constructability	None (no Natural Areas are within 120 m of this modification).	Figure 1G
H1: Addition of construction disturbance area for the transmission line on private property to the north of Centennial Road.		None (no Natural Areas are within 120 m of this modification).	Figure 1H
H2: Addition of construction disturbance area for the transmission line on private properties to the north of Centennial Road.		None (no Natural Areas are within 120 m of this modification).	Figure 1H

Proposed Modification	Rationale for Proposed Modification	Features in Proximity to Proposed Modification	Мар
H3: Addition of construction disturbance area for the transmission line in the municipal road right-of-way along Hensell Road.	New infrastructure or construction disturbance area added or changed to optimize project design/ constructability	 Transmission line construction disturbance area remains within 120 m of Natural Area 562. Features within 120 m of this modification include: Wetland Feature 12 (no change) Woodland Feature AR (no change) Generalized Candidate Significant Wildlife Habitat: Species of Conservation Concern Habitat (no change) 	Figure 1H
		Transmission line construction disturbance area remains within 120 m of Natural Area 563. No significant features are within Natural Area 563.	
		 Transmission line construction disturbance area remains within 120 m of Natural Area 564. Features within 120 m of this modification include: Wetland Feature 12 (no change) Woodland Feature AS (no change) Generalized Candidate Significant Wildlife Habitat: Amphibian Wetland Breeding Habitat (no change) 	
		 Transmission line construction disturbance area remains within 120 m of Natural Area 565. Features within 120 m of this modification include: Wetland Feature 12 (no change) Generalized Candidate Significant Wildlife Habitat: Amphibian Wetland Breeding Habitat (no change) 	
H4: Addition of construction disturbance area for the transmission line in the municipal road right-of-way along Hensell Road.	New infrastructure or construction disturbance area added or changed to optimize project design/ constructability	 Transmission line construction disturbance area remains within 120 m of Natural Area 564. Features within 120 m of this modification include: Wetland Feature 12 (no change) Woodland Feature AS (no change) Generalized Candidate Significant Wildlife Habitat: Amphibian Wetland Breeding Habitat (no change) 	Figure 1H
		 Transmission line construction disturbance area remains within 120 m of Natural Area 565. Features within 120 m of this modification include: Wetland Feature 12 (no change) Generalized Candidate Significant Wildlife Habitat: Amphibian Wetland Breeding Habitat (no change) 	
I1: Addition of construction disturbance area for the transmission line POI to the north of the existing disturbance area.	New infrastructure or construction disturbance area added or changed to optimize project design/ constructability	None (no Natural Areas are within 120 m of this modification).	Figure 1I
12: Addition of construction disturbance area for the transmission line in the municipal road right-of-way along Hensell Road.	New infrastructure or construction disturbance area added or changed to optimize project design/ constructability	None (no Natural Areas are within 120 m of this modification).	Figure 1I

Table 1. Modifications to the Bluewater Wind Energy Centre Project Location

1.2 Summary of NHA and EIS Amendment

Changes required to the approved NHA and EIS in order to address the proposed Project Location modifications are summarized in **Table 2** below. The relevant sections of this amendment pertaining to these changes are also provided in the table below.

NHA and EIS Report Section	Change	Refer to Amendment Section(s)	
2. Records	Methods: No changes.	Section 2	
Review	Results: No changes.		
3. Site Investigation	Section Section Secti		
	Results: Woodland T was carried forward to the Evaluation of Significance.	Section 3.2	
4. Evaluation of Significance	Methods: Woodland T was re-evaluated based on field data collected during the site investigation conducted in support of this NHA Amendment, following the methods described in the approved NHA and EIS.	Section 4.1	
	Results: Woodland T was confirmed to be significant and carried forward to the EIS.	Section 4.2	
5. EIS	No additional potential effects and mitigation measures are required for Woodland T.	Section 5	

Table 2. Summary of Changes to Approved NHA and EIS

2. Amendments to the Records Review

The Records Review in the approved NHA and EIS was conducted for the entire Project Study Area, rather than encompassing only the Project Location and an additional 120 m surrounding the Project Location as required by O.Reg. 359/09. This was done in order to accommodate any potential changes to the Project layout that may occur later in the project planning process. Consequently, there are no changes to the Records Review as a result of the proposed Project Location modifications.

3. Amendments to the Site Investigation

3.1 Methods

A site investigation was conducted in 2013 within Natural Area 544 for the purpose of this NHA Amendment, following the methods described in the approved NHA and EIS. This site investigation was conducted to accommodate Modification A1, which extended the 120 m Area of Investigation for the proposed Project Location modifications to include a new portion of Natural Area 544 (refer to **Figure 1A**). The results of this site investigation were examined for the presence of woodlands, wetlands, candidate Significant Wildlife Habitat and Generalized Candidate Significant Wildlife Habitat as described in the approved NHA and EIS.

3.2 Results

3.2.1 Vegetation Community

The vegetation community identified through the site investigation conducted for this NHA Amendment is described in **Table 3** (refer to **Figure A1** for ELC mapping). The initial site investigation for Natural Area 544 was completed in 2012 and is described in the approved NHA and EIS. The dates and start and end times of the site investigation are provided in **Table 3**. Detailed field notes are provided in **Appendix B**. The qualifications of field personnel are provided in Appendix C of the approved NHA and EIS.

The vegetation community composition of Natural Area 544 (FOD5-1) did not change from the approved NHA and EIS. Twenty-seven plant species were identified during the site investigation in Natural Area 544 (refer to **Appendix C**). All of these species are ranked as S5 (Secure) with the exception of Black Walnut (*Juglans nigra*), which is ranked as S4 (Apparently Secure). No plant Species of Conservation Concern were observed. Incidental wildlife observations recorded during the site investigation are included in **Table 3**.

Table 3. Ecological Land Classification (ELC) Vegetation Communities

Natural Area	Date, Time and Weather Conditions	ELC Vegetation Community	Area (ha)	Vegetation Composition	Incidental Wildlife Observations
544	April 24, 2013 08:30-09:45 Temperature: 2°C Cloud cover: Overcast	FOD5-1: Dry- Fresh Sugar Maple Deciduous Forest Type	3.9	The canopy layer within this mid-aged forest is dominated by Sugar Maple with lesser amounts of American Basswood and White Ash. The sub-canopy is dominated by Sugar Maple with lesser amounts of American Basswood, White Ash and Ironwood. The shrub layer is dominated by a Cherry species with lesser amounts of White Ash. The ground cover is dominated with Yellow Trout Lily with lesser amounts of Running-strawberry Bush.	Birds: Song Sparrow, Brown Thrasher, American Robin, Red- bellied Woodpecker, Blue Jay, Horned Lark, Red-winged Blackbird, Red-tailed Hawk and American Crow.

3.2.2 Wetlands

No Wetland Features are located within Natural Area 544 and none of the proposed Project Location modifications resulted in changes to the minimum distances from the Project Location to Wetland Features previously described in the approved NHA and EIS. As a result, Wetland Features are not discussed further in this NHA Amendment.

3.2.3 Woodlands

The site investigation conducted in support of this NHA Amendment includes a previously identified Woodland Feature (Woodland T); therefore the attributes, composition and function of this Feature were revised based on the results of the site investigation (**Table 5**). There were no changes with respect to the boundaries of Woodland T, as previously reported in the approved NHA and EIS. Woodland T was carried forward to the Evaluation of Significance section of this NHA Amendment.

Table 4	Revisions to Woodland Features Identified Through the Site Investigation
	Revisions to woodand i catales lacitanca i mough the olde investigation

		Minimum		Attribute	es		
Woodland ID	Natural Area	Distance from Project Location (m)	Size (ha)	Forest Community Type	Woodland Age	Composition	Functions
т	544	5 (access road)	3.9	Deciduous Forest	Mid-age	 Vegetation community composition within the 120 m Area of Investigation are as follows: Dry-Fresh Sugar Maple Deciduous Forest Type (FOD5-1). Refer to Table 2 for species composition. 	Provides habitat for plant and wildlife species, including birds such as Song Sparrow, Brown Thrasher, American Robin, Red-bellied Woodpecker, Blue Jay, Horned Lark, Red-winged Blackbird, Red-tailed Hawk and American Crow.

3.2.4 Wildlife Habitat

The site investigation conducted in Natural Area 544 resulted in no changes to the ELC community delineations as reported in the approved NHA and EIS. Thus the Significant Wildlife Habitat assessment completed in the approved NHA and EIS remains unchanged and is not repeated here.

During the site investigation in Natural Area 544, a Red-tailed Hawk was observed in an active nest in a Sugar Maple tree at a height of approximately 20 m (refer to **Appendix B** for approximate location). The observation took place in Woodland T, which consists of a FOD5-1 vegetation community. In accordance with the Ecoregion 7E Criterion Schedule Addendum to the Significant Wildlife Habitat Technical Guide (MNR, 2012), Red-tailed Hawk is not a target species for any of the Significant Wildlife Habitats in Ecoregion 7E. Therefore, this observation of a nesting Red-tailed Hawk does not qualify Woodland T as Significant Wildlife Habitat. There will be no vegetation removal within Natural Area 544 and the distance from Turbine 7 to this Feature remains unchanged from the approved NHA and EIS.

No changes to the designation of candidate Significant Wildlife Habitat and Generalized Candidate Significant Wildlife Habitats described in the approved NHA and EIS were required where distances from Project infrastructure to wildlife habitat Features changed as a result of the proposed Project Location modifications. Bat Maternity Colony BMC-03 and Generalized Candidate Significant Wildlife Habitat for Species of Conservation Concern were identified in Natural Area 544 in the approved NHA and EIS. These Features were carried forward to the EIS of this NHA Amendment to ensure that any potential effects of the modifications are addressed through the application of appropriate mitigation measures, if required.

3.2.5 Minimum Distances from Natural Features to Project Location

Modification A1 resulted in changes to the minimum distance to the Project Location for the Features listed in **Table 5**. Minimum distances from the Project Location to all other Features are the same as reported in the approved NHA and EIS.

			Minimum Distance from Project Location (m)			
Feature ID	Feature Type	Natural Area(s)	Distance Reported in Approved NHA and EIS (m)	Distance Corresponding to Proposed Modifications (m)		
Woodland T	Woodland	544	20 (access road)	5 (access road)		
BMC-03	Bat Maternity Colony	544	24 (access road)	5 (access road)		
Generalized Candidate SWH	Species of Conservation Concern Habitat	544	20 (access road)	5 (access road)		

Table 5. Updated Minimum Distances Between the Project Components and Natural Features

4. Amendments to the Evaluation of Significance

4.1 Methods

4.1.1 Woodlands

Woodland T was determined to be Significant in the approved NHA and EIS; however, criteria 2b (Proximity to Other Significant Woodlands/Habitats) and 2c (Linkages) were submitted as to be determined (TBD). The complete Evaluation of Significance for Woodland T is therefore presented in this NHA Amendment. Woodland T was evaluated based on the field data collected during the site investigation conducted in support of this NHA Amendment. Woodland T is located within the Municipality of Bluewater; therefore, this Feature was evaluated based on 16.5% woodland cover within the Municipality of Bluewater.

4.2 Results

4.2.1 Woodlands

Woodland T was evaluated as part of this amendment and determined to be significant (**Table 6**). The woodlands status did not change from the status reported in the approved NHA and EIS; however, AECOM committed to completing the EOS of Woodland T in the approved NHA and EIS. Woodland T is therefore carried forward to the EIS.

		Evaluation Criteria and Standards (Based on 16.5% woodland cover within the Municipality of Bluewater)											
Q		1. Woodland Size Must be at least 20 ha in size	(Base 2a. Woodland Interior Must have woodland interior at least 2 ha in size	d on 16.5% woodla 2b. Proximity to Other Significant Woodlands/ Habitats Must be within 30 m of a significant natural feature or fish	2c. Linkages Must be located between 2 othe	2d. Pro	Autor of Bl Water otection Aust be located ithin 50 m of a itive groundwater	2e. Dive Rep (con Mus	ater) Woodland ersity oresentation mposition) st be dominated singly or in ombination by	Cha	Incommon iracteristics Must have rare etation community 1, S2, S3) and be	Ţ	ificance
Woodland Feature I	Natural Area #			habitat ² and be at least 4 ha in size	each of which ar 120 m apart and at least 4 ha in si	be ze wa	harge ³ , recharge, headwater, tercourse or fish at and be at least 2 ha in size	oc Ms Ab, Oa,	ative naturally curring Ms, Mb, i, Mr, By, H, Ba, Wb, Ta, Sp, Pi, , Ba, He, and be east 4 ha in size	res pla indiv m of	ore than 0.5 ha in size OR labitat of a rare, uncommon, or stricted woodland nt species with 10 ridual stems or 100 leaf coverage and nore than 0.5 ha in	# of Criteria Met	Determination of Significance
		Criteria Met	Criteria Met	Criteria Met	Criteria Met		Criteria Met	(Criteria Met	woo tre nati mor	size OR racteristics of older dlands with larger e size structure in ve species and be e than 2 ha in size Criteria Met		
т	544	Y/NDescriptionN3.9 ha in size	Y/NDescriptionNNo interior	Y/N Description N Does not	Y/N Description N Does not		Description Within	Y/N N	Description Does not	Y/N N	Description Does not meet	1	Significant
			forest	meet size requirement	meet size requireme		groundwater recharge area		meet size requirement		specified requirements		

Table 6. Determination of Significance for Woodlands

5. Amendments to the Environmental Impact Study

5.1 Significant Woodlands

The minimum distance from Woodland Feature T to the nearest Project infrastructure (access road) decreased from 20 m to 5 m as a result of Modification A1. No changes are required to the mitigation measures, monitoring and contingency measures described in Section 5.4.2 of the approved NHA and EIS to accommodate this modification (refer to mitigation measures for Significant Woodlands within 120 m of access roads in Table 5.2 of the approved NHA and EIS).

5.2 Significant Wildlife Habitat

Bat Maternity Colony Feature BMC-03 in Natural Area 544 was previously evaluated and determined not to be significant (NRSI, 2013); therefore, the mitigation measures, monitoring, and contingency measures described in the approved NHA and EIS will not be applied to this Feature.

No changes to the mitigation measures described in the approved NHA and EIS are required for the Generalized Candidate Significant Wildlife Habitat for Species of Conservation Concern in Natural Area 544.

6. Summary and Conclusions

With respect to the proposed Project Location modifications, the significance of anticipated residual effects is predicted to be low provided that the recommended mitigation measures are properly implemented and proactively managed throughout the duration of construction and post-construction activities. The proposed Project Locations modifications resulted in a reduction in the minimum distance from the Project Location to Significant Woodland T and Generalized Candidate Significant Wildlife Habitat for Species of Conservation Concern in Natural Area 544. No changes are required to the mitigation measures, monitoring and contingency measures previously described for these Features in the approved NHA and EIS.

7. References

AECOM, 2012:

Bluewater Wind Energy Centre Natural Heritage Assessment and Environmental Impact Study Report. Prepared for NextEra Energy Canada, ULC. March 2012.

AECOM, 2013:

Bluewater Wind Energy Centre Natural Heritage Assessment and Environmental Impact Study Report Amendment. Prepared for NextEra Energy Canada, ULC. January 2013.

Natural Resource Solutions Inc. (NRSI), 2013:

Bluewater Wind Energy Centre Bat Maternity Colony Exit Survey Results Memo. February 14, 2013.

Ontario Ministry of Natural Resources, 2012:

Significant Wildlife Habitat Ecoregion 7E Criteria Schedule. Working Draft, January 2012. 37 pp.



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Appendix A

MNR Confirmation and Re-confirmation Letters Ministry of Natural Resources Ministère des Richesses naturelles



Renewable Energy Operations Team P.O Box 7000 300 Water Street 4th Floor, South Tower Peterborough, ON K9J 8M5

March 28, 2012

NextEra Energy Canada 5500 Service Road, Suite 205 Burlington, ON L7L 6W6

RE: NHA Confirmation for Bluewater Wind Energy Centre

Dear Tom Bird:

In accordance with the Ministry of the Environment's (MOE's) Renewable Energy Approvals (REA) Regulation (O.Reg.359/09), the Ministry of Natural Resources (MNR) has reviewed the natural heritage assessment and environmental impact study for the Bluewater Wind Energy Centre located in Huron County submitted by Nextera Energy Canada on March 26, 2012.

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

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

In accordance with Appendix D of MNR's Natural Heritage Assessment Guide, a commitment has been made to complete pre-construction assessments of habitat use for candidate significant wildlife habitats. MNR has reviewed and confirmed the assessment methods and the range of mitigation options. Pending completion of the pre-construction assessments and determination of significance, the appropriate

mitigation is expected to be implemented, as committed to in the environmental impact study for the following candidate significant wildlife habitats:

- Reptile Hibernaculum (features RH-01, RH-02)
- Bat Maternity Colony (features BMC-02, BMC-03, BMC-10, BMC-12, BMC-14)
- Amphibian Woodland Breeding (features AWO-03, AWO-04, AWO-05, AWO-06, AWO-08, AWO-11)
- Amphibian Wetland Breeding (feature AWE-01)

In addition to the NHA, Environmental Effects Monitoring Plans that address postconstruction monitoring and mitigation for birds and bats must be prepared and implemented. It is recommended that post-construction monitoring plans be prepared in accordance with MNR Guidelines and be reviewed by MNR in advance of submitting a REA application to MOE in order to minimize potential delays in determining if the application is complete.

This confirmation letter is valid for the project as proposed in the natural heritage assessment and environmental impact study, including those sections describing the Environmental Effects Monitoring Plan and Construction Plan Report. Should any changes be made to the proposed project that would alter the NHA, MNR may need to undertake additional review of the NHA.

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

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

Please be aware that your project may be subject to additional legislative approvals as outlined in the Ministry of Natural Resources' *Approvals and Permitting Requirements Document*. These approvals are required prior to the construction of your renewable energy facility.

If you wish to discuss any part of this confirmation or additional comments provided, please contact me at jim.beal@ontario.ca or 705-755-3203.

Sincerely,

Jim Beal Renewable Energy Provincial Field Program Coordinator Regional Operations Division Ministry of Natural Resources

- cc. Ian Hagman, District Manager, MNR Guelph District
- cc. Amy Cameron, A/Renewable Energy Field Advisor, MNR REOT
- cc. Erin Cotnam, A/Renewable Energy Coordinator, MNR Southern Region

- cc. Narren Santos, Environmental Assessment and Approvals Branch, MOE
- cc. Sandra Guido, Environmental Assessment and Approvals Branch, MOE
- cc. Jessica MacKay Ward, Ecologist, AECOM

Ontario

Ministry of
Natural ResourcesMinistère des
Richesses naturellesRenewable Energy Operations Team300 Water Street
4th Floor, South Tower
Peterborough, Ontario K9J 8M5

January 11th, 2013

NextEra Energy Canada 5500 Service Road, Suite 205 Burlington, ON L7L 6W6

RE: Modifications to Bluewater Wind Energy Centre project location

Dear Tom Bird,

The Ministry of Natural Resources (MNR) has received the document dated December 20th, 2012 which describes modifications to the Bluewater Wind Energy Centre project location made subsequent to MNR's letter confirming the Natural Heritage Assessment in respect of the project.

In accordance with Appendix D of MNR's Natural Heritage Assessment Guide, a commitment has been made to complete pre-construction assessments of habitat use for candidate significant wildlife habitats. This is in addition to pre-construction assessments detailed in the March 28th, 2012 confirmation letter. MNR has reviewed and confirmed the assessment methods and the range of mitigation options. Pending completion of the pre-construction assessments and determination of significance, the appropriate mitigation is expected to be implemented, as committed to in the environmental impact study for the following candidate significant wildlife habitats:

- Bat Maternity Colony (features BMC-015)
- Amphibian Woodland Breeding Habitat (features AWO-013)

Upon review of the modifications, MNR is satisfied that the Natural Heritage Assessment requirements of Ontario Regulation 359/09 have been met. Please add this letter as an addendum to the confirmation letter issued March 28th, 2012 for the Bluewater Wind Energy Centre project.

If you wish to discuss any part of this confirmation or additional comments provided, please contact Jim Beal at jim.beal@ontario.ca or 705-755-3203.

Sincerely,

ian

Kazia Milian Regional Planning Coordinator Ministry of Natural Resources Southern Region Planning Unit

cc Ian Hagman, District Manager, Guelph District, MNR Narren Santos, Environmental Approvals Access & Service Integration Branch, MOE Zeljko Romic, Environmental Approvals Access & Service Integration Branch, MOE



Appendix B

Field Notes



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FIC	Map #: 544	BIWISIO	Poly	gon: FC	DS-	1
Community	Surveyor(s):	Date:		Time	start:	8.3Car
Description and	<u>/), ////</u> UTMŹ:	<u>Acril 29</u> , UTMZ:	201	5	finish: 'MN:	9:45am
Classification	UTMZ.	011112.		101	INITY.	

Polygon Description

System	Substrate	Topographic Feature	Plant Form	Community
Image: Street of the street	Organic Mineral Soli Parent Min. Acidic Bedrk Basic Bedrk Carb. Bedrk	Lacustrine Riverine Bottomland Terrace Valley Slope Tableland Roll. Upland Crevice/Cave Alvar Rockland Beach / Bar Sand Dune Bluff	Plankton Submerged Floating-LVD. Graminoid Forb Lichen Bryophyte Peciduous Coniferous Mixed	Lake Pond River Stream Marsh Swamp Fen Bog Barren Meadow Prairie Thicket Savannah Woodland Zforest Plantation

Stand Description

Layer	нт	CVR	Species in Order of Decreasing Dominance (up to 4 sp) (>> Much Greater Than; > Greater Than; = About Equal To)
1	2	4	ACESACC>TILAMCR-FRAAMER
2	2	3	ACESACC > TILANER = ERAANER > OSTURG
3	4	2	PRUVIAC > FRAAFTLA - Arge Der
- 4	7	2	ERY AMER> EUGOROV
HT Codes	s: 7·	<0.2m	6 >0.2-0.5m 5 >0.5-1m 4 >1-2m 3 >2-8m 2 >8-25m 1 >25m

CVR Codes: 0 = none 10% - 10% 210 - 25% 325 - 60% 4 > 60%

Stand Composition:	Size Class Analysis:	0	<10	A	10-24	0	25-50	N	>50
	Standing Snags:	R	<10	ß	10-24	R	25-50		>50
BA:	Deadfall / Logs:	R	<10	R	10-24	R	25-50	て	>50

Abundance Codes: N = None R = Rare O = Occasional A = Abundant

Com. Age:	Pioneer	Young	Mid-Age	Mature	Old Growth
Ecosite:	Den - Frach	Surve Mag	la Deci)	E.m. Code:	EADE

ECORITO:	pry-fresh Jugar I lople Decidual	10 P/ CO00:	F005
Vegetation	Dry-Freih Sugar Maple Decidnows Forest	Code:	
Type:	J I		F005-1
Inclusion:		Code:	-
Complex:	-	Code:	-

Community Profile Diagram/Comments

Small, channel, of overland Flow	through SIL corner of
uacdlate i	
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÷		er Table								iective exture
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_	Bedr		1.1						b	eiow)
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		Texture								
	2	Depth from zero	\square	% CF		% CF		% CF		% CF
tion		Texture						-		
n Description	3	Depth from zero		% CF		% CF		% CF		% CF
O U D		Texture								_
Soli Horizo	4/	Depth from zero		% CF		% CF		% CF		% CF
Sol		Texture								1
ł		% Surface Stone/Rock sture Regime								

Community Description and	Surveyor(s):		24,2013 fin	tart: <u>8;30-6n</u> ish: 9;45 o.^		$(-1)_{i_1}^{i_1}$	Specijos -	T.	ally 1
Classification	UTMŹ:	UTMŻ:	UTMI	N:					
Polygon De	scription								
System	Substrate	Topographic	Plant Form	Germinishity					
		Peature Lacustrine							
Wetland	Mineral Soil	Riverine		Pond	_				
	Parent Min.	Bottomland	Graminoid		Tet		1		
Site Open Water	Acidic Bedrk	UTerrace Valley Slope		Stream			<u>98. (19</u> 4)		
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Surficial Dep.		Roll. Upland	Bryophyte	DFen DBog N/A	50		Ontario	and E	LC So
Bedrock				Bog N/A DBarren			Pit/Auger #		
Netural		Crevice/Cave	Mixed			_	Zone		
Cultural Cover		Alvar Rockland		Prairie Thicket	8	۲ 5	Easting		
UOpen		Beach / Bar		Savannah	E I		Northing		
				Woodland	Site Metrics		Position		
Treed		Bluff		Generation	l s	ø	Aspect		_
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Layer HT OV	Specie	s in Order of Dech	easing Dominance	(the to 4 app)	⊢		Length		_
and setting a set		dh Greater Than 🖇	Greater Than = Ab	out Equal To)		Mot Gle			
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CVR Codes: 0 = none	10%-10% 210-2	5% 3 25 - 60% 4 >	60%			1	zero		1
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Whenhami Admili 22 Dei 14 Al alle from 8.4.5	Standing	Smaga: R <1		〕 25-50 / >50			Depth from	\vdash	% CF
BA:	Deachail	/Laga: <1	0 🕅 10-24 🔼) 25-50 / >50		2	zero /	K	/0 CF
Abundance Codes:	N = None R = R	are O = Occasional	A = Abundant		5		Texture		
an State					Description		Death		1 0/
Com. Age:	Pioneer XY	oungMid-/	ge Mature	e Old Growth		3	Depth from zero		% CF
		1	1 Magaza	ar	Ŏ		Texture		-
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Type:					Soil Hori	4	Depth from		% CF
Indiusion			General				Zero Texture		
Complex			Code:		S	/			
Community	Profile Dia	gram/Comm	ents				% Surface		
							Stone/Rock		
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Tally 3 Tally 4 Total Rel. Avg. / 100 Description Summary Moisture Regime 1 Drainage Effective Texture (Indicate below) % CF % CF

Prism R.

2

Plant Species List 2012

Pa	ige	1	of	2

	Trees & Shrubs	1	2	3	4	5	Tree & Shrubs	1	2	3	4 !		1	2	3	4
	Conifers						Deciduous					Grasses	L			
	am Fir (Abies balsamea)		-				White Oak (Quercus alba)	4			+ +	Giant Redtop (Agrostis gigantea)	┢	₋-	\square	L
	mon Juniper (Juniperus communis)	┢	\square	\square		_	Bur Oak (Quercus macrocarpe) Red Oak (Quercus rubra)	╋	+	+	$\left \right $	Redtop (Agrostis stolonifera) Awnless Brome (Bromus inermis)	┢	+		\vdash
	em Red Cedar (Juniperus virginiana) arack (Larix Iaricina)	┝	-				Alder Buckthorn (Rhamnus alnifolia)	+-	-			Bromus	÷	++	-1	
	vay Spruce (Picea abies)	+	+			_	Common Buckthorn (Rhamnus cathartica)	R	F		\vdash	Blue-joint Grass (Calamagrostis canadensis)	.L	+	-	\vdash
	te Spruce (Picea glauca)	1	1-1				Smooth Sumac (Rhus glabra)	μ.	╧			Orchard Grass (Dactylis glomerata)	Т	+		
	k Spruce (Picea mariana)						Staghorn Sumac (Rhus hirta)					Poverty Oat Grass (Danthonia spicata)				
	Pine (Pinus banksiana)						Wild Black Currant (Ribes americanum)					Quack Grass (Elymus repens)	I			
	Plne (Pinus resinosa)	1_					Prickly Gooseberry (Ribes cynosbati)			 		Virginia Wild Rye (Elymus virginicus)	⊢			1
	ern White Pine (Pinus strobus)						Swamp Black Currant (Ribes lacustre)	┢				Elymus	1	\square		Ĺ
	ch Pine (Pinus sylvestris)	-	\square				Red Currant (Ribes rubrum)	-		$\left - \right $		Four Manage Organ (Other de atticite)	┢╌	\vdash	-	1
	ada Yew (Taxus canadensis) em White Cedar (Thuja occidentalis)	┨	\vdash		-		Ribes Black Locust (Robinia pseudo-acacia)	+	-	-		Fowl Manna Grass (Glyceria striata)	╂	++		⊢
_	ern Hemlock (Tsuga canadensis)	⊢	\vdash		-		Prickly Rose (Rosa acicularis)				\vdash	Rice Cut Grass (Leersia oryzoides)		++	-	⊢
311	Bill Heillock (Tsuga canadensis)				\dashv		Smooth Rose (Rosa blanda)			Н		Tall Fescue (Lolium arundinaceum)		+	-	ŀ
1			\square		-		Multiflora Rose (Rosa multiflora)			1-1		Muhlenbergia		++	-	
	Deciduous						Rosa	1				Witch-grass (Panicum capillare)		\square	-	-
ni	itoba Maple (Acer negundo)	1	R		1		Com. Blackberry (Rubus allegheniensis)					Panicum		Π		Γ
	k Maple (Acer nigrum)						Wild Red Raspberry (Rubus idaeus)					Reed Canary Grass (Phalaris arundinacea)	L			
	vay Maple (Acer platanoides)	1_	R		_		Black Raspberry (Rubus occidentalis)	L				Timothy (Phleum pratense)		\square	_	_
	Maple (Acer rubrum)		Ľ		_	_	Purple-fl. Raspberry (Rubus odoratus)	⊢	\square			Common Reed (Phragmites australis)	<u> </u>	\vdash	_	
	r Maple (Acer saccharinum)	0		_		-	Dwarf Raspberry (Rubus pubescens)					Canada Blue Grass (Poa compressa)		\vdash	-+	_
	man's Maple (Acer X freemanii)	R	; ; ;			_	Rubus		\vdash	\vdash	_	Fowl Meadow Grass (Poa palustris) Kentucky Bluegrass (Poa pratensis)	┢──	\square	-+	_
	ar Maple (Acer saccharum) ntain Maple (Acer spicatum)	Þ	$\left \cdot \right $		-+		Peach-leaved Willow (Salix amygdaloides) Bebb's Willow (Salix bebbiana)	1		\vdash		Yellow Foxtail (Setaria pumila)		++	+	-
	xled Alder (Alnus incana)		\square		+	-	Pussy Willow (Salix discolor)	1		\vdash		Green Foxtall (Setaria viridis)			+	-
	ny Serviceberry (Amelanchier arborea)		\vdash		-		Missouri Willow (Salix eriocephala)	1-		\vdash			1		-+	-
	iceberry (Amelanchier sanguinea)						Sandbar Willow (Salix axigua)	1					1			
0	w Birch (Betula alleghaniensis)						Shining Willow (Salix lucida)						L			_
	e Birch (Betula papyrifera)				T		Black Willow (Salix nigra)						Ē	LT	\Box	
	pean Birch (Betula pendula)			_	_		Slender Willow (Salix petiolaris)							H	_	_
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	bing Bittersweet (Celastrus scandens) mon Hackberry (Celtis occidentalis)	\vdash	\vdash	+	+		Red-berried Elder (Sambucus racemosa) Buffaloberry (Shepherdia canadensis)			$\left - \right $		Sedges	-	\vdash	+	
	onbush (Cephalanthus occidentalis)		$\left - \right $	-	-+		Eur, Mountain Ash (Sorbus aucuparia)			\vdash	-+-	Drooping Wood Sedge (Carex arctata)	-	\vdash	+	
	eaved Dogwood (Comus alternifolia)	u	\vdash	-	+		Narrow Meadow-sweet (Spiraea alba)					Golden-fruited Sedge (Carex aurea)		+	+	-
	Dogwood (Cornus amomum)			-1	1		Common Lilac (Syringa vulgaris)					Graceful Sedge (Carex gracillima)	h-		-	
	hberry (Comus canadensis)				1		Poison-ivy (Toxicodendron rydbergii)	R				Inland Sedge (Carex Interior)				_
	dogwood (Comus racemosa)						Climbing Polson-ivy (Toxicodendron radicans)	R				Bladder Sedge (Carex intumescens)				
	nd-leaved Dogwood (Comus rugosa)	R					White Elm (Ulmus americana)	R				Lake-bank Sedge (Carex lacustris)				
	osler Dogwood (Cornus serices)						Siberian Elm (Ulmus pumila)	Ľ				Hop Sedge (Carex lupulina)			_	_
	rican Hazel (Corylus americana)			_		_	Slippery Elm (Ulmus rubra)		_		_	Pennsylvania Sedge (Carex pensylvanica)	_	\vdash	-+	
	ed Hazel (Corylus comuta)			+	-	-	.ow Blueberry (Vaccinium angustifolium) Mapte-leaf Viburnum (Viburnum acerifolium)	\square	_		+	Awl-fruited Sedge (Carex stipata)		\vdash	+	_
	spur Thorn (Crataegus crus-galli) sh Hawthorn (Crataegus monogyna)	-	\vdash	-+	+		Hobblebush (Viburnum lantanoides)					Carex So	IJ	+	+	-
	e-fruited Thom (Crataegus punctata)			-+	+		Nannyberry (Viburnum lentago)				-†-	Carex	N		+	
	aegus (R		-+	+		Guelder-Rose (Viburnum opulus)				+	Carex	-		+	-
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	Honeysuckle (Diervilla Ionicera)						Riverbank Grape (Vitis riparia)	R				Carex	_			
	lan Olive (Elaeagnus angustifolia)						Am. Prickly-ash (Zanthoxylum americanum)				_	Carex		\square	\downarrow	
ų	mn Olive (Elaeagnus umbellate)	-		_	-	_			-		_	Carex		\vdash	-+	
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	rican Beech (Fagus grandifolia) sy Buckthorn (Frangula alnus)	ч		-+	+	+				-		Carex		-+-	+	
	e Ash (Fraxinus americana)	F		-+	+	•	Fems & Allles		1			Carex			+	
	(Ash (Fraxinus nigra)	4		+	+	1	ady Fern (Athyrium filix-fernina)			-+		Carex			-†	-
	n Ash (Fraxinus pennsylvanica)	-	X	-	1		Rattlesnake Fern (Botrychium virginlanum)				-	Cyperus	-		+	_
	n-hazel (Hamamelis virginiana)		-1	-			Bulbet Bladder Fern (Cystopteris bulbifera)		-	-		Redroot Spike-rush (Eleocharis erythropoda)-	_		+	=
	erberry (llex verticilata)			T			Spin. Wood Fern (Dryopteris carthusiana)					Eleocharis		T	_	
	mut (Juglans cinerea)	~		-+	-		Crested Wood Fern (Dryopteris cristata)		\rightarrow	-	_	Hard-stem Bulrush (Schoenoplectus acutus)			-	
		R	17	-	_		Marginal Wood Fern (Dryopteris marginalis)	\vdash	-	_		Three-square Bulrush (Sch. pungens)		+	_	
	mon Privet (Ligustrum vulgare)	A		+	-		Dryopteris	\vdash	-	-		Soft-stem Bulrush (Sch. tabernaemontani) Dark-green Bulrush (Scirpus atrovirens)		-	+	_
	ebush (Lindera benzoin) Ioneysuckle (Lonicera canadensis)	14		+	-		Dstrich Fern (Matteuccia struthiopteris) Sensitive Fern (Onoclea sensibilis)	H	+	+	+	Wool-grass (Scirpus cyperinus)		+	+	-
	cous Honeysuckie (Lonicera dioica)			+	+		Cinnamon Fern (Osmunda cinnamomea)	H	+	-+		steel graat (compus of pointuo)	-		-†	
	ow's Honeysuckie (Lonicera morrowii)	-	-	-	-+		nterrupted Fern (Osmunda claytoniana)		+	-+	1-				+	
	rian Honeysuckle (Lonicera tatarica)			-	+		Royal Fern (Osmunda regalis)		_1							
	mon Apple (Malus pumila)		b		1		Christmas Fern (Polystichum acrostichoides)									_
	e Mulberry (Morus alba)		1		T		astern Bracken-fern (Pteridlum aquilinum)							I	T	
	at Gale (Myrica gale)			_[Marsh Fern (Thelypteris palustris)			_	_	Other Graminolds			_	
	rood (Ostrya virginiana)	Ц	-	-		-			-	_		Broad Bur-reed (Sparganium eurycarpum)			+	
	ket-creeper (Parthenocissus inserta)			-		-	Tield Hemoteil (Environtum en anna 1		+	-+		Narrow-leaved Cattail (Typha angustifolia)		-+	+	
	bark (Physocarpus opulifolius)			-+	+		Field Horsetail (Equisetum arvense)	H	+	-		Broad-leaved Cattail (Typha latifolia) Broad-leaved Cattail (Typha X glauca)		-	+	
	am Poplar (Populus balsamifera) ern Cottonwood (Populus deltoides)			+	-		Scouring-rush (Equisetum hyemale) /ariegated Horsetail (Equisetum variegatum)		-+	+		Articulated Rush (Juncus articulatus)		+	-+	-
	e-tooth Aspen (Populus grandidentata)			+	+		Equisetum		-+	-+		Soft Rush (Juncus effusus)		+	\pm	
	bling Aspen (Populus tremulaides)			-	-†		Ground-cedar(Lycopodium digitatum)		†	-†	-1-	Path Rush (Juncus tenuis)		1	+	-
	at Cherry (Prunus avium)						Shining Clubmoss (Lycopodium lucidulum)					Juncus	-		T	
E	Cherry (Prunus pensylvanica)						Ground-pine (Lycopodium obscurum)		_		1	Juncus				_
	Cherry (Prunus serotina)				1											_
č	e Cherry (Prunus virginiana)		T		1	_								T	_[
C k	us Sp.	N		T					ſ	1						_
C k k		form					cover or >25% vegetation cover in any one stratum							Sil		
C + k							rainy large numbers of individual clumps; usually forming	> 7 (1 5)								
	inty common (=Abundant in ELC) : generally wide	spra										will fall into this catemond	-	_		
	inly common (=Abundant in ELC) · generally wide common (=Occasional in ELC) : present as wide	арга врга	ad ac	atte	ed in	ndiv	duals or represented by one or more clumps of many indivi					will fall into this catergory)	-	10.5		
	inty common (=Abundent in ELC) generally wide common (=Occasional in ELC) present as wide re, represented in the polygon by less than about i	арга врга	ad ac	atte	ed in	ndiv	duats or represented by one or more clumps of many indivi I clumps	duald				will fall into this catergory)		1	-	-
C + k 2 > s = n = n	inly common (=Abundant in ELC) · generally wide common (=Occasional in ELC) : present as wide	арга врга	ad ac	atte	ed in	ndiv	duals or represented by one or more clumps of many indivi	duald				will fail into this catergory)		T	Ţ	

Plant Species List 2012

		_			2012	- 11									
Dicot Herbs - Asteraceae	1	2	3	4 5		1	2	3 4	5		1	2	3	4	5
Common Yarrow (Achillea millefolium)	-			_	Shepherd's Purse (Capsella bursa-pastoris)	-				Kidney-leaf Buttercup (Ranunculus abortivus	2				
White Snakeroot (Ageratina altissima)	+				Cutleaf Toothwort (Cardamine concatenata)	-	_+			Tall Buttercup (Renunculus ecris)					
Com. Ragweed (Ambrosia artemisiifolia) Glant Ragweed (Ambrosia trifida)		+		-	Toothwort (Cardamine diphylla) Penn. Bitter-cress (Cardamine pensylvanica)		┼┈┿		+-	Hooked Buttercup (Ranunculus recurvatus) Ranunculus					
Field Pussytoes (Antennaria neglecta)	-1-	+		+	Cardamine	-		+-	+-	Sheep Sorrel (Rumex acetosella)	+			-+	-
Artemisia					Blue Cohosh (Caulophyllum thalictroides)	π		-	1	Curly-leaf Dock (Rumex crispus)			-	-	
Common Burdock (Arctium minus)					Mouse-ear Chickweed (Cerastium fontanum)			T	T	Bitter Dock (Rumex obtusifolius)					1
Nodding Beggar-ticks (Bidens cemua)				_	Turtlehead (Chelone glabra)	_			1	Bloodroot (Sanginaria canadense)	M				
Devil's Beggar-ticks (Bidens frondosa)					Spotted Water-hemlock (Cicuta maculata)	- 			- 	Black Snakeroot (Sanicula marilandica)	Ľ	_	_	_	
Spotted Knapweed (Centaurea biebersteinii Brown Knapweed (Centaurea jacea)	<u>''</u>			-	Water-hemlock (Cicuta virosa)	+	┝─┝			Bouncing Bet (Seponarie officinalis)		_		_	-
Chicory (Cichorium intybus)	-				Enchanter's Nightshade (Circaee lutetiana) Carolina Spring Beauty (Claytonia caroliniana	, 	┝╼┾╴		+-	Marsh Skullcap (Scutellaria galericulata) Mad Dog Skullcap (Scutellaria lateriflora)	┨╌┥	-+	-+	-+	
Canada Thistle (Cirsium arvesnse)	+				Virginia Spring Beauty (Claytonia virginica)	4-			+	White Campion (Silene latifolia)	+	-+		-+	-
Bull Thistle (Cirsium vulgare)		\vdash		+	Virgin's-bower (Clematis virginiana)	+			+	Bladder Campion (Silene vulgaris)		+	+	-+	-
Horseweed (Conyza canadensis)			1	1	Field Blndweed (Convolvulus arvensis)	1			1	Hemlock Water-parsnip (Sium sueve)	11	_†	-+	+	-1-
Daisy Fleabane (Erigeron annus)					Dog-strangling Vine (Cynanchum rossicum)			T		Bitter Nightshade (Solanum dulcamara)		1			
Philadelphia Fleabane (Erig. philadelphicus)				Wild Carrot (Daucus carota)				I.,	Black Nightshede (Solanum ptychanthum)					
Erigeron		 _	-	+	Deptford Pink (Dianthus armeria)	0				Grassleaf Stitchwort (Stellaria graminea)		-	_	\rightarrow	_
Joe-pye-weed (Eupatorium maculatum) Boneset (Eupatorium perfoliatum)	+	$\left - \right $			Squirrel-com (Dicentra canadensis)	1		+	1-	Common Chickweed (Stellaria media)	┞┈╡	-	-	-	
Large-leaved Aster (Eurybia macrophylla)		$\left \cdot \right $	-+-	+	Dutchman's-breeches (Dicentra cucullaria) Wild Teasel (Dipsacus fullonum)			-+	+-	Early Meadow-rue (Thalictrum dioicum) Tall Meadow-rue (Thalictrum pubescens)		+	+	+	-11
Flat-top Goldenrod (Euthamia graminifolia)	+	\vdash	-+	-†	Wild Cucumber (Echinocystis lobata)	1-1		+	1-	Field Penny-cress (Thlaspi arvense)		-	+	+	-
Orange Hawkweed (Hieracium aurantiacum)			1	Viper's Bugloss (Echium vulgare)	1		+-	+	Foamflower (Tiarella cordifolia)	┠┤	-	+	+	
Field Hawkweed (Hieracium caespitosum)	L				Northern Willow-herb (Epilobium ciliatum)					Star-flower (Trientalis borealis)			1	-	
Hieracium				1	Hairy Willow-herb (Epilobium hirsutum)			1.	1_	Red Clover (Trifolium pratense)			\Box		
Elecampane (Inula helenium)	+			+	Small-fl. Willow-herb (Epilobium parviflorum)	\square			<u> </u>	White Clover (Trifolium repens)		-	_	\perp	_
Prickly Lettuce (Lactuca semiola)		\vdash			Epilobium	┢			-	Trifolium	┝─┤	+	+	-	-
Lactuca Ox-eye Daisy (Leucanthemum vulgare)	-	⊢┤	-+-	+-	Worm Mustard (Erysimum cheiranthoides) Euphorbia	┨─┤		+-	-	Stinging Nettle (Urtica dioica) Greater Bladderwort (Utricularia vulgaris)	-+	-	+	+	-
Pineapple-weed (Matricaria discoidea)		\vdash	+	+	Hemp Nettle (Galeopsis tetrahit)	+	+		1	Common Mullein (Verbascum thapsus)	\vdash	-+-	+	+	-
Tall White Lettuce (Prenanthes altissima)		\vdash	+	+	Wild Madder (Galieup mollugo)	1-1		+	1	Blue Vervain (Verbena hestata)	\vdash	-+	+	+	-
Black-eyed Susan (Rudbeckia hirta)			1	1	Marsh Bedstraw (Galium palustre)		-	1		White Vervain (Verbena urticifolia)		-†-	+	+	1
Tall Goldenrod (Solidago altissima)			T		Sweet-scented Bedstraw (Galium triflorum)					Water Speedwell (Veron. anagallis-aquatica)		+	+	+	~
Blue-stem Goldenrod (Solidago caesia)					Galium			T		Common Speedwell (Veronica officinalis)				T	
Canada Goldenrod (Solidago canadensis)				1_	Spotted Geranium (Geranium maculatum)			\bot		Veronica		T	T		
Zig-zag Goldenrod (Solidago flexicaulis)	\square				Herb-robert (Geranium robertianum)					Cow Vetch (Vicia cracca)	-	_	+	-	-
Glant Goldenrod (Solidago gigantea) Early Goldenrod (Solidago juncea)			-	+	Yellow Avens (Geum aleppicum) White Avens (Geum canadense)	+		+		Vicia		+	-	+	-
Gray Goldenrod (Solidago nemoralis)	+ +		- -	+	Urban Avens (Geum urbanum)	+		+		Periwinkle (Vinca minor) Dog Violet (Viola conspersa)	\vdash	-+-	+	+	-
Solidago	\square		+	+-	Dame's Rocket (Hesperis matronalis)	┼┽		+		Yellow Violet (Viola pubescens)		+	+	+	-
Field Sow-thistle (Sonchus arvensis)				1	Virg. Water-leaf (Hydrophyllum virginianum)	tr i		1-	\square	Com. Blue Violet (Viola sororia)		+	+	+	
Sonchus				1	Com. St. John's-wort (Hypericum perforatum)	11				Viola		+	+	1	1
Heart-leaf Aster (Symph. cordifolium)					Spotted Jewelweed (Impatiens capensis)			L					T		
Heath Aster (Symphyotrichum ericoides)		-	-	+-	Wood Nettle (Laportea canadensis)			1_			_			1	
Tall White Aster (Symph. lanceolatum) Calico Aster (Symphyotrichum laterifiorum)			-		Motherwort (Leonurus cardiaca)	╂─┼	-	-			_	-	-+-	+	-
New England Aster (Symph. novae-angliae)		+		+	Field Peppergrass (Lepidium campestre) Eur. Gromwell (Lithospermum officinale)	+		+-			-+	+	-+-	+	-
Purple-stem Aster (Symph. noviceus)		+	+-	+	Butter & Eggs (Linaria vulgaris)	┼─┼	+-	+			-+	╋	+	+	-
Common Tansy (Tanacetum vulgare)	1-1	+	+	+	Great Lobelia (Lobelia siphilitica)	<u>†-</u> †		+			+		+	+	1
Common Dandelion (Taraxacum officinale)	R	U			Lobelia			1		Monocot Herbs	+	+	+	+	1
Com. Goatsbeard (Tragopogon pratensis)					Cut-leaf Bugleweed (Lycopus americanus)			1		Water-plantain (Alisme plantago-aquatica)			T	1	-
Coltsfoot (Tussilago farfara)					Northern Bugleweed (Lycopus uniflorus)						FL	Т		T	
	\vdash	-		\vdash	Fringed Loosestrife (Lysimachia ciliata)	$ \downarrow \downarrow$		_		Jack-in-the-pulpit (Arisaema triphyllum)	_	-	+	\perp	-
	┝╌┥		-		Moneywort (Lysimachia nummularia) Lysimachia	\vdash	_			Asparagus (Asparagus officinalis)	-	+		+-	-
	┨─┤		- -	+-	Purple Loosestrife (Lythrum salicaria)	++		+-		Wild Calla (Calla palustris) Bluebead-lily (Clintonia borealis)			-+-	+	-
		+	+		Black Medick (<i>Medicago lupulina</i>)			+		Garden Lily-of-valley (Convallaria majalis)		+	+	+	-
		†-	+	1	Alfalfa (Medicago sativa)					Yel. Lady's Slipper (Cypripedium parviflora)	-	+	+	+	
					White Sweet-clover (Melilotus alba)					Canada Waterweed (Elodea canadensis)		+	+	+	1
					Yellow Sweet-clover (Melilotus officinalis)					Heileborine (Epipactis helleborine)			T		1
0 .	1	_			Wild Mint (Menthe arvensis)	ЦĬ					0	T	1	-	
Other Dicot Herbs	⊢∔	_ -		-	Wild Bergamot (Monarda fistulosa)	┠╺∔		+		Blue-flag Iris (Iris versicolor)	-	-	+	+-	-
White Baneberry (Actaea pachypoda) Red Baneberry (Actaea rubra)					Small Forget-me-not (Myosotis laxa) Forget-me-not (Myosotis scorpioides)			+		Orange Day Lily (Hemerocallus fulva)	-	+	+	+-	-
Tall Agrimony (Agrimonia gryposepala)	┟─┼	+	+	1-1	Water-cress (Nasturtium officinale)	┢─┢		-		Lesser Duckweed (Lemna minor) Starry Duckweed (Lemna trisulca)		+	+	+	-
Gariic Mustard (Alliaria petiolata)		+	1		Com. Evening-primrose (<i>Oenothera biennis</i>)	-+	+	\uparrow		Wild Lily-of-valley (Maianthemum canadense)		+-	+	+-	1
Green Amaranth (Amaranthus retroflexus)			1		Sweet-cicely (Osmorhiza berterii)	Et	1			False Solom Seal (Maianthemum racemosum)	1	T	+	1
Hog-peanut (Amphicarpa bracteata)		1	Τ		Yellow Wood-sorrel (Oxalis stricta)					Star False Solomon (Maianthemum stellatum)			T	1	1
Pearly Everlasting (Anaphalis margaritacea)	ЦĨ				Wild Parsnip (Pastinaca sativa)					True Solomon Seal (Polygonatum pubescens)			L	T	
Canada Anemone (Anemone canadensis)	⊢∔	_			English Plantain (Plantago lanceolata)					Pickerel-weed (Pontederia cordata)		1	1	\perp	
Ivy Hepatica (Anemone acutiloba)		-	+-		Common Plantain (<i>Plantago major</i>)	⊢.∔	-	+		Curly-leaf Pondweed (Potamogeton crispus)		1	1	+	-
Thimbleweed (Anemone virginiana) Purple Angelica (Angelica atropurpurea)	\vdash		+	+	Rugel's Plantain (<i>Plantago rugelii</i>) May-apple (<i>Podophyllum peltatum</i>)	-+		+		Sago Pondweed (Potamogeton pectinatus)			+-	+	-
Indian Hemp (Apocynum cannabinum)	⊢┦	+	+-	$\left - \right $	Pale Smartweed (<i>Polygonum lapathifolium</i>)	+		+		Potamogeton		+-	+	+	-
Wild Sarsaparilla (Aralia nudicaulis)	┝─╋	-	+	\square	Lady's-thumb (<i>Polygonum persicaria</i>)		+-	+		Broad-leaved Arrowhead (Segittaria latifolia)	+-	+	+	+	-
Spikenard (Aralia racemosa)			1-	T	Virginia Knotweed (Polygonum virginianum)	$\uparrow \uparrow$	1	+-+		Blue-eyed-grass (Sisyrinchium montanum)	+	t	+	1-	1
Wild Ginger (Asarum canadense)					Polygonum					Herb. Carrion Flower (Smilax herbacea)			T	T	1
Swamp Milkweed (Asclepias incarnata)		T		\Box	Polygonum		T	\Box		Bristly Greenbrier (Smilax hispide)		Τ	T	T	1
Common Milkweed (Asclepias syriaca)				<u> </u>	Rough Cinquefoil (Potentilla norvegica)					Nodding Ladies' Tresses (Spiranthes cemue)		4	+	4-	-
Yellow Rocket (Barbarea vulgaris)	┝╼╋		+	\vdash	Rough-fruited Cinquefoil (Potentilla recta)	⊢∔				Rose Twisted-stalk (Streptopus lanceolatus)			+	-	-
False Nettle (Boehmeria cylindrica) Black Mustard (Brassica nigra)	-+				Common Cinquefoil (Potentilla simplex)	\vdash		+		Skunk-cabbage (Symplocarpus foetidus) Purple Trillium (Trillium erectum)	-+-	+	+-	+-	-
Marsh-marigold (Caltha palustris)	H	+	- -	+	Heal-all (Prunella vulgaris)	+		+-1		White Trillium (Trillium grandiflorum)	+	+-	+	+	1
Creeping Beltflower (Campanula rapunculoid	les)	-	-1	†	Shinleaf (<i>Pyrola elliptica</i>)	+				Large-flowered Bellwort (Uvularia grandifiora)	-+-	+	+	+	1
			1-				\pm				u	-	t	+-	1
D - Dominant · represented by large numbers; generally]
					fairly large numbers of individual clumps, usually forming						_		-	-	1
					duals or represented by one or more clumps of many indiv	duals	(most	speci	es wi	ill fall into this catergory)					1
R - Rare: represented in the polygon by less than about i	ive in	and	uală C	r ama	a Gump8		_				-	1	-	-	-
Map Number:	-+					4					<u> </u>	1	+	_	1
Date:	2					5						1	1	1	
Buzveyors:	3					Ľľ								1	
	_								_		ć		-	_	-

Page 2 of 2

Study Area:	Wildlife Habitat Forn		544 BILLISIO
Date:			
	2013-04-24	Time Started:	8:30 B.m.
Field Staff:	Tom storney, to	<u>Aiffe</u> Time Finished:	9:45 a.m.
Weather Conditio	ns: Overcast fain,	15km/L	
	Tree/Shrub Birds, Osprey Bre	eding/Feeding, Bald Eagle E	Breeding/Nesting Habitat
(FET1, FOC, FOM, FOD, S		Vos lifuas photos	raph and complete the following
Nest bowls preser	and the second		
UTMs: See map		Number of ne	
			nce of recent use; birds present):
	ed Stick near in Ac	er jall -> pillner.	LON high in crotch
Flushed tem		L from Nest	
	pitat (note riparian areas if pre	sent, evidence of disturbanc	e): <u>Sugar majale Flander</u>
deithers	forest.		
		-	wintering, Marsh Breeding Birds
(CUM1, CUT1, MAM, MA	AS, SAS1, SAM1, SAF1, SWD, SWT1, SWT2) (FOC, FOM, FOD, SWC, SWM,	SWD,BOO1, FEO1)
Standing water pr	esent: 🛛 📉 No	Yes (if yes, photog	raph and complete the following
UTMs:	السكية	Area of standing w	ater delineated on field map
Water depth (m):	% open v		mergent vegetation:
	water until at least July in mo		
Description of sta	nding water (permanent pool,	evidence of annual spring fl	ooding, etc):
	and the second second second second second	CONTRACTOR OF THE OWNER	
Area and soil/subs	strate of shoreline habitat:		
Type and abundar	nce of cover in open water hal	oitat:	
Type and abundar	nce of cover in surrounding ha	bitat:	
	bance (e.g. cattle grazing):		eneralize biode.
Evidence of use by	y waterfowl, amphibians, turle	es (e.g. broken eggs), marsh	breeding birds:
	Complete Verr	al Pool Habitat Description	Form
Snake Hibernacul		cont.	
FISSULEU LOCK/ IOU	ndation or rock/debris pile pre		ranh and complete the fellouise
	No		raph and complete the following
UTMs:			nd below frost line:
0/			to open canopy (m):
% canopy cover:	ure or crope pile (composition	n/material, dimenstions, etc)	
	are of stone pile (composition		
Description of fiss			dt.a
Description of fiss	rounding habitat (type & abur	ndance of cover, evidence of	disturbance, etc):
Description of fiss Description of sur	rounding habitat (type & abur	ndance of cover, evidence of	disturbance, etc):
Description of fiss Description of sur Seeps and Spring	rounding habitat (type & abur s(FOC, FOM, FOD, S	WC, SWM, SWD)	
Description of fiss Description of sur	rounding habitat (type & abur s(FOC, FOM, FOD, S	WC, SWM, SWD)	disturbance, etc):

	Bird Breeding Hab		nd Cliff Swallow	s)
	1, BLS1, BLT1, CLO1, CLS1,			
Eroding bank, sar	ndy hill, pits, steep s			
		D	James	es, photograph and complete the following (
UTMs:	-		Locatio	n (e.g. aggregate pit, bridge):
Evidence of use b	y bank or cliff swal	lows (provid	e number of nes	
Colonial Nesting	Ground Breeding I	Birds, Shore	bird Migratory S	topover Areas
÷	2, BBT1, BBT2, SDO1, SDS			•
	large river or large			,
		-		ves, photograph and complete the following (
UTMs:		-		sland or peninsula present:
Mudflat present:	<u> </u>			e of disturbance (e.g. cattle grazing):
widdhat present.				e of distarbance (e.g. cattle grazing).
Description of ha	hitat (size of rocky	outcrop/mu	dflat_substrate/s	oil type, type and abundance of cover):
Description of ha	Situt (Size of Foery	outeropyma	unit, substrate,	
			1010	· · · · · · · · · · · · · · · · · · ·
Raptor Winter Fe	eding and Roostin	ig, Open Coi	untry or Shrub/E	arly Successional Bird Breeding Habitat
				-
				r a CUM, CUS, CUT, CUW>15ha
	M1 >30ha, FOC, FOD, FON Id field or generally		at (e.g. CUM, CUS, CU	r a CUM, CUS, CUT, CUW>15ha T, CUS, CUW) present:
Large meadow, o	Id field or generally	y open habit	at (e.g. CUM, CUS, CU	r a CUM, CUS, CUT, CUW>15ha
Large meadow, o Large open habita	Id field or generally	y open habit	at (e.g. CUM, CUS, CU Yes (<i>if</i>)	r a CUM, CUS, CUT, CUW>15ha T, CUS, CUW) present:
Large meadow, o Large open habita	Id field or generally	y open habit	at (e.g. CUM, CUS, CU Yes (<i>if</i>)	r a CUM, CUS, CUT, CUW>15ha r, CUS, CUW) present: yes, photograph and complete the following
Large meadow, o Large open habita UTMs:	Id field or generally at present: X	y open habit. D	at (e.g. CUM, CUS, CU Yes (<i>if</i>) Evidenc	r a CUM, CUS, CUT, CUW>15ha r, CUS, CUW) present: yes, photograph and complete the following
Large meadow, o Large open habita UTMs:	Id field or generally at present: X	y open habit. D	at (e.g. CUM, CUS, CU Yes (<i>if</i>) Evidenc	r a CUM, CUS, CUT, CUW>15ha r, CUS, CUW) present: yes, photograph and complete the following te of disturbance (e.g. cattle grazing):
Large meadow, o Large open habita UTMs:	Id field or generally at present: X	y open habit. D	at (e.g. CUM, CUS, CU Yes (<i>if</i>) Evidenc	r a CUM, CUS, CUT, CUW>15ha r, CUS, CUW) present: yes, photograph and complete the following te of disturbance (e.g. cattle grazing):
Large meadow, o Large open habita UTMs: Description of ha	Id field or generally at present: X	y open habit: p f food plant:	at (e.g. сим, cus, cu Yes (if) Evidenc	r a CUM, CUS, CUT, CUW>15ha r, CUS, CUW) present: yes, photograph and complete the following te of disturbance (e.g. cattle grazing):
Large meadow, o Large open habit UTMs: Description of ha Old-growth or M	Id field or generally at present: No bitat (abundance o lature Forests, Inte	y open habit o f food plant: erior Forest l	at (e.g. CUM, CUS, CU Yes (if) Evidences for rodents, abu Breeding Birds	r a CUM, CUS, CUT, CUW>15ha r, CUS, CUW) present: yes, photograph and complete the following te of disturbance (e.g. cattle grazing):
Large meadow, o Large open habit UTMs: Description of ha Old-growth or M (FOD, FOC, FOM, SWC, S	Id field or generally at present: XNC bitat (abundance o ature Forests, Inte SWM, SWD. Mature fores	y open habit o f food plants erior Forest I t (>60 years) pres	at (e.g. CUM, CUS, CU Yes (<i>if</i>) Evidenc s for rodents, abu Breeding Birds	r a CUM, CUS, CUT, CUW>15ha r, CUS, CUW) present: yes, photograph and complete the following (ce of disturbance (e.g. cattle grazing): undance of perches, height of vegetation):
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Species of Conservation Concern Habitat and Incidental Wildlife - Bluewater Map No: 544- Blw 1510 Date (yyyy-mm-dd): 2013-04-24 Bob Aitken

Breeding Bird (Probable)



Observed Species List

Species Code	UTM	EV	Notes	Species Code	UTM	EV	Notes
mg Spanor		Vo					
nour Thraslor		VO					
Im Roman		06					
d-Belling		VO					
we Jug-		VO					
madlank		Vo					
ad - Jainagd. J Him Hourd		Vo					
led-Tailed Hain		06					- · · · · · · ·
3m. crow		Vo			······································		· · · · · · · · · · · · · · · · · · ·
					· · · · · · · · · · · · · · · · · · ·		
lote: Evidence Co	des (EV) Breeding	Bird (Possible)	SH=Suitable Habitat,	SM=Singing Mele			

T-Territory, D=Display, P=Pair, N=Nest Building, V= Visiting Nest; A=Anxiety Behavior;

Breeding Bird (Confirmed) DD=Distraction, NU=Used Nest, FY=Fledged Young, NE=Eggs, NY=Young, FS=Foos/Faecal sack, AE=Nest Entry

Other Wildlife Evidence: OB=observed, VO=Vocalization, CA=Carcass, DP=Distincitve Parts, HO=House/Den, FY=Eggs/young, TK-tracks, FE=Feeding evidence, SC= Scat, SI=Other signs (specify)

ELC	Speales	Habitat Description	Habitat Present (Y/N; UTM; description of habitat if present)
FOD7	American Gromwell (Lithospermum latifolium) - S3 Bloom Time - Spring		Y N UTM:
FOM1, FOM2, CUP3	Autumn Coral-root (Coraliorhiza odontorhiza) - 82 Bioom Time - summer to fall	Oak-pine woods or occasionally in open, red pine or white pine plantations. Dry, sandy woods.	Y WUTM:
•	Bald Eagle (Haliaeetus leucocephalus) - SC	Assessed as SWH. Record species if found.	not required.
FEO, FES, FET		Found among fens, calcareous shores and meadows.	Y N UTM:
SWC1, SWC3, SWC4, SWM1, SWM2, SWM4, SWM5, SWM6	Chinese Hemlock Parsley (Conioselinum chinense) - S2 Bioom Time -summer to fail	Swampy places with deciduous trees, white cedars, tamarack; springy river banks, creek borders, wet borders of streams and rivers. Also found among calcareous seepage slopes.	Y NUTM:
CUW, SDO, RBO, TPS	Common Nighthawk (Chordelles minor) - SC	Hunts insects over a wide variety of habitats, in particular <u>open or semi-open areas</u> . Nests on ground in a wide range of <u>open, sparse or vacetation-free</u> habitats.	Y 🔞 UTM:
SWC, SWM, SWD,SWT, MAM, MAS	Crowned Beggarticks (Bidens trichosperma) -S2 <u>Bloom</u> <u>Time</u> – late summer	Found in openings in swamps, marshes, along shores & wet fields within the Carolinian zone and southeastern Georgian bay. Bogs, fens, tamarack swamps .	Y (N) UTM:
ALT1, FOD7	Eastern Green-violet (Hybanthus concolor) - S2 <u>Bloom</u> <u>Time</u> –mid March to August	Occurs in rich, wet-mesic floodplain forests as well as mesic forests over limestone. Includes floodplains and river banks.	Y N UTM:
•	Eastern Ribbonsnake (Thamnophis sauritus) - SC	Assessed as SWH. Record species if found.	not required.
FOD8, FOD7, FOD9	Green Dragon (Arisaema dracontium) - SC/S3 <u>Bloom</u>	Species found in damp deciduous forest and along river streams. Particularly Maple forest and forest dominated by Red Ash and White Elm.	Y N UTM:

Species of Conservation Concern Habitat and Incidental Wildlife – Bluewater



ELC	Species	Habitat Description	Habitat Present (Y/N; UTM; description of habitat if present)
FEO1, FES1, FET1, SWC, SWM, SWD, SWT, TPO, IPS, TPW	Hairy Valerian (Valeriana edulis) -S1 <u>Bloom Time</u> – June to August	Inhabits swampy river flats and meadows, wet prairies, and wooded, rocky riverbanks and fens.	Y 🕟 UTM:
FOD6, FOD7, FOD8, FOD9	Harbinger-of-spring (Erigenia bulbosa) - S3 <u>Bloom</u> <u>Time –</u> early to lete April	Occurs in rich, moist deciduous woods, especially on floodplains.	Y NUTM:
BAS1, SAM1, SAF1	Hill's Pond Weed (Potamogeton hillii) - SC/S2 <u>Bloom</u> Time - summer	Aquatic plant found in highly alkaline waters of ditches, ponds, beaver ponds, and slow-moving cold waters.	Y ஸ்ராய:
FOMB, FOM7, FOM8	Large Round-leaved Orchid (Platanthera macrophylia) - S2 <u>Bioom Time</u> – June to August	Species inhabits moist mixed woods. Found in fairly mature, upland sugar maple- besch-eastern hemiock woodlands.	Y N UTM:
MAM2, MAM3, MAS2, MAS3, SWD	Lizard's Tall (Seururus cernuus) - S3 <u>Bloom Time</u> - June - September	Species inhabits shores and streambanks along shallow water. As well as swamps, floodplains, shallow water and mudilate at the borders of streams and ponds.	Y NUTM:
OD, FOM	Louisiana Waterthrush (Seiurus motacille) - SC	Inhabits <u>mature forests</u> along steeply sloped ravines adjacent to running water. Trees, bushes, exposed roots, cliffs, banks and mossy logs are favoured nesting apots. <u>Riparian woodlands</u> are preferred atopover sites during migration	Y (N) UTM:
	Milksnake (Lampropeltis triangulum) -SC	Assessed as SWH. Record species if found.	not required.
CUM1, CUT1, CUW1	Monarch Butterfly (Danaus plexippus) - SC	Their larvae only feed on <u>milikweeds</u> (<i>Åsoleplus</i> spp.). Habitat includes abandoned farmland, along roadsides, open spaces where these plants grow	Y NUTM:
CUW1, ALO, FET1, SWC	Ram's-head Lady's-slipper (Cypripedium arietinum) - S3 Bloom Time -mid May to mid June	Found in cedar woodlands, ilmestone plains and wooded fens, moist coniferous swamps, dry-sandy woods, and ilmestone barren.	Y N UTM:
FOD1, FOD2, FOD3, FOD4, FOD5, FOC1, FOM1, FOM5	Rattiesnake Hawkweed (Hieracium venosum) - S2 <u>Bloom Time</u> – April – September	Species inhabits open, dry sandy woods. Jack pine, cak, and aspen woodlands.	Y N UTM:
FOD, CUW, CUT	Red-headed Woodpecker (Melanerpes erythröcephalus) - SC	Species inhabits open woodland/ edges (oak savannahs and riparian forest), open, deciduous forest with little understory; fields or pasture lands with scattered large trees; wooded swamps; orchards, small woodlots or forest edges; groves of dead or dying trees; requires cavity trees with at least <u>40 cm dbh</u> ; requires about <u>4 ha</u> for a territory.	Y (N) UTM:
FOD8, FOD7, FOD8, FOD9, SWT2, SWT3	Scarlet Beebalm (Monarda didyma) - S3 <u>Bloom Time</u> - May to October	Found in moist, rich woods, thicket swamps, banks and floodplains.	Y DUTM:
	Short Eared Owl (Asio flammeus) - SC	Assessed as SWH. Record species if found.	not required.
TPS, TPW	Sleepy Duskywing (Erynnis brizo) - S1	Occurs in oak/oak-pine scrub, chaparral, barrens, well-drained sandy or shaly soils. Species regularly seen at flowers in oak woods, on the ground, and at mud puddles	Y NUTM:
SDO1, SDS1, SDT1	Slender Vulpla (Vulpla octoflora) - S2	Species inhabits dry, sandy habitats, including rocky woods meadows, dry forests, and stabilized dunes	YN UTM:
BDT1, FOD5, FOD9	Silm-flowered Muhly (Muhlenbergia tenuifiora) - S2	Found in rich deciduous forest, citen on rocky or sandy soils, wooded dunes, hillsides, and riverbanks whether in oak or beech-maple woods	Y NUTM:
	Snapping Turtle (Chelydra serpentine) - SC	Assessed as SWH. Record species if found.	not required.
BLO1, BLS1, BLT1, TPO2, TPS2, TPW2, MAM2, FOD7	Stiff Gentian (Gentlanslia quinquefolia) - S2 <u>Bioom</u> <u>Time</u> – late summer to mid fall	Found in moist solls of streambanks, edges of woods, wet prairies, marshy meadows, bluffs and wooded hillsides.	YN)UTM:
TPS1, TPW1, CUW1, RBO, SBO	Sundial Lupine (Lupinus perennis) - 83 <u>Bloom Time</u> – mid-March to mid-June	Inhabits dry, sandy oak savannahs, prairles, open barrens or clearings in woodlands of oak, jack pine, and/or aspen .	Y N UTM:
FEO, FES, FET, MAM2, MAM3	Tuberous Indian Plantain (Amoglossum plantagineum) - S3 <u>Bloom Time</u> mid-March to mid-June	Occurs mainly in flat, sandy areas of the Bruce Peninsula. Fens, wet meadows, and calcareous river flats.	Y NUTM:
FOD5	West Virginia White (Pieris virginiensis) - SC	This species is restricted to hop moist deciduous woods, where its <u>foodplant</u> <u>Toothwort</u> occur	N UTM: Not observed
FOC1, FOC2, FOC3, FOC4	Woodland Pinedrops (Pterospora andromedea) - S2 <u>Bloom Time</u> – summer	Found in conifer woods, under pines, but also hemicck, spruce, fir, and white cedar. In dry or rocky soil, often with common juniper and sometimes aspen or birch.	Y N UTM:
CUM1, CUT1, CUW1, RBO1, SBO1	Yellow Ladies'-tresses (Spiranthes ochroleuce) - S2 <u>Bioom Time</u> – August to November	Dry, open sites, usually on acidic sandy soil, dry to mesic open woodland, thickets, meadows, barrens, ledges, outcrops, banks and roadsides, old fields.	Y MIM:
	Yellow-breasted Chat (Icteria virens) - SC	Inhabits thickets, tall tangles of shrubbery beside streams, ponds; overgrown bushy clearings with deciduous thickets; nests above ground in bush, vines	Y N UTM:



Appendix C

Vascular Plant Species List

					_			_			_		
			Coefficient of Conservatistm	Wetness Index	Weediness Index	Provincial Status	OMNR Status	COSEWIC Status	Global Status	Local Status Lambton County	Local Status Huron County		
DOTANION N		COMMON NAME										Date	
BOTANICAL N	AME	COMMON NAME										Date	24-Apr-13
												Natural Area	544
			Oldham et al	Oldham et al	Oldham et al	Newmaster			Newmaster	Tiedje 2004	Oldham 1 993	ELC Community	FOD5-1
DICOTYLED		DICOTS											
Aceraceae		Maple Family											
Acer	saccharum	Sugar Maple	4	3		S5			G5T?		х		D
Acer X	freemanii	Freeman's Maple		-		SNR			GNA		L4		R
Anacardiaceae		Sumac or Cashew Family											
Toxicodendron	radicans ssp. negundo	Climbing Poison-ivy	5	-1		S5			G5T		х		R
			0	-1	H	55 S5	\vdash	H	G5T G5T		^		
Toxicodendron	rydbergil	Ground Poison-ivy	U	U		35			001				R
Asteraceae		Composite or Aster Family											
Taraxacum	officinale	Common Dandelion		3	-2	SE5			G5		1		R
Berberidaceae		Barberry Family											
Caulophyllum	thalictroides	Blue Cohosh	6	5		S5			G		х		U
Betulaceae		Birch Family											
Ostrya	virginiana	Ironwood	4	4		S5			G5		х		U
Celastraceae		Staff-tree Family											
Euonymus	obovata	Running Strawberry-bush	6	5		S5			G5		х		F
Cornaceae		Dogwood Family											
Cornus	alternifolia	Alternate-leaved Dogwood	6	5		S5			G5		х		U
Comus	rugosa	Round-Leaved Dogwood	6	5		S5			G5				R
Fagaceae		Beech Family	-	-									
Fagus	grandifolia	American Beech	6	3		S5			G5		х		U
Hydrophyllaceae	grandnolla	Water-leaf Family	0	5		35			0.5		^		0
	- Andre Services	Virginia Water-leaf	6	-2		S5			G5	L4	х		R
Hydrophyllum	virginianum		ь	-2	_	55	_	_	65	L4			ĸ
Juglandaceae		Walnut Family						_					
Carya	cordiformis	Bitternut hickory	6	0		S5			G5		х		U
Juglans	nigra	Black Walnut	5	3		S4			G5		х		R
Lauraceae		Laurel Family											
Lindera	benzoin	Spicebush	6	-2		S5			G5		Х		R
Oleaceae		Olive Family											
Fraxinus	americana	White Ash	4	3		S5			G5		х		F
Papaveraceae		Poppy Family											
Dicentra	canadensis	Squirrel corn	7	5		S5			G5				R
Sanguinaria	canadensis	Bloodroot	5	4		S5			G5		х		U
Rhamnaceae		Buckthorn Family											
Rhamnus	cathartica	Common Buckthorn		3	-3	SE5			G?		1		R
Rosaceae		Rose Family		É	-								
Crataegus	species	Hawthorn species											R
Prunus	species	Cherry Species					\vdash						U
Vimaceae	apoulos												5
		Elm Family				05			050		~		
Ulmus	americana	White Elm	3	-2		S5			G5?		х		R
Vitaceae		Grape Family											
Vitis	riparia	Riverbank Grape	0	-2		S5			G5		х		R
MONOCOTYLEDONS		MONOCOTS											
Cyperaceae		Sedge Family											
Carex	species	Sedge species											U
Liliaceae		Lily Family											
Allium	tricoccum	Wild Leek	7	2		S5			G5	L4	х		F
Erythronium	americanum ssp. americanur	Yellow Trout Lily	5	5		S5			G5T5		х		D
Trillium	species	Trillium Species				S5			G5		х		U
l					-		-	-					

FLORISTIC SUMMARY & ASSESSMENT

Species Diversity

. Total Species: 22 Native Species: Exotic Species 20 2 90.91% 9.09% S1-S3 Species 0 S4 Species S5 Species 1 20 Co-efficient of Conservatism and Floral Quality Index Co-efficient of Conservatism (CC) (average) CC 0 to 3 [overst sensitivity CC 7 to 8 high sensitivity 4.85 **3.00** 15 13.64% moderate sensitivity 68.18% high sensitivity highest sensitivity CC 7 to 8 2 9.09% 0 22 CC 9 to 10 0.00% Floral Quality Index (FQI) Presence of Weedy & Invasive Species mean weediness weediness = -1 -2.50 low potential invasiveness 0.00 0.00% moderate potential invasiveness 1.00 high potential invasiveness 1.00 weediness = -2 50.00% 50.00% weediness = -3 Presence of Wetland Species average wetness value 0.64 upland 6.00 23.90% facultative upland facultative 9 3 21.15% 17.58% facultative wetland 4 19.51% obligate wetland 0 13.74%

EXPLANATION OF TERMINOLOGY

Botanical and Common Name: From Integrated Taxonomic Information System (IT IS). 2012.

Co-efficient of Conservatism: This value, ranging from 0 (low) to 10 (high), is based on a species tolerance of disturbance and fidelity to a specific habitat integrity.

Wetness Index: This value, ranging from -5 (obligate wetland) to 5 (upland) provides the probability of a species occurring in wetland or upland habitats.

Weediness Index: This value, ranging from -1 (low) to -3 (high) quantifies the potential invasiveness of non-native plants. In combination with the percentage of non-native plants, it can be used as an indicator of disturbance.

Provincial Status: Provincial ranks are used by the NHIC to set protection priorities for rare species and natural communities. These ranks are not legal designations. S4 and S5 species are generally uncommon to common in the province. Species ranked S1-S3 are considered to be rare in Ontario. Local Status:

VU: native and very uncommon X: native and not rare or very uncommon C: native and common R: native and rare I: introduced and persisting outside of cultivation. Ir: introduced and rare Ih: introduced and known only from historic records Ivu: introduced and very uncommon lu: introduced and uncommon Ic: introduced and common Annotations: Provides comments on general distribution and abundance on the subject lands. Definitions of terminology and abbreviations used as follows. Abundance Dominant: represented by large numbers; generally forming >10% ground cover or >25% vegetation in any one stratum Fairly common: generally widespread; represented by fairly large numbers of individual clumps; usually forming >10% ground cover Uncommon: present as widespread scattered individuals or represented by one or more clumps of many individuals

Rare: represented in the polygon by less than about five individuals or small clumps

DETAILED EXPLANATION OF TERMS

Floral Quality Index and Coefficient of Conservatism Values

Vegetation species and community sensitivity was assessed through the application of coefficient of conservatism values (CC), assigned to each native species in southern Ontario (Oldham, et. al, 1995). The value of CC, ranging from 0 (low) to 10 (high), is based on a species tolerance of disturbance and fidelity to specific habitat integrity. The occurrence of species with a CC of 9 or 10 can be good indicators of undisturbed conditions such as mature forests, fens or bogs.

General habitat values associated with the CC values are:

0-3: species found in a wide variety of communities, including disturbed sites 4-6: species associated with a specific community, but tolerate moderate disturbance

7-8: species associated with a community in an advanced successional stage, tolerant of minor disturbances

9-10: species with a high degree of fidelity to a narrow range of synecological parameters

The floristic quality of an area is reflected in the mean value of CC. For example, an old field or grazed woodlot would tend have a low mean CC; these habitats are dominated by opportunistic species that occur in a wide range of site conditions and are tolerant of disturbance. A bog, prairie or intact forest would have a higher value, reflecting the specific habitat requirements of many of the species and a generally undisturbed condition. The following provides an example of interpretation of CC values: mean CC value / % spp CC >8 / Condition of the Landscape

5 / 27 / intact 3.5 / 19 / slightly degraded

1.3 / 2 / severely degraded

The FQI accounts for the species diversity of the area by equating the number of native species with the mean CC value. The FQI is generally used for comparing natural areas. The CC value and FQI of the study area were calculated for the entire study area.

Weediness Index

The sensitivity of natural areas can be assessed through application of the Weediness Index. The Weediness Index quantifies the potential invasiveness of non-native plants, and, in combination with the percentage of non-native plants can be used as an indicator of disturbance. Values (ranging from 1- to -3) have been assigned to most non-native species based on the potential impact each species can have in natural areas:

-1: little or no impact on natural areas (most non-native plants are in this category)

-2: occasional impacts on natural areas, generally infrequent or localized

-3: major potential impacts on natural areas

Wetness Index

All plants in southern Ontario have been assigned a wetland category, based on the designations developed for use by the United States Fish & Wildlife Service. Plants are designated into the following categories:

OBL (Obligate Wetland): occurs almost always in wetlands under natural conditions (estimated >99% probability)

FACW (Facultative Wetland): usually occurs in wetlands, but occasionally found in non-wetlands (estimated 67-99% probability)

FAC (Facultative): equally likely to occur in wetlands or non-wetlands (estimated 34-66% probability)

FACU (Facultative Upland): occasionally occurs in wetlands, but usually occurs in non-wetlands (estimated 1-33% probability)

UPL (Upland): occurs almost never in wetlands under natural conditions (estimated <1% probability)

Further refinement of the Facultative categories are denoted by a "+" or "-" to express exaggerated tendencies for those species. The "+" denotes a greater estimated probability occurring in wetlands than species in the general indicator category, but a lesser probability than species occurring in the next higher category. The "-" denotes a lesser estimated probability of occurring in wetlands than species in the general indicator category, but a greater probability than species occurring in the next lower general category. Each wetland category has been assigned a numerical value to facilitate the quantification of the wetness index. The wetland categories and their corresponding values are as follows:

OBL : -5 FACW+: -4 FACW: -3 FACW-: -2 FAC+ -1 FAC: 0 FAC-: 1 FACU+: 2

FACU: 3 FACU-: 4 UPL: 5

Provincial Status

Provincial ranks are used by the NHIC to set protection priorities for rare species and natural communities. These rankings are based on the total number of extant Ontario populations and the degree to which they are potentially or actively threatened with destruction. The ranks are: S1: Critically Imperiled—Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province S2: Imperiled—Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province

S3: Vulnerable—Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation

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

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

SH: Possibly Extirpated (Historical)—Species or community occurred historically in the nation or state/province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20-40 years. A species or community could become NH or SH without such a 20-40 year delay if the only known occurrences in a nation or state/province were destroyed or if it had been extensively and unsuccessfully looked for. The NH or SH rank is reserved for species or communities for which some effort has been made to relocate occurrences, rather than simply using this status for all elements not known from verified extant occurrences

SNR Unranked—Nation or state/province conservation status not yet assessed

SX: Presumed Extirpated—Species or community is believed to be extirpated from the nation or state/province. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered

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

SU: Unrankable—Currently unrankable due to lack of information or due to substantially conflicting information about status or trends

Rank ranges, e.g. S2S3, indicate that the rank is either S2 or S3, but that current information is insufficient to differentiate.

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

REFERENCES

Nomenclature based on:

Integrated Taxonomic Information System (IT IS). 2012: (http://www.itis.gov) Co-efficient of Conservatism, Wetness & Weediness:

Oldham, M.J., W.D. Bakowsky and D.A. Sutherland. 1995. Floristic quality assessment for southern Ontario. OMNR, Natural Heritage Information Centre, Peterborough. 68 pp.

Provincial (Ontario) Status:

Natural Heritage Information Centre (NHIC). 2000. Provincial status of plants, wildlife and vegetation communities database. http://www.mnr.gov.on.ca/MNR/nhic/nhic.html. OMNR, Peterborough.

Local Status:

Oldham, M.J. 1993. Distribution and Status of the Vascular Plants of Southwestern Ontario. OMNR