

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.

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

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

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

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)	Figure 1E
		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) • 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)	
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.	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)	-
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)	Figure 1E
		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)	
		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)	
F1: 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 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 1F
		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)	

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

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 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)	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	Generalized Candidate Significant Wildlife Habitat: Bat Maternity Colony and Species of Conservation Concern Habitat (no change) 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.	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 1H
H2: Addition of construction disturbance area for the transmission line on private properties 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 1H

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

Proposed Modification	Rationale for Proposed Modification	Features in Proximity to Proposed Modification					
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				
I2: 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				

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.

Table 2. Summary of Changes to Approved NHA and EIS

NHA and EIS Report Section	Change	Refer to Amendment Section(s)					
2. Records	Methods: No changes.	Section 2					
Review	Results: No changes.	1					
3. Site Investigation	Methods: Site investigations were conducted in 2013 for Natural Area 544, to determine whether Project modifications resulted in changes to the designations of candidate Significant Wildlife Habitat and Generalized Candidate Significant Wildlife Habitat. This Natural Area was assessed to determine whether it contained wetlands, woodlands, or candidate Significant Wildlife habitat. The site investigations were conducted following the survey methods described in the approved NHA and EIS. Survey dates, time, weather conditions, field notes and the qualification of field personnel are included in this amendment.						
	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					

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

		Minimum		Attribute	es		Functions		
Woodland ID	Natural Area	Distance from Project Location (m)	Size (ha)	Forest Community Type	Woodland Age	Composition			
T	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.

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

		Natural	Minimum Distance from Project Location (m)					
Feature ID	Feature Type	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)				

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.

Table 6. Determination of Significance for Woodlands

				(Basec	l on '			Criteria and S			IIOW:	ater)				
		1. Woodland Size	oodland 2a. Woodland		2a. Woodland 2b. Proximity to			Protection			2e. Dive Rep	Woodland ersity presentation mposition)	3. Uncommon Characteristics			
Woodland Feature ID	Natural Area#	Must be at least 20 ha in size Must have woodland interior at least 2 ha in size		o natui hal	t be within 30 m f a significant al feature or fish bitat ² and be at ist 4 ha in size	e within 30 m significant feature or fish at² and be at Must be located between 2 other significant features each of which are		wi sensi disch wat habita			st be dominated singly or in ombination by ative naturally curring Ms, Mb, I, Mr, By, H, Ba, Wb, Ta, Sp, Pi, Ba, He, and be east 4 ha in size	veg (S' mo H res pla indiv m of be n Cha woo	Must have rare vegetation community (S1, S2, S3) and be more than 0.5 ha in size OR Habitat of a rare, uncommon, or restricted woodland plant species with 10 individual stems or 100 m of leaf coverage and be more than 0.5 ha in size OR Characteristics of older woodlands with larger tree size structure in native species and be		Determination of Significance	
		Criteria Met Y/N Description	Y/N	Description	Y/N	Description	Y/N	Description	Y/N	Description	Criteria Met Criteria Met Y/N Description Y/N Description					
Т	544	N 3.9 ha in size		No interior forest	N	Does not meet size requirement	N	Does not meet size requirement	Y	Within groundwater recharge area	N	Description Does not meet size requirement	N	Description Does not meet specified requirements	1	Significant

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:

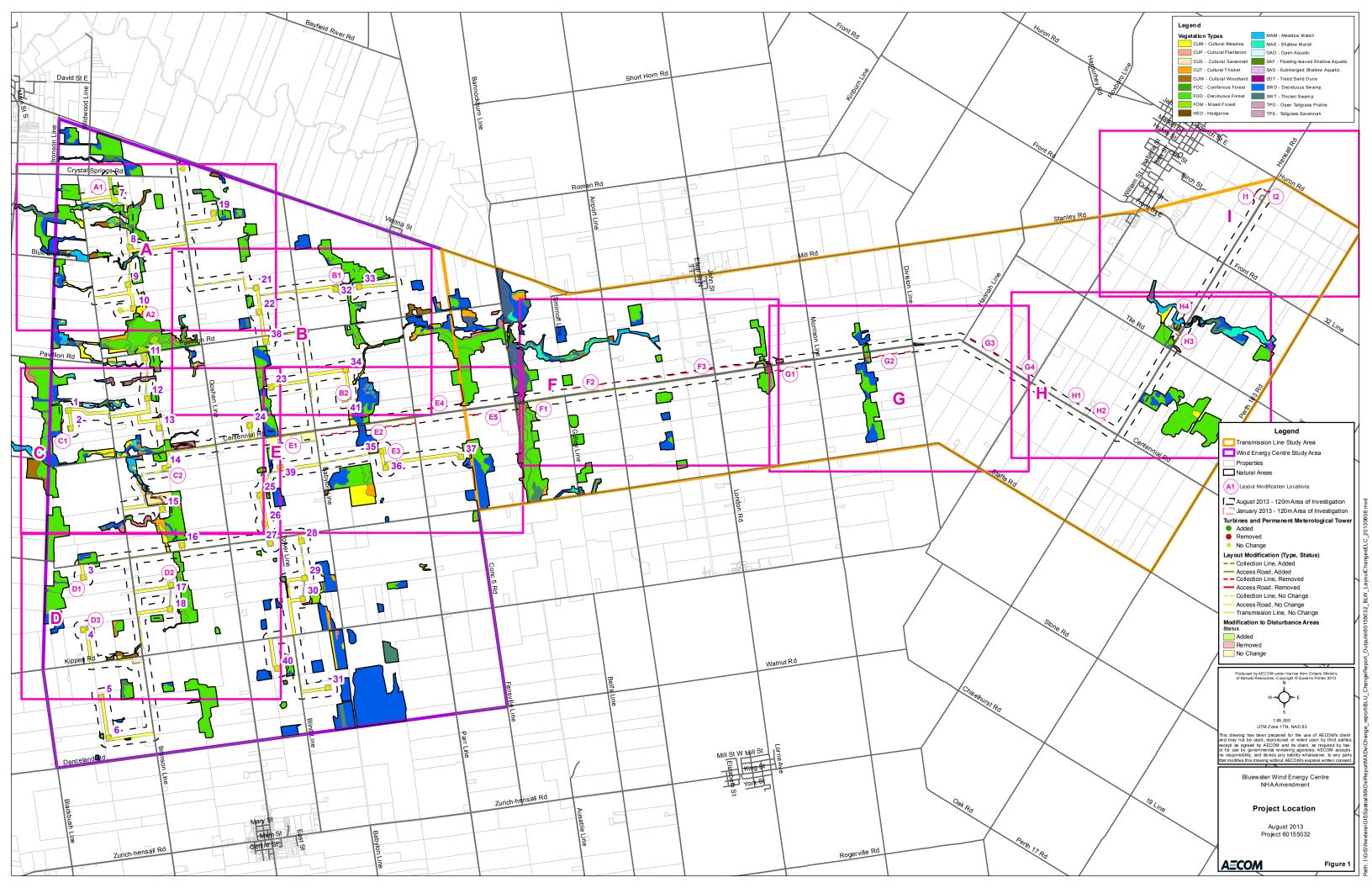
Bluewater Wind Energy Centre Natural Heritage Assessment and Environmental Impact Study Report Amendment. Prepared for NextEra Energy Canada, ULC. January 2013.

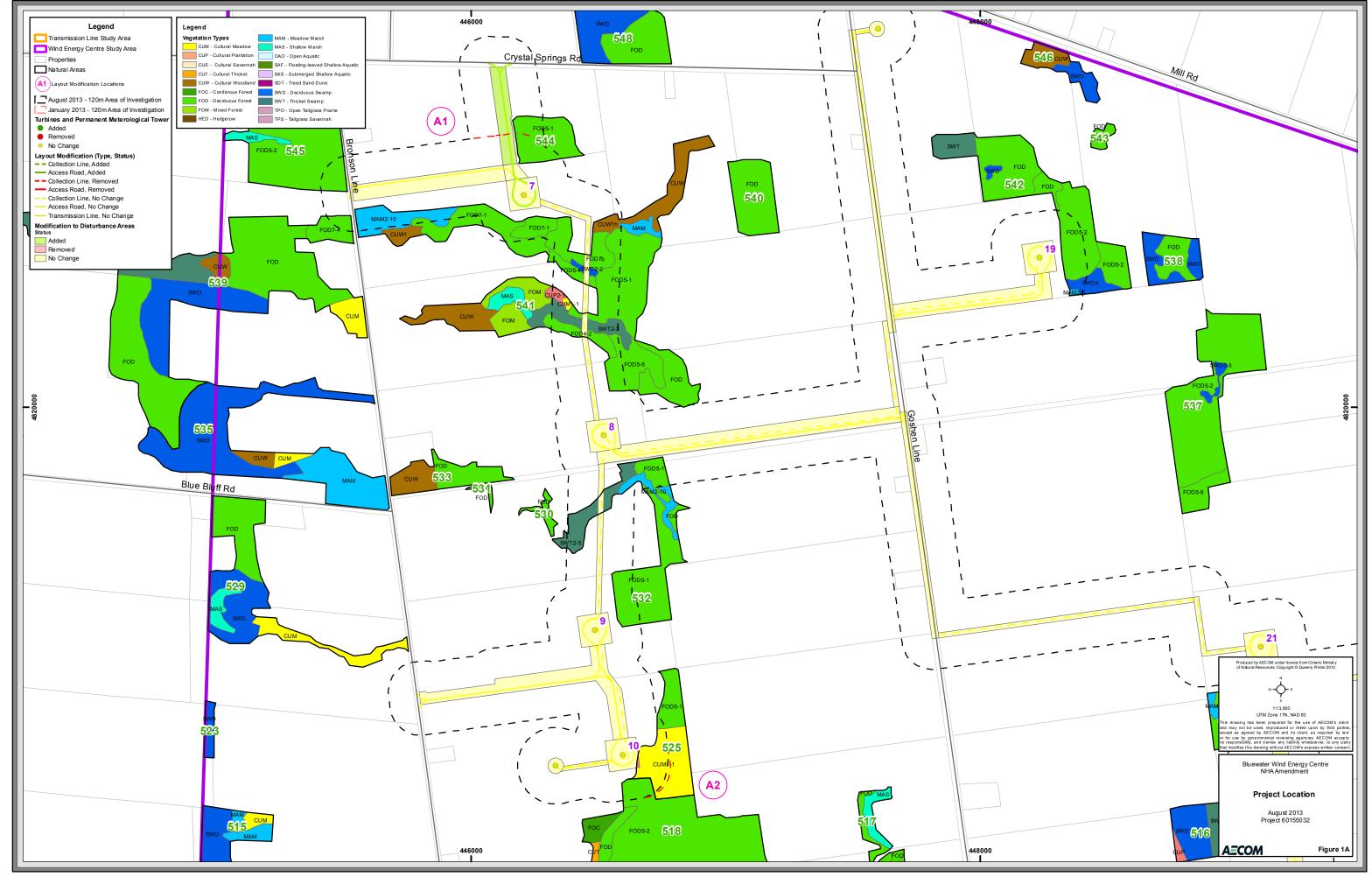
Natural Resource Solutions Inc. (NRSI), 2013:

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.

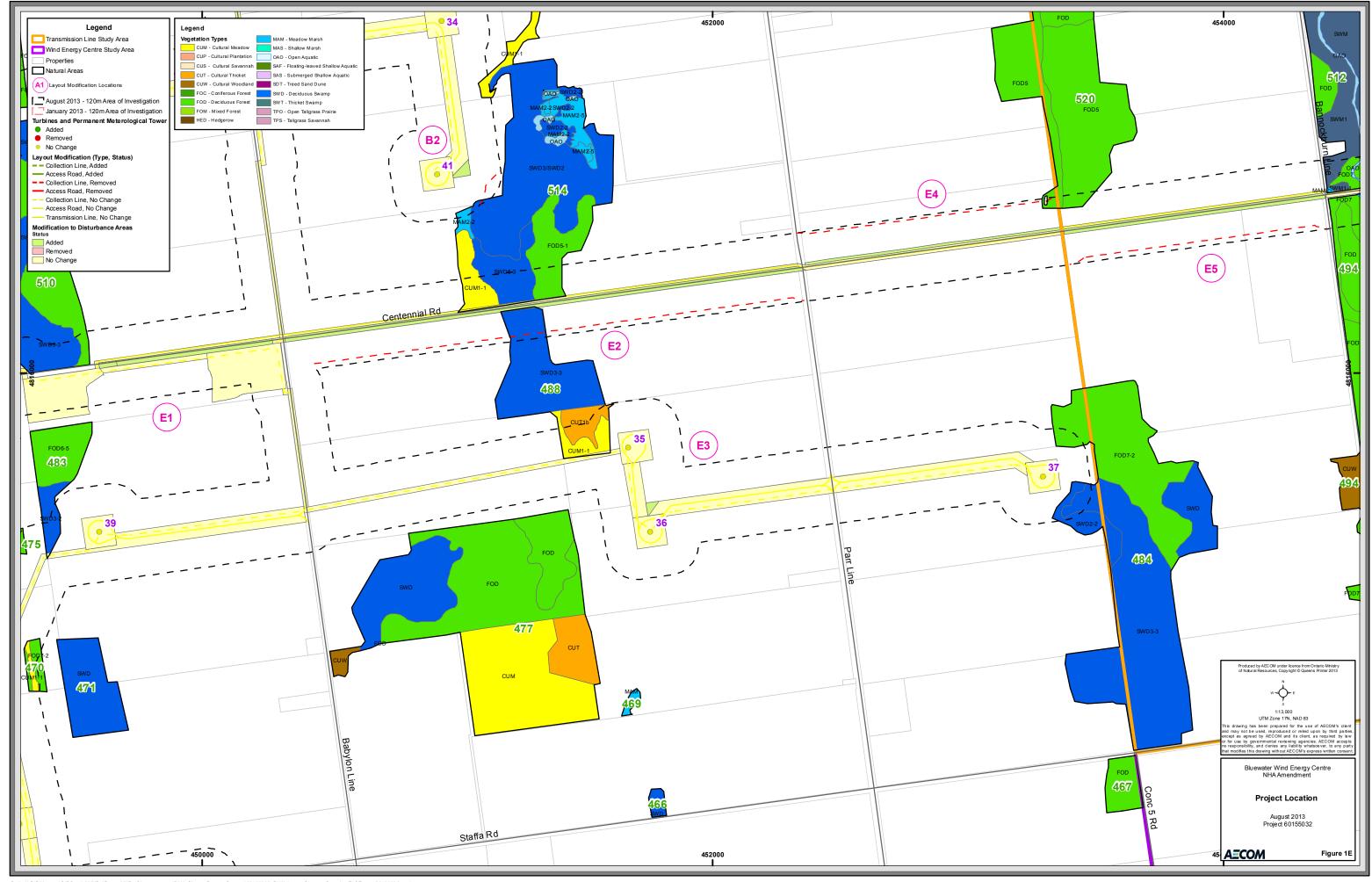




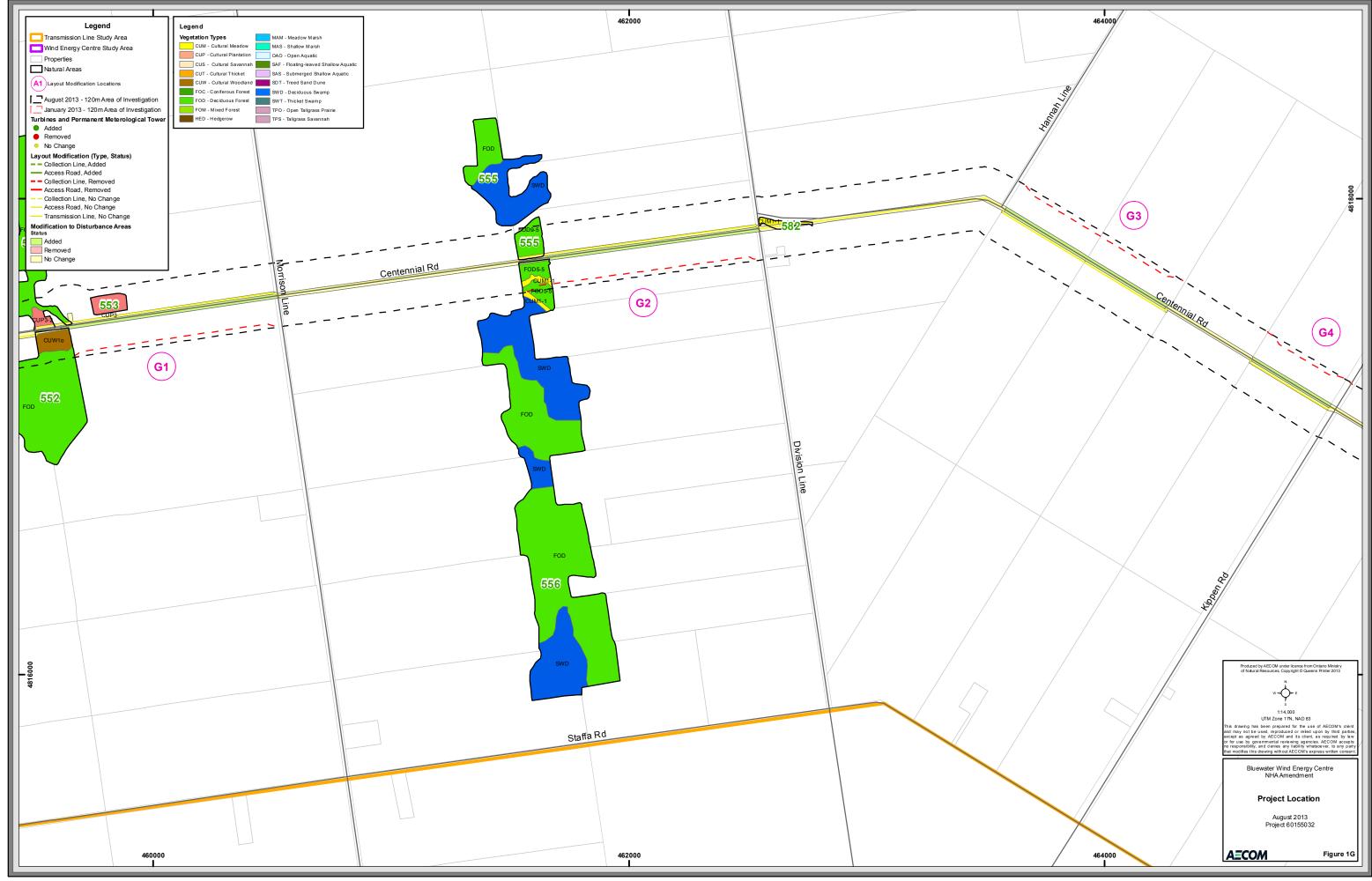


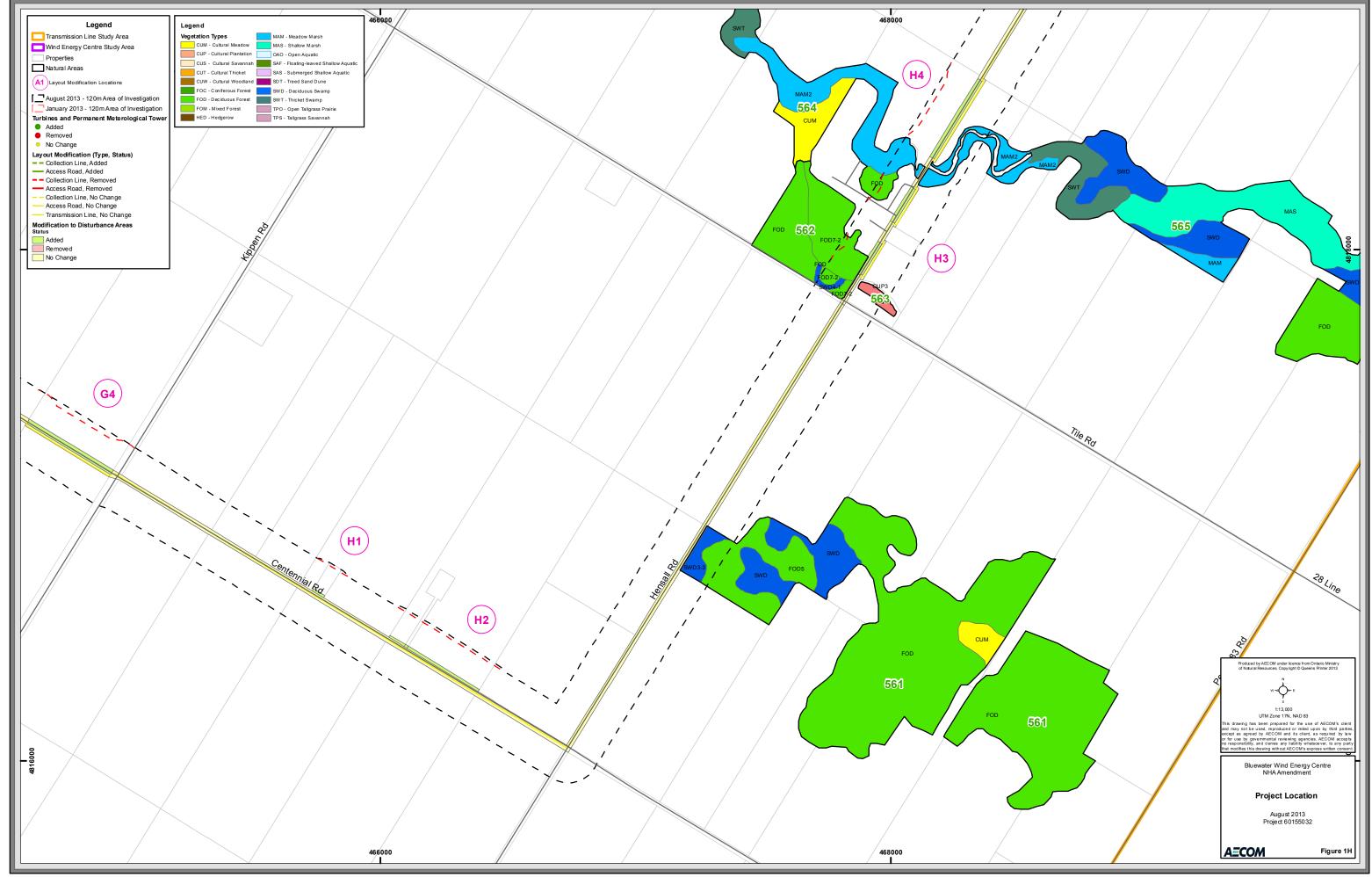


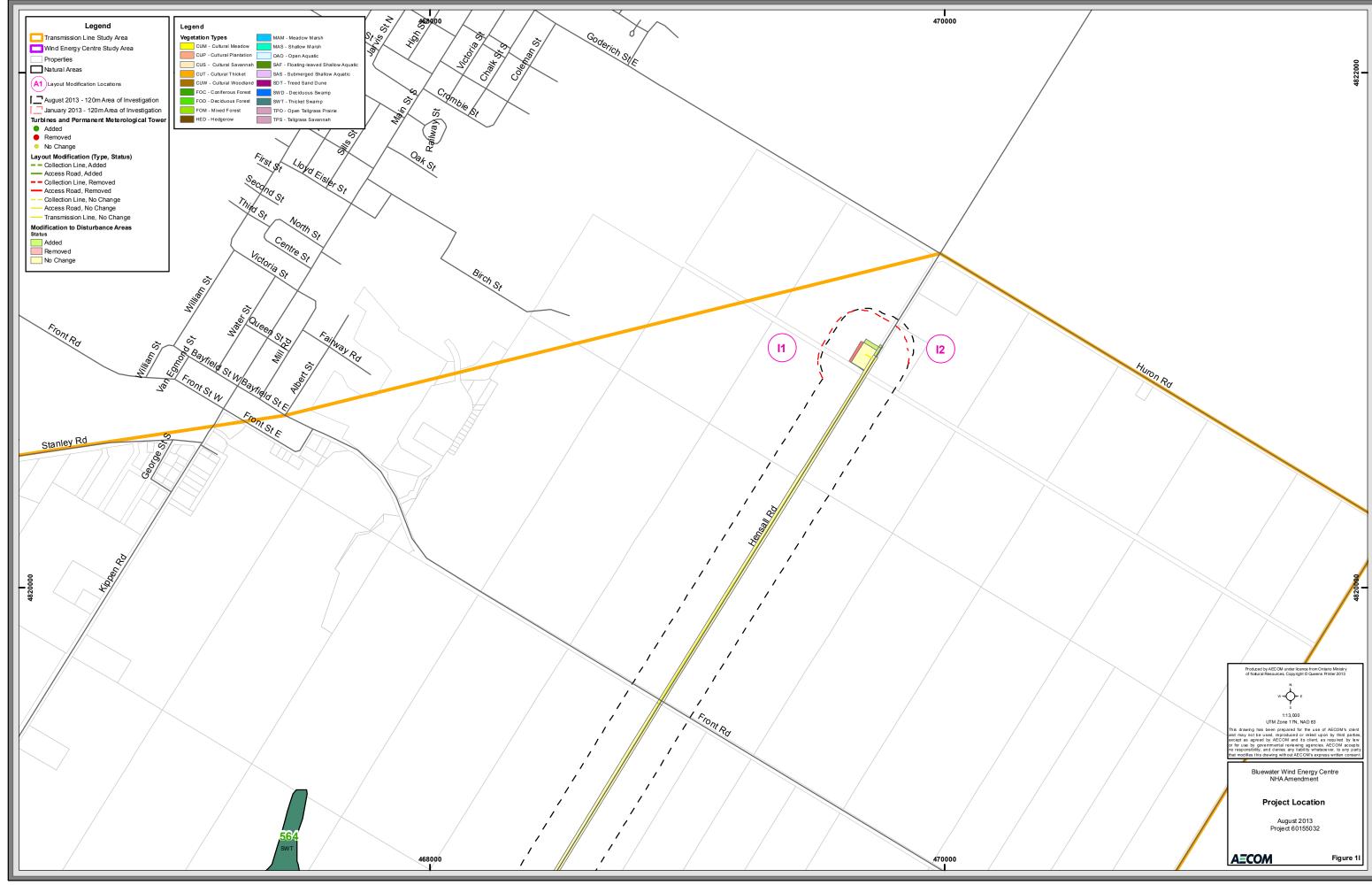














Appendix A

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 post-construction 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

Ministry of Natural Resources Ministère des Richesses naturelles Ontario

Renewable Energy Operations Team 300 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 <u>jim.beal@ontario.ca</u> or 705-755-3203.

Sincerely,

Kazia Milian

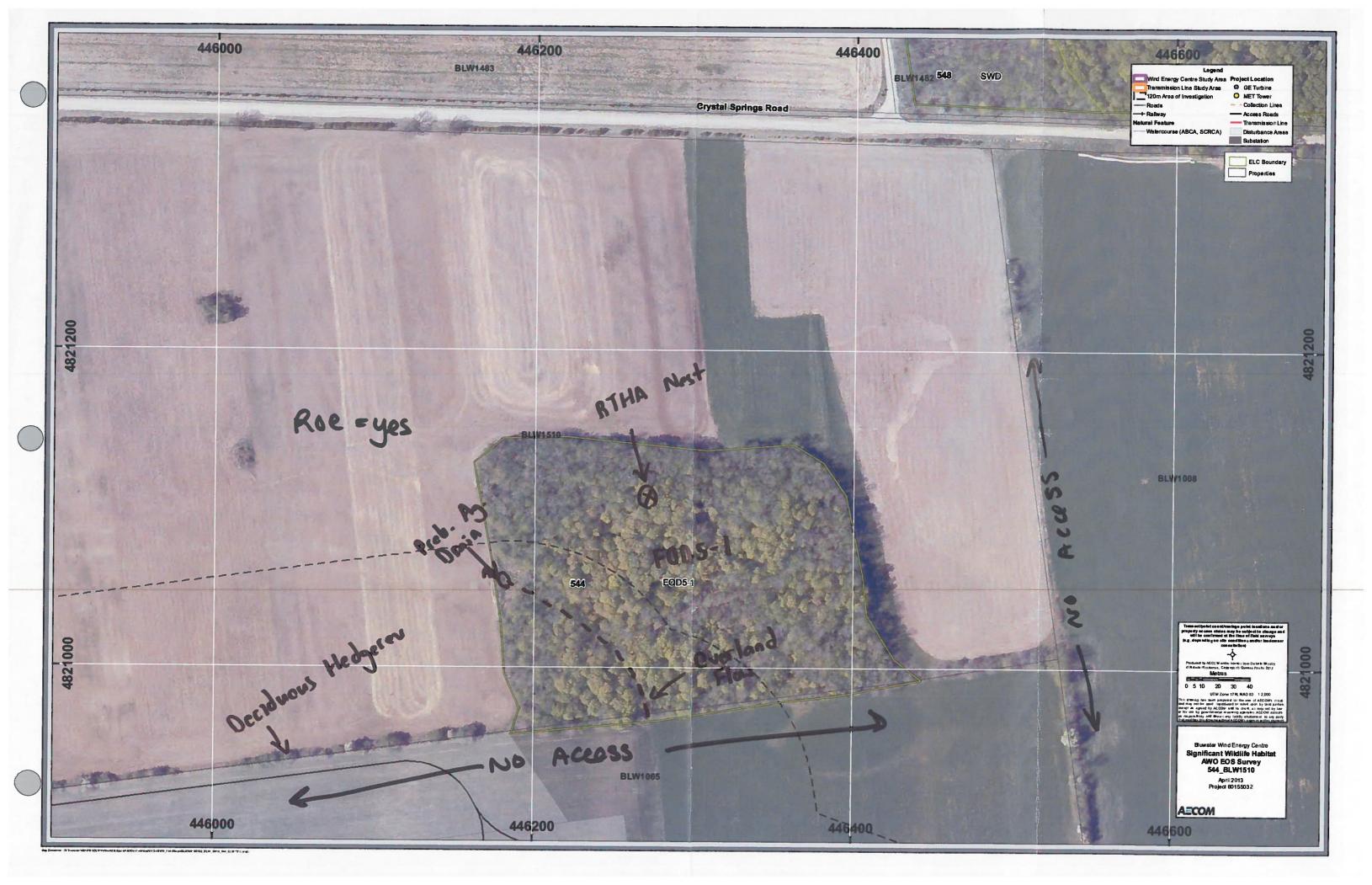
Regional Planning Coordinator Ministry of Natural Resources Southern Region Planning Unit

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



EI C	Map#: 544 RI	WISIO	Polygon: FOD	(1)
ELC	Surveyor(s):	Date:		tart: 8.3Car
Community Description and	TS. RA	April 24	2013 fin	ish: 9:45an
Classification	UTMŹ:	UTMZ:	UTM	N:
Polygon De	scription			
System	Substrate	Topographic Feature	Plant Form	Community
Terrestrial	Organic	Lacustrine	Plankton	Lake
☐Wetland ☐Aquatic	☑Mineral Soii ☐Parent Min.	☐Riverine ☐Bottomland	UŞubmerged □Floating-LVD.	☐Pond ☐River
Site	Acidic Bedrk	Terrace	☐Graminoid	□Stream
□Open Water	☐Basic Bedrk	□Valley Slope	□Forb	□Marsh
☐Shallow Water	☐Carb. Bedrk	⊠ Tableland	□Ļichen	Swamp
Surficial Dep.		Roll. Upland	Bryophyte	☐ Fen
□Bedrock			Deciduous	□Bog
History Matural		Talus	Coniferous	Barren
Cultural		□Crevice/Cave □Alvar	☐Mixed	☐Meadow ☐Prairie
Cover		Rockland		☐Thicket
Open		Beach / Bar		Savannah
Shrub		☐Sand Dune		□Woodland
☑Treed		□Bluff		⊠ Forest
				□Plantation
Stand Desc		s In Order of Decre	Dominon Company	(made de m)
Layer HT CV		ch Greater Than; > 0		
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2 2 3		TILANER = FR		TURG
3 4 2	DRIVINGS	FRAAFILA	Arrage	<u> </u>
4 7 7		> EUGOROV .		
HT Codes: 7 < 0.2m CVR Codes: 0 = none		5-1m 4>1-2m	3 >2-8m 2 >6-25m	1 >25m
Stand Compositi	on: Size Class Ar	natysis: () <10	A 10-24 (25-50 7 >50
	Standing	Snags: <10	10-24	
BA:	Deadfall	/ Logs: <10) R 10-24 R	25-50 📈 >50
Abundance Codes:	N = None R = Ra	are O = Occasional	A = Abundant	
Com. Age:	Pioneer Yo	oung XMid-A	ge Matur	e Old Growth
Ecosite: Dov	- Fresh Sugar	Maple Decidus	Sus For Code	F005
	- Freit Sugar Maj	de Decidions F	rest Code:	
Туре:	- 71.717 - 05/20 - 17			F005-1
Inclusion:			Code	-
Complex: -	3 35"		Code	_
-	Profile Diag	-		7
unedla fa ;	enster, pljbly		2.4.61.31.31	ZCOLINGLQT
Notes:				

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		<u> </u>			-		
		1			ļ		
Total					-	100	
Basal Area (BA)	10 000						
Dead							

Solis Ontario and ELC Soils Description Plt/Auger # Summary Zone Easting Site Metrics Moisture Northing Regime Position Aspect Slope Percent Siope Drainage Length Mottles Gley **Effective** Water Table Texture Carbonates (indicate Bedrock below) Depth from %/CF % CF % CF % CF zero Texture Depth from % CF % CF % CF % CF 2 zero Texture Soil Horizon Description Depth from % CF % CF % CF % CF 3 zero/ Texture Depth from % CF % CF % CF % CF zero Texture % Surface Stone/Rock Moisture Regime Drainage

ELC	Map#: 544 B	W 1510		duous Hedgeaux	()Tr	ee '	Tally by S	pecies			Prisi	n He	2
Community	Surveyor(s):	Date:	اما با	tart: 8:30-6m			Specijos	Tally 1	Tally 2	Tally 3	Tally 4	ALL REAL PROPERTY.	Rel. Avg.
Description and Classification	UTMŹ:	UTMŽ:	UTM		1 -								
Polygon De	scription								 				<u> </u>
Para la constitución de la colonia de		Topograpio	શ લ મા							- Andrews			
System	Substrate	Topographic Pasture	Plant Form	Community					-/				
Terrestrial Wetland	☐Organic ☑Mineral Soil	□Lacustrine □Riverine	☐Plankton ☐Submerged	□Lake □Pond									
□Aquatic	☐Parent Min.	☐Bottomland	☐Floating-LVD.	□River	To	2.2	, e i e e e e e e e e e						100
Site Uopen Water	☐Acidic Bedrk ☐Basic Bedrk	☐Terrace ☐Valley Slope	☐Graminoid ☐Forb	Stream Marsh	10 s		6g.(19/A)		 				
Shallow Water	☐Carb. Bedrk	☐ Tableland	Lichen	□Swamp		171	Ontario a	and ELC	Soile D	os erinti	100		
Surficial Dep. Bedrock		□Roll. Upland □Cliff	☐Bryophyte ☐Deciduous	□Fen □Bog ⋈/△			Plt/Auger#	and EEO	1 0115	escripti	011		
History		☐Talus ☐Crevice/Cave	☐Coniferous ☐Mixed	□Barren □Meadow		<u> </u>	Zone					Su	mmary
☐Natural ☐Cultural		□Alvar		Prairie		ME 5	Easting					4	
Cover UOpen		Rockland Beach / Bar		☐Thicket ☐Savannah	Metrics	5	Northing				7		oisture
Shrub		☐Sand Dune		☐Woodland	8		Position				<u> </u>	- R	egime
☑Treed		□Bluff		☐Forest ☐Plantation	Sta	0	Aspect					+	
24 1	-1-41			_ Griantauon		Slope	Percent						
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CVR Codes: 0 = none			60%	1-2011		1	Depth from zero	/% C	F	% CF	% CF		% CF
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BA:	Deadval	// Laga: <16	——————————————————————————————————————	-		2	zero	/ % C		% CF	% CF		% CF
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r		3.					Stone/Rock						
						Mois	sture Regime						
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Notes:													

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nmon Juniper (Juniperus communis)	11		\vdash	Bur Oak (Quercus macrocarpa) Redtop (Agrostis stolonifera)	†	+-	Г
ern Red Cedar (Juniperus virginiana)	П			Red Oak (Quercus rubra) Awnless Brome (Bromus inermis)	Γ		
arack (Larix Iaricina)				Alder Buckthorn (Rhamnus ainifolia) Bromus	Γ.		L
ay Spruce (Picea abies)	$\bot \bot$			Common Buckthorn (Rhamnus cathartica)		L	L
Spruce (Picea glauca)	₩		1	Smooth Sumac (Rhus glabra) Orchard Grass (Dactylis glomerata)	\vdash	-	-
Spruce (Picea mariana)	₩	-		Staghorn Surnac (Rhus hirta) Poverty Oat Grass (Danthonia spicata)	╂	+	-
Pine (Pinus banksiana)	╀	+		Wild Black Currant (Ribes americanum) Quack Grass (Elymus repens) Prickly Gooseberry (Ribes cynosbeti) Virginia Wild Rye (Elymus virginicus)	+-	-	-
Plne (Pinus resinosa) em White Pine (Pinus strobus)	╂═┼			Swamp Black Current (Ribes lacustre) Elymus	╁	╁	⊢
th Pine (Pinus sylvestris)	++	-		Red Currant (Ribes rubrum)	t	\vdash	-
da Yew (Texus canadensis)	+	+		Ribes Fowl Manna Grass (Glyceria striata)	†-	Т	
em White Cedar (Thuja occidentalis)	1-1			Black Locust (Robinia pseudo-acacia) Glyceria	1-		
ern Hemlock (Tsuga canadensis)	\Box			Prickly Rose (Rosa acicularis) Rice Cut Grass (Leersia oryzoides)	1		Γ
				Smooth Rose (Rose blanda) Tall Fescue (Lolium arundinaceum)	oxdot		
				Multiflora Rose (Rosa multiflora) Muhlenbergia	L		L
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toba Maple (Acer negundo)	1.4	R L		Com. Blackberry (Rubus allegheniensis) Panicum	\vdash	1	<u> </u>
(Maple (Acer nigrum)	-	_	+	Wild Red Raspberry (Rubus idaeus) Reed Canary Grass (Phalaris arundinacea)	-	-	<u> </u>
ay Maple (Acer platanoides)	11	R_		Black Raspberry (Rubus occidentalis) Timothy (Phleum pratense)	⊢	\vdash	\vdash
Maple (Acer rubrum)	₩	+		Purple-fl. Respberry (Rubus odoratus) Common Reed (Phragmites australis)	Н	┦	-
r Maple (Acer saccharinum)	R			Dwarf Raspberry (Rubus pubescens) Canada Blue Grass (Poe compressa) Rubus Fowl Meadow Grass (Poe palustris)	\vdash	\vdash	\vdash
man's Maple (Acer X freemanii)		+		Peach-leaved Willow (Salix amygdaloides) Kentucky Bluegrass (Poa pratensis)	1	Н	-
r Maple (Acer saccharum) ntain Maple (Acer spicatum)	19	-		Bebb's Willow (Salix bebbiana) Yellow Foxtail (Setaria pumila)		H	
kled Alder (Alnus incane)	1	_		Pussy Willow (Salix discolor) Green Foxtall (Setaria viridis)	\vdash	H	-
ny Serviceberry (Amelanchier arborea)	1			Missouri Willow (Salix eriocephala)		\vdash	
ceberry (Amelanchier sanguinea)				Sandbar Willow (Salix exigua)		П	Г
w Birch (Betula alleghaniensis)				Shining Willow (Salix lucida)			
Birch (Betula papyrifera)		\perp		Black Willow (Salix nigra)			
pean Birch (Betula pendula)			Ш	Slender Willow (Salix petiolaris)			Ĺ
Beech (Carpinus caroliniana)	\sqcup		ш	Salix	\sqcup	\sqcup	_
nut hickory (Carya cordiformis	N			Hybrid Crack Willow (Salix X rubens)	Ш	ш	_
bark Hickory (Carya ovata)	\vdash			Black-berned Elder (Sambucus nigra)	H	Н	
Ing Bittersweet (Celastrus scandens)	₩	+		Red-berried Elder (Sambucus racemosa) Buffaloberry (Shepherdia canadensis) Sedges	Н	Н	_
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aved Dogwood (Comus alternifolia)	u	+		Narrow Meadow-sweet (Spiraea alba) Golden-fruited Sedge (Carex aurea)	Н	H	_
Dogwood (Cornus amomum)		+		Common Lilac (Syringa vulgaris) Graceful Sedge (Carex gracillima)	+	Н	_
nberry (Comus canadensis)		-		Poison-ivy (Toxicodendron rydbergii) Inland Sedge (Carex Interior)	\Box	П	-
dogwood (Comus racemosa)	\Box	_		Climbing Polson-ivy (Toxicodendron radicans) R Bladder Sedge (Carex intumescens)	П	П	_
d-leaved Dogwood (Cornus rugosa)	R			White Elm (Ulmus americana) (Lake-bank Sedge (Carex lacustris)	\Box		_
osler Dogwood (Cornus serices)				Siberian Elm (Ulmus pumila) 1 Hop Sedge (Carex lupulina)			
ican Hazel (Corylus americana)	Ц			Slippery Elm (Ulmus rubra) Pennsylvania Sedge (Carex pensylvanica)			
ed Hazel (Corylus comuta)	\perp			Low Blueberry (Vaccinium angustifolium) Awl-fruited Sedge (Carex stipata)	Ш	Ш	_
pur Thorn (Crataegus crus-galli)	\vdash			Maple-leaf Viburnum (Viburnum acerifolium) Fox Sedge (Carex vulpinoides)		Н	
h Hawthorn (Crataegus monogyna) -fruited Thorn (Crataegus punctata)	\vdash	+		Hobblebush (Viburnum lantanoides) Carex Sc. Nannyberry (Viburnum lentago) Carex	Ŋ	\vdash	
	R			Guelder-Rose (Viburnum opulus) Carex		\vdash	-
egus	1	1		Downy Arrow-wood (Vib. rafinesquienum) Carex	Н	-	
Honeysuckle (Diervilla lonicera)		+		Riverbank Grape (Vitis riperia)		П	
an Olive (Elaeagnus angustifolia)		-		Am. Prickly-ash (Zanthoxylum americanum) Carex		П	
nn Olive (Elaeagnus umbellata)	\Box	\top		Carex	П	П	
Strawberry-bush (Euonymus obovata)	F			Carex		\Box	
can Beech (Fagus grandifolia)	u			Carex			
y Buckthom (Frangula alnus)				Cerex		Ш	
Ash (Fraxinus americana)	F	╨		Ferns & Allies Carex	\sqcup	Ш	
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-hazel (Hamamelis virginiana) rberry (Ilex verticilata)	-			Bulbet Bladder Fem (Cystopteris bulbifera) Redroot Spike-rush (Eleocharis erythropoda) Spin. Wood Fern (Dryopteris carthusiana) Eleocharis	一		
nut (Juglans cinerea)	-			Crested Wood Ferri (<i>Dryopteris cristata</i>) Hard-stem Bulrush (Schoenopiectus acutus)	-	1	
	RI	1		Marginal Wood Fam (Dryopteris cristate) Marginal Wood Fam (Dryopteris marginalis) Three-square Bulrush (Sch. pungens)	H		-
	12.17	1		Dryopteris Soft-stem Bulrush (Sch. tabernaemontani)	Н	\sqcap	
	N	11		Ostrich Fern (Matteuccie struthiopteris) Dark-green Bulrush (Scirpus atrovirens)	[-		_
on Privet (Ligustrum vulgare)	سقىمىي			Sensitive Fern (Onoclea sensibilis) Wool-grass (Scirpus cyperinus)			
on Privet (Ligustrum vulgara) oush (Lindera benzoin)	LI	\neg		Cinnamon Fern (Osmunda cinnamomea)			
on Privet (Ligustrum vulgare) oush (Lindera benzoin) oneysuckle (Lonicera canadensis)		1		Interrupted Fern (Osmunda claytoniana)	Ш		
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Plant Species List 2012

	_				2012	_							
Dicot Herbs - Asteraceae	1	2	3	4 5		1	2	3 4		1	2	3 4	4 5
Common Yarrow (Achillea millefolium)	_				Shepherd's Purse (Capsella bursa-pastoris)				Kidney-leaf Buttercup (Ranunculus abortivus)		\perp		I
White Snakeroot (Ageratina altissima)	\perp				Cutleaf Toothwort (Cardamine concatenata)		1_1	\rightarrow	Tall Buttercup (Ranunculus acris)				
Com. Ragweed (Ambrosia artemisiifolia)		1			Toothwort (Cardamine diphylla)		1.1		Hooked Buttercup (Ranunculus recurvatus)		_L		
Glant Ragweed (Ambrosia trifida)	1_	\perp			Penn. Bitter-cress (Cardamine pensylvanica)	_	Ш	\dashv	Ranunculus	_	\perp		
Field Pussytoes (Antennaria neglecta)	1	\sqcup			Cardamine				Sheep Sorrel (Rumex acetosella)				\perp
Artemisia	+-	1	_		Blue Cohosh (Caulophyllum thalictroides)	ᄮ	1_1		Curly-leaf Dock (Rumex crispus)				
Common Burdock (Arctium minus)	1	\perp		_ _	Mouse-ear Chickweed (Cerastium fontanum)	4	$\downarrow \downarrow$		Bitter Dock (Rumex obtusifolius)	_			
Nodding Beggar-ticks (Bidens cemua)	Ļ.,	\perp			Turtlehead (Chelone glabra)	-L-	Ш		Bloodroot (Sanginaria canadense)	M			
Devil's Beggar-ticks (Bidens frondosa)		\perp			Spotted Water-hemlock (Cicuta maculata)				Black Snakeroot (Sanicula marilandica)		_[.		
Spotted Knapweed (Centaurea biebersteinii	1_	1_1		_	Water-hemlock (Cicuta virosa)	上			Bouncing Bet (Saponaria officinalis)			T	T
Brown Knapweed (Centaurea jacea)	L				Enchanter's Nightshade (Circaea lutetiana)	1_			Marsh Skullcap (Scutellaria galericulata)		T		\top
Chicory (Cichorium intybus)					Carolina Spring Beauty (Claytonia caroliniana		П		Mad Dog Skullcap (Scutellaria lateriflore)		T		
Canada Thistle (Cirsium arvesnse)	Т	\Box		7	Virginia Spring Beauty (Claytonia virginica)	1			White Campion (Silene latifolia)	_	7	+	+
Bull Thistle (Cirsium vulgare)	Т	П		Т	Virgin's-bower (Clematis virginiana)	+	\sqcap	-1-1	Bladder Campion (Silene vulgaris)	T	-	+	+
Horseweed (Conyza canadensis)	1-	П		_	Field Blndweed (Convolvulus arvensis)	1	\Box		Hemlock Water-parsnip (Sium suave)	-†	1	+	+
Daisy Fleabane (Erigeron annus)		\Box	-1	_	Dog-strangling Vine (Cynanchum rossicum)	┪	1		Bitter Nightshade (Solanum dulcamara)	_	+	+	+
Philadelphia Fleabane (Erig. philadelphicus	1	\vdash	-	+-	Wild Carrot (Daucus carota)	+	Н	-+-	Black Nightshade (Solanum ptychanthum)	+	+	+	+
Erigeron	1-	1-1	-	- -	Deptford Pink (Dianthus armeria)		1	-1-1	Grassleaf Stitchwort (Stellaria graminea)	-+	+		+
Joe-pye-weed (Eupatorium maculatum)	1-	1-1	+	1	Squirrel-com (Dicentre canadensis)	R	\vdash	-+-+	Common Chickweed (Stellaria media)	+	-	+	+
Boneset (Eupatorium perfoliatum)	┼	1-1			Dutchman's-breeches (Dicentra cucullaria)	147	-		Early Meadow-rue (Thalictrum dioicum)	-+		+-	+-
Large-leaved Aster (Eurybia macrophylla)		1-1	-+-	+	Wild Teasel (Dipsacus fullonum)	+-	-+		Tall Meadow-rue (Thalictrum pubescens)	-	+	+	+
Flat-top Goldenrod (Euthamia graminifolia)	╆	! - i	+		Wild Cucumber (Echinocystis lobata)	+-	-	- -		-	+	+	+
Orange Hawkweed (Hieracium aurantiacum	Ĺ		-					++	Field Penny-cress (Thlaspi arvense)	-+	-	+-	╄
	4	╌┼			Viper's Bugloss (Echium vulgare)			+	Foamflower (Tiarella cordifolia)		-	+	+-
Field Hawkweed (Hieracium caespitosum)	⊢	\vdash	-		Northern Willow-herb (Epilobium ciliatum)	4			Star-flower (Trientalis borealis)	_			╀
Hieracium		╌		-	Hairy Willow-herb (Epilobium hirsutum)	\perp	\vdash	+	Red Clover (Trifolium pratense)	-1		\bot	\bot
Elecampane (Inula helenium)	+-	1-1-			Small-fl. Willow-herb (Epilobium perviflorum)	.	$\vdash \downarrow$		White Clover (Trifolium repens)	-	1		1
Prickly Lettuce (Lactuca serriola)	1	\vdash	-	-	Epilobium	1	\sqcup	+	Trifolium	_			1
Lactuca	<u> -</u>	1	1		Worm Mustard (Erysimum cheiranthoides)	4_	Ш.		Stinging Nettle (Urtica dioica)				1
Ox-eye Daisy (Leucanthemum vulgare)	⊢	\sqcup	_		Euphorbia		Ш		Greater Bladderwort (Utricularia vulgaris)		L		1
Pineapple-weed (Matricaria discoidea)	\perp				Hemp Nettle (Galeopsis tetrahit)	\perp			Common Mullein (Verbascum thapsus)				T
Tall White Lettuce (Prenanthes altissime)		\Box			Wild Madder (Gelium mollugo)				Blue Vervain (Verbena hastata)	T	T		
Black-eyed Susan (Rudbeckia hirta)					Marsh Bedstraw (Galium palustre)				White Vervain (Verbena urticifolia)		7	T	П
Tall Goldenrod (Solidago altissima)			J		Sweet-scented Bedstraw (Galium triflorum)	\Box			Water Speedwell (Veron. anagallis-aquatica)	-1	T	T	T
Blue-stem Goldenrod (Solidago caesia)			7	T	Galium	\Box			Common Speedwell (Veronica officinalis)	\dashv	_	1	+
Canada Goldenrod (Solidago canadensis)	П		1		Spotted Geranium (Geranium maculatum)	\Box		\top	Veronica	+	+	+	1
Zig-zag Goldenrod (Solidago flexicaulis)	\Box		-		Herb-robert (Geranium robertianum)			11	Cow Vetch (Vicia cracca)	+	_	1	\vdash
Glant Goldenrod (Solidago gigantea)			-	1	Yellow Avens (Geum aleppicum)				Vicia	+	- -	+	1
Early Goldenrod (Solidago juncea)					White Avens (Geum canadense)	\vdash	-		Periwinkle (Vinca minor)	+	+	+	+
Gray Goldenrod (Solidago nemoralis)		-	-1-	-	Urban Avens (Geum urbanum)	+-1			Dog Violet (Viole conspersa)	+		+-	\vdash
Solidago	Н	\vdash	+	+	Dame's Rocket (Hesperis metronalis)	┨╼╏		++	Yellow Violet (Viola pubescens)	+		+	\vdash
Field Sow-thistle (Sonchus arvensis)		-	-	+	Virg. Water-leaf (Hydrophyllum virginianum)	10		\dashv		+	+	+	₩
Sonchus	-		-+-	1-		₩.			Com. Blue Violet (Viola sororia)	- -		+-	₽
			-	-	Com. St. John's-wort (Hypericum perforatum)	╂╌┪	-+-	++	Viola	+			ш
Heart-leaf Aster (Symph. cordifolium)	H			+	Spotted Jewelweed (Impatiens capensis)	1-1	+	++		-	_	-	1
Heath Aster (Symphyotrichum ericoides)		+	+		Wood Nettle (Laportea canadensis)	╁┤	-			-	+	4	┦
Tall White Aster (Symph. lanceolatum)			-		Motherwort (Leonurus cardiaca)	11	-	+		4	_		
Calico Aster (Symphyotrichum lateriflorum)	Щ	_	_ _		Fleid Peppergrass (Lepidium campestre)	Ш				_	\perp		Ш
New England Aster (Symph. novae-angliae)	Ш	-	-	44	Eur. Gromwell (Lithospermum officinale)	\sqcup	\perp	\dashv			_ _	\perp	
Purple-stem Aster (Symph. puniceus)	-	_	_		Butter & Eggs (<i>Linaria vulgaris</i>)	1-1	_	_		1			
Common Tansy (Tanacetum vulgare)				\perp	Great Lobelia (Lobelia siphilitica)					_			
	R	W			Lobelia				Monocot Herbs				
Com. Goatsbeard (Tragopogon pratensis)			ᆚ-	\perp	Cut-leaf Bugleweed (Lycopus americanus)	Ш			Water-plantain (Alisme plantago-aquatica)				
Coltsfoot (Tussilago farfara)					Northern Bugleweed (Lycopus uniflorus)				Wild Leek (Allium tricoccum)	7	T	\Box	П
					Fringed Loosestrife (Lysimachia ciliata)	П			Jack-in-the-pulpit (Arisaema triphyllum)	T	T		П
				П	Moneywort (Lysimachia nummularia)		T		Asparagus (Asparagus officinalis)	Т		\Box	П
		T	Т	TT	ysimachia	П			Wild Calla (Calla palustris)	T	\top	1	
			-1-	77	Purple Loosestrife (Lythrum salicaria)	\Box			Bluebead-lily (Clintonia borealis)	-1-	1		
		_	1		Black Medick (<i>Medicago lupulina</i>)				Garden Lily-of-valley (Convallaria majalis)	-	1	1	
					Alfalfa (Medicago sativa)	1			Yel. Lady's Slipper (Cypripedium parviflora)	+	+	++	\vdash
	1	-	+		White Sweet-clover (Melilotus alba)	\vdash		-1	Canada Waterweed (Elodea canadensis)	+	+	+-	\vdash
•			+		rellow Sweet-clover (Melilotus officinalis)	† †		++	Heileborine (Epipactis helleborine)	+	+	+	Н
	-+	+			Wild Mint (Mentha arvensis)	tt		+-+-	Yellow Trout Lily (Erythronium americanum)	+	+-	 	Н
Other Dicot Herbs	-	-	+		Wild Bergamot (Monarda fistulosa)	↤	-+	++		4-	+-	+	
White Baneberry (Actaea pachypoda)	-+		+-		Small Forget-me-not (Myosotis laxa)	+-+	-+	++-	Blue-flag Iris (Iris versicolor) Orange Day Lily (Hemerocallus fulva)	+	+	+	Н
		-				 - 	-			+	+	+	H
Red Baneberry (Actaea rubra) Fall Agrimony (Agrimonia gryposepala)	+	+	+-		Orget-me-not (Myosotis scorpioides)	+-+	-+-		Lesser Duckweed (Lemna minor)	-}-	+-	1-1	\vdash
		+	+		Nater-cress (Nasturtium officinale)	-+			Starry Duckweed (Lemna trisulca)	- -	+-	+-	
Sariic Mustard (<i>Alliaria petiolata</i>) Green Amaranth (<i>Amaranthus retroflexus</i>)	-+		+-		Com. Evening-primrose (Oenothera biennis)	├		++	Wild Lily-of-valley (Maianthemum canadense)	+	+-	1-1	Ш
	-	+	-		Sweet-cicely (Osmorhiza berterii)	┢┵			False Solom Seal (Maianthemum racemosum)	-		₩	1
tog-peanut (Amphicarpa bracteata)		-+-	+		fellow Wood-sorrel (Oxalis stricta)	1-1			Star False Solomon (Maianthemum stellatum)	-	-	\sqcup	
Pearly Everlasting (Anaphalis margaritacea)	-	-4-	-		Vild Parsnip (Pastinaca sativa)	Ш			True Solomon Seal (Polygonatum pubescens)	_	1	11	-1
Canada Anemone (Anemone canadensis)	-+	-	-		nglish Plantain (Plantago lanceolata)	1	_	+	Pickerel-weed (Pontederia cordata)	1	1	\sqcup	ப
vy Hepatica (Anemone acutiloba)	4		1_		Common Plantain (<i>Plantago major</i>)		-	11	Curly-leaf Pondweed (Potamogeton crispus)	1.	╽.	\perp \perp	
Thimbleweed (Anemone virginiana)			L		Rugel's Plantain (<i>Plantago rugelii</i>)	\coprod	\perp		Sago Pondweed (Potamogeton pectinatus)			1.7	
Purple Angelica (Angelica atropurpurea)	\perp	1	1		May-apple (Podophyllum peltatum)	Ш		Ш.	Potamogeton			\perp T	
ndian Hemp (Apocynum cannabinum)			L		Pale Smartweed (Polygonum lapathifolium)	Ш		$\perp \Gamma$	Potamogeton	_[_	Γ		
Vild Sarsaparilla (Aralia nudicaulis)	_1	$_{ m I}$	J	\Box	.ady's-thumb (Polygonum persicaria)		T	Π	Broad-leaved Arrowhead (Sagittaria latifolia)	T	T	\Box	71
pikenard (Aralia racemosa)	T	$_{\Gamma}$	J		/irginia Knotweed (Polygonum virginianum)		T		Blue-eyed-grass (Sisyrinchium montanum)	T	T		П
Vild Ginger (Asarum canadense)	T	T	T		Polygonum				Herb. Carrion Flower (Smilax herbacea)	T	Г		
Swamp Milkweed (Asclepias incarnata)				П	Polygonum			TT	Bristly Greenbrier (Smilax hispida)	Т	T-	\Box	
Common Milkweed (Asclepias syriaca)	-1	\top	T		Rough Cinquefoil (Potentilla norvegica)		T		Nodding Ladies' Tresses (Spiranthes cemua)	1	T	1	\dashv
'ellow Rocket (Barbarea vulgaris)		7	-1-		Rough-fruited Cinquefoil (Potentilla recta)	-†	1	T-1-	Rose Twisted-stalk (Streptopus lanceolatus)	-	1-	1	\neg
alse Nettle (Boehmeria cylindrica)		_			Common Cinquefoil (Potentille simplex)	广	\top	1	Skunk-cabbage (Symplocarpus foetidus)	+	1	1-1	-1
Black Mustard (Brassica nigra)	-	-	-		Potentilla	-	-1-	1-1-	Purple Trillium (Trillium erectum)	+	+	1-1	\dashv
Marsh-marigold (Caltha palustris)	-	+	- -		leal-all (Prunella vulgaris)	++	+	+-+	White Trillium (Trillium grandiflorum)	+	+	+-1	
Creeping Bellflower (Cempanula rapunculoide	961				Shinleaf (<i>Pyrola elliptica</i>)	+	+		Large-flowered Bellwort (Uvularia grandiflora)	+	-	1-1	\exists
Januara (Campandia rapunculoidi	93/		- -	 - 	minoai (r yroia ampiroa)	╁╌┼	+			+	-	1-1	
. Dominant: regressited by lane sureban.	60-	ing > 1	i IOP	1	course of 2559/ uncertation on the in-		Ī	1 [ITcillium Sp. IV	_ند	Ţ	<u> </u>	4
Dominant represented by large numbers; generally Selection common (reflection for El.C.).									ı				
					fairly large numbers of individual clumps, usually forming				70.6.0.1.0.1.				
	sprea	o aca	TO/O	ındiv	duals or represented by one or more clumps of many indivi	duals	(mos	species	wall rall into this caternoon)				
					1-4		(11100		The following state of the stat		-		
-Rare: represented in the polygon by less than about f					clumps		(moo		vin for the une category		-	_	\Box
R - Rare: represented in the polygon by less than about f					chumps	4	(mod		The state of the s	T		П	\exists
R - Rare : represented in the polygon by less than about the same series of the same seri					clumps		pinou			I			

Study Area:	Wildlife Habitat		Man #:	EUM PIL ICIA
Date:	20/3-04-		Map #: Time Started:	344 BIW 1510
Field Staff:	Tom Storney		Harime Finished:	9.45 a.m
		ain, 151	km/L	
		rey Breeding	/Feeding, Bald Eagle B	reeding/Nesting Habitat
FET1, FOC, FOM, FOD, S Nest bowls preser			Yes lif yes photon	raph and complete the follov
JTMs: See map			Number of ne	-4
Decription of nest	ts (location, e.g. in tree	on built stru		ce of recent use; birds preser
	ed Stick meat in			
Flusted Fem		Frank L	m Nest	The state of the s
	bitat (note riparian area	as if present,		e): Suan made Han
deiduous				
Waterfowls Stop	over/Nesting, Amphib	ian Breeding	, Turtle Nesting/Over-	wintering, Marsh Breeding B
CUM1, CUT1, MAM, MA	AS, SAS1, SAM1, SAF1, SWD, SW	VT1, SWT2)	(FOC, FOM, FOD, SWC, SWM,	SWD,BOO1, FEO1)
Standing water pr	resent: No		Yes (if yes, photog	raph and complete the follow
UTMs:	المكرا			ater delineated on field map
Water depth (m):	%	open water:		mergent vegetation:
	water until at least Jul			- X
	nding water (permane	-		ooding, etc):
1 1/ 1				
Area and soil/sub	strate of shoreline habi	itat:		
Type and abunda	nce of cover in open wa	ater habitat:		
Type and abanda	nee or cover in open we	ater maditat.		
Type and abundar	nce of cover in surroun	ding habitat:		
	rbance (e.g. cattle grazi			
Evidence of use b	y waterfowl, amphibiai	ns, turles (e.g	g. broken eggs), marsh b	reeding birds:

	Comple	te Vernal Po	ol Habitat Description	Form
Snake Hibernacu				
Fissured rock/fou	indation or rock/debris	pile present:		
	No			raph and complete the follow
UTMs:			Likelihood to exter	
% canopy cover:		% slope:		o open canopy (m):
Description of fiss	sure or stone pile (com	position/mate	erial, dimenstions, etc)	
Description of sur	rrounding habitat (type	& abundanc	e of cover, evidence of	disturbance, etc):
Seeps and Spring		M, FOD, SWC, SW		raph and complete the follow
EVIDANCA AT CAAN	or spring: IXINo			ronn ono comolete the thiin
Evidence of seep JTMs:	or spinig.		Description (indica	•

NHA Site Investigation - Significant Wildlife Habitat Form A=COM Colonial Nesting Bird Breeding Habitat (Bank and Cliff Swallows) (CUM1, CUT1, CUS, BLO1, BLS1, BLT1, CLO1, CLS1, CLT1) Eroding bank, sandy hill, pits, steep slope or rock face present: Yes (if yes, photograph and complete the following) UTMs: Location (e.g. aggregate pit, bridge): Evidence of use by bank or cliff swallows (provide number of nests): **Colonial Nesting Ground Breeding Birds, Shorebird Migratory Stopover Areas** (BBO1, BBO2, BBS1, BBS2, BBT1, BBT2, SDO1, SDS2, SDT1, MAM1, MAM2, MAM3, MAM4, MAM5) Shoreline of lake, large river or large wetland present: Yes (if yes, photograph and complete the following) UTMs: Rocky island or peninsula present: Mudflat present: Evidence of disturbance (e.g. cattle grazing): Description of habitat (size of rocky outcrop/mudflat, substrate/soil type, type and abundance of cover): Raptor Winter Feeding and Roosting, Open Country or Shrub/Early Successional Bird Breeding Habitat CUT1, CUS1, >30ha, CUM1 >30ha, FOC, FOD, FOM with a CUM, CUT, CUS, CUW > 20ha, or a CUM, CUS, CUT, CUW>15ha Large meadow, old field or generally open habitat (e.g. сим, сиз, сит, сиз, сиw) present: Yes (if yes, photograph and complete the following) Large open habitat present: UTMs: Evidence of disturbance (e.g. cattle grazing): Description of habitat (abundance of food plants for rodents, abundance of perches, height of vegetation): Old-growth or Mature Forests, Interior Forest Breeding Birds (FOD, FOC, FOM, SWC, SWM, SWD. Mature forest (>60 years) present) Yes (if yes, photograph and complete the following) |**∑**|No Mature forest present: **UTMs:** Age of oldest trees: Evidence of disturbance (e.g. selective cutting): Description of habitat (structural complexity, abundance of snags and/or downed woody debris, etc): Photo# **Location or Subject** Photo # Location or Subject Vic. Stickness-

Species of Conservation Concern Habitat and Incidental Wildlife - Bluewater

A

Map No: 544- 816 1510	Fleid Staff: Tom Shorway
Date (yyyy-mm-dd): 2013 - 04 - 24	Bob Aitken

Time Started: 8:30 an

Observed Species List

Species Code	UTM E		Species Code	UTM	EV	Notes
ong Sparror	V	0				
vein Thraslor	V	0				
- Lonin	01	5				
J. Berling	V					
re Juga	V	0				
noedlerk	V					
ad Jailrage J Alive Hours ad Tailed Hay	Vo	0		,		
	Of	5				· · · · · · · · · · · · · · · · · · ·
m. cow	V					
					1 1	

Note: Evidence Codes (EV)

Breeding Bird (Possible)

SH=Suitable Habitat, SM=Singing Male;

Breeding Bird (Probable)

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=Distinctive Parts, HO=House/Den, FY=Eggs/young, TK-tracks, FE=Feeding evidence, SC= Scat. SI=Other signs (specify)

ELC **Habitat Description** Habitat Present (Y/N; UTM; description of habitat if present) FOD7 American Gromwell (Lithospermum latifolium) - S3 Shaded river banks, wooded floodplains. River floodplains, woods and edges of Y (N) UTM: Bloom Time - Spring FOM1, FOM2, CUP3 Autumn Coral-root (Corallorhiza odontorhiza) - 82 Oak-pine woods or occasionally in open, red pine or white pine plantations. Dry, Y (N) UTM: Bloom Time - summer to fall sandy woods Bald Eagle (Haliseetus leucocephalus) - SC Assessed as SWH, Record species if found. not required. FEO. FES. FET Beaked Spike-Rush (Eleocharis rostellata) - S3 Bloom Found among fens, calcareous shores and meadows. Y N UTM: Time - May to October SWC1, SWC3, SWC4, Chinese Hemlock Parsley (Conioselinum chinense) - S2 Swampy places with deciduous trees, white cedars, tamarack; springy river banks, Y (N DUTM: SWM1, SWM2, SWM4. Bloom Time -summer to fall creek borders, wet borders of streams and rivers. Also found among calcareous SWM5, SWM6 seepage slopes. CUW, SDO, RBO, TPS Common Nighthawk (Chordelles minor) - SC Hunts insects over a wide variety of habitats, in particular open or semi-open areas. Y (N) UTM: Nests on ground in a wide range of open, sparse or vegetation-free habitats. SWC. SWM, SWD,SWT, Crowned Beggarticks (Bidens trichosperms) -S2 Bloom Found in openings in swamps, marshes, along shores & wet fields within the Y (N) UTM: MAM, MAS Time - late summer Carolinian zone and southeastern Georgian bay. Bogs, fens, tamarack swamps ALT1, FOD7 Eastern Green-violet (Hybanthus concolor) - S2 Bloom Occurs in rich, wet-mesic floodplain forests as well as mesic forests over limestone. '(N) UTM: Time -mid March to August Includes floodplains and river banks. Eastern Ribbonsnake (Thamnophis sauritus) - SC Assessed as SWH. Record species if found. not required. FOD8, FOD7, FOD9 Green Dragon (Arisaema dracontium) - SC/83 Bloom Species found in damp deciduous forest and along river streams. Particularly Maple Y (N) UTM: Time - May and June forest and forest dominated by Red Ash and White Elm.

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, TPS, TPW	Hairy Valerian (Valeriana edulis) -S1 <u>Bioom Time</u> – June to August	Inhabits swampy river flats and meadows, wet prairies, and wooded, rocky riverbanks and fens.	Y N UTM:
FOD6, FOD7, FOD8, FOD9	Harbinger-of-spring (Erigenia bulbosa) - S3 <u>Bloom</u> Time - early to late April	Occurs in rich, moist deciduous woods, especially on floodplains.	Y N UTM:
SAS1, SAM1, SAF1	Hill's Pond Weed (Potamogeton hillii) - SC/S2 Bloom Time - summer	Aquatic plant found in highly alkaline waters of ditches, ponds, beaver ponds, and slow-moving cold waters.	Y (1) ОТМ:
FOMB, FOM7, FOM8	Large Round-leaved Orchid (Platanthera macrophylia) - S2 <u>Bioom Time</u> – June to August	beech-eastern hemiock woodlands.	Y N UTM:
MAM2, MAM3, MAS2, MAS3, SWD	Lizard's Tall (Saururus cernuus) - S3 <u>Bloom Time</u> – June – September	Species inhabits shores and streambanks along shallow water. As well as swamps, floodplains, shallow water and mudflats at the borders of streams and ponds.	Y N UTM:
FOD, FOM	Louisiana Waterthrush (Seiurus motacilla) - SC	Inhabits mature forests along steeply sloped ravines adjacent to running water. Trees, bushes, exposed roots, cliffs, banks and mossy logs are favoured nesting spots. Riparian woodlands are preferred stopover 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 milkweeds (Ascieptus spp.). Habitat includes abandoned farmland, along roadsides, open spaces where these plants grow	Y WUTM:
CUW1, ALO, FET1, SWC	Ram's-head Lady's-slipper (Cypripedium arietinum) - S: Bloom Time -mid May to mid June	Found in ceder woodlends, limestone plains and wooded fens, moist coniferous swamps, dry-sandy woods, and limestone barren.	Y N UTM:
FOD1, FOD2, FOD3, FOD4, FOD5, FOC1, FOM1, FOM5	Rattlesnake Hawkweed (Hieracium venosum) - S2 Bloom Time – April – September	Species inhabits open, dry sandy woods. Jack pine, cak, and espen woodlands.	Y N UTM:
FOD, CUW, CUT	Red-headed Woodpecker (Melanerpes erythrocephalus - 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 40 cm dbh; requires about 4 ha 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 WUTM:
•	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:
SDT1, FOD5, FOD9	Silm-flowered Muhly (Muhlenbergia tenuifiora) - S2	Found in rich deciduous forest, often on rocky or sandy soils, wooded dunes, hillsides, and riverbanks whether in oak or beech-maple woods	Y N UTM:
•	Snapping Turtle (Chelydra serpentine) - SC	Assessed as SWH. Record species if found.	not required.
BLO1, BLS1, BLT1, TPO2, TPS2, TPW2, MAM2, FOD7	Stiff Gentlan (Gentlanella quinquefolla) - S2 <u>Bloom</u> <u>Time</u> – late summer to mid fall	Found in moist soils of streambanks, edges of woods, wet prairies, marshy meadows, bluffs and wooded hillsides.	YN UTM:
TPS1, TPW1, CUW1, RBO, SBO	Sundial Lupine (Lupinus perennis) - S3 <u>Bloom Time</u> – mid-March to mid-June	Inhabits dry, sandy oak savannahs, prairies, open barrens or clearings in woodlands of oak, jack pine, and/or aspen	T S OTM.
FEO, FES, FET, MAM2, MAM3	Tuberous Indian Plantain (Amoglossum plantagineum) S3 Bloom Time —mid-March to mid-June	calcareous river flats.	T NOTINE.
FOD5	West Virginia White (Pieris virginiensia) - SC	This species is restricted to nich, moist deciduous woods, where its foodplant <u>Toothwort</u> occur	N UTM: Not observed
FOC1, FOC2, FOC3, FOC4	Woodland Pinedrops (Pterospora andromedea) - S2 Bioom Time – summer	Found in conifer woods, under pines, but also hemiock, spruce, fir, and white cedar. In dry or rocky soil, often with common juniper and sometimes aspen or birch.	Y Ñ UTM:
CUM1, CUT1, CUW1, RBO1, SBO1	Yellow Ladies'-tresses (Spiranthes ochroleucs) - S2 Bioom Time – 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.	ү (т) итм:
	Yellow-breasted Chat (loteria virens) - SC	Inhabits thickets, tall tangles of shrubbery beside streams, ponds; overgrown bushy clearings with deciduous thickets; nests above ground in bush, wines	Y N UTM:

BLW - SOCC And



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		
			Coefficie	8	We	Pro	0	00	0	Local	Local S		
BOTANICAL N	AME	COMMON NAME										Date	24-Apr-13
												Natural Area	544
								H					344
			Oldham et al	Oldham et al	Oldham et al	Newmaster			Newmaster	Tiedje 2004	Oldham 1993	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
Toxicodendron	rydbergil	Ground Poison-ivy	0	0		S5			G5T				R
Asteraceae		Composite or Aster Family											
Taraxacum	officinale	Common Dandelion		3	-2	SE5			G5		-		R
Berberidaceae		Barberry Family											
Caulophyllum	thalictroides	Blue Cohosh	6	5		S5			G		Х		U
Betulaceae		Birch Family											
Ostrya	virginiana	Ironwood	4	4		S5		Ш	G5		Х		U
Celastraceae		Staff-tree Family											
Euonymus	obovata	Running Strawberry-bush	6	5		S5			G5		Х		F
Cornaceae		Dogwood Family											
Comus	alternifolia	Alternate-leaved Dogwood	6	5		S5			G5		Х		U
Comus	rugosa	Round-Leaved Dogwood	6	5		S5		Ш	G5				R
Fagaceae		Beech Family											
Fagus	grandifolia	American Beech	6	3	Ш	S5		Ш	G5		Х		U
Hydrophyllaceae		Water-leaf Family											
Hydrophyllum	virginianum	Virginia Water-leaf	6	-2	Ш	S5		Ш	G5	L4	Х		R
Juglandaceae		Walnut Family											
Carya	cordiformis	Bitternut hickory	6	0		S5		Ш	G5		Х		U
Juglans	nigra	Black Walnut	5	3	Ш	S4		Ш	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		Ц	G5		Х		F
Papaveraceae		Poppy Family											
Dicentra	canadensis	Squirrel corn	7	5	Н	S5	H	Н	G5				R
Sanguinaria	canadensis	Bloodroot	5	4		S5		Ш	G5		Х		U
Rhamnaceae		Buckthorn Family											
Rhamnus	cathartica	Common Buckthorn		3	-3	SE5			G?		_		R
Rosaceae		Rose Family											
Crataegus	species	Hawthorn species		H	Н		Н	Н					R
Prunus	species	Cherry Species											U
Ulmaceae Ulmus	americana	Elm Family	3	-2	П	S5		H	G5?		x		R
	arriencana	White Elm	3	-2		55			U5?		X		к
Vitaceae Vitis	rinaria	Grape Family Riverbank Grape	0	-2	П	S5		H	G5		х		R
MONOCOTYLEDONS	riparia	MONOCOTS	U	-2		33			GO		Ê		N.
Cyperaceae		Sedge Family											
Carex	species	Sedge Family Sedge species						П					U
Liliaceae	upu6/03	Lily Family											J
Allium	tricoccum	Wild Leek	7	2		S5		П	G5	L4	х		F
Erythronium	americanum ssp. americanur		5	5	H	S5	H	Н	G5T5	L94	X		D D
Trillium	species	Trillium Species	_	Ť	H	S5	H	H	G5		X		U
	1-1	орошо		<u> </u>	ш	00	ш	ш	- 00		_ ^	l	ŭ

FLORISTIC SUMMARY & ASSESSMENT

Species Diversity			
Total Species:		22	
Native Species:		20	90.919
Exotic Species		2	9.09%
S1-S3 Species		0	
S4 Species		1	
S5 Species		20	
Co-efficient of Conservatism and Floral Qu	uality Index		
Co-efficient of Conservatism (CC) (average)		4.85	
CC 0 to 3	lowest sensitivity	3.00	13.649
CC 4 to 6	moderate sensitivity	15	68.189
CC 7 to 8	high sensitivity	2	9.09%
CC 9 to 10	highest sensitivity	0	0.00%
Floral Quality Index (FQI)		22	
Presence of Weedy & Invasive Species			
mean weediness		-2.50	
weediness = -1	low potential invasiveness	0.00	0.00%
weediness = -2	moderate potential invasivenes	1.00	50.009
weediness = -3	high potential invasiveness	1.00	50.009
Presence of Wetland Species			
average wetness value		0.64	
upland		6.00	23.909
facultative upland		9	21.159
facultative		3	17.589
facultative wetland		4	19.519
obligate wetland		0	40.740

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.

Ahundance

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 Inde

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: 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 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 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 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 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 occurred historically in the nation of the past 20-40 years. A species or community occurred historically in the nation of the past 20-40 years. A species or community occurred historically in the nation of the past 20-40 years. A species or community occurred historically in the nation of the past 20-40 years. A species or community occurred historically in the nation of the past 20-40 years. A species or community occurred historically in the nation of the past 20-40 years. A species or community occurred historically in the nation of the past 20-40 years. A species or community occurred historically in the nation of the past 20-40 years. A species or community occurred historically in the nation of the past 20-40 years. A species or community occurred historically in the nation of the past 20-40 years. A species of the past
- 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).

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