

**PRE-CONSTRUCTION
MONITORING REPORT
NIAGARA REGION WIND FARM**

File No. 160950269



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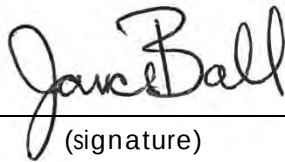
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Sign-off Sheet

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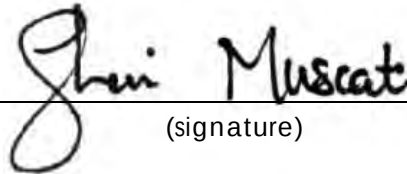
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1.0 Introduction

The Niagara Region Wind Farm Natural Heritage Assessment and Environmental Impact Study (NHA/EIS) received confirmation from the Ministry of Natural Resources (MNR) April 3, 2013 that the report had been completed in accordance with Section 28(2) and 38(2)(b) of the Ministry of the Environment (MOE) Renewable Energy Approvals (Ontario Regulation 359/09 (O. Reg. 359/09)). The Niagara Region Wind Farm Corporation is proposing to develop, operate and construct the 230 megawatt (MW) Niagara Region Wind Farm within the Townships of West Lincoln and Wainfleet and the Town of Lincoln within the Niagara Region and within Haldimand County in Southern Ontario. The Project includes 77 wind turbine generators, each with a rated capacity of approximately 3 MW, for a maximum installed nameplate capacity of 230 MW. Details regarding the natural heritage assessment are provided in the Niagara Region Wind Farm Natural Heritage Assessment and Environmental Impact Study (Stantec, March 2013). Addendums to the NHA/EIS have also been submitted to the MNR (Stantec, April 8th and June 20th, 2013).

As a condition of confirmation for the Niagara Region Wind Farm, under O. Reg. 359/09, additional pre-construction monitoring surveys were required. Certain natural environment monitoring requirements were established in the supporting REA documentation, namely the NHA/EIS (Stantec, March 2013) and the Environmental Effects Monitoring Plan (EEMP) (Stantec, June 2013). These additional surveys include fall migratory landbird stopover area surveys, bat maternity colony surveys, turtle overwintering area surveys, snake hibernacula surveys and turtle nesting habitat assessments. Surveys were completed to confirm the significance of these features, which were assumed to be significant as part of the NHA/EIS, pending the completion of these surveys.

The purpose of this report is to describe the survey methodologies and summarize results of the pre-construction surveys conducted in 2013, in accordance with the NHA/EIS and EEMP. This report will inform future monitoring requirements and the results will form the basis for comparing post-construction monitoring results of this project.

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2.0 Methods

2.1 MIGRATORY LANDBIRD STOPOVER AREAS

There were four migratory landbird stopover areas identified in Section 6.6.1 of the NHA/EIS as occurring within 120 m of the Project Location (**Figure 1, Appendix A**). In order to determine significance, a candidate migratory landbird stopover area must meet the criteria for significance during transect-based spring and fall migratory surveys, however prior to completion of the NHA/EIS, spring surveys were conducted in two of the features. In accordance with Table 5.3 in Appendix B of the NHA/EIS (**Table 2.1 below**), spring migratory landbird surveys determined that mlsa1 met the criteria for significance, as per the Draft Significant Wildlife Habitat Ecoregion Criterion Schedule (MNR, 2012). Mlsa2 was treated as significant, since evaluation of significance surveys were not possible due to access permission constraints. Insufficient numbers of individuals and a lack of species variety recorded during spring surveys did not qualify mlsa3 and mlsa4 as significant, however, these features were considered to be significant wildlife habitat for migratory landbird stopover areas, pending the results of the fall surveys.

Table 2.1: Spring Migratory Landbird Survey Results					
Feature No.	Transect #	ELC Community Type(s)	Landbird Migratory Stopover Area Criteria		Significant (Yes/No)
			> 200 birds/day*	> 35 species with min 10 species recorded on 5 survey dates*	
mlsa1	1	SWD5-1, SWD4-5/SWD2-1	Y	Y	Y
	2	SWD3-2 and SWD5-1			
	3	SWD5-1			
mlsa2	n/a	SWD2-2 and FOD7-2	n/a	n/a	Y*
mlsa3	4	SWD2-3	N	N	Y**
mlsa4	5	SWD2-2 and FOD 7-2	N	N	Y**
Note: Both criteria must be present for a determination of significance					
*Assumed significant due to lack of permissions to access the community to conduct passerine surveys					
**Assumed significant pending fall passerine surveys					

During fall surveys, one (1) transect route for migrating landbirds was conducted within each of the two (2) candidate significant migratory bird stopover areas (mlsa3 and mlsa4), and this was consistent with the transect locations used for the spring surveys. The transect routes were recorded with a GPS to ensure the surveys are replicable. (**Figure 2, Appendix A**).

Surveys began one half hour after sunrise and continued for approximately two hours. The number of individuals of each species observed during the surveys was recorded. Nine (9) surveys were conducted at regular intervals from September 4th to October 17th, 21013.

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Survey dates, times, weather conditions and survey personnel for these studies are provided in **Table 2.2** below.

Table 2.2: Field Investigation Record for Fall Migratory Landbird Surveys at the Niagara Region Wind Farm					
DATE/TIME	WEATHER				SURVEYOR(S)
	Temp. °C	Wind (Beaufort Scale)	Cloud %	PPT / PPT last 24 hours	
Sept. 4, 2013 8:10 – 9:45 am	18-20	1-3	0	None / None	A. Orr
Sept. 9, 2013 7:25 – 9:10 am	10-12	0	50	None / None	A. Orr
Sept. 13, 2013 7:35 – 9:05 am	11-12	1-3	30-60	None / Precipitation in last 24 hours	A. Orr
Sept. 19, 2013 7:45 – 9:07 am	11-13	1-3	30-40	None / None	A. Orr
Sept. 24, 2013 8:30-9:50am	8	0	0	None / None	J. Ball
Sept. 30, 2013 7:32-9:05am	17	2	100	None / Unknown	J. Ball
Oct. 8, 2013 7:50 – 9:30 am	4-6	0	0-10	None / Precipitation in last 24 hours	A. Orr
Oct. 11, 2013 7:48 – 9:10 am	7-8	0-1	10	None / None	A. Orr
Oct. 17, 2013 8:00 – 9:20 am	10	0	50-70	None / Rain in last 24 hours	A. Orr

2.2 BAT MATERNITY COLONIES

There were 48 potential candidate bat maternity colonies identified in Section 6.6.3 of the NHA/EIS as occurring within 120 m of the wind turbines (**Figure 3, Appendix A**). All potential candidate bat maternity colonies were considered to be significant in the NHA/EIS, pending bat maternity colony habitat pre-construction surveys (for which access was permitted) to confirm whether these features met the criteria to be considered as candidate significant wildlife habitat for bat maternity colonies, with subsequent surveys to confirm if the candidate features met the criteria as significant, as per the *Draft Significant Wildlife Habitat Ecoregion 7E Criterion Schedule* (MNR 2012) and the “*Guidelines for Wind Power Projects Potential Impacts to Bats and Bat Habitats*”. These features included; bmc1, bmc6, bmc7, bmc8, bmc9, bmc10, bmc11, bmc13, bmc14, bmc16, bmc17, bmc18, bmc20, bmc23, bmc25, bmc26, bmc27, bmc28, bmc29, bmc30, bmc31, bmc32, bmc33, bmc34, bmc35, bmc37, bmc38, bmc42, bmc47, bmc48, bmc49, bmc50, bmc51, bmc52, bmc53, bmc54 and bmc55. No surveys were undertaken in bmc3, bmc12, bmc15, bmc19, bmc24, bmc36, bmc39, bmc43, bmc44, bmc45 and bmc46 due to access permission constraints. Those features for which permission to access was unavailable

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were considered to be significant wildlife habitat for bat maternity colonies. Potential candidate significant bat maternity colonies and bat maternity colonies that have been assumed significant due to access restraints are shown on **Figure 3, Appendix A**.

Candidate significant bat maternity colony habitat was determined by conducting tree cavity density surveys in each potential candidate feature. This was done by using randomly selected plots, with a 12.6 m radius, as described in Bats and Bat Habitats (MNR 2011b), throughout the applicable habitat. A minimum of 10 plots were established in each forest site ≤ 10 ha. For sites > 10 ha, an extra plot was added for each additional ha in size, to a maximum of 35 plots. Sites that were < 0.5 ha were surveyed in their entirety. Trees with a decay class of 1-3 and a dbh (diameter at breast height) of > 25 cm were surveyed to identify any cavities 10m or higher from the ground. Trees with suitable cavities to support bat maternity colonies (small, narrow openings etc.) were tallied. Suitable cavities were assessed based on the following criteria (NOTE: not all criteria had to be met in order for cavity tree to be tallied):

- Cavity tree is ≥ 25 cm DBH;
- Cavity is ≥ 10 m high in tree;
- Size of cavity is small enough so large mammals (i.e. raccoons) cannot enter;
- Cavity tree is a decay class of 1 – 3 (see decay classification on data form).

Surveys were conducted during leaf off so cavities could be observed clearly. In some cases such as with bmc 14 and bmc16, the features were combined for the purposes of the survey since they were directly adjacent to each other within the same woodlot.

If the cavity tree density was ≥ 10 trees per hectare, then the feature was identified as candidate significant wildlife habitat for bat maternity colony roosts and evaluation of significance bat exit surveys were undertaken. Evaluation methods followed the “Guidelines for Wind Power Projects Potential Impacts to Bats and Bat Habitats”.

To determine significance, bat exit surveys were conducted in candidate significant features as follows; 10 candidate trees were selected within woodlots ≤ 10 ha and up to 30 trees for woodlots ≥ 10 ha (an additional tree was added for every hectare above 10 up to a maximum of 30 trees). The tree cavity in each candidate tree was then monitored by one surveyor from sunset (30 minutes before dusk to 60 minutes after dusk) for 1.5 hours to observe whether bats were entering or exiting the cavity. A bat detector was also set up in the area of the candidate tree to record all bats present in the area and bats sighted flying around in the area were tallied by the surveyor.

Survey dates, times, weather conditions and survey personnel for the Bat Maternity Colony Cavity Tree Density Surveys are provided in **Table 2.3** below.

Table 2.3: Field Investigation Record for Bat Maternity Colony Cavity Tree Density Surveys at the Niagara Region Wind Farm					
Date/Time	Temp. °C	Wind (Beaufort Scale)	Cloud %	PPT / PPT last 24 hours	Surveyors

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Table 2.3: Field Investigation Record for Bat Maternity Colony Cavity Tree Density Surveys at the Niagara Region Wind Farm					
Date/Time	Temp. °C	Wind (Beaufort Scale)	Cloud %	PPT / PPT last 24 hours	Surveyors
April 14 2013 10:45 – 17:15	7-9	1-2	50-90	None / Rain	J. Ball
April 18, 2013 9:50-16:40	14-25	2-4	80-100	None / n/a	J. Ball
April 18 2013 8:00 – 17:00	22	3	75	None / Thunderstorms	N. Leava
April 18 2013 11:10-17:00	11-25	1-4	0-80	None / n/a	A. Orr
April 23 2013 8:00 – 17:00	16	1	50	None / Rain	N. Leava M. Cameron

2.3 TURTLE OVERWINTERING HABITAT

According to Section 6.6.4 of the NHA/EIS, a single candidate significant wildlife habitat feature for turtle overwintering habitat was identified within the Project Location where an overhead transmission line is proposed to cross the Welland River (**Figure 6, Appendix A**). This feature was considered to be significant in the NHA/EIS, pending turtle overwintering surveys to confirm whether this feature met the criteria to be considered as significant wildlife habitat.

Habitat use surveys were conducted in the spring to determine whether the reach of the river where the transmission line was proposed, met the criteria to be considered as significant wildlife habitat for overwintering turtles, as per the *Draft Significant Wildlife Habitat Ecoregion 7E Criterion Schedule* (MNR 2012). The surveyors searched potential basking sites (eg. logs in the water and sunny banks) along the Welland River for turtles, within 120 m on either side of the proposed transmission line. Surveys were conducted on warm, sunny days during the spring; once early in the season (April 15); once in mid-season (May 2), and once later in the season (May 21). Southern Ontario experienced a cooler than normal spring and therefore surveys were postponed until mid-April when daily temperatures became appropriate for basking turtles.

Survey dates, times, weather conditions and survey personnel for these studies are provided in **Table 2.4** below.

Table 2.4: Field Investigation Record for Turtle Overwintering Habitat Surveys at the Niagara Region Wind Farm					
Date/Time	Temp. °C	Wind (Beaufort Scale)	Cloud %	PPT / PPT last 24 hours	Surveyors

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Table 2.4: Field Investigation Record for Turtle Overwintering Habitat Surveys at the Niagara Region Wind Farm

April 18 2013 11:00-11:15	25	2	80 (sunny at time of survey)	None / None	J. Ball
May 2 2013 12:50-13:05	21	2	0	None / Unknown	J. Ball
May 21 2013 13:00-13:20	23-26	2-3	60-80	None / Thunderstorms	A. Orr

2.4 SNAKE HIBERNACULUM

According to Section 6.6.5 of the NHA/EIS, there were five candidate significant snake hibernaculum features identified within 120 m of the Project Location (**Figure 5, Appendix A**). These features were considered to be significant in the NHA/EIS, pending snake hibernaculum surveys to confirm whether these features met the criteria to be considered as significant wildlife habitat.

Habitat use surveys were conducted in the spring of 2013 to determine whether candidate significant snake hibernaculum features (sh2, sh3, sh4, sh6 and sh7) met the criteria to be considered as significant wildlife habitat for snake hibernaculum, as per the *Draft Significant Wildlife Habitat Ecoregion 7E Criterion Schedule* (MNR 2012). Hibernacula emergence/exit surveys were conducted on warm, sunny days during the spring; once early in the season (April 14/15); once in mid-season (May 2), and once later in the season (May 21). Southern Ontario experienced a cooler than normal spring and therefore surveys were postponed until mid-April when daily temperatures became appropriate for snake emergence.

For each survey, the surveyor observed for 20 minutes, recording all snake species and number of individuals observed entering or exiting the candidate hibernacula. The search pattern at each hibernaculum included surveying all potential basking and sheltering habitat within the location (i.e., an area including a 30 m radius around the hibernaculum).

Survey dates, times, weather conditions and survey personnel for these studies are provided in **Table 2.5** below.

Table 2.5: Field Investigation Record for Snake Hibernaculum Surveys at the Niagara Region Wind Farm

Date/Time	Temp. °C	Wind (Beaufort Scale)	Cloud %	PPT / PPT last 24 hours	Surveyors
April 14 2013 14:50-16:15	9	1-2	40-60 (sunny at time of survey)	None / Rain	J. Ball

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Table 2.5: Field Investigation Record for Snake Hibernaculum Surveys at the Niagara Region Wind Farm					
April 15 2013 11:20-16:50	15-20	0	0	None / None	A. Orr
May 2 2013 10:45-15:50	18-23	1-2	0	None / Unknown	J. Ball
May 21 2013 10:20-14:20	23-26	2-3	60-80	None / Thunderstorms	A. Orr

2.5 TURTLE NESTING HABITAT

According to Section 6.6.6 of the NHA/EIS, there were 18 potential candidate significant turtle nesting habitat features identified within 120 m of the Project Location (**Figure 6, Appendix A**). These features were considered to be significant in the NHA/EIS, pending turtle nesting habitat surveys to confirm whether these features met the criteria to be considered as candidate significant wildlife habitat.

Potential candidate significant turtle nesting habitats (th3, th5, th9, th10, th19, th21, th26, th28, th29, th38, th39, th40, th41, th42, th45, th46, th62, and th69) were assessed to determine whether the features met the criteria to be considered as significant wildlife habitat for turtle nesting, as per the *Draft Significant Wildlife Habitat Ecoregion 7E Criterion Schedule* (MNR 2012). This includes exposed, natural sand and gravel deposits. (**Figure 6, Appendix A**).

Survey dates, times, weather conditions and survey personnel for the turtle nesting habitat assessment is provided in **Table 2.6** below.

Table 2.6: Field Investigation Record for Turtle Nesting Habitat Surveys at the Niagara Region Wind Farm					
Date/Time	Temp. °C	Wind (Beaufort Scale)	Cloud %	PPT / PPT last 24 hours	Surveyors
June 10 2013 10:20-14:18	15-20	1	100	Rain / Unknown	J. Ball
June 11 2013 14:20-18:00	22-24	0-3	20-100	None / Rain	M. Cameron

If candidate habitat was determined to be present, then evaluation of significance surveys would be completed as follows.

- Habitat use surveys will be conducted on three separate dates during the 2013 spring breeding season (June to July) to record direct observations of turtle nesting and/or nesting evidence (e.g. hatched eggs and/or nests that have been dug up by predators).

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- Walking surveys will occur to systematically inspect all areas of exposed mineral (sand or gravel) substrates, spending a minimum of 15 minutes for every 100m² of candidate nesting substrate.
- Surveyors will map and photo-document areas of exposed substrates, and photo-document any observed nesting evidence.

3.0 Results

3.1 MIGRATORY LANDBIRD STOPOVER AREAS

In order for the candidate significant migratory landbird stopover features to qualify as significant, they need to meet the criteria of 200 birds/day with 35 different species in either the spring or fall, as per the *Draft Significant Wildlife Habitat Ecoregion 7E Criterion Schedule* (MNR 2012).

A complete list of all bird species observed is provided in **Table 1, Appendix B**. In total, 34 species of birds were observed during the fall migratory landbird surveys. All species observed are ranked G5 (Very common globally), or G4 (Common globally). Two bird species observed are considered federal species at risk by COSEWIC. The Eastern Wood-Pewee, which is listed as Special Concern was observed in MLSA 4 (Transect 5) on September 9, 2013. Only one individual was heard. One individual was also heard in MLSA 3 (Transect 4) on September 19, 2013. The Wood Thrush, which is listed as Threatened was observed in MLSA 4 (Transect 5) on September 9. Three individuals were seen at this time.

Tables 3.1 – 3.2 below summarize species richness and average abundance for the fall season. Average abundance was determined by dividing total abundance by number of dates (9) surveyed during the fall season. In **Table 3.1**, Transect 4, occurring in mlsa3, showed a daily species richness range from four to 13 species, with a total species richness of 27 for the fall season. Daily abundance ranged from three to 6 to 94 individuals, with an average abundance of 32 for the fall season.

Table 3.1: Transect 4 (mlsa3) Fall Migratory Landbird Survey Results for the Niagara Region Wind Farm		
Date	Species Richness	Abundance
Sept. 4, 2013	7	9
Sept. 9, 2013	4	6
Sept. 13, 2013	8	16
Sept. 19, 2013	7	17
Sept. 24, 2013	11	25
Sept. 30, 2013	4	6
Oct. 8, 2013	13	81
Oct. 11, 2013	12	94
Oct. 17, 2013	9	31
Total species richness and abundance for season	27	285
Abundance average for season	N/A	32

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In **Table 3.2**, Transect 5, occurring in mlsa4, showed a daily species richness range from three to ten species, with a total species richness of 22 for the fall season. Daily abundance ranged from four to 35 individuals, with an average abundance of 15 for the fall season.

Table 3.2: Transect 5 (mlsa4) Fall Migratory Landbird Survey Results for the Niagara Region Wind Farm		
Date	Species Richness	Abundance
Sept. 4, 2013	5	7
Sept. 9, 2013	9	16
Sept. 13, 2013	6	11
Sept. 19, 2013	3	6
Sept. 24, 2013	6	9
Sept. 30, 2013	3	4
Oct. 8, 2013	10	35
Oct. 11, 2013	9	20
Oct. 17, 2013	9	25
Total species richness and abundance for season	22	133
Abundance average for season	N/A	15

Overall, Transect 4, located in mlsa3, exhibited the highest species richness. A total of 27 species occurred within Transect 4 during the fall season compared to 22 species occurring within Transect 5 (located in mlsa 4). Transect 4 also exhibited the highest average abundance. An average of 32 individuals occurred within Transect 4 during the fall season compared to an average of 15 individuals observed within Transect 5.

As both transects did not meet the criteria of 200 birds/day with 35 different species (MNR 2012) in either the spring or fall, it is concluded that MLSA 3 and MLSA 4 are not significant landbird migratory stopover areas as per the *Draft Significant Wildlife Habitat Ecoregion 7E Criterion Schedule* (MNR 2012).

3.2 BAT MATERNITY COLONIES

In order for the potential candidate significant bat maternity colony features to qualify as significant, bat maternity colony tree density surveys need to be conducted to determine whether they meet the criteria of ≥ 10 trees per hectare. The candidate significant wildlife habitat for bat maternity colony features then require the presence of bats exiting tree cavities during bat exit surveys in order to confirm significance. Evaluation methods followed the "Guidelines for Wind Power Projects Potential Impacts to Bats and Bat Habitats" as per the *Draft Significant Wildlife Habitat Ecoregion 7E Criterion Schedule* (MNR 2012).

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Bat Maternity Colony Tree Density Surveys

Bat maternity colony tree density surveys were undertaken to identify candidate significant wildlife habitat. Results are summarized in **Table 3.7** below.

Table 3.3: Bat Maternity Colony Tree Density Survey Results for the Niagara Region Wind Farm

Feature ID	Size (ha) (Accessible area in brackets)	Total # plots required	Total # cavity trees	Total # cavity trees / ha	Exit survey required?	Notes
BMC1	1.95	10	0	0	No	Logging occurred in the past as evidenced by several stumps throughout.
BMC6	6.69 (2.84)	10	0	0	No	
BMC7	2.78	10	0	0	No	
BMC8	2.80 (2.38)	10	3	6	No	Very thick understory, young to mid-age FOD/SWD. Lots of decay class 5 and 6.
BMC9	4.40 (1.85)	10	2	4	No	SWT/SWD; very wet and very thick understory. A few decay class 5 and 6.
BMC10	2.46 (0.23)	Searched Entire Accessible Area	0	0	No	
BMC11	2.06 (1.93)	10	0	0	No	
BMC13	0.57	Searched Entire Area	0	0	No	
BMC14/16	4.28	10	0	0	No	BMC14/16 lumped into one survey since they were all directly adjacent to each other but with a different ELC code.
BMC17	0.35	Searched Entire Area	1	2.86	No	
BMC18	0.13	Searched	0	0	No	

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Table 3.3: Bat Maternity Colony Tree Density Survey Results for the Niagara Region Wind Farm						
Feature ID	Size (ha) (Accessible area in brackets)	Total # plots required	Total # cavity trees	Total # cavity trees / ha	Exit survey required?	Notes
		Entire Area				
BMC20	1.44 (1.12)	10	1	2	No	
BMC23/25 /26/27	6.02 (4.72)	10	1	2	No	BMC23/25/26/27 lumped into one survey since they were all directly adjacent to each other but with a different ELC code. Mid-age FOD with few cavity trees having decay class of 5 and 6
BMC28/30 /31/32	33.04 (5.05)	33	11	6.6	No	BMC28/30/31/32 lumped into one survey since they were all directly adjacent to each other but with a different ELC code.
BMC29	0.21	Searched Entire Area	0	0	No	Small woodlot, consisting of mid-aged to mature poplar. Downed woody debris throughout with large amounts of brush piles from adjacent clear-cut.
BMC33	4.74 (4.71)	10	1	2	No	
BMC34	3.60 (1.59)	10	0	0	No	Stumps present, indicating forest management.
BMC35	0.68	10	0	0	No	Some overlap of plots may have occurred.
BMC37/38	5.15 (2.38)	10	1	2	No	BMC37/38 lumped into one survey

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Table 3.3: Bat Maternity Colony Tree Density Survey Results for the Niagara Region Wind Farm						
Feature ID	Size (ha) (Accessible area in brackets)	Total # plots required	Total # cavity trees	Total # cavity trees / ha	Exit survey required?	Notes
						since they were directly adjacent to each other but with a different ELC code. 2 cavities were found in the same tree with a decay class of 2.
BMC42	2.85	10	4	8	No	Combination of lowland and upland deciduous forest; young in age, with few trees >15m in height and decay class of 1-3.
BMC47	2.35	10	3	6	No	Trees with DBH >25cm scattered throughout forest community; open areas throughout canopy cover
BMC48/49	1.20	10	4	4	No	BMC48/49 lumped into one survey since they were directly adjacent to each other but with a different ELC code. Small isolated forest community; limited clusters of trees with DBH >25cm.
BMC50	1.00 (0.93)	10	2	4	No	Small isolated forest community; young-mature in age, with limited amount of trees >25cm DBH; canopy height ~15m.
BMC51	6.46 (6.43)	10	13	26	Yes	Large portion of

PRE-CONSTRUCTION MONITORING REPORT NIAGARA REGION WIND FARM

Results

July 23, 2014

Table 3.3: Bat Maternity Colony Tree Density Survey Results for the Niagara Region Wind Farm						
Feature ID	Size (ha) (Accessible area in brackets)	Total # plots required	Total # cavity trees	Total # cavity trees / ha	Exit survey required?	Notes
						trees in FOD community with a DBH >25cm; large amounts of maples and shagbark hickory; canopy height >20m throughout.
BMC52/53 /54/55	6.39 (5.07)	10	3	6	No	BMC52/53/54/55 communities combined together: narrow areas of upland deciduous forest surrounded by deciduous swamp. Limited areas of upland deciduous forest in feature.

Based on the plot surveys, a total of one (1) feature was considered as candidate significant wildlife habitat (BMC51). BMC-51 (**Figure 4, Appendix A**) had a total of 13 cavity trees (26 cavity trees / ha) identified during field investigations, meeting the “Guidelines for Wind Power Projects Potential Impacts to Bats and Bat Habitats” requirement of ≥ 10 trees per hectare. Bat exit surveys were therefore required to confirm the significance of this feature.

Bat Exit Surveys

Ten (10) candidate BMC cavity trees were selected within BMC51. The tree cavity in each candidate tree was monitored by one surveyor from sunset (30 minutes before dusk to 60 minutes after dusk) for 1.5 hours to observe whether bats were entering or exiting the cavity. A bat detector was also set up in the area of the candidate tree to record all bats present in the area. Additionally, bats sighted flying around in the area were tallied by the surveyor.

Dates, time, weather conditions and surveyors are provided in **Table 3.4**. Characteristics of each candidate tree cavity are included in **Table 3.5**. Bat observations for each candidate tree cavity are included in **Table 3.6**.

PRE-CONSTRUCTION MONITORING REPORT NIAGARA REGION WIND FARM

Results

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Table 3.4: Field Investigation Record for Bat Exit Surveys for the Niagara Region Wind Farm

Date/Time	Temp. °C	Wind (Beaufort Scale)	Cloud %	PPT / PPT last 24 hours	Surveyors
June 14, 2013 21:00-22:15	17	0-1	5	None / Rain	J. Ball, A.Orr, B. Miller
June 24 2013 20:45 – 22:15	27	0-1	0	None / None	J. Ball, A.Orr, N. Charlton
June 25 2013 20:45 – 22:15	25	3	80	None / None	J. Ball, A.Orr
June 26 2013 21:00 – 22:15	25	1	10	None / Rain	J. Ball, A.Orr

Table 3.5: Bat Exit Survey Candidate Tree Cavity Characteristics

Tree ID	Species ID	# of cavities	DBH (cm)	Cavity Height (m)	Tree Height (m)	Decay Class
1	American Beech	1	30	15	22	1
2	American Beech	2	27	15	20	1
3	Sugar Maple	2	25	10	22	2
4	Sugar Maple	1	25	15	23	2
5	Sugar Maple	1	25	12	21	2
6	Sugar Maple	1	40	13	23	1
7	American Beech	1	26	10	23	1
8	Bitternut Hickory	1	26	12	24	1
9	Sugar Maple	1	25	16	22	2
10	Sugar Maple	3	37	17	23	3

PRE-CONSTRUCTION MONITORING REPORT NIAGARA REGION WIND FARM

Results

July 23, 2014

Table 3.6: Bat Exit Survey Results for the Niagara Region Wind Farm

Tree ID	Bats observed exiting / entering cavity?	Total # of bats visually observed during survey
1	No	5
2	No	0
3	No	0
4	No	2
5	No	0
6	No	0
7	No	0
8	No	2
9	No	0
10	No	6

No bats were observed exiting tree cavities of candidate trees selected for the bat exit surveys, however bats were observed flying in the area during the surveys. Bat detectors indicate that the species using the habitat provided by the woodlot include Little Brown Myotis (*Myotis lucifugus*) and Big Brown Bat (*Eptesicus fuscus*). Despite the presence of these bats, BMC51 has not been considered as significant wildlife habitat for breeding bats due to the absence of bats observed exiting tree cavities of candidate trees, as per the "Guidelines for Wind Power Projects Potential Impacts to Bats and Bat Habitats".

3.3 TURTLE OVERWINTERING HABITAT

The Draft *Significant Wildlife Habitat Ecoregion 7E Criterion Schedule* (MNR 2012), defines significant wildlife habitat for overwintering turtles to be overwintering habitat used by a minimum of five Midland Painted Turtles or one or more Northern Map Turtle or Snapping Turtle.

Results of the turtle overwintering habitat surveys that were undertaken to identify significant wildlife habitat are summarized in **Table 3.7** below.

Table 3.7: Results of Turtle Overwintering Surveys	
Survey Dates	Turtle Observations
April 18 2013	None
May 2 2013	None
May 21 2013	None

No turtles were observed during turtle overwintering surveys which can conclude that the area where the transmission line crosses the Welland River should not be considered to be significant wildlife habitat for overwintering turtles at this location.

PRE-CONSTRUCTION MONITORING REPORT NIAGARA REGION WIND FARM

Results

July 23, 2014

3.4 SNAKE HIBERNACULUM

In order for a candidate significant snake hibernaculum feature to qualify as significant, it needs to be used by a minimum of five individuals of a snake species or individuals of two or more snake species, as per the *Draft Significant Wildlife Habitat Ecoregion 7E Criterion Schedule* (MNR 2012).

Results of the snake hibernacula surveys that were undertaken to identify significant wildlife habitat are summarized in **Table 3.8** below.

Table 3.8: Results of Snake Hibernacula Surveys				
Feature ID	Survey Dates	Snake Species Observations	Feature Description	Survey Details
SH2	April 15	None	Piles of rocks/concrete in agricultural field.	Searched rocks/concrete for snakes and up to a 30m perimeter around the hibernacula, including adjacent agricultural field, driveway and meadow marsh.
	May 2	None		
	May 21	None		
SH3	April 15	None	Several brush/log piles in FOD.	Searched potential hibernacula, upland forest areas and the edge of agricultural field.
	May 2	Northern Brownsnake observed within 100m of hibernacula.		
	May 21	None		
SH4	April 14	None	Potential hibernacula is a pile of logs/posts and an old bridge foundation.	Searched areas north and south of the watercourse with a focus on potential hibernacula. Searched from the edge of the stream, up the slope and along the edge of the agricultural field/pasture.
	May 2	None		
	May 21	None		
SH6	April 15	None	Pile of sand 3m tall at the edge of agricultural field and FOD.	Searched the hibernacula, dryer areas of the FOD and the edge of the agricultural field.
	May 2	None		
	May	None		

PRE-CONSTRUCTION MONITORING REPORT NIAGARA REGION WIND FARM

Results

July 23, 2014

Table 3.8: Results of Snake Hibernacula Surveys				
Feature ID	Survey Dates	Snake Species Observations	Feature Description	Survey Details
	21			
SH7	April 15	None	Downed logs and an old brick silo within an inaccessible cultural woodland.	Surveyed from the road as we did not have permission to access the property. Observed roadside and the edge of the cultural woodland for snakes.
	May 2	None		
	May 21	None		

One (1) Northern Brownsnake was observed within 100 m of SH3 however this observation does not qualify as significant according to the *Draft Significant Wildlife Habitat Ecoregion 7E Criterion Schedule* (MNR 2012), which requires a snake hibernacula to be used by a minimum of five individuals of a snake species or individuals of two or more snake species. All five (5) potential snake hibernacula are not considered significant wildlife habitat.

3.5 TURTLE NESTING HABITAT

In order for a potential candidate significant turtle nesting habitat feature to be further assessed for significance, it needs to provide exposed, natural sand and gravel deposits, as per the *Draft Significant Wildlife Habitat Ecoregion 7E Criterion Schedule* (MNR 2012). Results of the turtle nesting habitat surveys are found in **Table 3.9**.

The majority of sites were disturbed and consisted of drainage ditches with dense canary reed grass, and surrounded by agricultural fields. Nesting habitats were all artificial, consisting of gravel roadway shoulders and agricultural field edges and therefore did not qualify as significant wildlife habitat.

Gravel piles adjacent to TH45 likely provide adequate turtle nesting habitat however, they would not be considered significant as they are artificial. A small gravel pile adjacent to the watercourse in TH21 may also provide turtle nesting habitat however, the gravel pile is artificial and the area is disturbed with agricultural practices.

PRE-CONSTRUCTION MONITORING REPORT NIAGARA REGION WIND FARM

Results

July 23, 2014

Table 3.9: Turtle Nesting Habitat Summary		
Feature ID	Habitat Description	Candidate SWH? Y/N
TH3	Wetland in red maple, ash and cottonwood thicket with some shallow open water and cattail marsh. Surrounded by gravel roads to the west and north (which provide artificial turtle nesting habitat) and agricultural fields to the south. No exposed mineral soil or gravel besides access road. Heavy, saturated soil along ditch at east end.	N
TH5	Southern Portion: Surrounded by agricultural field to the west and north, forest to the east and south. Exposed clay/silt behind hog barn where tractor created rectangular dug-out beside wetland. Side of ditch on west side of wetland, adjacent to bean field are exposed clay and steep sloped. Smaller Southern Portion: Agriculture and forest on all sides. Northern Portion: Agriculture to the west and east. Forest to the north transitioning to roadside meadow. South is dense deciduous forest. No exposed soil.	N
TH9	Comprised of 2 separate ponds surrounded by dense canary reed grass and agricultural fields. The parking area provides artificial turtle nesting habitat. 3 piles of exposed clay are located by the furthest pond in TH9 however, clay does not provide suitable turtle nesting material.	N
TH10	No longer a wetland. Converted to cropland.	N
TH19	Grassy meadow with meandering stream in center. Agricultural fields to the north and south. Silty clay piles around dugout at SH4 do not provide suitable nesting substrate.	N
TH21	Watercourse (~4m wide) with dense canary reed grass; meanders through agricultural fields. There is a small pile of gravel beside the watercourse at the midpoint of the feature that would likely provide suitable turtle nesting habitat however it is artificial. The shoulders of Rosdene Rd. also provide potential artificial turtle nesting habitat. Exposed clay soils along the bank of the watercourse would not provide suitable nesting habitat due to improper soil texture,	N

PRE-CONSTRUCTION MONITORING REPORT NIAGARA REGION WIND FARM

Results

July 23, 2014

Table 3.9: Turtle Nesting Habitat Summary		
Feature ID	Habitat Description	Candidate SWH? Y/N
	steep slope and tendency for soils to become saturated.	
TH26	Linear wetland to the south is a grassy channel surrounded by corn fields. Central and northern wetlands have meadow to the north and east, corn fields to the south and west. Shoulders of Canborough Rd. may provide artificial nesting habitat.	N
TH28	Watercourse (~3m wide) with dense canary reed grass and cattails and surrounded by agricultural fields. Comfort Rd. provides artificial turtle nesting habitat along the shoulders. The portion of the watercourse along Comfort Rd. has some exposed clay soils along the bank however soil texture, steep slope and tendency for soils to become saturated does not make it suitable nesting habitat.	N
TH29	Watercourse with dense canary reed grass and cattails and surrounded by agricultural fields. Comfort Rd. provides artificial turtle nesting habitat along the shoulder.	N
TH38	Watercourse (~1m wide) with dense canary reed grass and cattails and surrounded by agricultural fields. Concession 4 provides artificial turtle nesting habitat along the shoulder.	N
TH39	Watercourse (~3m wide) dominated by dense canary reed grass and surrounded by agricultural fields. Gravel shoulders of Vaughan Rd. likely provide artificial turtle nesting habitat. The portion of TH39 that enters the woodland 103 is too shaded for turtle nesting.	N
TH40	Watercourse (~3m wide) dominated by dense canary reed grass and surrounded by agricultural fields. Gravel shoulders of Vaughan Rd. E. likely provide artificial turtle nesting habitat.	N
TH41	Meadow marsh dominated by dense canary reed grass and surrounded by agricultural fields and directly adjacent to an old foundation and manure pile. A gravel/sandy lane provides artificial turtle nesting habitat.	N

PRE-CONSTRUCTION MONITORING REPORT NIAGARA REGION WIND FARM

Results

July 23, 2014

Table 3.9: Turtle Nesting Habitat Summary		
Feature ID	Habitat Description	Candidate SWH? Y/N
TH42	Wetland is a dense, grassy marsh. Meadow and pine plantation to the north, corn to the east, west and south. No exposed soil beyond cultivated field. Soil is dense, heavy clay and not suitable for nesting.	N
TH45	Pond surrounded by red maple, ash and willow thicket. Piled gravel to the west of pond and gravel substrate between the gravel piles and gravel railway right of way provide artificial nesting habitat. West end of pond is dense cattail marsh and shrub swamp.	N
TH46	Dense, grassy, meadow marsh does not provide very good turtle habitat. No exposed soil. Trees, meadow, agricultural field around entire perimeter.	N
TH62	Watercourse (~0.5m wide) dominated by canary reed grass and surrounded by agricultural fields to the north, south and east. Woods Road to the west provides artificial turtle nesting habitat along the shoulders.	N
TH69	Watercourse (~2m wide) dominated by dense canary reed grass and surrounded by agricultural fields. Exposed soil in the area represents wet, clay depressions within agricultural fields that would not provide suitable turtle nesting habitat. The shoulders of Gee Rd. would provide artificial nesting habitat.	N

No natural, sandy and/or gravelly areas were observed within the eighteen (18) areas that were identified as potential candidate turtle nesting sites. None of these areas are considered to be Candidate significant wildlife habitat for turtle nesting.

3.6 SUMMARY

Apart from the bat maternity colony features for which permission to access the properties was not available (bmc3, bmc12, bmc15, bmc19, bmc24, bmc36, bmc39, bmc43, bmc44, bmc45 and bmc46), none of the potential or candidate features assessed qualified as significant wildlife habitat. **Table 3.10** below summarizes the results of the evaluation of significance surveys.

PRE-CONSTRUCTION MONITORING REPORT NIAGARA REGION WIND FARM

Results

July 23, 2014

Table 3.10: Pre-Construction Evaluation of Significance Summary			
Feature	Potential Candidate Significant Wildlife Habitat?	Candidate Significant Wildlife Habitat?	Significant Wildlife Habitat?
<i>Migratory Landbird Stopover Areas</i>			
mlsa3	N/A	Yes	No
mlsa4	N/A	Yes	No
<i>Bat Maternity Colonies</i>			
bmc1	Yes	N/A	No
bmc3	N/A	N/A	Yes (assumed)
bmc6	Yes	N/A	No
bmc8	Yes	N/A	No
bmc9	Yes	N/A	No
bmc10	Yes	N/A	No
bmc11	Yes	N/A	No
bmc12	N/A	N/A	Yes (assumed)
bmc15	N/A	N/A	Yes (assumed)
bmc19	N/A	N/A	Yes (assumed)
bmc20	Yes	N/A	No
bmc23	Yes	N/A	No
bmc24	N/A	N/A	Yes (assumed)
bmc25	Yes	N/A	No
bmc26	Yes	N/A	No
bmc27	Yes	N/A	No
bmc28	Yes	N/A	No
bmc29	Yes	N/A	No
bmc30	Yes	N/A	No
bmc31	Yes	N/A	No
bmc33	Yes	N/A	No
bmc34	Yes	N/A	No
bmc35	Yes	N/A	No
bmc36	N/A	N/A	Yes (assumed)
bmc37	Yes	N/A	No
bmc38	Yes	N/A	No
bmc39	N/A	N/A	Yes (assumed)
bmc42	Yes	N/A	No
bmc43	N/A	N/A	Yes (assumed)
bmc44	N/A	N/A	Yes (assumed)

PRE-CONSTRUCTION MONITORING REPORT NIAGARA REGION WIND FARM

Results

July 23, 2014

Table 3.10: Pre-Construction Evaluation of Significance Summary

Feature	Potential Candidate Significant Wildlife Habitat?	Candidate Significant Wildlife Habitat?	Significant Wildlife Habitat?
bmc45	N/A	N/A	Yes (assumed)
bmc46	N/A	N/A	Yes (assumed)
bmc47	Yes	N/A	No
bmc48	Yes	N/A	No
bmc49	Yes	N/A	No
bmc50	Yes	N/A	No
bmc51	Yes	Yes	No
bmc52	Yes	N/A	No
bmc53	Yes	N/A	No
bmc54	Yes	N/A	No
bmc55	Yes	N/A	No
<i>Turtle Overwintering Habitat</i>			
to1	N/A	Yes	No
<i>Snake Hibernacula</i>			
sh2	N/A	Yes	No
sh3	N/A	Yes	No
sh4	N/A	Yes	No
sh6	N/A	Yes	No
sh7	N/A	Yes	No
<i>Turtle Nesting Habitat</i>			
th3	Yes	N/A	No
th5	Yes	N/A	No
th9	Yes	N/A	No
th10	Yes	N/A	No
th19	Yes	N/A	No
th21	Yes	N/A	No
th26	Yes	N/A	No
th28	Yes	N/A	No
th29	Yes	N/A	No
th38	Yes	N/A	No
th39	Yes	N/A	No
th40	Yes	N/A	No
th41	Yes	N/A	No
th42	Yes	N/A	No
th45	Yes	N/A	No

PRE-CONSTRUCTION MONITORING REPORT NIAGARA REGION WIND FARM

Results

July 23, 2014

Table 3.10: Pre-Construction Evaluation of Significance Summary

Feature	Potential Candidate Significant Wildlife Habitat?	Candidate Significant Wildlife Habitat?	Significant Wildlife Habitat?
th46	Yes	N/A	No
th62	Yes	N/A	No
th69	Yes	N/A	No

4.0 Conclusion

This report completes requirements for the pre-construction fall migratory landbird stopover area surveys, bat maternity colony surveys, turtle overwintering habitat surveys, snake hibernacula surveys and turtle nesting habitat assessments under the REA approval as required. Post-construction surveys will follow once the project is constructed to assess potential impacts as outlined in the EIS and EEMP.

Based on these survey results, post-construction surveys as identified in the EEMP and the NHA/EIS will not be undertaken in mlsa 3 and mlsa 4 as these features were not considered to be significant. Additionally, bat maternity colonies and turtle nesting features were not identified as being significant during pre-construction surveys and will not require post-construction surveys, however, all turbines within 120 m of bat maternity colonies that could not be surveyed due to site constraints will be included in the post-construction mortality monitoring for birds and bats. These turbines include: T01, T02, T05, T44, T58, T66, T81, and T96.

Post-construction surveys will still include bird and bat mortality monitoring, spring and fall migratory landbird surveys at mlsa1 and winter raptor and Short-eared Owl surveys for a period of 3 years, and hydrological and amphibian monitoring for a one-year period.

MNR, along with the applicable agencies, will be asked to collectively review the results of the post-construction monitoring to determine if an ecologically significant disturbance/avoidance effect is occurring, and whether such an effect is attributable to the wind turbines and not external factors. These discussions will determine if and when the contingency plan will be implemented and if any additional measures are warranted. The best available science and information will be considered when determining appropriate mitigation.

5.0 References

Ontario Ministry of Natural Resources. 2010. Birds and Bird Habitats: Guidelines for Wind Power Projects. 32pp.

Ontario Ministry of Natural Resources. 2012. Draft Significant Wildlife Habitat Ecoregion 7E Criterion Schedule.

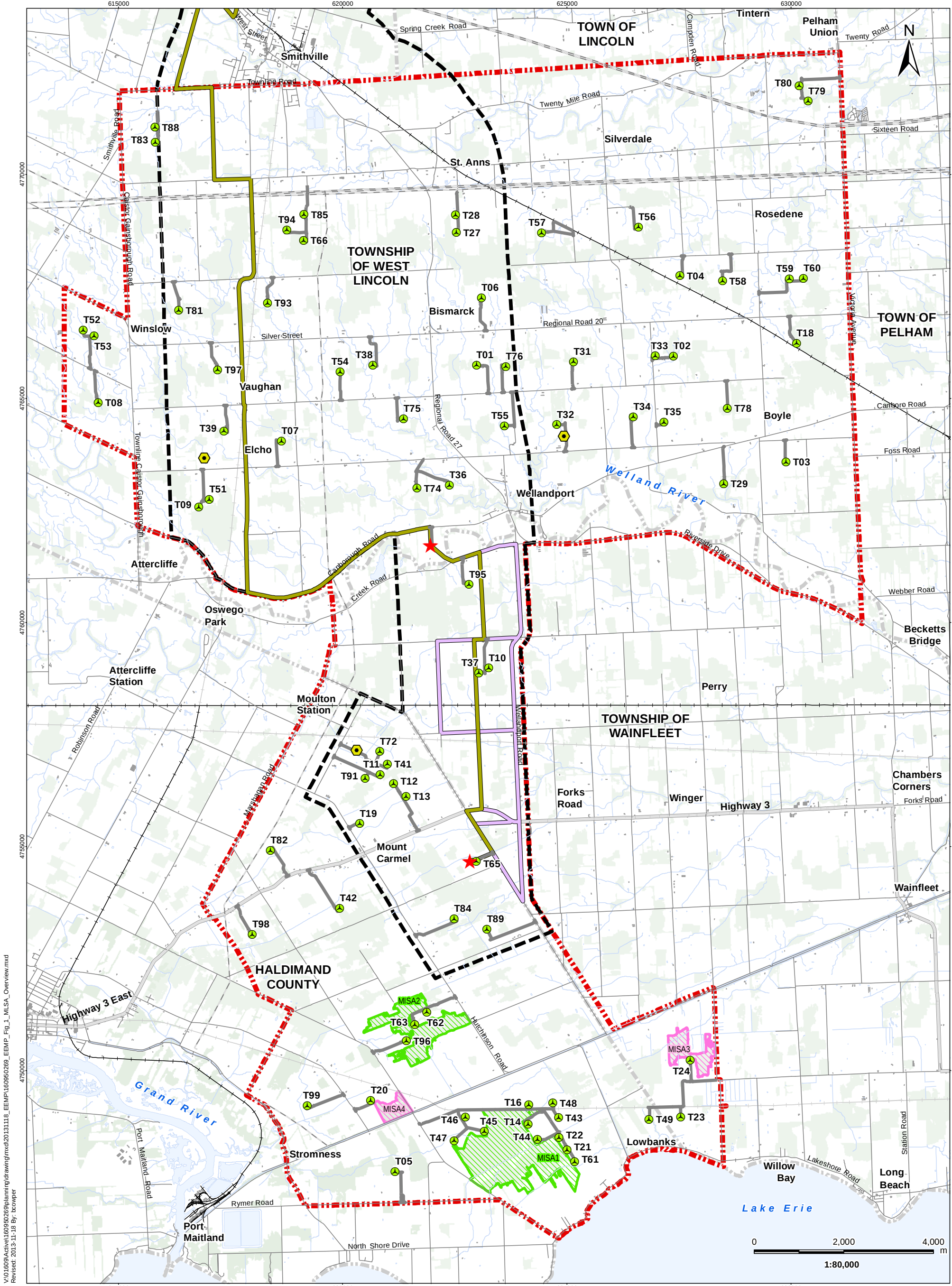
Stantec Consulting Ltd. 2013. Niagara Region Wind Farm: Environmental Effects Monitoring Plan for Wildlife and Wildlife Habitat. Prepared for Niagara Region Wind Corporation.

Stantec Consulting Ltd. 2013. Niagara Region Wind Farm: Natural Heritage Assessment and Environmental Impact Study. Prepared for Niagara Region Wind Corporation.

PRE-CONSTRUCTION MONITORING REPORT NIAGARA REGION WIND FARM

Appendix A Figures
July 23, 2014

Appendix A Figures



V:\01609\Active\160950269\planning\drawing\mxd\20131118_EEMP\160950269_EEMP_Fig_1_MLSA_Overview.mxd
Revised: 2013-11-18 By: bczwager



Legend

	Project Study Area		Active Railway
	Interconnector Study Area		Abandoned Railway
	Proposed Turbine Location		Existing Structures
	Potential Access Road		Existing Transmission Line
	Transformer Substation		Watercourse
	Tap-in Location		Waterbody
	Existing Met Tower		Wooded Area
	Preferred Transmission Line Route		Municipality Lower Tier
	Alternate Transmission Route		Significant Migratory Landbird Stopover Area
	Road		Candidate Migratory Landbird Stopover Area
	Expressway / Highway		

Notes

- Coordinate System: NAD 1983 UTM Zone 17N
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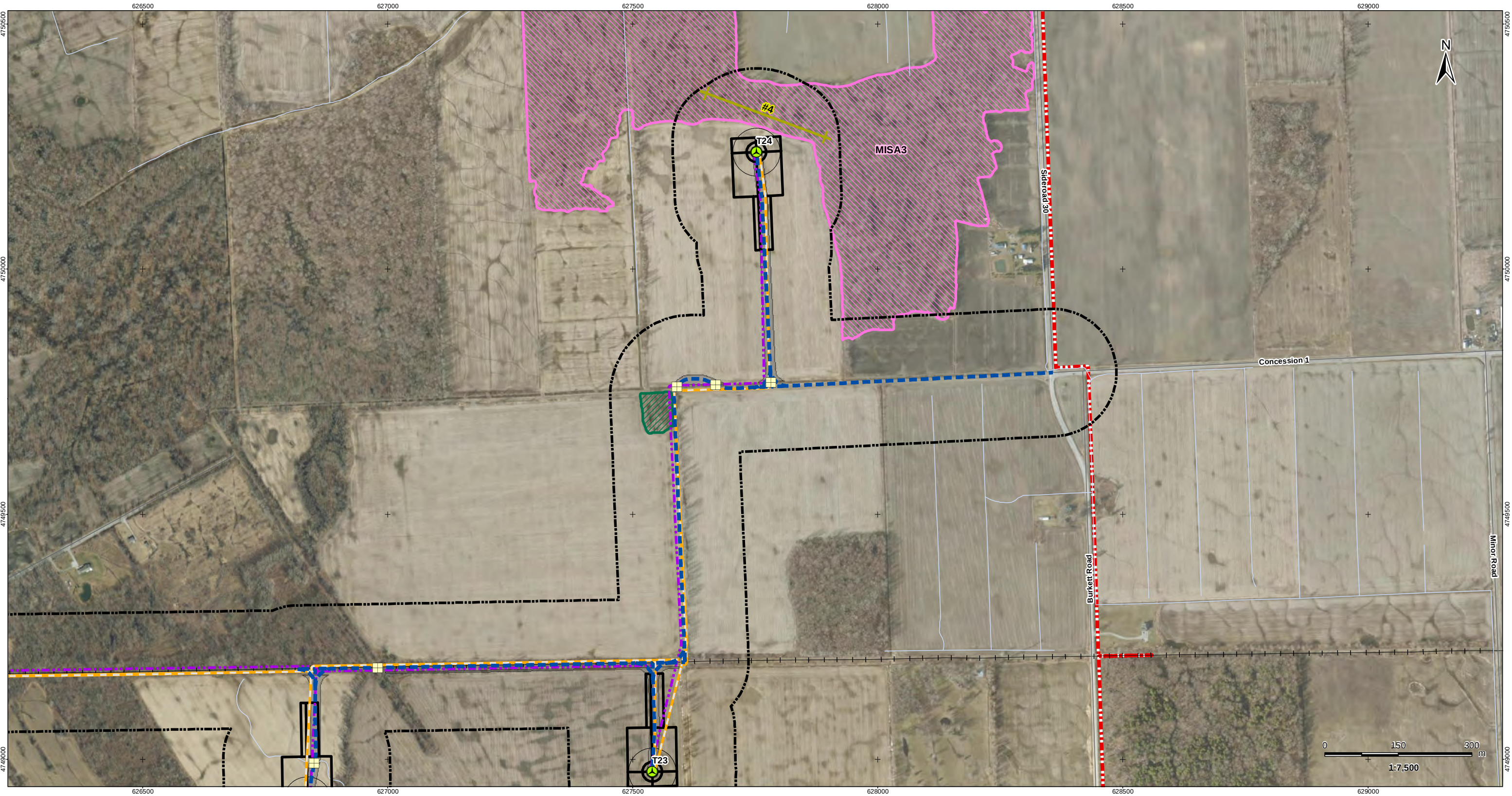
Client/Project
Niagara Region Wind Corporation
Niagara Region Wind Farm

Figure No.
1

Title
Migratory Landbird Stopover Area

November 2013
160950269

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Revised: 2013-11-18 By: bbowyer



November, 2013
160950269

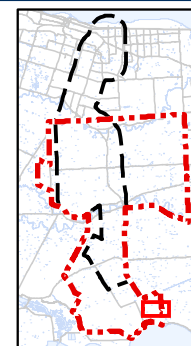


Legend

- | | | | |
|--|---|--|-----------------------------------|
| | Project Study Area | | Potential Access Road |
| | 120m Zone of Investigation | | Access Road 20m Construction Area |
| | Proposed Turbine Location | | Migratory Bird Transect |
| | Turbine Blade Length | | Migratory Landbird Stopover Area |
| | Proposed Culvert | | |
| | Temporary Laydown Area | | |
| | Collector Lines – Underground or Overhead | | |
| | Fibre Optic Line | | |

Notes

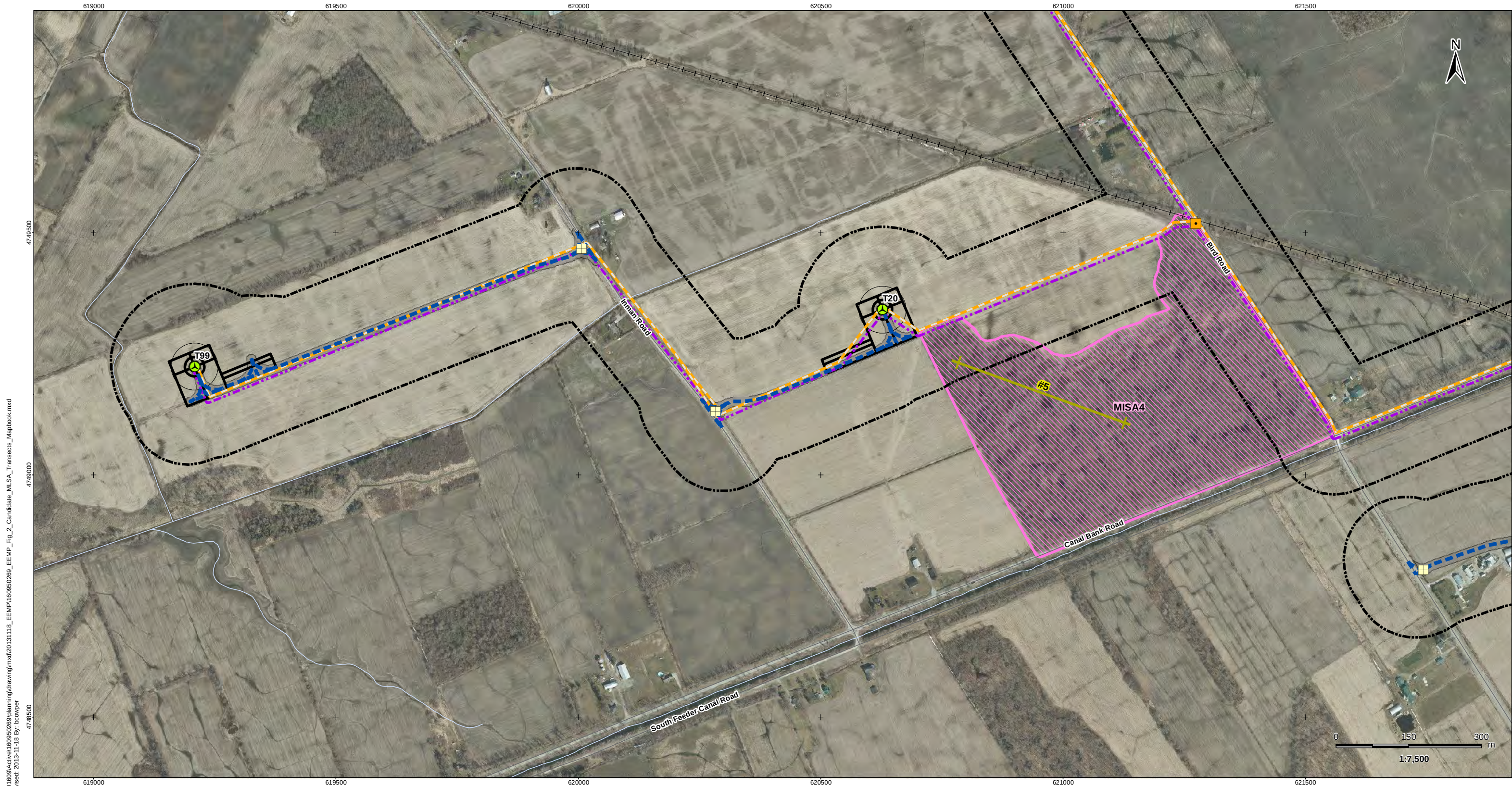
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Figure No.
2.1

Title
**Candidate Significant
Migratory Landbird Stopover
Area Transects**



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Revised: 2013-11-18 By: bowyer

November, 2013
160950269

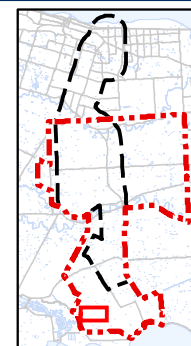


Legend

- | | | | |
|--|---|--|-----------------------------------|
| | Project Study Area | | Potential Access Road |
| | 120m Zone of Investigation | | Access Road 20m Construction Area |
| | Proposed Turbine Location | | Migratory Bird Transect |
| | Turbine Blade Length | | Migratory Landbird Stopover Area |
| | Junction Box | | |
| | Proposed Culvert | | |
| | Temporary Laydown Area | | |
| | Collector Lines – Underground or Overhead | | |
| | Fibre Optic Line | | |

Notes

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Natural Heritage Assessment Report

Figure No.
2.2

Title
**Candidate Significant
Migratory Landbird Stopover
Area Transects**

V:\01609\Active\160950269\planning\drawing\mxd\20131118_EEMP\160950269_EEMP_Fig_3_Potential_Candidate_Bat_Maternity_Overview.mxd
Revised: 2013-11-18 By: bczwager



Stantec

Legend



Project Study Area



Interconnector Study Area



Proposed Turbine Location



Potential Access Road



Transformer Substation



Tap-in Location



Existing Met Tower

Preferred Transmission Line Route

Alternate Transmission Route

Road

Expressway / Highway

Active Railway

Abandoned Railway

Existing Structures

Existing Transmission Line

Watercourse

Waterbody

Wooded Area

Municipality Lower Tier

Potential Candidate Significant Bat Maternity Colonies

Assumed Significant Bat Maternity Colonies (not surveyed due to access issues)

Notes

- Coordinate System: NAD 1983 UTM Zone 17N
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Client/Project

Niagara Region Wind Corporation
Niagara Region Wind Farm

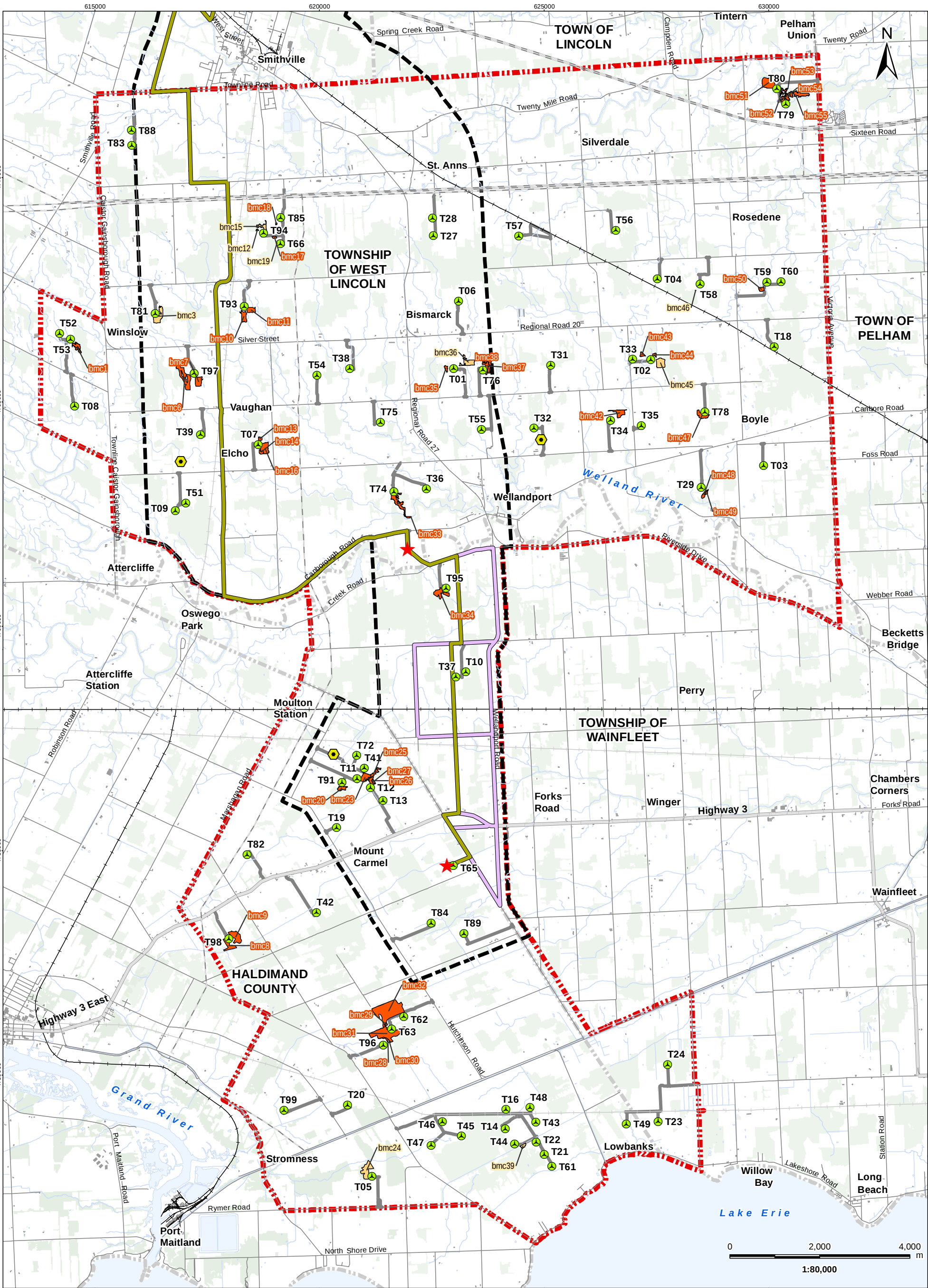
November 2013
160950269

Figure No.

3

Title

Potential Candidate Significant Bat Maternity Colonies



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Revised: 2014-01-28 By: bawpwr



Stantec

Legend



Project Study Area



Interconnector Study Area



Proposed Turbine Location



Potential Access Road



Transformer Substation



Tap-in Location



Existing Met Tower



Preferred Transmission Line Route



Alternate Transmission Route



Road



Expressway / Highway

Active Railway

Abandoned Railway

Existing Structures

Existing Transmission Line

Watercourse

Waterbody

Wooded Area

Municipality Lower Tier

Candidate Significant Bat Maternity Colonies

Assumed Significant Bat Maternity Colonies (not surveyed due to access issues)

Notes

- Coordinate System: NAD 1983 UTM Zone 17N
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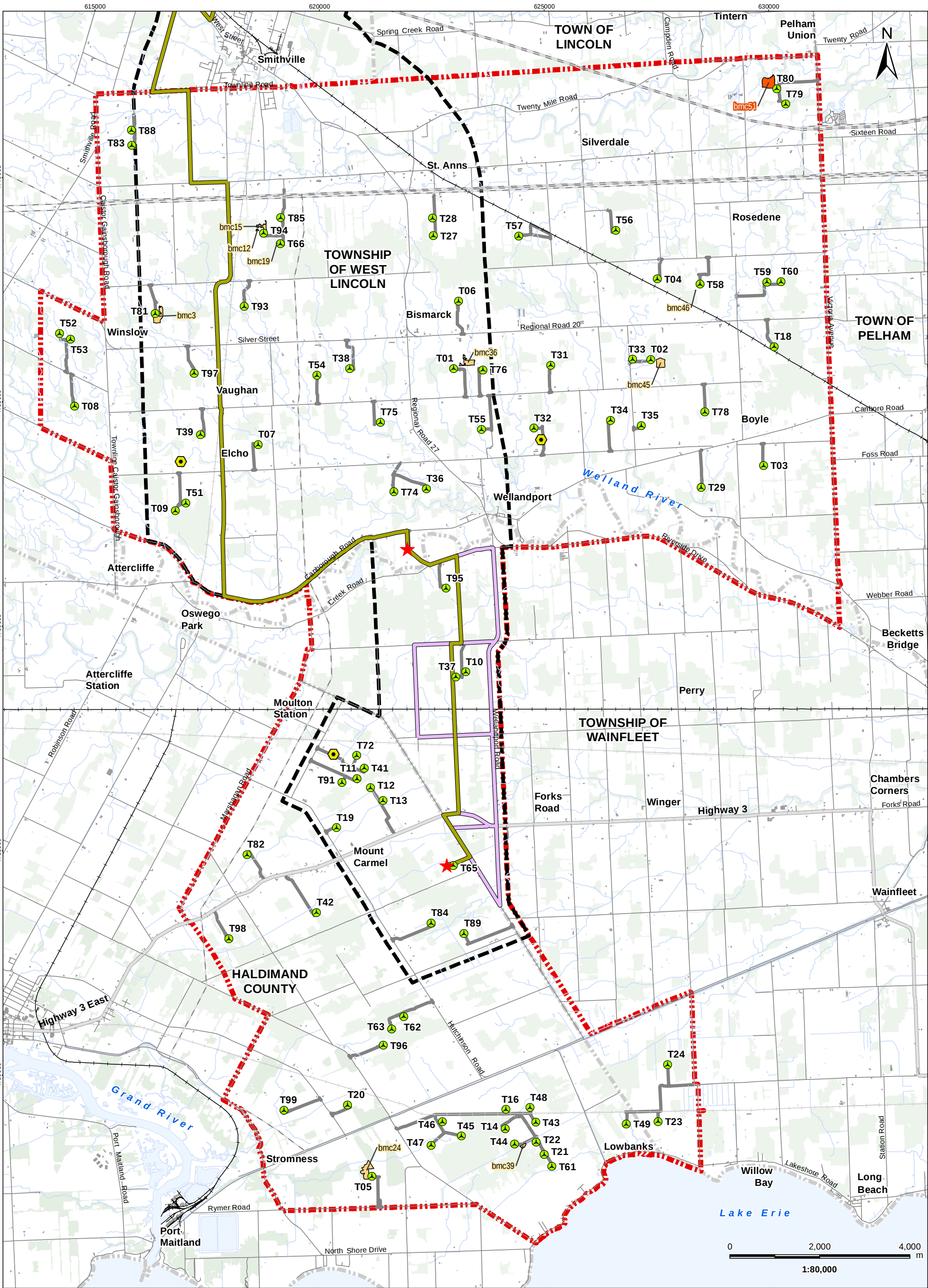
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Niagara Region Wind Farm

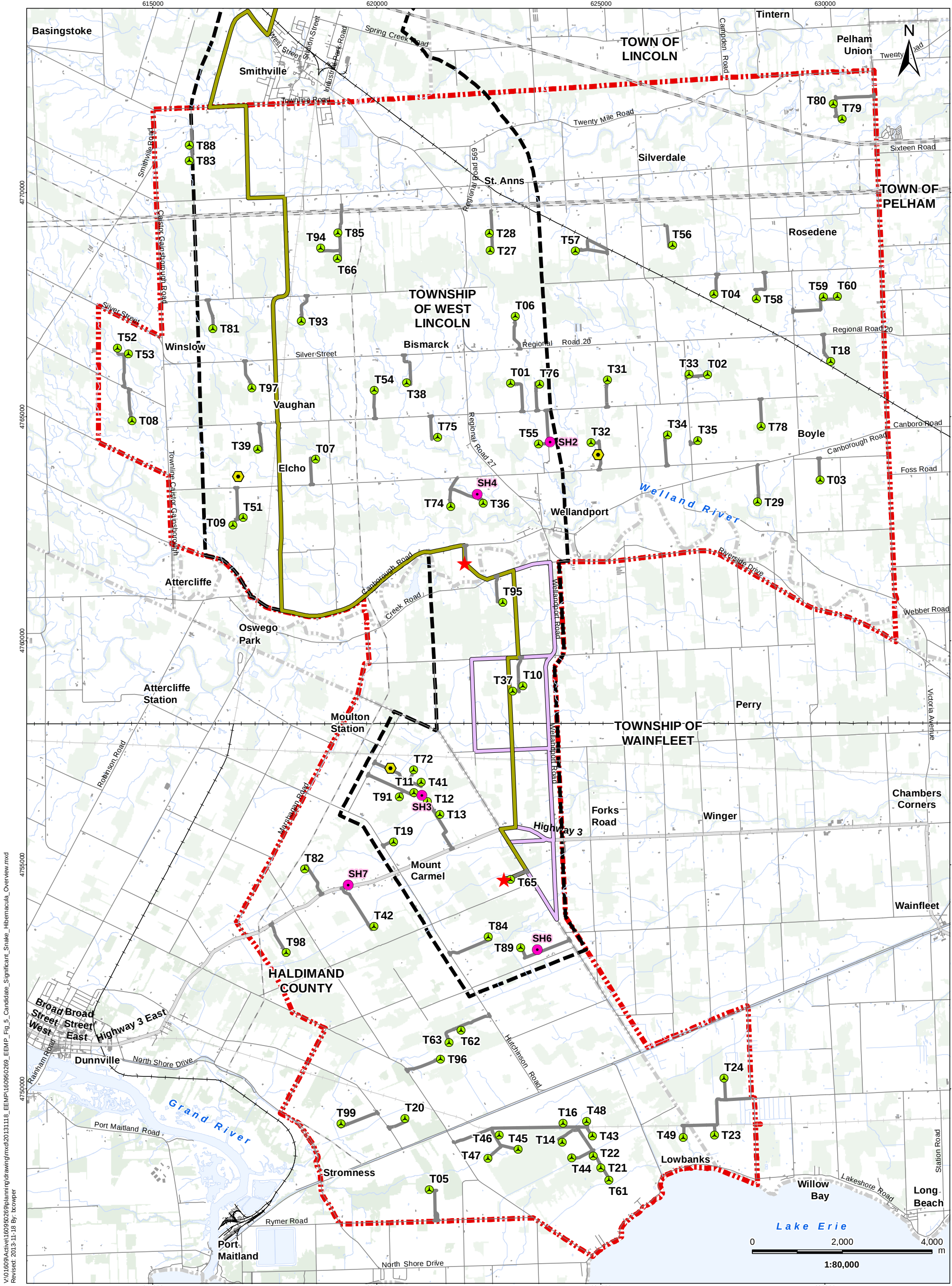
January 2014
160950269

Figure No.
4

Title

Candidate Significant
Bat Maternity Colonies





V:\01609\Active\160950269\planning\drawing\mxd\20131118_EEMP\160950269_EEMP_Fig_5_Candidate_Significant_Snake_Hibernacula_Overview.mxd
Revised: 2013-11-18 By: bczowier



Legend

	Project Study Area		Road		Candidate Significant Snake Hibernacula
	Interconnector Study Area		Expressway / Highway		
	Proposed Turbine Location		Active Railway		
	Potential Access Road		Abandoned Railway		
	Transformer Substation		Existing Structures		
	Tap-in Location		Existing Transmission Line		
	Existing Met Tower		Watercourse		
	Preferred Transmission Line Route		Waterbody		
	Alternate Transmission Route		Wooded Area		
			Municipality Lower Tier		

Client/Project
Niagara Region Wind Corporation
Niagara Region Wind Farm

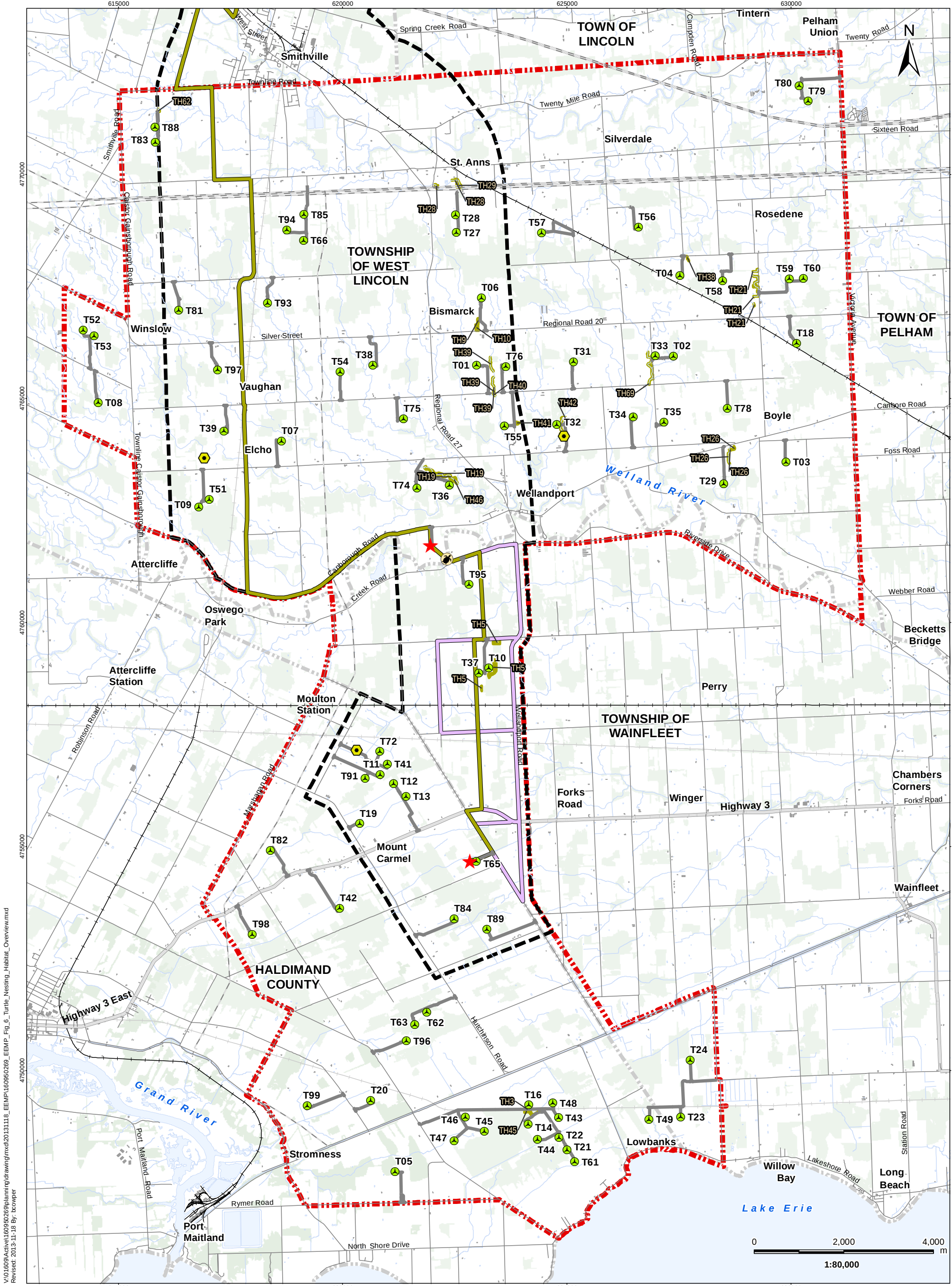
Figure No.
5

Title
Candidate Significant Snake Hibernacula

Notes

- Coordinate System: NAD 1983 UTM Zone 17N
- Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2012.

November 2013
160950269



V:\01609\09\160950269\planning\drawing\mxd\20131118_EEMP\160950269_EEMP_Fig_6_Turtle_Nesting_Habitat_Overview.mxd
Revised: 2013-11-18 By: bczwper



Legend

- Project Study Area
- Interconnector Study Area
- Proposed Turbine Location
- Potential Access Road
- Transformer Substation
- Tap-in Location
- Existing Met Tower
- Preferred Transmission Line Route
- Alternate Transmission Route
- Road
- Expressway / Highway
- Active Railway
- Abandoned Railway
- Existing Structures
- Existing Transmission Line
- Watercourse
- Waterbody
- Wooded Area
- Municipality Lower Tier
- Potential Candidate Significant Turtle Nesting Habitat
- Candidate Significant Turtle Overwintering Habitat

Notes

- Coordinate System: NAD 1983 UTM Zone 17N
- Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2012.

Client/Project
Niagara Region Wind Corporation
Niagara Region Wind Farm

Figure No.
6

Title
Potential Candidate Significant
Turtle Nesting Habitat and
Candidate Significant Turtle
Overwintering Habitat

November 2013
160950269

PRE-CONSTRUCTION MONITORING REPORT NIAGARA REGION WIND FARM

Appendix B Tables
July 23, 2014

Appendix B Tables

Table 1. Migratory Landbird Stopover Area Species List

COMMON NAME	SCIENTIFIC NAME	ONTARIO STATUS	GLOBAL STATUS	COSSARO	COSEWIC	AREA SENSITIVITY (ha)	Local Status PIF Priority Species (BCR 13)
AMPHIBIANS							
Spring Peeper	<i>Pseudacris crucifer</i>	S5	G5				
Wood Frog	<i>Lithobates sylvatica</i>	S5	G5				
BIRDS							
Canada Goose	<i>Branta canadensis</i>	S5	G5				
Killdeer	<i>Charadrius vociferus</i>	S5B, S5N	G5				
Mourning Dove	<i>Zenaida macroura</i>	S5	G5				
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	S4	G5				
Downy Woodpecker	<i>Picoides pubescens</i>	S5	G5				
Hairy Woodpecker	<i>Picoides villosus</i>	S5	G5			10	
Northern Flicker	<i>Colaptes auratus</i>	S4B	G5				X
Eastern Wood-Pewee	<i>Contopus virens</i>	S4B	G5		SC-NS		X
Least Flycatcher	<i>Empidonax minimus</i>	S4B	G5				
Red-eyed Vireo	<i>Vireo olivaceus</i>	S5B	G5				
Blue Jay	<i>Cyanocitta cristata</i>	S5	G5				
American Crow	<i>Corvus brachyrhynchos</i>	S5B	G5				
Black-capped Chickadee	<i>Poecile atricapillus</i>	S5	G5				
White-breasted Nuthatch	<i>Sitta carolinensis</i>	S5	G5			10	
Brown Creeper	<i>Certhia americana</i>	S5B	G5			30	
House Wren	<i>Troglodytes aedon</i>	S5B	G5				
Golden-crowned Kinglet	<i>Regulus satrapa</i>	S5B	G5			0	
Ruby-crowned Kinglet	<i>Regulus calendula</i>	S4B	G5				
Hermit Thrush	<i>Catharus guttatus</i>	S5B	G5			20-30	
Wood Thrush	<i>Hylocichla mustelina</i>	S4B	G5		THR-NS		X
American Robin	<i>Turdus migratorius</i>	S5B	G5				
Gray Catbird	<i>Dumetella carolinensis</i>	S4B	G5				
Cedar Waxwing	<i>Bombycilla cedrorum</i>	S5B	G5				
Black-and-white Warbler	<i>Mniotilta varia</i>	S5B	G5			100	
American Redstart	<i>Setophaga ruticilla</i>	S5B	G5			20-30	
Blackburnian Warbler	<i>Setophaga fusca</i>	S5B	G5			30-50	
Black-throated Blue Warbler	<i>Setophaga caerulescens</i>	S5B	G5			30-50	
Yellow-rumped Warbler	<i>Setophaga coronata</i>	S5B	G5				
Warbler species							
Song Sparrow	<i>Melospiza melodia</i>	S5B	G5				
White-throated Sparrow	<i>Zonotrichia albicollis</i>	S5B	G5			20	
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	S4B	G5				X
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	S5	G5				
American Goldfinch	<i>Carduelis tristis</i>	S5B	G5				
MAMMALS							
Grey Squirrel	<i>Sciurus carolinensis</i>	S5	G5				
Red Squirrel	<i>Tamiasciurus hudsonicus</i>	S5	G5				
Raccoon	<i>Procyon lotor</i>	S5	G5				
White-tailed Deer	<i>Odocoileus virginianus</i>	S5	G5				

Table 1. Migratory Landbird Stopover Area Species List

SUMMARY

Total Amphibians: 2

Total Birds: 34

Total Mammals: 4

SIGNIFICANT SPECIES

Global: 0

National: 2

Provincial: 0

Explanation of Status and Acronyms

COSSARO: Committee on the Status of Species at Risk in Ontario

COSEWIC: Committee on the Status of Endangered Wildlife in Canada

REGION: Rare in a Site Region

S1: Critically Imperiled—Critically imperiled in the province (often 5 or fewer occurrences)

S2: Imperiled—Imperiled in the province, very few populations (often 20 or fewer),

S3: Vulnerable—Vulnerable in the province, relatively few populations (often 80 or fewer)

S4: Apparently Secure—Uncommon but not rare

S5: Secure—Common, widespread, and abundant in the province

SX: Presumed extirpated

SH: Possibly Extirpated (Historical)

SNR: Unranked

SU: Unrankable—Currently unrankable due to lack of information

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

S#S#: Range Rank—A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species

S#B- Breeding status rank

S#N- Non Breeding status rank

?: Indicates uncertainty in the assigned rank

G1: Extremely rare globally; usually fewer than 5 occurrences in the overall range

G1G2: Extremely rare to very rare globally

G2: Very rare globally; usually between 5-10 occurrences in the overall range

G2G3: Very rare to uncommon globally

G3: Rare to uncommon globally; usually between 20-100 occurrences

G3G4: Rare to common globally

G4: Common globally; usually more than 100 occurrences in the overall range

G4G5: Common to very common globally

G5: Very common globally; demonstrably secure

GU: Status uncertain, often because of low search effort or cryptic nature of the species; more data needed.

GNR: Unranked—Global rank not yet assessed.

T: Denotes that the rank applies to a subspecies or variety

Q: Denotes that the taxonomic status of the species, subspecies, or variety is **questionable**.

END: Endangered

THR: Threatened

SC: Special Concern

Table 1. Migratory Landbird Stopover Area Species List

2, 3 or NS after a COSEWIC ranking indicates the species is either on Schedule 2, Schedule 3 or No Schedule of the Species At Risk Act (SARA)

NAR: Not At Risk

IND: Indeterminant, insufficient information to assign status

DD: Data Deficient

Area: Minimum patch size for area-sensitive species (ha)

LATEST STATUS UPDATE

Birds: August 2013

S and G ranks and explanations: December 2011

NOTE

All rankings for birds refer to breeding birds unless the ranking is followed by N

REFERENCES

COSSARO Status

Endangered Species Act, 2007 (Bill 184). Species at Risk in Ontario List.

COSEWIC Status

COSEWIC. 2007. Canadian Species at Risk. Committee on the Status of Endangered Wildlife in Canada. \

Local Status

Ontario Partners in Flight. 2006. Ontario Landbird Conservation Plan: Lower Great Lakes/St. Lawrence Plain (North American Bird Conservation Region 13), Priorities, Objectives and Recommended Actions. Environment Canada and Ontario Ministry of Natural Resources. Draft, February 2006.

Area-sensitive information

Austen, M.J.W., M.D. Cadman, and R.D. James. 1994. Ontario birds at risk: status and conservation needs. Toronto and Port Rowan, ON: Federation of Ontario Naturalists and Long Point Bird Observatory. 165 pp.

Herkert, J.R. 1991. An ecological study of the breeding birds of grassland habitats within Illinois. Ph.D. dissertation. University of Illinois, Urbana, IL. 112 pp.

Robbins, C.S. 1979. Effect of forest fragmentation on bird populations. Pp. 198-212 in DeGraaf, R.M., and K.E. Evans, eds. Management of northcentral and northeastern forests for nongame birds. United States Department of Agriculture, Forest Service General Technical Report NC-51. 268 pp.

Sandilands, A. 2005. Birds of Ontario. Habitat Requirements, Limiting Factors and Status. UBC Press.

PRE-CONSTRUCTION MONITORING REPORT NIAGARA REGION WIND FARM

Appendix C Field Notes
July 23, 2014

Appendix C Field Notes

**Stantec**

Stantec Consulting Ltd.
 1 – 70 Southgate Drive
 Guelph, ON
 Canada N1G 4P5
 Tel: (519) 836-6050
 Fax: (519) 836-2493

Bat Maternity Roost - Cavity Tree Density Plots Data Form

(FOR USE IN FOD & FOM COMMUNITIES ONLY)

Project Number:

160950269

Project Name:

NRWCApril 18, 2013

DATE

4:30

TIME (start)

5:30

TIME (end)

Natalie Leavie

Field Personnel

Weather Conditions:

26°

TEMP (°C)

2

WIND

50%

CLOUD

0

PPT

7-Storms

PPT (in last 24 hrs)

Criteria for Cavity Tree Tally Inclusion: ☒ Cavity tree is ≥ 25 cm DBHNOTE: All criteria must be met in ☒ Cavity is ≥ 10 m high in treeorder for cavity tree to be tallied ☒ Size of cavity is small enough so large mammals (i.e. raccoons) cannot enter, but large enough for two bats☒ Cavity tree is a Decay Class of 1 - 3 (see decay classification below)

Feature #:

BML-50

Feature Size (ha):

1haNo. of Plots to Survey¹:10

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: ____)	Comments
Plot 01	/	(0) 0629810 / 4767494	
Plot 02	/	(0) 0629832 / 4767525	
Plot 03	/	(0) 0629867 / 4767511	
Plot 04	/	(0) 0629883 / 4767509	
Plot 05	/	(0) 0629861 / 4767501	
Plot 06	•	(1) 0629863 / 4767496	
Plot 07	/	(0) 0629832 / 4767481	
Plot 08	/	(0) 0629837 / 4767494	
Plot 09	•	(1) 0629824 / 4767511	
Plot 10	/	(0) 0629814 / 4767518	
Plot 11		/	
Plot 12		/	
Plot 13		/	
Plot 14		/	
Plot 15		/	
Plot 16		/	
Plot 17		/	
Plot 18		/	
Plot 19		/	
Plot 20		/	
Plot 21		/	

Page 1 of 2

Signature:

Natalie Leavie
 (Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)

REV: 2013-03-13

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: _____)	Comments
Plot 22		/	
Plot 23		/	
Plot 24		/	
Plot 25		/	
Plot 26		/	
Plot 27		/	
Plot 28		/	
Plot 29		/	
Plot 30		/	
Plot 31		/	
Plot 32		/	
Plot 33		/	
Plot 34		/	
Plot 35		/	

TOTAL No.
Cavity Trees: 2

Density Calculation:
(use formula provided²)

4

Trees/ha

¹No. of Plots: Sites ≤ 10 ha; 10 plots (minimum); each extra ha: 1 plot (up to max 35 plots).

Plots = 0.05 ha or 12.6m radius.

Select plots randomly.

²Total Cavity Tree Density = $\frac{\text{total \# cavity trees}}{(\# \text{ plots} \times 0.05 \text{ ha})}$

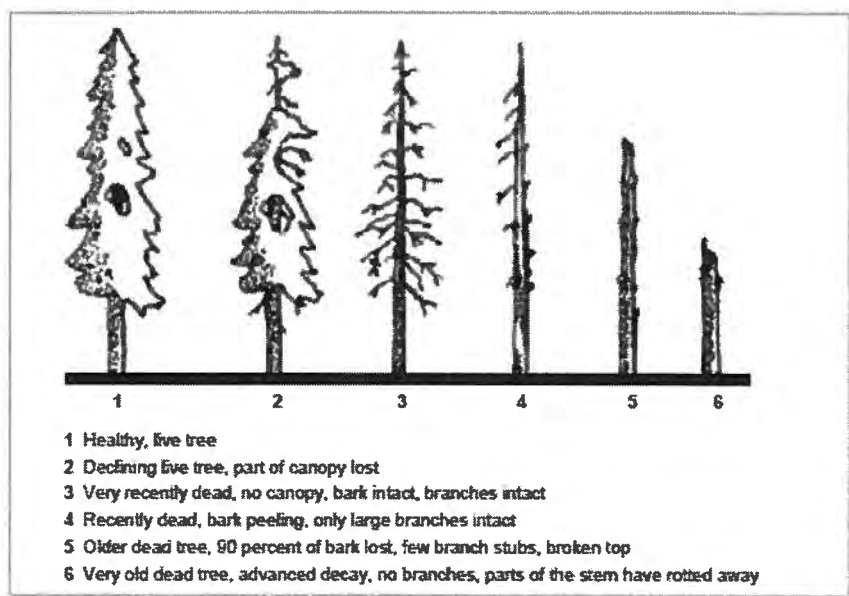


Figure : Decay classification system for cavity trees (Watt and Caceres, 1999)

NOTE: Decay classifications 4-6 should not be tallied in plots.

**Stantec**

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 1 – 70 Southgate Drive
 Guelph, ON
 Canada N1G 4P5
 Tel: (519) 836-6050
 Fax: (519) 836-2493

Bat Maternity Roost - Cavity Tree Density Plots Data Form

(FOR USE IN FOD & FOM COMMUNITIES ONLY)

Project Number:

160950269

Project Name:

NRWCApril 18, 2013

DATE

3:00

TIME (start)

4:00

TIME (end)

Natalie Leava

Field Personnel

Weather Conditions:

26°

TEMP (°C)

2-3

WIND

75%

CLOUD

Ø

PPT

T-storms

PPT (in last 24 hrs)

Criteria for Cavity Tree Tally Inclusion: ☒ Cavity tree is ≥ 25 cm DBHNOTE: All criteria must be met in ☒ Cavity is ≥ 10 m high in treeorder for cavity tree to be tallied ☒ Size of cavity is small enough so large mammals (i.e. raccoons) cannot enter, but large enough for two bats☒ Cavity tree is a Decay Class of 1 - 3 (see decay classification below)

Feature #:

BMC 48/49

Feature Size (ha):

1.2 haNo. of Plots to Survey¹:10

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: <u>17T</u>)	Comments
Plot 01	/ <u>Ø</u>	<u>0628555</u> / <u>4762807</u>	
Plot 02	/ <u>Ø</u>	<u>0628586</u> / <u>4762827</u>	
Plot 03	/ <u>Ø</u>	<u>0628573</u> / <u>4762835</u>	
Plot 04	/ <u>Ø</u>	<u>0628597</u> / <u>4762839</u>	
Plot 05	• <u>(1)</u>	<u>0628582</u> / <u>4762860</u>	
Plot 06	•• <u>(2)</u>	<u>0628574</u> / <u>4762875</u>	
Plot 07	/ <u>Ø</u>	<u>0628593</u> / <u>4762918</u>	
Plot 08	• <u>(1)</u>	<u>0628585</u> / <u>4762933</u>	
Plot 09	/ <u>Ø</u>	<u>0628605</u> / <u>4762932</u>	
Plot 10	/ <u>Ø</u>	<u>0628596</u> / <u>4762960</u>	
Plot 11		/	
Plot 12		/	
Plot 13		/	
Plot 14		/	
Plot 15		/	
Plot 16		/	
Plot 17		/	
Plot 18		/	
Plot 19		/	
Plot 20		/	
Plot 21		/	

Page 1 of 2

Signature:

Natalie Leava
 (Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)

REV: 2013-03-13

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: _____)	Comments
Plot 22		/	
Plot 23		/	
Plot 24		/	
Plot 25		/	
Plot 26		/	
Plot 27		/	
Plot 28		/	
Plot 29		/	
Plot 30		/	
Plot 31			
Plot 32		/	
Plot 33		/	
Plot 34		/	
Plot 35		/	

TOTAL No.
Cavity Trees:

4

Density Calculation:
(use formula provided²)

8

Trees/ha

¹No. of Plots: Sites ≤ 10 ha; 10 plots (minimum); each extra ha: 1 plot (up to max 35 plots).
Plots = 0.05 ha or 12.6m radius.
Select plots randomly.

²Total Cavity Tree Density = $\frac{\text{total \# cavity trees}}{(\# \text{ plots} \times 0.05 \text{ ha})}$

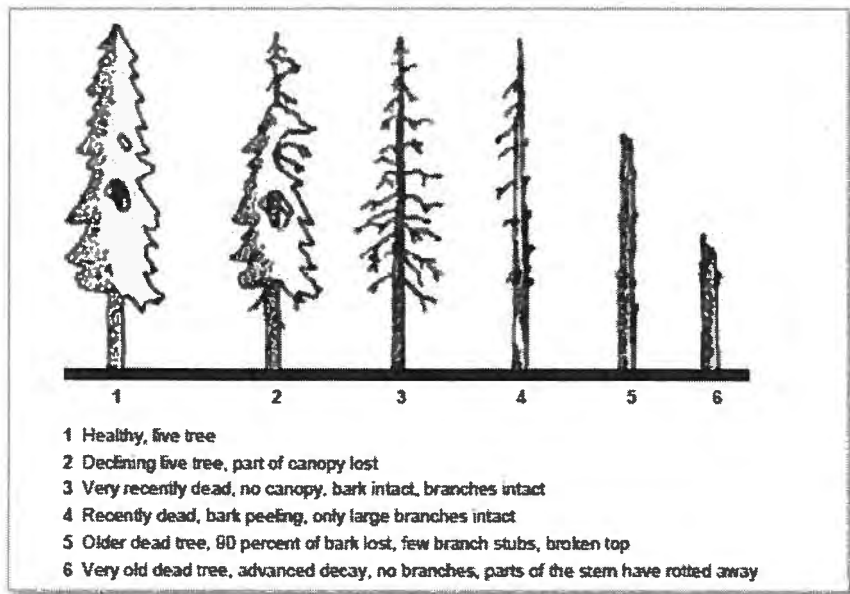


Figure 1: Decay classification system for cavity trees (Watt and Caceres, 1999)
NOTE: Decay classifications 4-6 should not be tallied in plots.

Note: this feature(s)
was extended' FODS extended
South, so some plots surveyed
occured in this portion of
the feature

**Stantec**

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 Guelph, ON
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 Tel: (519) 836-6050
 Fax: (519) 836-2493

Bat Maternity Roost - Cavity Tree Density Plots Data Form

(FOR USE IN FOD & FOM COMMUNITIES ONLY)

Project Number:

160950269

Project Name:

NRWCApril 18, 2013

DATE

1:05pm

TIME (start)

2:15pm

TIME (end)

Natalie Leava

Field Personnel

Weather Conditions:

22°C

TEMP (°C)

3

WIND

0%

CLOUD

0

PPT

T-storms

PPT (in last 24 hrs)

Criteria for Cavity Tree Daily Inclusion: ☒ Cavity tree is ≥ 25 cm DBHNOTE: All criteria must be met in ☒ Cavity is ≥ 10 m high in treeorder for cavity tree to be tallied ☒ Size of cavity is small enough so large mammals (i.e. raccoons) cannot enter, but large enough for two bats☒ Cavity tree is a Decay Class of 1 - 3 (see decay classification below)

Feature #:

BMC-47

Feature Size (ha):

2.3 haNo. of Plots to Survey¹:10

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: <u>17T</u>)	Comments
Plot 01	/ 0	0628581 / 4764681	} Portion of feature very wet w/ vernal pooling throughout
Plot 02	• 1	0628534 / 4764683	
Plot 03	• 1	0628567 / 4764667	
Plot 04	/ 0	0628503 / 4764673	
Plot 05	• 1	0628476 / 4764673	
Plot 06	/ 0	0628480 / 4764717	
Plot 07	/ 0	0628457 / 4764726	
Plot 08	/ 0	0628452 / 4764731	
Plot 09	/ 0	0628442 / 4764736	
Plot 10	/ 0	0628430 / 4764760	
Plot 11		/	
Plot 12		/	
Plot 13		/	
Plot 14		/	
Plot 15		/	
Plot 16		/	
Plot 17		/	
Plot 18		/	
Plot 19		/	
Plot 20		/	
Plot 21		/	

Page 1 of 2

Signature:

Natalie Leava
(Field Personnel)Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)

REV: 2013-03-13

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: _____)	Comments
Plot 22		/	
Plot 23		/	
Plot 24		/	
Plot 25		/	
Plot 26		/	
Plot 27		/	
Plot 28		/	
Plot 29		/	
Plot 30		/	
Plot 31			
Plot 32		/	
Plot 33		/	
Plot 34		/	
Plot 35		/	

TOTAL No.
Cavity Trees:

3

Density Calculation:
(use formula provided²)

6

Trees/ha

¹No. of Plots: Sites ≤ 10 ha; 10 plots (minimum); each extra ha: 1 plot (up to max 35 plots).
Plots = 0.05 ha or 12.6m radius.
Select plots randomly.

²Total Cavity Tree Density = $\frac{\text{total \# cavity trees}}{(\# \text{ plots} \times 0.05 \text{ ha})}$

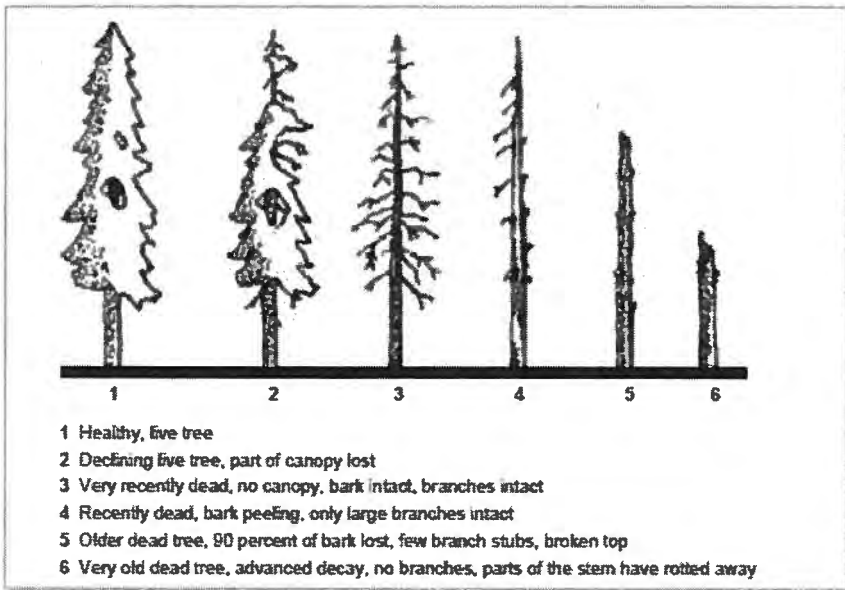


Figure 1: Decay classification system for cavity trees (Watt and Caceres, 1999)
NOTE: Decay classifications 4-6 should not be tallied in plots.

Stick nest on north edge of
woodlot 17T. 0628494, 4764726

**Stantec**

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 1 – 70 Southgate Drive
 Guelph, ON
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 Tel: (519) 836-6050
 Fax: (519) 836-2493

Bat Maternity Roost - Cavity Tree Density Plots Data Form

(FOR USE IN FOD & FOM COMMUNITIES ONLY)

Project Number: 160950269Project Name: NRWCDATE April 18, 2013TIME (start) 11:40TIME (end) 12:35Field Personnel Natalie Leaux

Weather Conditions:

22

TEMP (°C)

3

WIND

75%

CLOUD

0

PPT

T-Storms

PPT (in last 24 hrs)

Criteria for Cavity Tree Tally Inclusion: ☒ Cavity tree is ≥ 25 cm DBHNOTE: All criteria must be met in ☒ Cavity is ≥ 10 m high in treeorder for cavity tree to be tallied ☒ Size of cavity is small enough so large mammals (i.e. raccoons) cannot enter, but large enough for two bats☒ Cavity tree is a Decay Class of 1 - 3 (see decay classification below)Feature #: BMC-42 Feature Size (ha): 2.85ha No. of Plots to Survey¹: 10

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: <u>17T</u>)	Comments
Plot 01	/ <u>0</u>	<u>0626638 / 476466</u>	accuracy ~17m.
Plot 02	• <u>1</u>	<u>0626665 / 4764680</u>	Forest has large amounts of regeneration in understory
Plot 03	/ <u>0</u>	<u>0626697 / 4764702</u>	accuracy 9m
Plot 04	• <u>1</u>	<u>0626655 / 4764676</u>	
Plot 05	/ <u>0</u>	<u>0626764 / 4764750</u>	
Plot 06	/ <u>0</u>	<u>0626768 / 4764787</u>	
Plot 07	/ <u>0</u>	<u>0626723 / 4764791</u>	
Plot 08	• <u>1</u>	<u>0626708 / 4764774</u>	
Plot 09	• <u>1</u>	<u>0626686 / 4764746</u>	
Plot 10	/ <u>0</u>	<u>0626648 / 4764736</u>	
Plot 11		/	
Plot 12		/	
Plot 13		/	
Plot 14		/	
Plot 15		/	
Plot 16		/	
Plot 17		/	
Plot 18		/	
Plot 19		/	
Plot 20		/	
Plot 21		/	

Page 1 of 2Signature: Natalie Leaux

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature: _____

(Project Manager)

REV: 2013-03-13

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: _____)	Comments
Plot 22		/	
Plot 23		/	
Plot 24		/	
Plot 25		/	
Plot 26		/	
Plot 27		/	
Plot 28		/	
Plot 29		/	
Plot 30		/	
Plot 31			
Plot 32		/	
Plot 33		/	
Plot 34		/	
Plot 35		/	

TOTAL No.
Cavity Trees:

4

Density Calculation:
(use formula provided²)

8

Trees/ha

¹No. of Plots: Sites ≤ 10 ha; 10 plots (minimum); each extra ha: 1 plot (up to max 35 plots).
Plots = 0.05 ha or 12.6m radius.
Select plots randomly.

²Total Cavity Tree Density = $\frac{\text{total \# cavity trees}}{(\# \text{ plots} \times 0.05 \text{ ha})}$ 0.5

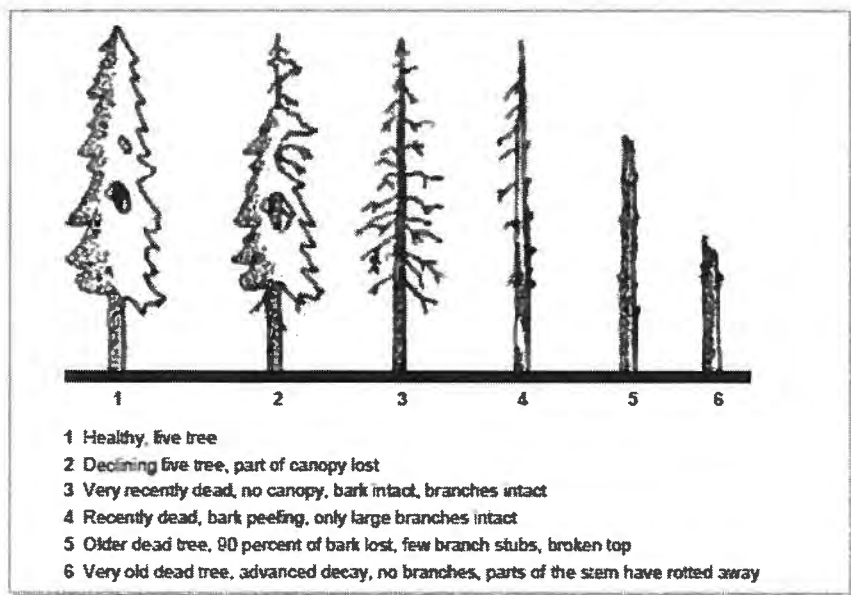
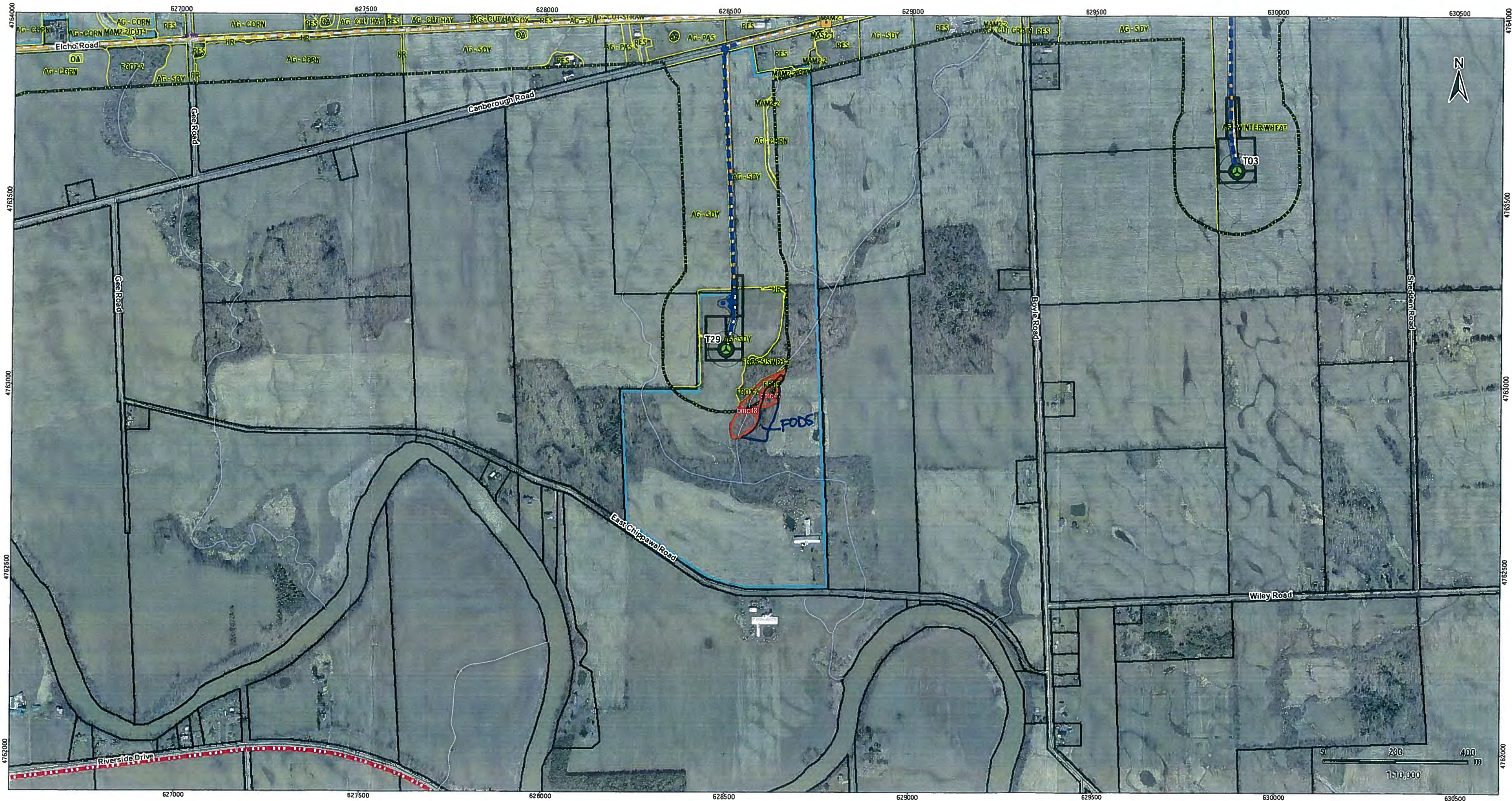


Figure : Decay classification system for cavity trees (Watt and Caceres, 1999)
NOTE: Decay classifications 4-6 should not be tallied in plots.

Inc
-CHFR
- Woodpecker sp.
- RTTA
- SPPE

V:\0160950269\planning\drawing\20130226_Bat_Field_Map\160950269_Figure_1_Bat_Field_Areas_Mapbook_20130319.mxd
Revised: 2013-03-28 By: bcowper



March, 2013
160950269

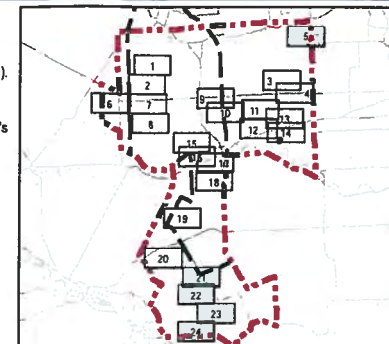


Legend

	Project Study Area		Junction Box		Bat Maternity Colonies
	Interconnector Study Area		Preferred Transmission Line Route		Accessible Bat Survey Areas
	120m Zone of Investigation		Alternate Transmission Route		Property Boundary (Survey)
	ELC Boundary		Collector Lines - Underground or Overhead		Property Boundary (No Survey)
	Proposed Turbine Location		Temporary Laydown Area		
	Turbine Blade Length		Fibre Optic Line		
	Tap-in Location		Potential Access Road		
			Potential Construction Laydown Area		
			Transformer Substation		

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N).
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2011.
3. Orthoimagery source: First Base Solutions, Date Spring 2010.



Client/Project

Niagara Region Wind Corporation
Natural Heritage Assessment Report

Figure No.

1.41

Title

Bat Surveys
bmc 48

**Stantec**

Stantec Consulting Ltd.
 1 – 70 Southgate Drive
 Guelph, ON
 Canada N1G 4P5
 Tel: (519) 836-6050
 Fax: (519) 836-2493

Bat Maternity Roost - Cavity Tree Density Plots Data Form

(FOR USE IN FOD & FOM COMMUNITIES ONLY)

Project Number: 60950269Project Name: NRW C

23 Apr 13	1:15 pm	2:40 pm	NL / MC	
DATE	TIME (start)	TIME (end)	Field Personnel	
16°C	1	50%	Ø	Ø
TEMP (°C)	WIND	CLOUD	PPT	PPT (in last 24 hrs)

Weather Conditions:

Criteria for Cavity Tree Tally Inclusion: ☒ Cavity tree is ≥ 25 cm DBHNOTE: All criteria must be met in ☒ Cavity is ≥ 10m high in tree

order for cavity tree to be tallied

☒ Size of cavity is small enough so large mammals (i.e. raccoons) cannot enter, but large enough for two bats☒ Cavity tree is a Decay Class of 1 - 3 (see decay classification below)

beautiful forest

Feature #: BMC51 Feature Size (ha): 6.45 No. of Plots to Survey¹: 10

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: <u>17N</u>)	Comments
Plot 01	/ Ø	0630000 / 4772154	lots of shagbark hickory in plot
Plot 02	•• (2)	0630070 / 4772180	
Plot 03	• (1)	0629973 / 4772225	
Plot 04	• (1)	0629895 / 4772231	
Plot 05	•• (4)	0629854 / 4772214	
Plot 06	/ Ø	0629910 / 4772121	
Plot 07	• (1)	0629915 / 4772112	
Plot 08	•• (3)	0629953 / 4772039	
Plot 09	/ Ø	0630002 / 4772069	
Plot 10	• (1)	0630099 / 4772056	
Plot 11		/	
Plot 12		/	
Plot 13		/	
Plot 14		/	
Plot 15		/	
Plot 16		/	
Plot 17		/	
Plot 18		/	
Plot 19		/	
Plot 20		/	
Plot 21		/	

Page 1 of 2Signature: Nataheva

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature: _____

(Project Manager)

REV: 2013-03-13

spring beauty

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: _____)	Comments
Plot 22		/	
Plot 23		/	
Plot 24		/	
Plot 25		/	
Plot 26		/	
Plot 27		/	
Plot 28		/	
Plot 29		/	
Plot 30		/	
Plot 31			
Plot 32		/	
Plot 33		/	
Plot 34		/	
Plot 35		/	

TOTAL No.
Cavity Trees: 13

Density Calculation:
(use formula provided²) 26

Trees/ha

¹No. of Plots: Sites ≤ 10 ha; 10 plots (minimum); each extra ha: 1 plot (up to max 35 plots).
Plots = 0.05 ha or 12.6m radius.
Select plots randomly.

²Total Cavity Tree Density = $\frac{\text{total \# cavity trees}}{(\# \text{ plots} \times 0.05 \text{ ha})}$

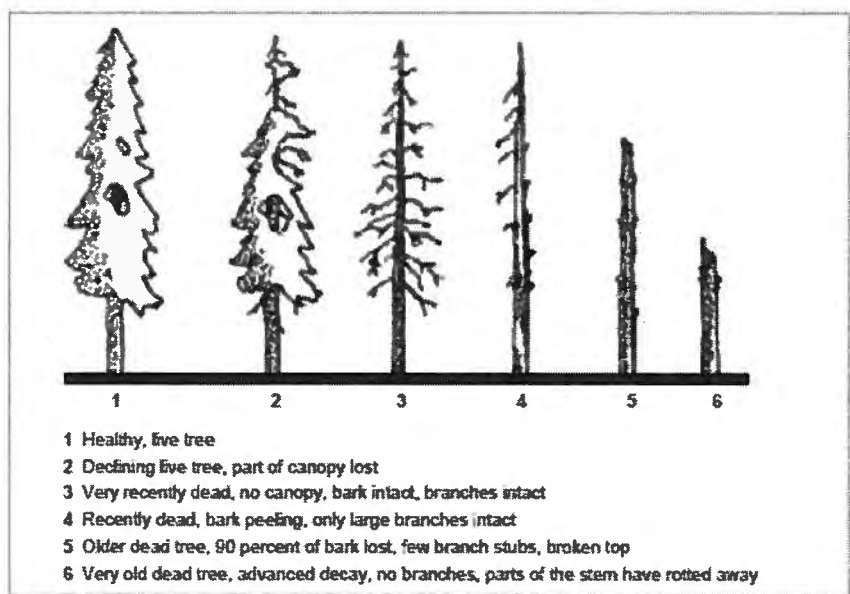


Figure : Decay classification system for cavity trees (Watt and Caceres, 1999)
NOTE: Decay classifications 4-6 should not be tallied in plots.



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Bat Maternity Roost - Cavity Tree Density Plots Data Form

(FOR USE IN FOD & FOM COMMUNITIES ONLY)

Project Number:

160950269

Project Name:

NRWC

Apr 23, 2013

DATE

2:45

TIME (start)

4:00

TIME (end)

N. Leana E.M. Cameron

Field Personnel

Weather Conditions:

20°

TEMP (°C)

1

WIND

50%

CLOUD

Ø

PPT

Ø

PPT (in last 24 hrs)

Criteria for Cavity Tree Tally Inclusion: ☒ Cavity tree is ≥ 25 cm DBH

NOTE: All criteria must be met in ☒ Cavity is ≥ 10 m high in tree

order for cavity tree to be tallied ☒ Size of cavity is small enough so large mammals (i.e. raccoons) cannot enter, but large enough for two bats

☒ Cavity tree is a Decay Class of 1 - 3 (see decay classification below)

Feature #:

BMC52-55

Feature Size (ha):

16.4

No. of Plots to Survey¹:

10

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: <u>17T</u>)	Comments
Plot 01	/ Ø	0630291 / 4771991	- Accuracy of 8m
Plot 02	/ Ø	0630331 / 4771933	- Combined BMC 52-55;
Plot 03	/ Ø	0630350 / 4771947	upland community
Plot 04	• ①	0630364 / 4771860	worked with SWD community.
Plot 05	• ①	0630416 / 4771827	FOD communities NOT as
Plot 06	/ Ø	0630421 / 4771807	fragmented as depicted on
Plot 07	/ Ø	0630398 / 4771805	map (ELC)
Plot 08	• ①	0630508 / 4771839	
Plot 09	/ Ø	0630556 / 4771853	
Plot 10	/ Ø	0630669 / 4771861	
Plot 11		/	
Plot 12		/	
Plot 13		/	
Plot 14		/	
Plot 15		/	
Plot 16		/	
Plot 17		/	
Plot 18		/	
Plot 19		/	
Plot 20		/	
Plot 21		/	

Nataheana
(Field Personnel)

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: _____)	Comments
Plot 22		/	
Plot 23		/	
Plot 24		/	
Plot 25		/	
Plot 26		/	
Plot 27		/	
Plot 28		/	
Plot 29		/	
Plot 30		/	
Plot 31			
Plot 32		/	
Plot 33		/	
Plot 34		/	
Plot 35		/	

TOTAL No.
Cavity Trees: 3

Density Calculation:
(use formula provided²) 6

Trees/ha

¹No. of Plots: Sites ≤ 10 ha; 10 plots (minimum); each extra ha: 1 plot (up to max 35 plots).
Plots = 0.05 ha or 12.6m radius.
Select plots randomly.

²Total Cavity Tree Density = $\frac{\text{total \# cavity trees}}{(\# \text{ plots} \times 0.05 \text{ ha})}$

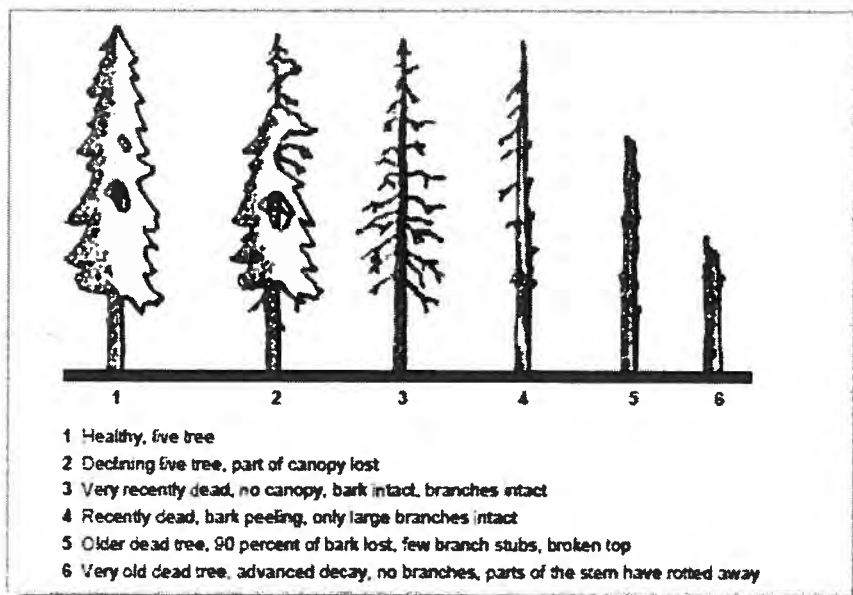
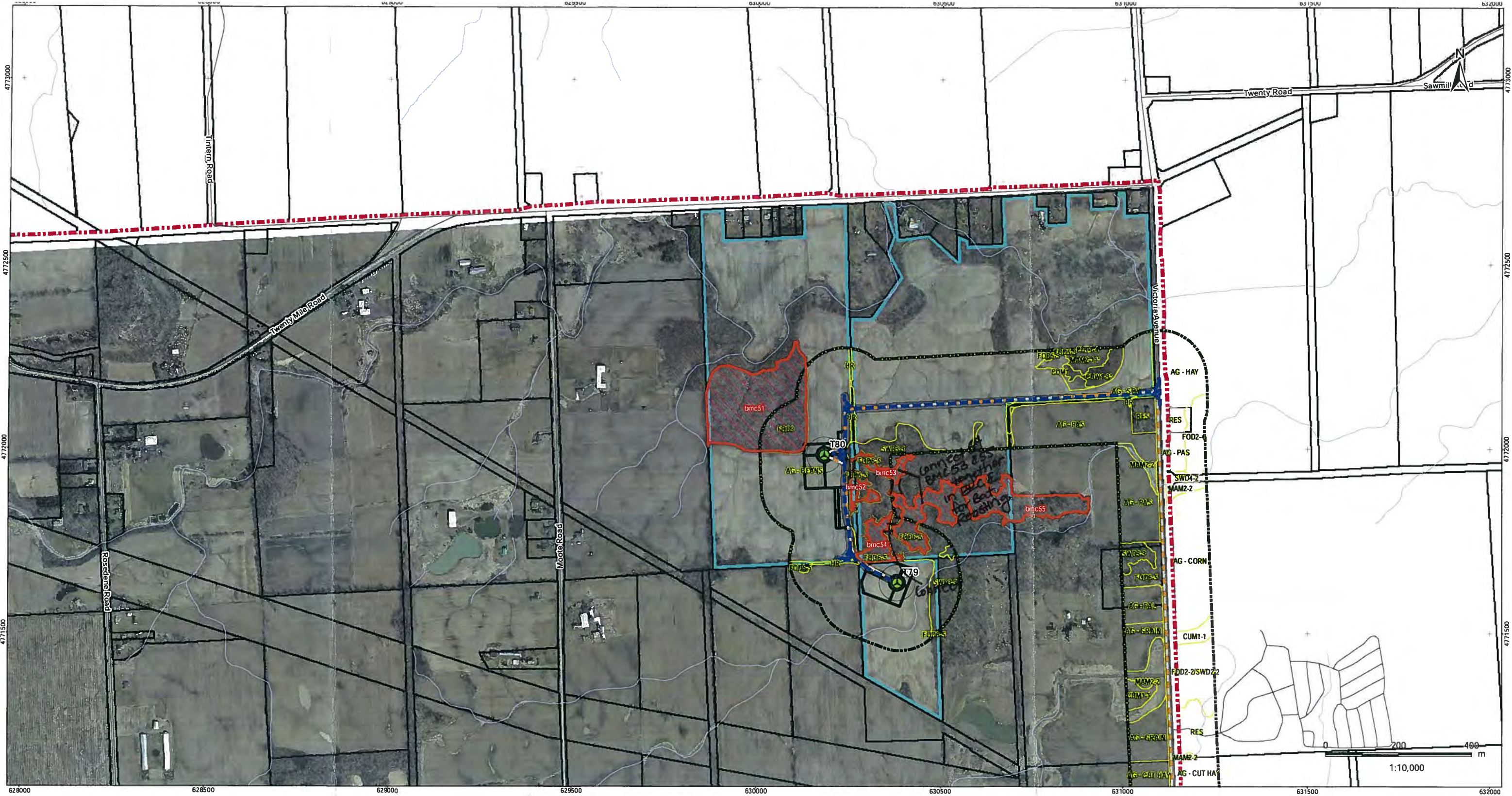


Figure : Decay classification system for cavity trees (Watt and Caceres, 1999)
NOTE: Decay classifications 4-6 should not be tallied in plots.



Stantec

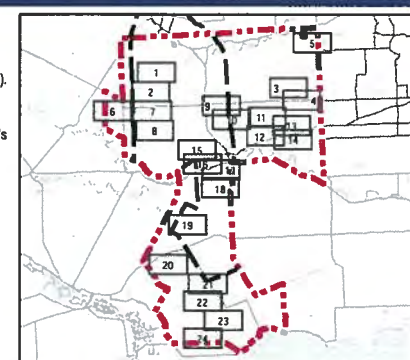
Legend

	Project Study Area		Junction Box		Bat Maternity Colonies
	Interconnector Study Area		Preferred Transmission Line Route		Accessible Bat Survey Areas
	120m Zone of Investigation		Alternate Transmission Route		Property Boundary (Survey)
	ELC Boundary		Collector Lines – Underground or Overhead		Property Boundary (No Survey)
	Proposed Turbine Location		Temporary Laydown Area		
	Turbine Blade Length		Fibre Optic Line		
	Tap-in Location		Potential Access Road		
			Potential Construction Laydown Area		
			Transformer Substation		

BUTT? (bmc51)
17T 0630003, 4772082

Notes

- Coordinate System: NAD 1983 UTM Zone 17N.
- Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2011.
- Orthimagery source: First Base Solutions, Date Spring 2010.



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Niagara Region Wind Corporation
Natural Heritage Assessment Report

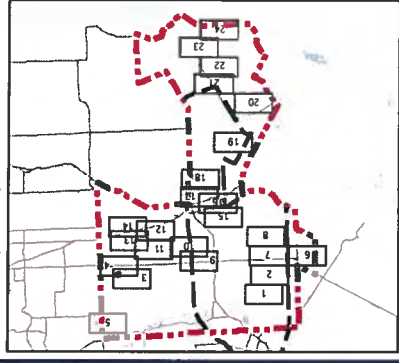
Figure No.
1.44

Title
Bat Surveys
bmc 51

Legend

- Project Study Area
- 120m Zone of Investigation
- Interconnector Study Area
- Preferred Transmission Line Route
- Alternate Transmission Route
- Collector Lines – Underground or Overhead
- Junction Box
- Tap-in Location
- Turbine Blade Length
- Proposed Turbine Location
- ELC Boundary
- Property Boundary
- Property Boundary (Survey)
- Accessible Bat Survey Areas
- Bat Maternity Colonies
- Temporary Laydown Area
- Potential Laydown Area
- Potential Access Road
- Fibre Optic Line
- Potential Construction Laydown Area
- Transformer Substation

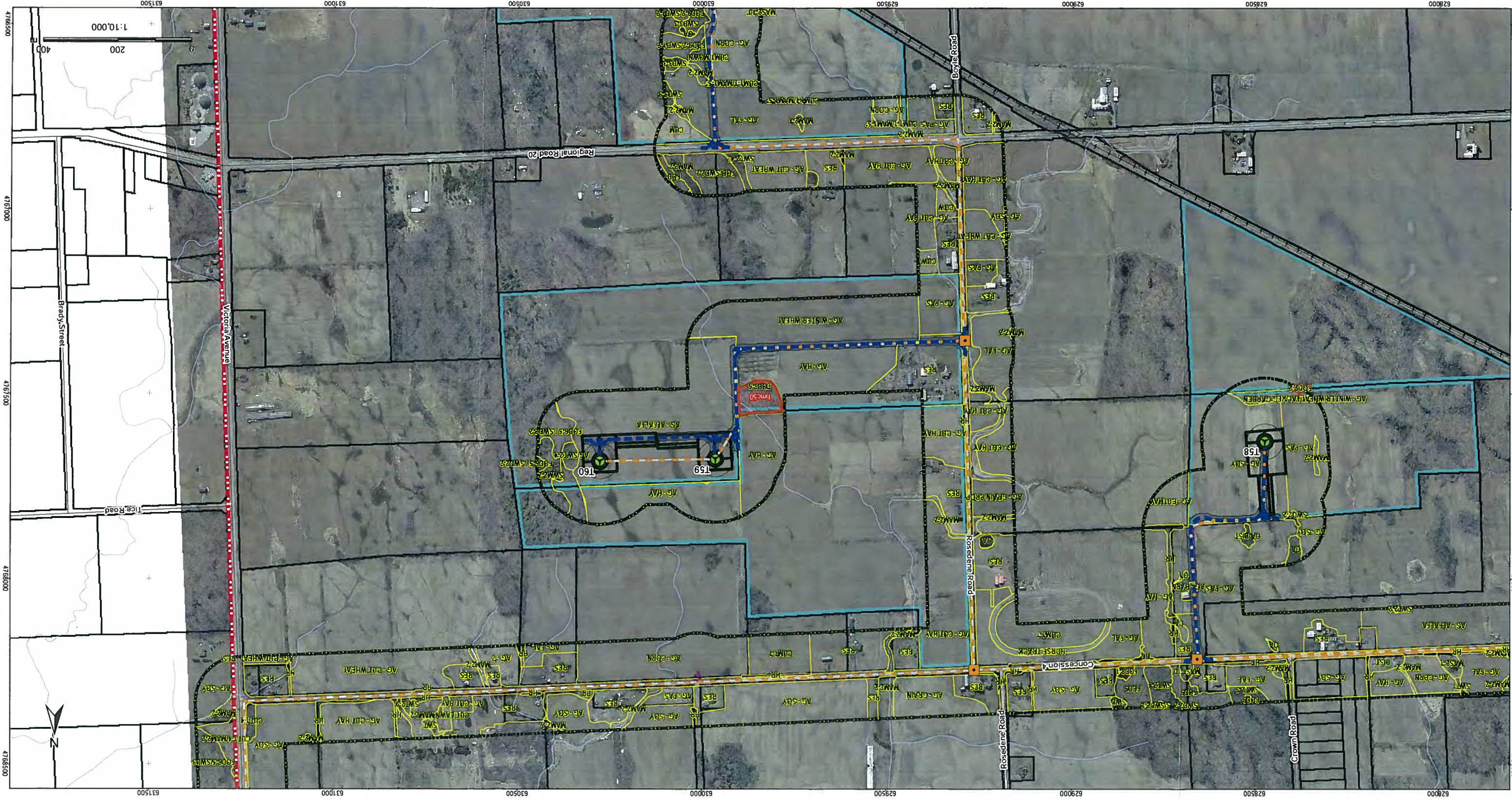
- Notes
- Coordinate System: NAD 1983 UTM Zone 17N.
 - Base features produced under license with the Ontario Ministry of Natural Resources & Queen's Printer for Ontario, 2011.
 - Orthimagery source: First Base Solutions, Date Spring 2010.



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Figure No. 1.43

Bat Surveys
bmc 50



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Bat Maternity Roost - Cavity Tree Density Plots Data Form

(FOR USE IN FOD & FOM COMMUNITIES ONLY)

Project Number: Niagara Wind Farm ↔ Project Name: 160950269

<u>Apr 14/2013</u>	<u>10:45am</u>	<u>11:45am</u>	<u>J. Ball</u>
--------------------	----------------	----------------	----------------

DATE

TIME (start)

TIME (end)

Field Personnel

Weather Conditions:

7°C250%NONERAIN

TEMP (°C)

WIND

CLOUD

PPT

PPT (in last 24 hrs)

Criteria for Cavity Tree Tally Inclusion: ☒ Cavity tree is ≥ 25 cm DBHNOTE: All criteria must be met in ☒ Cavity is ≥ 10m high in treeorder for cavity tree to be tallied ☒ Size of cavity is small enough so large mammals (i.e. raccoons) cannot enter, but large enough for two bats☒ Cavity tree is a Decay Class of 1 - 3 (see decay classification below)

Feature #:

Feature Size (ha):

1.95No. of Plots to Survey¹:10

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: <u>17T</u>)	Comments
Plot 01	<u>0</u>	<u>0614663 ' 4766132</u>	
Plot 02	<u>0</u>	<u>0614708 ' 4766137</u>	
Plot 03	<u>0</u>	<u>0614741 ' 4766195</u>	
Plot 04	<u>0</u>	<u>0614715 ' 4766168</u>	
Plot 05	<u>0</u>	<u>0614667 ' 4766149</u>	
Plot 06	<u>0</u>	<u>0614642 ' 4766188</u>	
Plot 07	<u>0</u>	<u>0614630 ' 4766242</u>	
Plot 08	<u>0</u>	<u>0614638 ' 4766331</u>	
Plot 09	<u>0</u>	<u>0614658 ' 4766406</u>	
Plot 10	<u>0</u>	<u>0614686 ' 4766465</u>	
Plot 11	<u>0</u>	<u>/</u>	
Plot 12		<u>/</u>	
Plot 13		<u>/</u>	
Plot 14		<u>/</u>	
Plot 15		<u>/</u>	
Plot 16		<u>/</u>	
Plot 17		<u>/</u>	
Plot 18		<u>/</u>	
Plot 19		<u>/</u>	
Plot 20		<u>/</u>	
Plot 21		<u>/</u>	

Page 1 of 2

Signature:


 (Field Personnel)
Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)

REV: 2013-03-13

**Stantec**

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 Canada N1G 4P5
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Bat Maternity Roost - Cavity Tree Density Plots Data Form

(FOR USE IN FOD & FOM COMMUNITIES ONLY)

Project Number:

1609 50269

Project Name:

Niagara Wind FarmApr 14/2013

DATE

12:00 pm

TIME (start)

12:40 pm

TIME (end)

J. Ball

Field Personnel

Weather Conditions:

7°C

TEMP (°C)

1

WIND

80%

CLOUD

NONE

PPT

RAIN

PPT (in last 24 hrs)

Criteria for Cavity Tree Tally Inclusion: ☒ Cavity tree is ≥ 25 cm DBHNOTE: All criteria must be met in ☒ Cavity is ≥ 10 m high in tree

order for cavity tree to be tallied

☒ Size of cavity is small enough so large mammals (i.e. raccoons) cannot enter, but large enough for two bats☒ Cavity tree is a Decay Class of 1 - 3 (see decay classification below)

Feature #:

6

Feature Size (ha):

6.7No. of Plots to Survey¹:10

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: <u>17T</u>)	Comments
Plot 01	<u>0</u>	<u>0616943' 4765702</u>	
Plot 02	<u>0</u>	<u>0616952' 4765648</u>	
Plot 03	<u>0</u>	<u>0616985' 4765592</u>	
Plot 04	<u>0</u>	<u>0617012' 4765569</u>	
Plot 05	<u>0</u>	<u>0617000' 4765551</u>	
Plot 06	<u>0</u>	<u>0616991' 4765502</u>	
Plot 07	<u>0</u>	<u>0617060' 4765489</u>	
Plot 08	<u>0</u>	<u>0617041' 4765434</u>	
Plot 09	<u>0</u>	<u>0617080' 4765459</u>	
Plot 10	<u>0</u>	<u>0617080' 4765525</u>	
Plot 11		<u>/</u>	
Plot 12		<u>/</u>	
Plot 13		<u>/</u>	
Plot 14		<u>/</u>	
Plot 15		<u>/</u>	
Plot 16		<u>/</u>	
Plot 17		<u>/</u>	
Plot 18		<u>/</u>	
Plot 19		<u>/</u>	
Plot 20		<u>/</u>	
Plot 21		<u>/</u>	

Page 1 of 2

Signature:

Jane Ball
 (Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)

REV: 2013-03-13

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: _____)	Comments
Plot 22		/	
Plot 23		/	
Plot 24		/	
Plot 25		/	
Plot 26		/	
Plot 27		/	
Plot 28		/	
Plot 29		/	
Plot 30		/	
Plot 31			
Plot 32		/	
Plot 33		/	
Plot 34		/	
Plot 35		/	

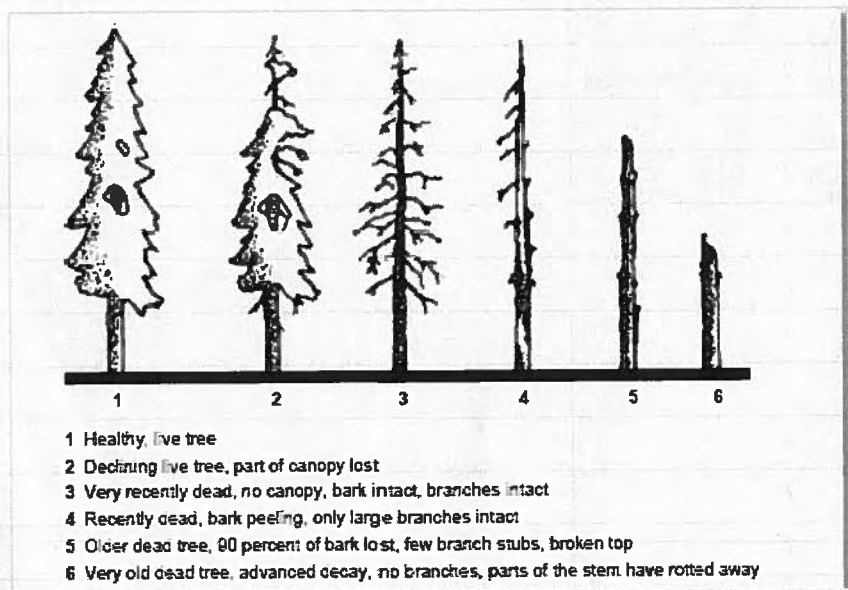
TOTAL No.
Cavity Trees: 0

Density Calculation:
(use formula provided²) 0

Trees/ha

¹No. of Plots: Sites ≤ 10 ha: 10 plots (minimum); each extra ha: 1 plot (up to max 35 plots).
Plots = 0.05 ha or 12.6m radius.
Select plots randomly.

²Total Cavity Tree Density = $\frac{\text{total \# cavity trees}}{(\# \text{ plots} \times 0.05 \text{ ha})}$



1 wood frog,
several chorus frogs
calling

Figure 1: Decay classification system for cavity trees (Watt and Caceres, 1999)
NOTE: Decay classifications 4-6 should not be tallied in plots.

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Bat Maternity Roost - Cavity Tree Density Plots Data Form

(FOR USE IN FOD & FOM COMMUNITIES ONLY)

Project Number:

160950269

Project Name:

Niagara Wind FarmApr 14/201312:451:30J. Ball

DATE

TIME (start)

TIME (end)

Field Personnel

Weather Conditions:

7°C180%NONERAIN

TEMP (°C)

WIND

CLOUD

PPT

PPT (in last 24 hrs)

Criteria for Cavity Tree Tally Inclusion: ☒ Cavity tree is ≥ 25 cm DBHNOTE: All criteria must be met in ☒ Cavity is ≥ 10 m high in treeorder for cavity tree to be tallied ☒ Size of cavity is small enough so large mammals (i.e. raccoons) cannot enter, but large enough for two bats☒ Cavity tree is a Decay Class of 1 - 3 (see decay classification below)

Feature #:

7

Feature Size (ha):

2.8No. of Plots to Survey¹:10

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: <u>17T</u>)	Comments
Plot 01	<u>0</u>	<u>061725414765522</u>	
Plot 02	<u>0</u>	<u>061725914765472</u>	
Plot 03	<u>0</u>	<u>061726814765443</u>	
Plot 04	<u>0</u>	<u>061726414765388</u>	
Plot 05	<u>0</u>	<u>061729014765377</u>	
Plot 06	<u>0</u>	<u>061734714765410</u>	
Plot 07	<u>0</u>	<u>061734514765466</u>	
Plot 08	<u>0</u>	<u>061735014765502</u>	
Plot 09	<u>0</u>	<u>061737114765538</u>	
Plot 10	<u>0</u>	<u>061733414765539</u>	
Plot 11		<u>/</u>	
Plot 12		<u>/</u>	
Plot 13		<u>/</u>	
Plot 14		<u>/</u>	
Plot 15		<u>/</u>	
Plot 16		<u>/</u>	
Plot 17		<u>/</u>	
Plot 18		<u>/</u>	
Plot 19		<u>/</u>	
Plot 20		<u>/</u>	
Plot 21		<u>/</u>	

Page 1 of 2

Signature:

Jane Ball
 (Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)

REV: 2013-03-13

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: ____)	Comments
Plot 22		/	
Plot 23		/	
Plot 24		/	
Plot 25		/	
Plot 26		/	
Plot 27		/	
Plot 28		/	
Plot 29		/	
Plot 30		/	
Plot 31			
Plot 32		/	
Plot 33		/	
Plot 34		/	
Plot 35		/	

TOTAL No.
Cavity Trees: 0

Density Calculation:
(use formula provided²)

Trees/ha

¹No. of Plots: Sites ≤ 10 ha; 10 plots (minimum); each extra ha: 1 plot (up to max 35 plots).
Plots = 0.05 ha or 12.6m radius.
Select plots randomly.

²Total Cavity Tree Density = $\frac{\text{total \# cavity trees}}{(\# \text{ plots} \times 0.05 \text{ ha})}$

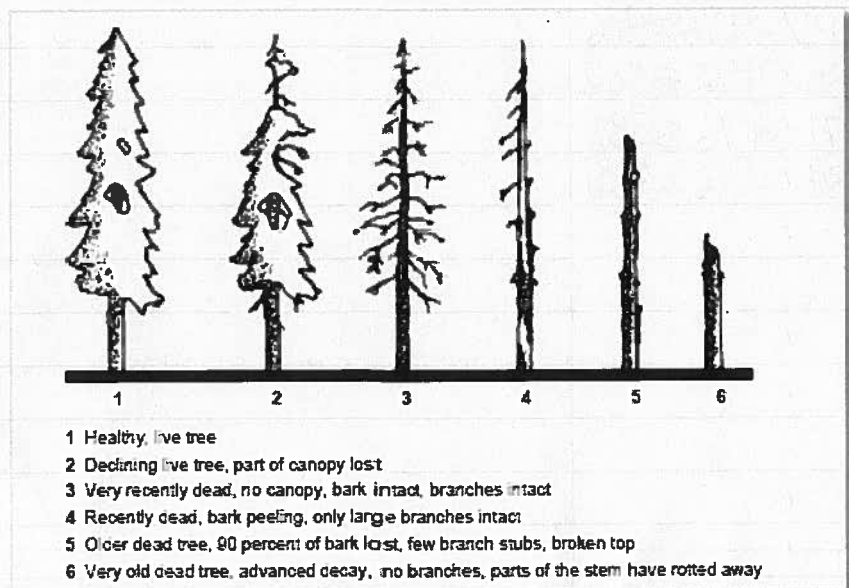


Figure 1: Decay classification system for cavity trees (Watt and Caceres, 1999)
NOTE: Decay classifications 4-6 should not be tallied in plots.

Full chorus of
chorus frogs in
vernal pool (extensive)
w red-osier dogwood
2 wood frogs heard
EAPH, HETH observed.
EAME observed singing
in AG field.

Page 2 of 2
Signature: Jain Ball
(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐
Signature: _____
(Project Manager)

REV: 2013-03-13

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 Canada N1G 4P5
 Tel: (519) 836-6050
 Fax: (519) 836-2493

Bat Maternity Roost - Cavity Tree Density Plots Data Form

(FOR USE IN FOD & FOM COMMUNITIES ONLY)

Project Number: 160950269Project Name: Niagara Wind Farm

<u>Apr 14/2013</u>	<u>2:00 PM</u>	<u>2:30 PM</u>	<u>J. Ball</u>	
DATE	TIME (start)	TIME (end)	Field Personnel	
<u>9</u>	<u>1</u>	<u>90%</u>	<u>NONE</u>	<u>RAIN</u>
TEMP (°C)	WIND	CLOUD	PPT	PPT (in last 24 hrs)

Weather Conditions:

Criteria for Cavity Tree Tally Inclusion: ☒ Cavity tree is ≥ 25 cm DBHNOTE: All criteria must be met in ☒ Cavity is ≥ 10 m high in treeorder for cavity tree to be tallied ☒ Size of cavity is small enough so large mammals (i.e. raccoons) cannot enter, but large enough for two bats☒ Cavity tree is a Decay Class of 1 - 3 (see decay classification below)Feature #: 11 Feature Size (ha): 2.1 No. of Plots to Survey¹: 10

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: <u>17T</u>)	Comments
Plot 01	<u>0</u>	<u>0618498 ' 4767085</u>	
Plot 02	<u>0</u>	<u>0618525 ' 4767062</u>	
Plot 03	<u>0</u>	<u>0618531 ' 4767054</u>	
Plot 04	<u>0</u>	<u>0618512 ' 4767029</u>	
Plot 05	<u>0</u>	<u>0618475 ' 4767024</u>	
Plot 06	<u>0</u>	<u>0618456 ' 4767053</u>	
Plot 07	<u>0</u>	<u>0618425 ' 4767057</u>	
Plot 08	<u>0</u>	<u>0618419 ' 4767043</u>	
Plot 09	<u>0</u>	<u>0618441 ' 4767027</u>	
Plot 10	<u>0</u>	<u>0618478 ' 4767014</u>	
Plot 11		<u>/</u>	
Plot 12		<u>/</u>	
Plot 13		<u>/</u>	
Plot 14		<u>/</u>	
Plot 15		<u>/</u>	
Plot 16		<u>/</u>	
Plot 17		<u>/</u>	
Plot 18		<u>/</u>	
Plot 19		<u>/</u>	
Plot 20		<u>/</u>	
Plot 21		<u>/</u>	

Page 1 of 2Signature: Jane Ball

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature: _____

(Project Manager)

REV: 2013-03-13

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: ____)	Comments
Plot 22		/	
Plot 23		/	
Plot 24		/	
Plot 25		/	
Plot 26		/	
Plot 27		/	
Plot 28		/	
Plot 29		/	
Plot 30		/	
Plot 31			
Plot 32		/	
Plot 33		/	
Plot 34		/	
Plot 35		/	

TOTAL No.
Cavity Trees: 0

Density Calculation:
(use formula provided²) 0

Trees/ha

¹No. of Plots: Sites ≤ 10 ha: 10 plots (minimum); each extra ha: 1 plot (up to max 35 plots).
Plots = 0.05 ha or 12.6m radius.
Select plots randomly.

²Total Cavity Tree Density = $\frac{\text{total \# cavity trees}}{(\# \text{ plots} \times 0.05 \text{ ha})}$

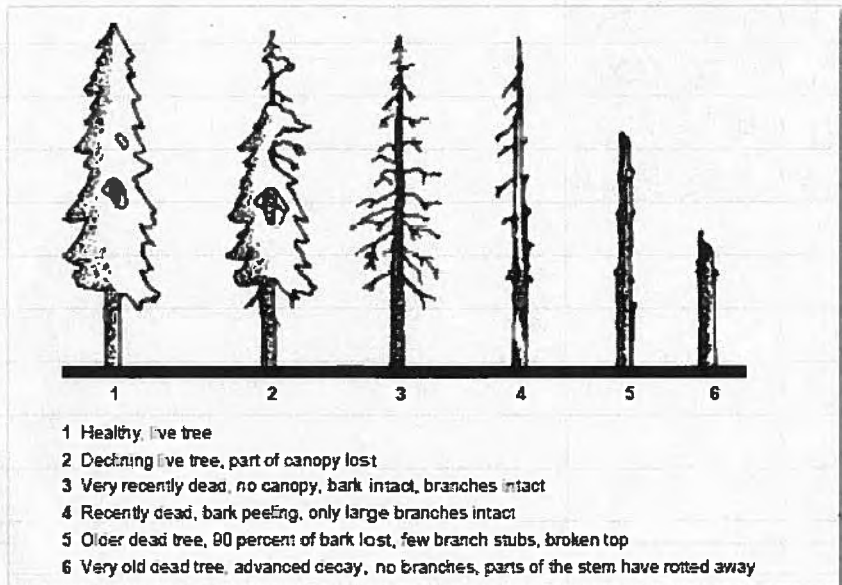


Figure 1: Decay classification system for cavity trees (Watt and Caceres, 1999)
NOTE: Decay classifications 4-6 should not be tallied in plots.

2 chorus frogs
chirping from marsh
inclusion
- Large stick nest
- pair of RTNA observed
(possibly using it?)
- male was calling

Page 2 of 2

Signature: [Signature]

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)

REV: 2013-03-13

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 Canada N1G 4P5
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 Fax: (519) 836-2493

Bat Maternity Roost - Cavity Tree Density Plots Data Form

(FOR USE IN FOD & FOM COMMUNITIES ONLY)

Project Number:

160950269

Project Name:

Niagara Wind FarmApr 14/20132:40 pm2:50J. Ball

DATE

TIME (start)

TIME (end)

Field Personnel

Weather Conditions:

9190%NONERain

TEMP (°C)

WIND

CLOUD

PPT

PPT (in last 24 hrs)

Criteria for Cavity Tree Tally Inclusion:

- ☒ Cavity tree is ≥ 25 cm DBH
NOTE: All criteria must be met in order for cavity tree to be tallied
☒ Cavity is ≥ 10 m high in tree
☒ Size of cavity is small enough so large mammals (i.e. raccoons) cannot enter, but large enough for two bats
☒ Cavity tree is a Decay Class of 1 - 3 (see decay classification below)

Feature #:

10

Feature Size (ha):

2.5No. of Plots to Survey¹:entire area only 0.226 ha accessible

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: <u>17T</u>)	Comments
Plot 01		/	no cavities found
Plot 02		/	within the entire
Plot 03		/	area searched
Plot 04		/	
Plot 05		/	
Plot 06		/	
Plot 07		/	
Plot 08		/	
Plot 09		/	
Plot 10		/	
Plot 11		/	
Plot 12		/	
Plot 13		/	
Plot 14		/	
Plot 15		/	
Plot 16		/	
Plot 17		/	
Plot 18		/	
Plot 19		/	
Plot 20		/	
Plot 21		/	

Page 1 of 2

Signature:

Jane Ball
 (Field Personnel)

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Signature:

(Project Manager)

REV: 2013-03-13

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Bat Maternity Roost - Cavity Tree Density Plots Data Form

(FOR USE IN FOD & FOM COMMUNITIES ONLY)

Project Number: 160950269Project Name: Niagara Wind Farm

<u>April 14/2013</u>	<u>4:15pm</u>	<u>5:15pm</u>	<u>J. Ball</u>	
DATE	TIME (start)	TIME (end)	Field Personnel	
<u>9</u>	<u>2</u>	<u>50%</u>	<u>NONE</u>	<u>Rain</u>
TEMP (°C)	WIND	CLOUD	PPT	PPT (in last 24 hrs)

Weather Conditions:

Criteria for Cavity Tree Tally Inclusion: ☒ Cavity tree is ≥ 25 cm DBHNOTE: All criteria must be met in ☒ Cavity is ≥ 10 m high in treeorder for cavity tree to be tallied ☒ Size of cavity is small enough so large mammals (i.e. raccoons) cannot enter, but large enough for two bats☒ Cavity tree is a Decay Class of 1 - 3 (see decay classification below)Feature #: 33 Feature Size (ha): 4.7 No. of Plots to Survey¹: 10

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: <u>17T</u>)	Comments
Plot 01	<u>1</u>	<u>0621810 14762955</u>	
Plot 02	<u>0</u>	<u>0621697 14762936</u>	
Plot 03	<u>0</u>	<u>0621686 14762892</u>	
Plot 04	<u>0</u>	<u>0621679 14762840</u>	
Plot 05	<u>0</u>	<u>0621704 14762812</u>	
Plot 06	<u>0</u>	<u>0621726 14762765</u>	
Plot 07	<u>0</u>	<u>0621771 14762718</u>	
Plot 08	<u>0</u>	<u>0621831 14762658</u>	
Plot 09	<u>0</u>	<u>0621873 14762631</u>	
Plot 10	<u>0</u>	<u>0621889 14762613</u>	
Plot 11	<u>/</u>		
Plot 12	<u>/</u>		
Plot 13	<u>/</u>		
Plot 14	<u>/</u>		
Plot 15	<u>/</u>		
Plot 16	<u>/</u>		
Plot 17	<u>/</u>		
Plot 18	<u>/</u>		
Plot 19	<u>/</u>		
Plot 20	<u>/</u>		
Plot 21	<u>/</u>		

Page 1 of 2Signature: Jane Ball

(Field Personnel)

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Signature: _____

(Project Manager)

REV: 2013-03-13

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: ____)	Comments
Plot 22		/	
Plot 23		/	
Plot 24		/	
Plot 25		/	
Plot 26		/	
Plot 27		/	
Plot 28		/	
Plot 29		/	
Plot 30		/	
Plot 31			
Plot 32		/	
Plot 33		/	
Plot 34		/	
Plot 35		/	

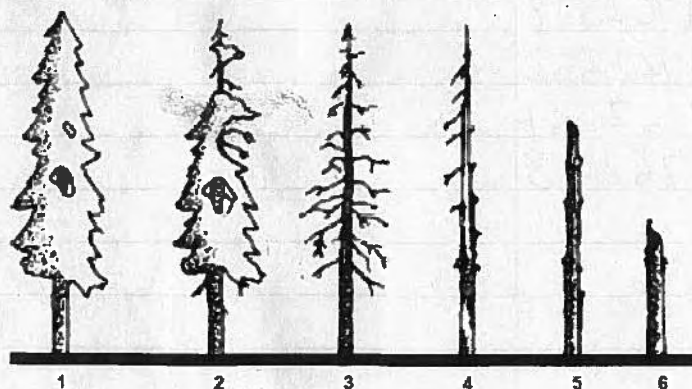
TOTAL No.
Cavity Trees: _____

Density Calculation:
(use formula provided²) _____

2 Trees/ha

No. of Plots: Sites ≤ 10 ha: 10 plots (minimum); each extra ha: 1 plot (up to max 35 plots).
Plots = 0.05 ha or 12.6m radius.
Select plots randomly.

²Total Cavity Tree Density = $\frac{\text{total \# cavity trees}}{(\# \text{ plots} \times 0.05 \text{ ha})}$



- 1 Healthy, live tree
- 2 Declining live tree, part of canopy lost
- 3 Very recently dead, no canopy, bark intact, branches intact
- 4 Recently dead, bark peeling, only large branches intact
- 5 Older dead tree, 80 percent of bark lost, few branch stubs, broken top
- 6 Very old dead tree, advanced decay, no branches, parts of the stem have rotted away

Figure 1: Decay classification system for cavity trees (Watt and Caceres, 1999)
NOTE: Decay classifications 4-6 should not be tallied in plots.

snake observed
photos taken
17T 0621693/4762822
no apparent hibernacula
nearby
wood frog calling

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Bat Maternity Roost - Cavity Tree Density Plots Data Form

(FOR USE IN FOD & FOM COMMUNITIES ONLY)

Project Number: 160950269Project Name: Niagara Wind FarmApril 18/20139:5010:50J. Ball

DATE

TIME (start)

TIME (end)

Field Personnel

Weather Conditions:

14290%NONENONE

TEMP (°C)

WIND

CLOUD

PPT

PPT (in last 24 hrs)

Criteria for Cavity Tree Tally Inclusion: ☒ Cavity tree is ≥ 25 cm DBHNOTE: All criteria must be met in ☒ Cavity is ≥ 10 m high in treeorder for cavity tree to be tallied ☒ Size of cavity is small enough so large mammals (i.e. raccoons) cannot enter, but large enough for two bats☒ Cavity tree is a Decay Class of 1 - 3 (see decay classification below)

Feature #:

34

Feature Size (ha):

1.5No. of Plots to Survey¹:10

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: <u>17T</u>)	Comments
Plot 01	<u>0</u>	<u>0622863 ' 4760704</u>	
Plot 02	<u>0</u>	<u>0622818 ' 4760696</u>	
Plot 03	<u>0</u>	<u>0622823 ' 4760645</u>	
Plot 04	<u>0</u>	<u>0622825 ' 4760605</u>	
Plot 05	<u>0</u>	<u>0622790 ' 4760615</u>	
Plot 06	<u>0</u>	<u>0622764 ' 4760637</u>	
Plot 07	<u>0</u>	<u>0622754 ' 4760682</u>	<u>garter snake observed</u>
Plot 08	<u>0</u>	<u>0622794 ' 4760715</u>	
Plot 09	<u>0</u>	<u>0622724 ' 4760766</u>	
Plot 10	<u>0</u>	<u>0622707 ' 4760814</u>	
Plot 11		<u>/</u>	
Plot 12		<u>/</u>	
Plot 13		<u>/</u>	
Plot 14		<u>/</u>	
Plot 15		<u>/</u>	
Plot 16		<u>/</u>	
Plot 17		<u>/</u>	
Plot 18		<u>/</u>	
Plot 19		<u>/</u>	
Plot 20		<u>/</u>	
Plot 21		<u>/</u>	

Page 1 of 2Signature: Jane Ball

(Field Personnel)

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(Project Manager)

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Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: _____)	Comments
Plot 22		/	
Plot 23		/	
Plot 24		/	
Plot 25		/	
Plot 26		/	
Plot 27		/	
Plot 28		/	
Plot 29		/	
Plot 30		/	
Plot 31		/	
Plot 32		/	
Plot 33		/	
Plot 34		/	
Plot 35		/	

TOTAL No.
Cavity Trees: 0

Density Calculation:
(use formula provided²)

0 Trees/ha

¹No. of Plots: Sites ≤ 10 ha: 10 plots (minimum); each extra ha: 1 plot (up to max 35 plots).
Plots = 0.05 ha or 12.6m radius.
Select plots randomly.

$$^2\text{Total Cavity Tree Density} = \frac{\text{total \# cavity trees}}{(\# \text{ plots} \times 0.05 \text{ ha})}$$

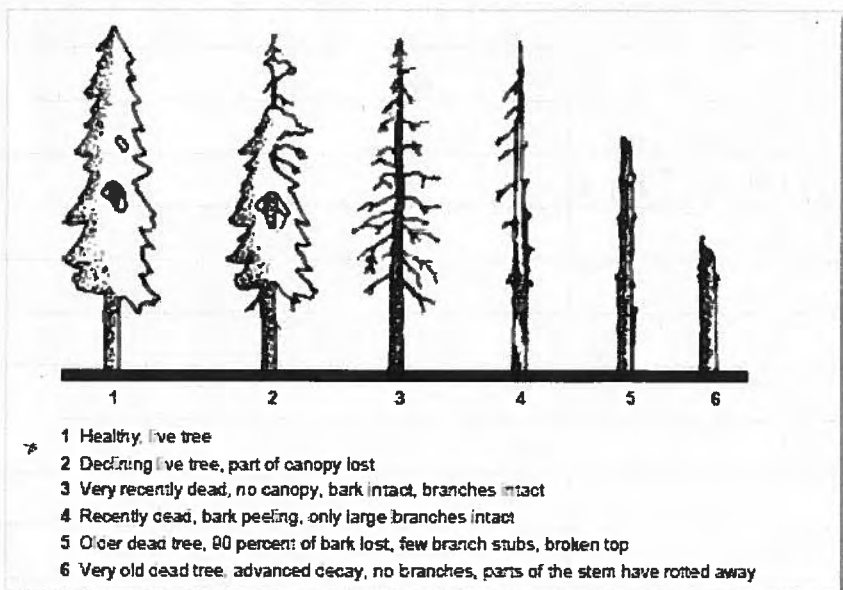


Figure 1: Decay classification system for cavity trees (Watt and Caceres, 1999)
NOTE: Decay classifications 4-6 should not be tallied in plots.

- stumps observed
indicating forest
management
- chorus frogs
abundant

Page 2 of 2
Signature: _____

Jane Ball
(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature: _____

(Project Manager)

REV: 2013-03-13



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Bat Maternity Roost - Cavity Tree Density Plots Data Form

(FOR USE IN FOD & FOM COMMUNITIES ONLY)

Project Number: 160950269

Project Name: Niagara Wind Farm

<u>April 18/2013</u>	<u>11:45</u>	<u>12:30</u>	<u>J. Ball</u>
DATE	TIME (start)	TIME (end)	Field Personnel

Weather Conditions:

<u>24</u>	<u>3</u>	<u>1.00</u>	<u>NONE</u>	<u>NONE</u>
TEMP (°C)	WIND	CLOUD	PPT	PPT (in last 24 hrs)

Criteria for Cavity Tree Tally Inclusion: ☒ Cavity tree is ≥ 25 cm DBH

NOTE: All criteria must be met in ☒ Cavity is ≥ 10 m high in tree

order for cavity tree to be tallied ☒ Size of cavity is small enough so large mammals (i.e. raccoons) cannot enter, but large enough for two bats

☒ Cavity tree is a Decay Class of 1 - 3 (see decay classification below)

Feature #: 35 Feature Size (ha): 0.678 No. of Plots to Survey¹: 10

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: <u>17T</u>)	Comments
Plot 01	0	0622836 ' 4765694	
Plot 02	0	0622829 ' 4765721	
Plot 03	0	0622811 ' 4765751	
Plot 04	0	0622829 ' 4765757	
Plot 05	0	0622806 ' 4765774	
Plot 06	0	0622814 ' 4765768	
Plot 07	0	0622831 ' 4765784	
Plot 08	0	0622836 ' 4765766	
Plot 09	0	0622845 ' 4765737	
Plot 10	0	0622838 ' 4765716	
Plot 11		/	
Plot 12		/	
Plot 13		/	
Plot 14		/	
Plot 15		/	
Plot 16		/	
Plot 17		/	
Plot 18		/	
Plot 19		/	
Plot 20		/	
Plot 21		/	

Page 1 of 2

Signature: J. Ball

(Field Personnel)

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Signature: _____

(Project Manager)

REV: 2013-03-13

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: ____)	Comments
Plot 22		/	
Plot 23		/	
Plot 24		/	
Plot 25		/	
Plot 26		/	
Plot 27		/	
Plot 28		/	
Plot 29		/	
Plot 30		/	
Plot 31			
Plot 32		/	
Plot 33		/	
Plot 34		/	
Plot 35		/	

TOTAL No.
Cavity Trees: 0

Density Calculation:
(use formula provided²) 0

Trees/ha

¹No. of Plots: Sites ≤ 10 ha: 10 plots (minimum); each extra ha: 1 plot (up to max 35 plots).
Plots = 0.05 ha or 12.6m radius.
Select plots randomly.

²Total Cavity Tree Density = $\frac{\text{total \# cavity trees}}{(\# \text{ plots} \times 0.05 \text{ ha})}$

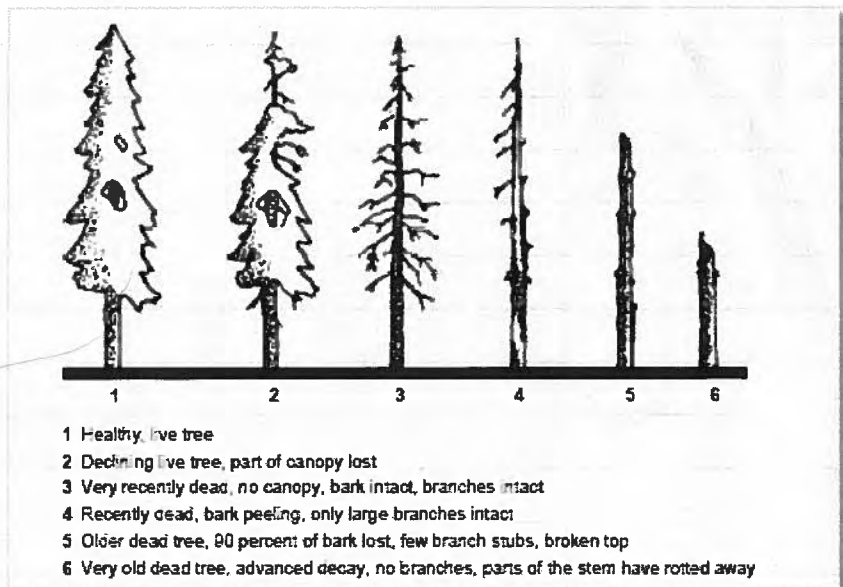


Figure 1: Decay classification system for cavity trees (Watt and Caceres, 1999)
NOTE: Decay classifications 4-6 should not be tallied in plots.

- chorus frogs calling in chorus in adjacent wetland
- also 1 wood frog and 1 leopard frog

- some overlap in plots may have occurred
- large stick nest in woodlot - appears unoccupied

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Bat Maternity Roost - Cavity Tree Density Plots Data Form

(FOR USE IN FOD & FOM COMMUNITIES ONLY)

Project Number:

160950269

Project Name:

Niagara Wind Farm

April 18/2013

DATE

12:40

TIME (start)

1:30

TIME (end)

J. Ball

Field Personnel

Weather Conditions:

25

TEMP (°C)

4

WIND

80% (hazy)

CLOUD

NONE

PPT

NONE

PPT (in last 24 hrs)

Criteria for Cavity Tree Tally Inclusion: ☒ Cavity tree is ≥ 25 cm DBHNOTE: All criteria must be met in ☒ Cavity is ≥ 10 m high in treeorder for cavity tree to be tallied ☒ Size of cavity is small enough so large mammals (i.e. raccoons) cannot enter, but large enough for two bats☒ Cavity tree is a Decay Class of 1 - 3 (see decay classification below)

Feature #:

37/38

Feature Size (ha):

5.15

No. of Plots to Survey¹:

10

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: 17T)	Comments
Plot 01	0	0623790 14765663	
Plot 02	0	0623789 14765692	
Plot 03	0	0623812 14765720	
Plot 04	0	0623797 14765774	
Plot 05	2	0623799 14765824	cavities in the same tree - decay class = 2
Plot 06	0	0623767 14765806	
Plot 07	0	0623749 14765761	
Plot 08	0	0623757 14765716	
Plot 09	0	0623759 14765690	
Plot 10	0	0623724 14765670	
Plot 11		/	
Plot 12		/	
Plot 13		/	
Plot 14		/	
Plot 15		/	
Plot 16		/	
Plot 17		/	
Plot 18		/	
Plot 19		/	
Plot 20		/	
Plot 21		/	

Page 1 of 2

Signature:

(Field Personnel)

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Signature:

(Project Manager)

REV: 2013-03-13

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: ____)	Comments
Plot 22		/	
Plot 23		/	
Plot 24		/	
Plot 25		/	
Plot 26		/	
Plot 27		/	
Plot 28		/	
Plot 29		/	
Plot 30		/	
Plot 31			
Plot 32		/	
Plot 33		/	
Plot 34		/	
Plot 35		/	

TOTAL No. Cavity Trees: 2

Density Calculation:
(use formula provided²)

2 Trees/ha

¹No. of Plots: Sites ≤ 10 ha; 10 plots (minimum); each extra ha: 1 plot (up to max 35 plots).
Plots = 0.05 ha or 12.6m radius.
Select plots randomly.

²Total Cavity Tree Density = $\frac{\text{total \# cavity trees}}{(\# \text{ plots} \times 0.05 \text{ ha})}$

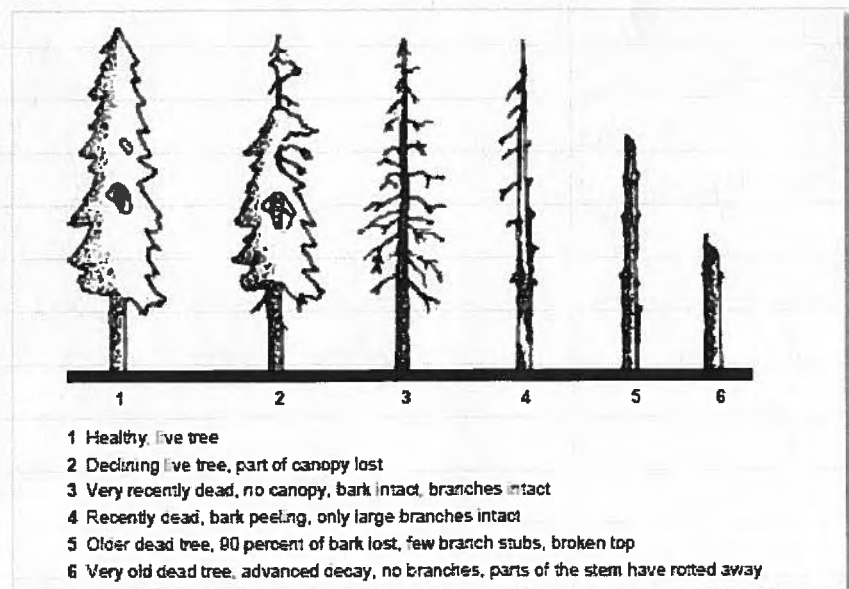


Figure 1: Decay classification system for cavity trees (Watt and Caceres, 1999)
NOTE: Decay classifications 4-6 should not be tallied in plots.

-chorus frogs
calling in adjacent
wetlands

Page 2 of 2
Signature: _____

(Field Personnel)

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Signature: _____

(Project Manager)

REV: 2013-03-13

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Bat Maternity Roost - Cavity Tree Density Plots Data Form

(FOR USE IN FOD & FOM COMMUNITIES ONLY)

Project Number: 160950269Project Name: Niagara Wind Farm

<u>April 18/2013</u>	<u>1:45</u>	<u>2:50</u>	<u>J. Ball</u>	
DATE	TIME (start)	TIME (end)	Field Personnel	
<u>25</u>	<u>4</u>	<u>100%</u>	<u>NONE</u>	<u>NONE</u>
TEMP (°C)	WIND	CLOUD	PPT	PPT (in last 24 hrs)

Weather Conditions:

Criteria for Cavity Tree Tally Inclusion: ☒ Cavity tree is ≥ 25 cm DBHNOTE: All criteria must be met in ☒ Cavity is ≥ 10 m high in treeorder for cavity tree to be tallied ☒ Size of cavity is small enough so large mammals (i.e. raccoons) cannot enter, but large enough for two bats☒ Cavity tree is a Decay Class of 1 - 3 (see decay classification below)Feature #: 14/16 Feature Size (ha): 4.28 No. of Plots to Survey¹: 10

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: <u>17T</u>)	Comments
Plot 01	<u>0</u>	<u>0618818 14763896</u>	
Plot 02	<u>0</u>	<u>0618832 14763983</u>	
Plot 03	<u>0</u>	<u>0618809 14764021</u>	
Plot 04	<u>0</u>	<u>0618829 14764065</u>	
Plot 05	<u>0</u>	<u>0618744 14764018</u>	
Plot 06	<u>0</u>	<u>0618742 14763989</u>	
Plot 07	<u>0</u>	<u>0618716 14763944</u>	
Plot 08	<u>0</u>	<u>0618728 14763907</u>	
Plot 09	<u>0</u>	<u>0618757 14763902</u>	
Plot 10	<u>0</u>	<u>0618688 14763894</u>	
Plot 11		<u>/</u>	
Plot 12		<u>/</u>	
Plot 13		<u>/</u>	
Plot 14		<u>/</u>	
Plot 15		<u>/</u>	
Plot 16		<u>/</u>	
Plot 17		<u>/</u>	
Plot 18		<u>/</u>	
Plot 19		<u>/</u>	
Plot 20		<u>/</u>	
Plot 21		<u>/</u>	

Page 1 of 2Signature: J. Ball

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Signature: _____

(Project Manager)

REV: 2013-03-13

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: _____)	Comments
Plot 22		/	
Plot 23		/	
Plot 24		/	
Plot 25		/	
Plot 26		/	
Plot 27		/	
Plot 28		/	
Plot 29		/	
Plot 30		/	
Plot 31			
Plot 32		/	
Plot 33		/	
Plot 34		/	
Plot 35		/	

TOTAL No.
Cavity Trees: 0

Density Calculation:
(use formula provided²)

Trees/ha 0

¹No. of Plots: Sites ≤ 10 ha; 10 plots (minimum); each extra ha: 1 plot (up to max 35 plots).
Plots = 0.05 ha or 12.6m radius.
Select plots randomly.

²Total Cavity Tree Density = $\frac{\text{total \# cavity trees}}{(\# \text{ plots} \times 0.05 \text{ ha})}$

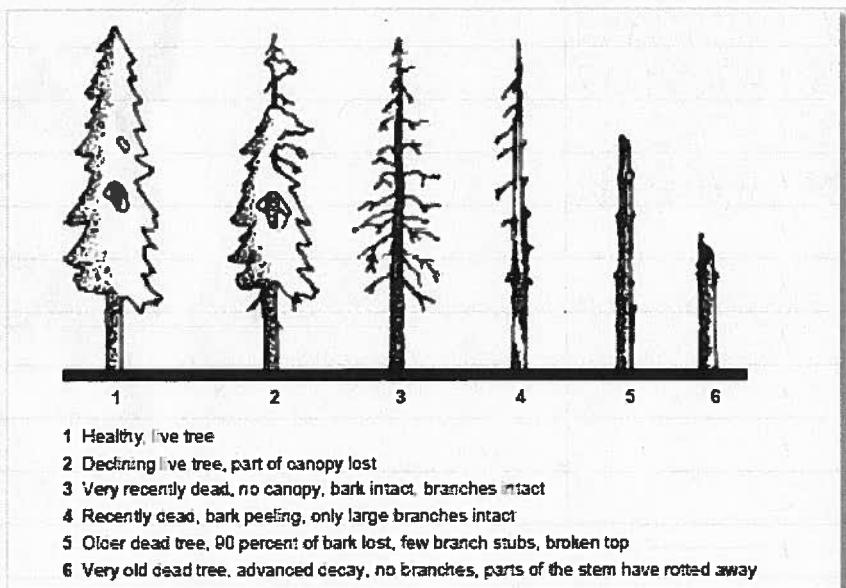


Figure 1: Decay classification system for cavity trees (Watt and Caceres, 1999)
 NOTE: Decay classifications 4-6 should not be tallied in plots.

Page 2 of 2

Signature: James Ball

(Field Personnel)

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Signature: _____

(Project Manager)

REV: 2013-03-13

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Bat Maternity Roost - Cavity Tree Density Plots Data Form

(FOR USE IN FOD & FOM COMMUNITIES ONLY)

Project Number: 160950269Project Name: Niagara Wind FarmApril 18/20132:052:20J. Ball

DATE

TIME (start)

TIME (end)

Field Personnel

Weather Conditions:

254100%NONENONE

TEMP (°C)

WIND

CLOUD

PPT

PPT (in last 24 hrs)

Criteria for Cavity Tree Tally Inclusion: ☒ Cavity tree is ≥ 25 cm DBHNOTE: All criteria must be met in ☒ Cavity is ≥ 10 m high in treeorder for cavity tree to be tallied ☒ Size of cavity is small enough so large mammals (i.e. raccoons) cannot enter, but large enough for two bats☒ Cavity tree is a Decay Class of 1 - 3 (see decay classification below)

Feature #:

13

Feature Size (ha):

0.57No. of Plots to Survey¹:survey entire area

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: <u>17T</u>)	Comments
Plot 01		<u>0618671 14764140</u>	<u>UTM taken from edge</u>
Plot 02		<u>/</u>	<u>of woodlot)</u>
Plot 03		<u>/</u>	<u>No cavities</u>
Plot 04		<u>/</u>	<u>observed</u>
Plot 05		<u>/</u>	
Plot 06		<u>/</u>	
Plot 07		<u>/</u>	
Plot 08		<u>/</u>	
Plot 09		<u>/</u>	
Plot 10		<u>/</u>	
Plot 11		<u>/</u>	
Plot 12		<u>/</u>	
Plot 13		<u>/</u>	
Plot 14		<u>/</u>	
Plot 15		<u>/</u>	
Plot 16		<u>/</u>	
Plot 17		<u>/</u>	
Plot 18		<u>/</u>	
Plot 19		<u>/</u>	
Plot 20		<u>/</u>	
Plot 21		<u>/</u>	

Page 1 of 2

Signature:

Jamie Ball
 (Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)

REV: 2013-03-13

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: ____)	Comments
Plot 22		/	
Plot 23		/	
Plot 24		/	
Plot 25		/	
Plot 26		/	
Plot 27		/	
Plot 28		/	
Plot 29		/	
Plot 30		/	
Plot 31		/	
Plot 32		/	
Plot 33		/	
Plot 34		/	
Plot 35		/	

TOTAL No.
Cavity Trees: 0

Density Calculation:
(use formula provided²)

Trees/ha 0

¹No. of Plots: Sites ≤ 10 ha: 10 plots (minimum); each extra ha: 1 plot (up to max 35 plots).

Plots = 0.05 ha or 12.6m radius.

Select plots randomly.

²Total Cavity Tree Density = $\frac{\text{total \# cavity trees}}{(\# \text{ plots} \times 0.05 \text{ ha})}$

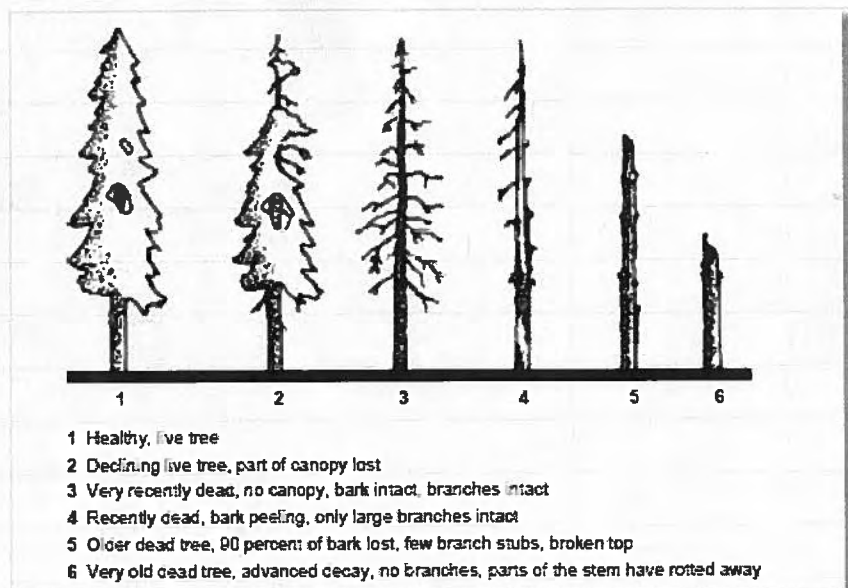


Figure 1: Decay classification system for cavity trees (Watt and Caceres, 1999)

NOTE: Decay classifications 4-6 should not be tallied in plots.

- surveyed entire
area
- no cavities
observed

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 1 – 70 Southgate Drive
 Guelph, ON
 Canada N1G 4P5
 Tel: (519) 836-6050
 Fax: (519) 836-2493

Bat Maternity Roost - Cavity Tree Density Plots Data Form

(FOR USE IN FOD & FOM COMMUNITIES ONLY)

Project Number: 160950269Project Name: Niagara Wind Farm

<u>April 18/2013</u>	<u>4:00</u>	<u>4:30</u>	<u>J. Ball</u>	
DATE	TIME (start)	TIME (end)	Field Personnel	
<u>25</u>	<u>4</u>	<u>90% hazy</u>	<u>NONE</u>	<u>NONE</u>
TEMP (°C)	WIND	CLOUD	PPT	PPT (in last 24 hrs)

Weather Conditions:

Criteria for Cavity Tree Tally Inclusion: ☒ Cavity tree is ≥ 25 cm DBHNOTE: All criteria must be met in ☒ Cavity is ≥ 10 m high in treeorder for cavity tree to be tallied ☒ Size of cavity is small enough so large mammals (i.e. raccoons) cannot enter, but large enough for two bats☒ Cavity tree is a Decay Class of 1 - 3 (see decay classification below)Feature #: 17 Feature Size (ha): 0.35 No. of Plots to Survey¹: entire area

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: <u>17T</u>)	Comments
Plot 01	<u>1</u>	<u>0618984 14768569</u>	
Plot 02		/	
Plot 03		/	
Plot 04		/	
Plot 05		/	
Plot 06		/	
Plot 07		/	
Plot 08		/	
Plot 09		/	
Plot 10		/	
Plot 11		/	
Plot 12		/	
Plot 13		/	
Plot 14		/	
Plot 15		/	
Plot 16		/	
Plot 17		/	
Plot 18		/	
Plot 19		/	
Plot 20		/	
Plot 21		/	

Page 1 of 2Signature: Jam Ball

(Field Personnel)

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(Project Manager)

REV: 2013-03-13

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: _____)	Comments
Plot 22		/	
Plot 23		/	
Plot 24		/	
Plot 25		/	
Plot 26		/	
Plot 27		/	
Plot 28		/	
Plot 29		/	
Plot 30		/	
Plot 31			
Plot 32		/	
Plot 33		/	
Plot 34		/	
Plot 35		/	

TOTAL No.
Cavity Trees: 1

Density Calculation:
(use formula provided²)

N/A

Trees/ha

¹No. of Plots: Sites ≤ 10 ha: 10 plots (minimum); each extra ha: 1 plot (up to max 35 plots).
Plots = 0.05 ha or 12.6m radius.
Select plots randomly.

²Total Cavity Tree Density = $\frac{\text{total \# cavity trees}}{(\# \text{ plots} \times 0.05 \text{ ha})}$

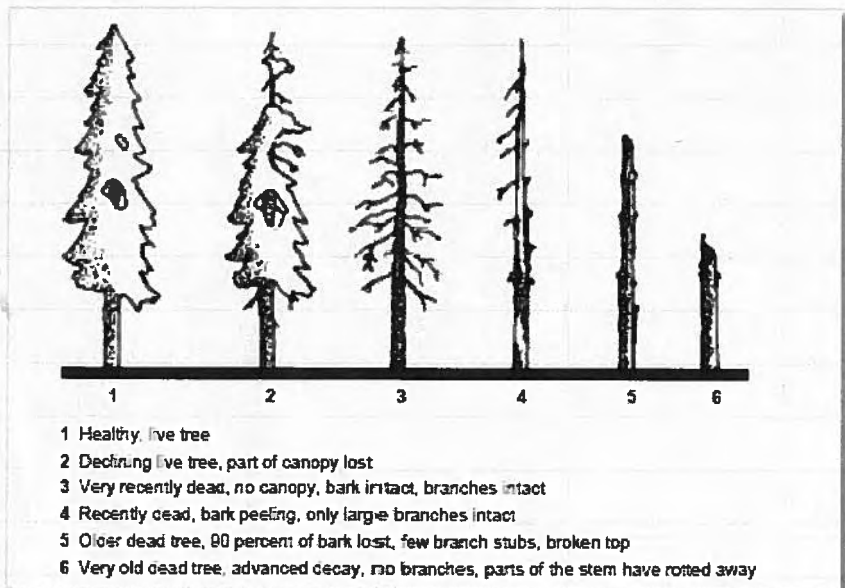


Figure 1: Decay classification system for cavity trees (Watt and Caceres, 1999)

NOTE: Decay classifications 4-6 should not be tallied in plots.

Page 2 of 2
Signature: [Signature]
(Field Personnel)

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(Project Manager)

REV: 2013-03-13

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 Tel: (519) 836-6050
 Fax: (519) 836-2493

Bat Maternity Roost - Cavity Tree Density Plots Data Form

(FOR USE IN FOD & FOM COMMUNITIES ONLY)

Project Number:

160950269

Project Name:

Niagara Wind FarmApril 18/20134:304:40J. Ball

DATE

TIME (start)

TIME (end)

Field Personnel

Weather Conditions:

25490% hazyNONENONE

TEMP (°C)

WIND

CLOUD

PPT

PPT (in last 24 hrs)

Criteria for Cavity Tree Tally Inclusion: ☒ Cavity tree is ≥ 25 cm DBHNOTE: All criteria must be met in ☒ Cavity is ≥ 10 m high in treeorder for cavity tree to be tallied ☒ Size of cavity is small enough so large mammals (i.e. raccoons) cannot enter, but large enough for two bats☒ Cavity tree is a Decay Class of 1 - 3 (see decay classification below)

Feature #:

18

Feature Size (ha):

0.13No. of Plots to Survey¹:entire survey

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: <u>17T</u>)	Comments
Plot 01	<u>0</u>	<u>0619 001 '4768881</u>	<u>no cavities observed</u>
Plot 02		<u>/</u>	<u>in entire feature</u>
Plot 03		<u>/</u>	
Plot 04		<u>/</u>	
Plot 05		<u>/</u>	
Plot 06		<u>/</u>	
Plot 07		<u>/</u>	
Plot 08		<u>/</u>	
Plot 09		<u>/</u>	
Plot 10		<u>/</u>	
Plot 11		<u>/</u>	
Plot 12		<u>/</u>	
Plot 13		<u>/</u>	
Plot 14		<u>/</u>	
Plot 15		<u>/</u>	
Plot 16		<u>/</u>	
Plot 17		<u>/</u>	
Plot 18		<u>/</u>	
Plot 19		<u>/</u>	
Plot 20		<u>/</u>	
Plot 21		<u>/</u>	

Page 1 of 2

Signature:

Jane Ball
 (Field Personnel)

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Signature:

(Project Manager)

REV: 2013-03-13

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: _____)	Comments
Plot 22		/	
Plot 23		/	
Plot 24		/	
Plot 25		/	
Plot 26		/	
Plot 27		/	
Plot 28		/	
Plot 29		/	
Plot 30		/	
Plot 31			
Plot 32		/	
Plot 33		/	
Plot 34		/	
Plot 35		/	

TOTAL No.
Cavity Trees: 0

Density Calculation:
(use formula provided²) N/A

Trees/ha

¹No. of Plots: Sites ≤ 10 ha: 10 plots (minimum); each extra ha: 1 plot (up to max 35 plots).
Plots = 0.05 ha or 12.6m radius.
Select plots randomly.

²Total Cavity Tree Density = $\frac{\text{total \# cavity trees}}{(\# \text{ plots} \times 0.05 \text{ ha})}$

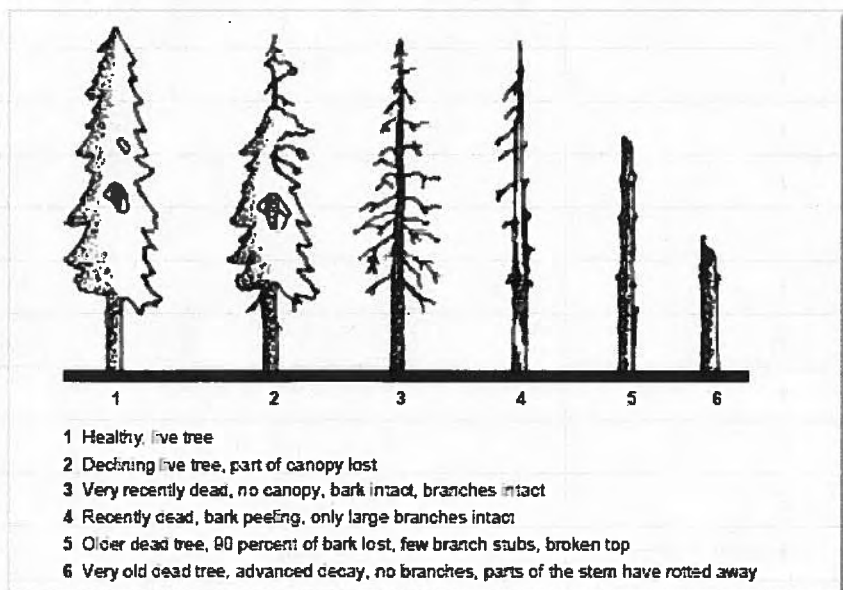


Figure 1: Decay classification system for cavity trees (Watt and Caceres, 1999)
NOTE: Decay classifications 4-6 should not be tallied in plots.

- searched entire
feature
- no cavities
found



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Bat Maternity Colony – Selection of BEST Roost Trees Data Form

Project Number: 1609502069

Project Name: NRNC

DATE	TIME (start)	TIME (end)	Field Personnel
June 13, 2013	7:00pm	9:30	RORR, J. BALL, B. Miller
TEMP (°C):	WIND:	CLOUD:	PPT:
20	0-1	60%	None
			PPT (in last 24 hrs):
			Rain

Weather Conditions

Criteria for selecting the BEST cavity trees (note: in order of importance; not all criteria must be met):

- ☐ Tallest cavity tree
- ☐ Exhibits cavities or crevices, such as cracks, scars, knot holes, or woodpecker cavities
- ☐ Has the largest DBH (cm)
- ☐ Within highest density of cavity trees (e.g. clusters of cavity trees)
- ☐ Large amount of loose, peeling bark
- ☐ Cavity or crevice is high up in tree (>10 m)
- ☐ Preferred species: white pine, maple, aspen, ash, oak
- ☐ Open canopy
- ☐ Early stages of decay (class 1-3)

- June 14 - 2013 - 0-10% None-Rain (40, B.M. JE)
6:00pm - 7:30pm

Tree No.	Species	No. of Cavities	DBH (cm)	Cavity height(s)	Tree height	UTM (Zone:)	Photo Number(s)	Notes
1	FAGGRAN	1	30	15m	22	0630068 14772027	#87 (JE)	Grass. Forest East. Decid. class 1
2	FAGGRAN	2	27	15m	20	0629987 14772055		Grass. Forest South. Decid. class 1
3	ACESASH	2	25	10m	22	0629926 14772082		Grass. Forest West. Decid. class 2
4	ACESASH	1	25	15m	23	0629878 14772210		Grass. Forest West. Decid. class 2
5	ACESASH	1	25	12m	21	0629865 14772236		Grass. Forest West. Decid. class 2
6	ACESASH	1	40	13m	23	0630031 14772096		Grass. Forest West. Decid. class 1
7	FAGGRAN	1	26	10m	23	0630031 14772053		Grass. Forest West. Decid. class 1
8	CARCORD	1	26	12m	24	0629881 14772144	#89 (JE)	Grass. Forest West. Decid. class 1
9	ACESASH	1	25	16m	22	0629783 14772265		Grass. Forest West. Decid. class 2
10	ACESASH	3	27	17m	23	0629887 14772235		Grass. Forest West. Decid. class 2
11								
12								
13								
14								
15								
16								
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29								
30								

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Field Personnel)

(Project Manager)

Sketch roost trees that have multiple cavities present. Identify the location of the cavities on the tree.

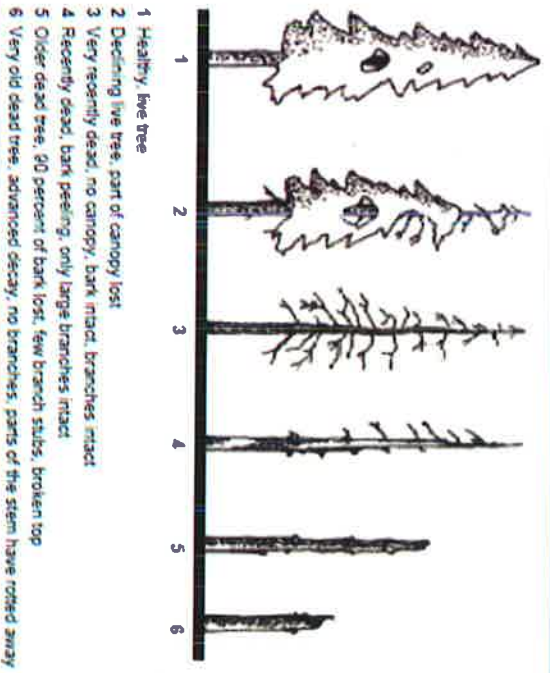


Figure 1: Decay classification system for cavity trees (Watt and Caceres, 1999)

① Bmc 1, 6, 7
② Bmc 2, 3

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(Field Personnel)

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Signature: _____

(Project Manager)

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**Bat Maternity Colony -
Audio & Visual Monitoring
(Exit Surveys) Data Form**
(FOR USE IN FOD & FOM COMMUNITIES ONLY)

Project Number: 160950629Project Name: NRWC

June 14 2013 9:00 pm 10:30 pm HARR, B. Miller, J. Ball
DATE TIME (start) TIME (end) Field Personnel

Weather Conditions:

17° 0-1 5% None Rain
TEMP (°C) WIND CLOUD PPT PPT (in last 24 hrs)

June 24 - 9:00pm - 10:30pm - HARR, J. Ball, Vicki Clarkson - 27° 0-1 - 0%, None, None

Feature #: BMC 51 Feature Size (ha):No. of Roost Trees: 12

Tree No.	Audio Recorded (Y/N)	File No.	Start Time	End Time	Tally of Bats Observed	Probable Species	UTM (Zone: <u>17</u>)	Notes
01	Y	June 14 - BM Em3-A	9:00pm	10:15pm	5		0630058/4772027	Low visibility after 10pm.
02	Y	June 25 - AO Em3-C	8:45pm	10:15pm	—		0629987/4772055	Photo# 47 (AO)
03	Y	June 25 - JB Em3-C	8:45pm	10:15pm	—		0629926/4772082	Photo# 95 (JB) Flying squirrel obs.
04	Y	June 26 - JB Sin2-C	8:45pm	10:15pm	2		0629872/4772216	Photo# 99 (JB)
05	Y	June 24 - MC Em3-C	9:00pm	10:20pm	—		0629865/4772226	Very humid evening.
06	Y	June 14 - JB Em3-B	9:00pm	10:15pm	—		0630081/4772016	Low visibility after 10pm.
07	Y	June 14 - AO Em3-B	9:00pm	10:15pm	—		0630031/4772053	Low visibility after 10pm.
08	Y	June 26 - AO Em3-C	8:45pm	10:15pm	2		0629881/4772144	Photo# 48-49
09	Y	June 24 - AO Em3-C	9:00pm	10:30pm	—		0629853/4772216	Very humid evening.
10	Y	June 24 - JB Em3-C	9:00pm	10:20pm	6		0629887/4772235	Very humid evening.
11							/	
12							/	
13							/	
14							/	
15							/	

Page 1 of 2Signature: Andrew

(Field Personnel)

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(Project Manager)

REV: 2013-06-07

Tree No.	Audio Recorded (Y/N)	File No.	Start Time	End Time	Tally of Bats Observed	Probable Species	UTM (Zone: _____)	Notes
16							/	
17							/	
18							/	
19							/	
20							/	
21							/	
22							/	
23							/	
24							/	
25							/	
26							/	
27							/	
28							/	
29							/	
30							/	

June 25, 2013 - J. Ball, A. ORR 8:30pm - 11:00pm
 25° - 3 wind - 80% cloud, None, None.

June 26, 2013 - J. Ball, A. ORR 8:30 - 11:00pm
 25° 4 wind, 10% cloud, None, Rain

Page 2 of 2

Signature: _____

(Field Personnel)

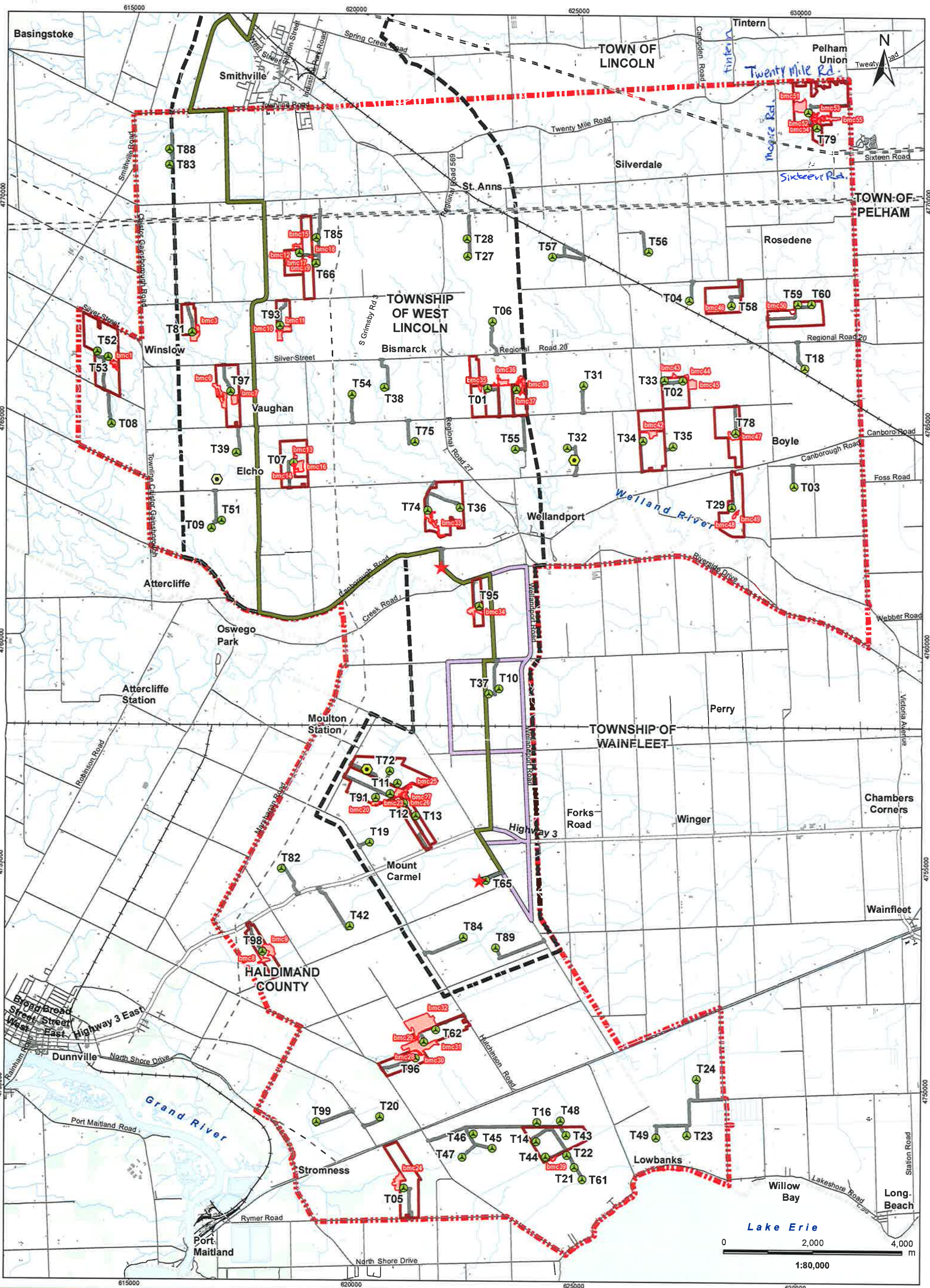
Quality Control: This form is complete ☐ & legible ☐.

Signature: _____

(Project Manager)

REV: 2013-06-07

V:\1609\A\Drawings\160950269\planning\drawing\mxd\20130226_Bat_Field_Map\160950269_Figure_1_Bat_Field_Areas_Key_Map.mxd
Revised: 2013-03-28 By: bowper



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Legend

- | | | | | | |
|--|-----------------------------------|--|----------------------------|--|---------------------------|
| | Project Study Area | | Road | | Bat Maternity Colonies |
| | Interconnector Study Area | | Expressway / Highway | | Signed Property |
| | Proposed Turbine Location | | Active Railway | | Potential Signed Property |
| | Potential Access Road | | Abandoned Railway | | |
| | Transformer Substation | | Existing Structures | | |
| | Tap-in Location | | Existing Transmission Line | | |
| | Existing Met Tower | | Watercourse | | |
| | Preferred Transmission Line Route | | Waterbody | | |
| | Alternate Transmission Route | | Wooded Area | | |
| | | | Municipality Lower Tier | | |

Notes

- Coordinate System: NAD 1983 UTM Zone 17N
- Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2012.

Client/Project
Niagara Region Wind Corporation
Niagara Region Wind Farm

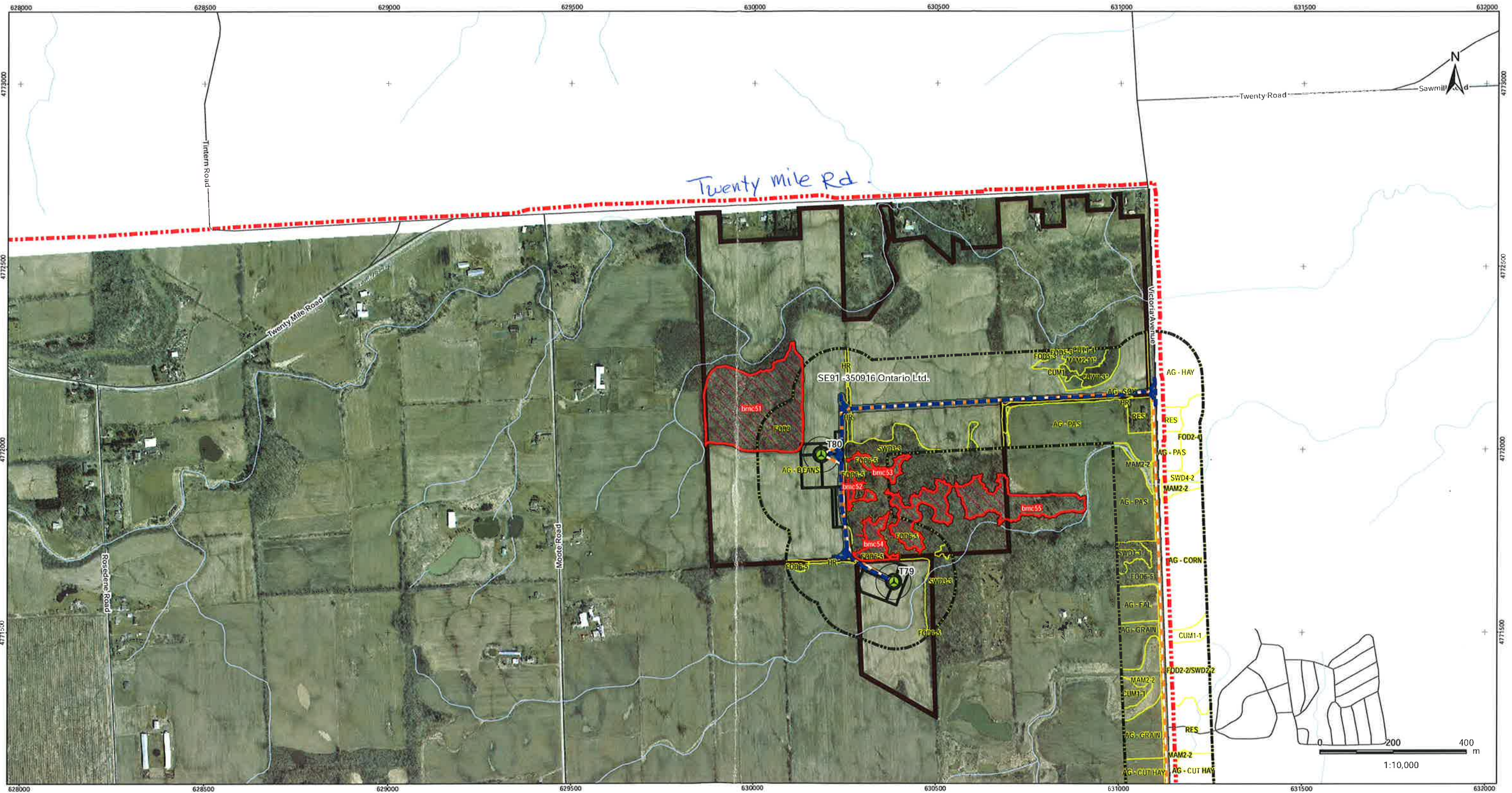
March 2013
160950269

Figure No.
1

Title

Draft Site Plan Overview

V:\1609\Activel\160950269\planning\drawing\mxd\20130226_BaL_Field_Map\160950269_Figure_1_BaL_Field_Areas_Mapbook_20130319.mxd
Revised: 20130328 by: bcomper



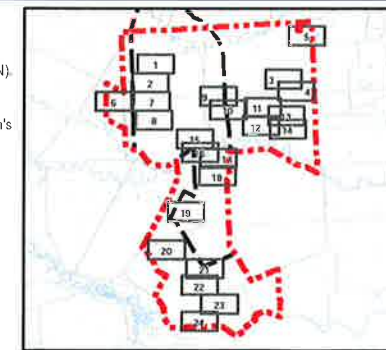
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Legend

	Project Study Area		Junction Box		Bat Maternity Colonies
	Interconnector Study Area		Preferred Transmission Line Route		Accessible Bat Survey Areas
	Signed Property		Alternate Transmission Route		
	Potential Signed Property		Collector Lines – Underground or Overhead		
	120m Zone of Investigation		Temporary Laydown Area		
	ELC Boundary		Fibre Optic Line		
	Proposed Turbine Location		Potential Access Road		
	Turbine Blade Length		Potential Construction Laydown Area		
	Tap-in Location		Transformer Substation		

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N).
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2011.
3. Orthoimagery source: First Base Solutions, Date Spring 2010.



Client/Project

Niagara Region Wind Corporation
Natural Heritage Assessment Report

Figure No.
1.44

Title
Bat Surveys
bmc 51

March, 2013
160950269

NRWC - 160950269

Bat Exit Surveys

June 13, 14, 24, 25, 26
2013

**Stantec**

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Bat Maternity Roost - Cavity Tree Density Plots Data Form

(FOR USE IN FOD & FOM COMMUNITIES ONLY)

Project Number: 160950269Project Name: NRWCDATE April 18, 2012TIME (start) 11:45TIME (end) 12:45Field Personnel A. ORR

DATE

TIME (start)

TIME (end)

Field Personnel

Weather Conditions:

212-380%NoneNone.

TEMP (°C)

WIND

CLOUD

PPT

PPT (in last 24 hrs)

Criteria for Cavity Tree Tally Inclusion: ☒ Cavity tree is ≥ 25 cm DBHNOTE: All criteria must be met in ☒ Cavity is ≥ 10 m high in treeorder for cavity tree to be tallied ☒ Size of cavity is small enough so large mammals (i.e. raccoons) cannot enter, but large enough for two bats☒ Cavity tree is a Decay Class of 1 - 3 (see decay classification below)Feature #: bmc 20Feature Size (ha): 1.4No. of Plots to Survey: 10

Accessible area = 1.1 ha

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: <u>17</u>)	Comments
Plot 01	<u>0</u>	<u>0620493 / 4756404</u>	<u>GPS = 92 - young to middle aged SWD.</u>
Plot 02	<u>0</u>	<u>0620488 / 4756378</u>	<u>very few cavity trees present GPS = 93</u>
Plot 03	<u>0</u>	<u>0620463 / 4756355</u>	<u>GPS = 94</u>
Plot 04	<u>0</u>	<u>0620449 / 4756328</u>	<u>GPS = 95</u>
Plot 05	<u>0</u>	<u>0620440 / 4756365</u>	<u>GPS = 96</u>
Plot 06	<u>0</u>	<u>0620420 / 4756386</u>	<u>GPS = 97</u>
Plot 07	<u>0</u>	<u>0620381 / 4756389</u>	<u>GPS = 98</u>
Plot 08	<u>0</u>	<u>0620353 / 4756359</u>	<u>GPS = 99</u>
Plot 09	<u>0</u>	<u>0620284 / 4756364</u>	<u>GPS = 100</u>
Plot 10	<u>0</u>	<u>0620257 / 4756339</u>	<u>GPS = 101</u>
Plot 11		<u>/</u>	
Plot 12		<u>/</u>	
Plot 13		<u>/</u>	
Plot 14		<u>/</u>	
Plot 15		<u>/</u>	
Plot 16		<u>/</u>	
Plot 17		<u>/</u>	
Plot 18		<u>/</u>	
Plot 19		<u>/</u>	
Plot 20		<u>/</u>	
Plot 21		<u>/</u>	

Page 1 of 2

Signature: _____

(Field Personnel)

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Signature: _____

(Project Manager)

REV: 2013-03-13

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: ____)	Comments
Plot 22		/	
Plot 23		/	
Plot 24		/	
Plot 25		/	
Plot 26		/	
Plot 27		/	
Plot 28		/	
Plot 29		/	
Plot 30		/	
Plot 31			
Plot 32		/	
Plot 33		/	
Plot 34		/	
Plot 35		/	

TOTAL No.
Cavity Trees:

1

Density Calculation:
(use formula provided²)

2

Trees/ha

¹No. of Plots: Sites ≤ 10 ha; 10 plots (minimum); each extra ha: 1 plot (up to max 35 plots).
Plots = 0.05 ha or 12.6m radius.
Select plots randomly.

²Total Cavity Tree Density = $\frac{\text{total \# cavity trees}}{(\# \text{ plots} \times 0.05 \text{ ha})}$

$$\frac{1}{10 \times 0.05}$$

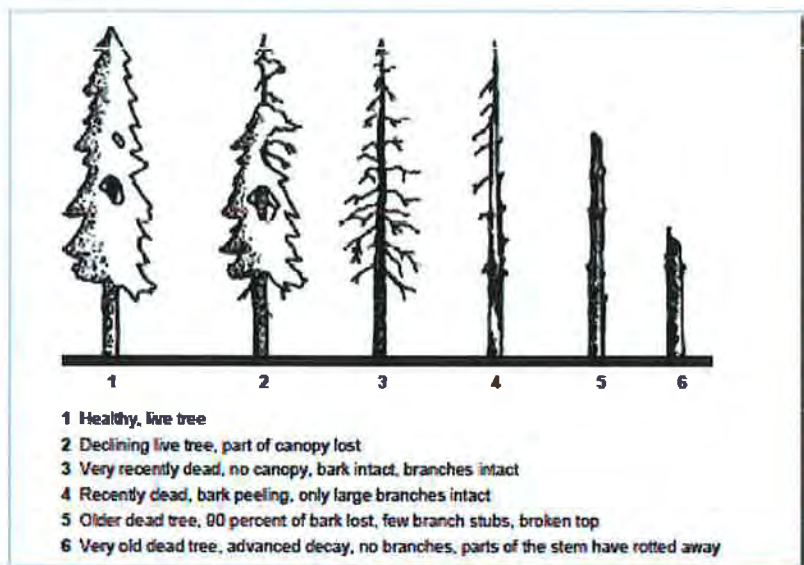


Figure 1: Decay classification system for cavity trees (Watt and Caceres, 1999)
NOTE: Decay classifications 4-6 should not be tallied in plots.

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Tel: (519) 836-6050
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Bat Maternity Roost - Cavity Tree Density Plots Data Form

(FOR USE IN FOD & FOM COMMUNITIES ONLY)

Project Number: 1609502109Project Name: NRWCDATE: April 18, 2013TIME (start): 1:15 pmTIME (end): 2:05Field Personnel: A. ORR

DATE

TIME (start)

TIME (end)

Field Personnel

Weather Conditions:

TEMP (°C): 22WIND: 3-4CLOUD: 10%PPT: NonePPT (in last 24 hrs): None

TEMP (°C)

WIND

CLOUD

PPT

PPT (in last 24 hrs)

Criteria for Cavity Tree Tally Inclusion: ☒ Cavity tree is ≥ 25 cm DBHNOTE: All criteria must be met in ☒ Cavity is ≥ 10 m high in treeorder for cavity tree to be tallied ☒ Size of cavity is small enough so large mammals (i.e. raccoons) cannot enter, but large enough for two bats☒ Cavity tree is a Decay Class of 1 - 3 (see decay classification below)

Feature #:

bmc 23, 25, 27Feature Size (ha): 6.2No. of Plots to Survey¹: 10Accessible area = 4.6 ha
- all communities lumped to 1.

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: <u>17</u>)	Comments
Plot 01	<u>0</u>	<u>0620981 14756633</u>	<u>GPS = 102 → RTTH? Vacant - in plot</u>
Plot 02	<u>0</u>	<u>0620998 14756683</u>	<u>GPS = 103 Large stick nest 30m in Tree</u>
Plot 03	<u>0</u>	<u>0621041 14756647</u>	<u>GPS = 104</u>
Plot 04	<u>0</u>	<u>0621076 14756637</u>	<u>GPS = 105</u>
Plot 05	<u>0</u>	<u>0621070 14756701</u>	<u>GPS = 106</u>
Plot 06	<u>0</u>	<u>0621121 14756668</u>	<u>GPS = 107</u>
Plot 07	<u>0</u>	<u>0621135 14756595</u>	<u>GPS = 108</u>
Plot 08	<u>1</u>	<u>0621197 14756574</u>	<u>GPS = 109</u>
Plot 09	<u>0</u>	<u>0621197 14756516</u>	<u>GPS = 110</u>
Plot 10	<u>0</u>	<u>0621219 14756508</u>	<u>GPS = 111</u>
Plot 11		<u>/</u>	
Plot 12		<u>/</u>	
Plot 13		<u>/</u>	
Plot 14		<u>/</u>	<u>Mid-age FOD with few</u>
Plot 15		<u>/</u>	<u>cavity trees having decay</u>
Plot 16		<u>/</u>	<u>class 5-6</u>
Plot 17		<u>/</u>	
Plot 18		<u>/</u>	
Plot 19		<u>/</u>	
Plot 20		<u>/</u>	
Plot 21		<u>/</u>	

Page 1 of 2Signature: [Signature]

(Field Personnel)

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Signature: _____

(Project Manager)

REV: 2013-03-13

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: ____)	Comments
Plot 22		/	
Plot 23		/	
Plot 24		/	
Plot 25		/	
Plot 26		/	
Plot 27		/	
Plot 28		/	
Plot 29		/	
Plot 30		/	
Plot 31			
Plot 32		/	
Plot 33		/	
Plot 34		/	
Plot 35		/	

TOTAL No.
Cavity Trees: 1

Density Calculation:
(use formula provided²)

2

Trees/ha

¹No. of Plots: Sites ≤ 10 ha; 10 plots (minimum); each extra ha: 1 plot (up to max 35 plots).
Plots = 0.05 ha or 12.6m radius.
Select plots randomly.

²Total Cavity Tree Density = $\frac{\text{total \# cavity trees}}{(\# \text{ plots} \times 0.05 \text{ ha})}$

1
 10×0.05

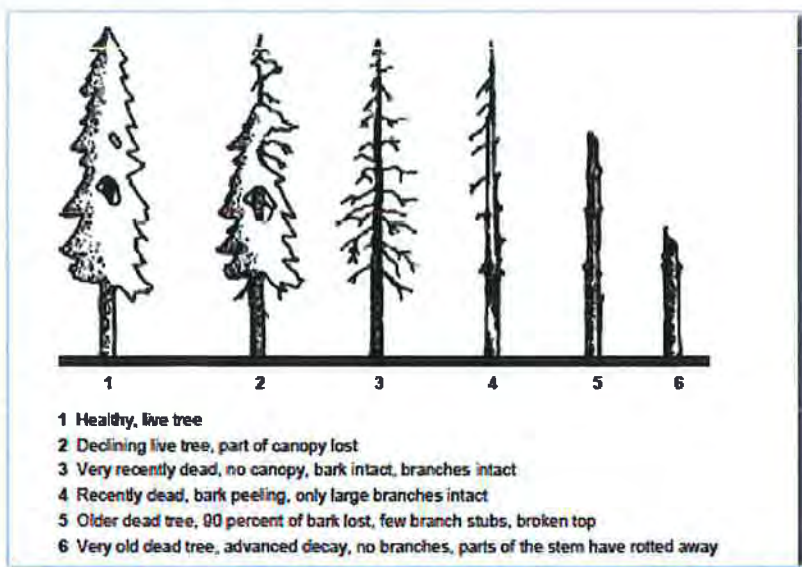


Figure 1: Decay classification system for cavity trees (Watt and Caceres, 1999)
NOTE: Decay classifications 4-6 should not be tallied in plots.

Page 2 of 2

Signature: _____

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature: _____

(Project Manager)

REV: 2013-03-13

**Stantec**

Stantec Consulting Ltd.
1 - 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Bat Maternity Roost - Cavity Tree Density Plots Data Form

(FOR USE IN FOD & FOM COMMUNITIES ONLY)

Project Number:

160950269

Project Name:

NRWC

April 18, 2013

3:35pm

4:20pm

A. ORR

DATE

TIME (start)

TIME (end)

Field Personnel

Weather Conditions:

25

2-3

0%

None

None

TEMP (°C)

WIND

CLOUD

PPT

PPT (in last 24 hrs)

Criteria for Cavity Tree Tally Inclusion: ☒ Cavity tree is ≥ 25 cm DBHNOTE: All criteria must be met in ☒ Cavity is ≥ 10 m high in treeorder for cavity tree to be tallied ☒ Size of cavity is small enough so large mammals (i.e. raccoons) cannot enter, but large enough for two bats☒ Cavity tree is a Decay Class of 1 - 3 (see decay classification below)

Feature #:

bmcX

Feature Size (ha):

2.8

No. of Plots to Survey¹:

10

Accessible area = 2.3 ha

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: ____)	Comments
Plot 01	0	0617900 14753021	GPS = 112
Plot 02	0	0617930 14752996	GPS = 113
Plot 03	1	0617961 14752967	GPS = 114
Plot 04	0	0617957 14752929	GPS = 115
Plot 05	1	0617990 14752923	GPS = 116
Plot 06	0	0617993 14752875	GPS = 117
Plot 07	1	0618038 14752862	GPS = 118
Plot 08	0	0618054 14752835	GPS = 119
Plot 09	0	0618098 14752839	GPS = 120
Plot 10	0	0618123 14752874	GPS = 121
Plot 11		/	
Plot 12		/	
Plot 13		/	
Plot 14		/	
Plot 15		/	
Plot 16		/	
Plot 17		/	
Plot 18		/	Jerry.
Plot 19		/	Thick understory, young to
Plot 20		/	mid-age FOD/SWD.
Plot 21		/	Lots of decay class 5 & 6.

Page 1 of 2

Signature:

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)

REV: 2013-03-13

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: ____)	Comments
Plot 22		/	
Plot 23		/	
Plot 24		/	
Plot 25		/	
Plot 26		/	
Plot 27		/	
Plot 28		/	
Plot 29		/	
Plot 30		/	
Plot 31			
Plot 32		/	
Plot 33		/	
Plot 34		/	
Plot 35		/	

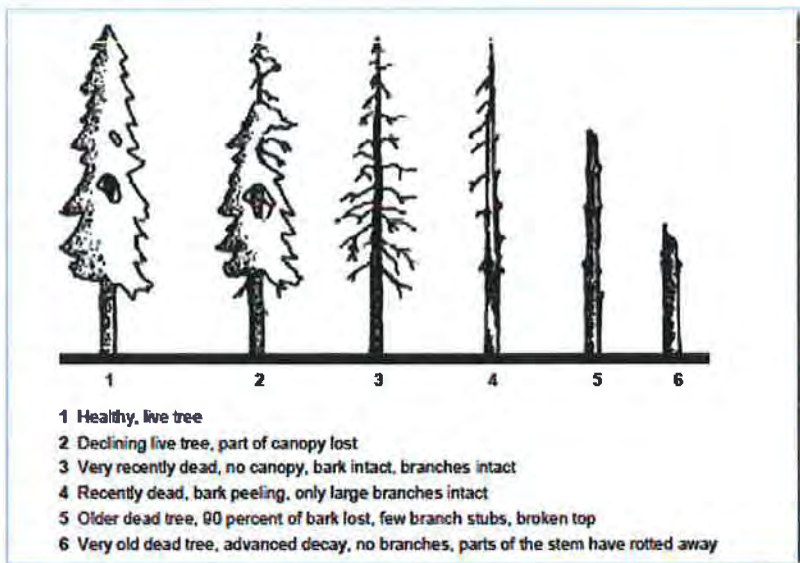
TOTAL No.
Cavity Trees: 3

Density Calculation:
(use formula provided²)

6 Trees/ha

¹No. of Plots: Sites ≤ 10 ha; 10 plots (minimum); each extra ha: 1 plot (up to max 35 plots).
Plots = 0.05 ha or 12.6m radius.
Select plots randomly.

²Total Cavity Tree Density = $\frac{\text{total \# cavity trees}}{(\# \text{ plots} \times 0.05 \text{ ha})}$



3
 10×0.05

Figure 1: Decay classification system for cavity trees (Watt and Caceres, 1999)
NOTE: Decay classifications 4-6 should not be tallied in plots.

Page 2 of 2

Signature: _____

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature: _____

(Project Manager)

REV: 2013-03-13

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Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Bat Maternity Roost - Cavity Tree Density Plots Data Form

(FOR USE IN FOD & FOM COMMUNITIES ONLY)

Project Number:

160950629

Project Name:

NRWCApril 18, 2013

DATE

4:30 pm

TIME (start)

5:00 pm

TIME (end)

A ORR

Field Personnel

Weather Conditions:

25

TEMP (°C)

2

WIND

10%

CLOUD

None

PPT

None.

PPT (in last 24 hrs)

Criteria for Cavity Tree Tally Inclusion: ☒ Cavity tree is ≥ 25 cm DBHNOTE: All criteria must be met in ☒ Cavity is ≥ 10 m high in treeorder for cavity tree to be tallied ☒ Size of cavity is small enough so large mammals (i.e. raccoons) cannot enter, but large enough for two bats☒ Cavity tree is a Decay Class of 1 - 3 (see decay classification below)

Feature #:

bmc 9

Feature Size (ha):

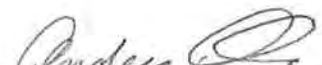
4.4No. of Plots to Survey¹:10

Accessible area = 1.8 ha

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: <u>17</u>)	Comments
Plot 01	<u>0</u>	<u>061813614753016</u>	<u>GPS = 122</u>
Plot 02	<u>0</u>	<u>061810814753071</u>	<u>GPS = 123</u>
Plot 03	<u>0</u>	<u>061809714753092</u>	<u>GPS = 124</u>
Plot 04	<u>0</u>	<u>061807114753089</u>	<u>GPS = 125</u>
Plot 05	<u>1</u>	<u>061806914753116</u>	<u>= 126</u>
Plot 06	<u>0</u>	<u>061806314753138</u>	<u>= 127</u>
Plot 07	<u>0</u>	<u>061805114753162</u>	<u>= 128</u>
Plot 08	<u>0</u>	<u>061802914753182</u>	<u>= 129</u>
Plot 09	<u>0</u>	<u>061802214753153</u>	<u>= 130</u>
Plot 10	<u>1</u>	<u>061800114753164</u>	<u>= 131</u>
Plot 11		<u>/</u>	
Plot 12		<u>/</u>	
Plot 13		<u>/</u>	
Plot 14		<u>/</u>	
Plot 15		<u>/</u>	<u>Note. In stick out E of bmc 9.</u>
Plot 16		<u>/</u>	<u>on other property no access</u>
Plot 17		<u>/</u>	
Plot 18		<u>/</u>	<u>Almost thicket swamp /</u>
Plot 19		<u>/</u>	<u>SWD. Very wet & very thick undergrowth</u>
Plot 20		<u>/</u>	<u>A few decay class 5-6.</u>
Plot 21		<u>/</u>	<u>Hard to walk through</u>

Page 1 of 2

Signature:


(Field Personnel)
Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)

REV: 2013-03-13

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Guelph, ON
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Tel: (519) 836-6050
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Bat Maternity Roost - Cavity Tree Density Plots Data Form

(FOR USE IN FOD & FOM COMMUNITIES ONLY)

Project Number: 160950629Project Name: NRWC

April 23, 2013	11:35 am	12:10 pm	A. ORR
DATE	TIME (start)	TIME (end)	Field Personnel

Weather Conditions: 11-18°C	1	0%	None	None
TEMP (°C)	WIND	CLOUD	PPT	PPT (in last 24 hrs)

Criteria for Cavity Tree Tally Inclusion: ☒ Cavity tree is ≥ 25 cm DBHNOTE: All criteria must be met in ☒ Cavity is ≥ 10 m high in treeorder for cavity tree to be tallied ☒ Size of cavity is small enough so large mammals (i.e. raccoons) cannot enter, but large enough for two bats☒ Cavity tree is a Decay Class of 1 - 3 (see decay classification below)Feature #: 29 Feature Size (ha): 0.2 ha No. of Plots to Survey¹: 10

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: ____)	Comments
Plot 01	0	0621484 14751127	GPS = 144
Plot 02	0	0621481 14751134	GPS = 145
Plot 03	0	0621465 14751131	GPS = 146
Plot 04	0	0621455 14751130	GPS = 147
Plot 05	0	0621468 14751145	GPS = 148
Plot 06	0	0621497 14751145	GPS = 149
Plot 07	0	0621490 14751156	GPS = 150
Plot 08	0	0621475 14751162	GPS = 151
Plot 09	0	0621464 14751150	GPS = 152
Plot 10	0	0621448 14751144	GPS = 153
Plot 11		/	
Plot 12		/	
Plot 13		/	
Plot 14		/	
Plot 15		/	(A few decay class 4-6 Note: BMC 29 - sm. woodlot)
Plot 16		/	- DWD in entire area. large
Plot 17		/	amounts of brush piles from adjacent
Plot 18		/	clear-cut. ∴ difficult to walk thru.
Plot 19		/	Difficult to not overlap plots.
Plot 20		/	- Area was searched as well
Plot 21		/	- Poplar woodlot. mid-age to mature

Page 1 of 2

Signature: _____

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature: _____

(Project Manager)

REV: 2013-03-13

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: _____)	Comments
Plot 22		/	
Plot 23		/	
Plot 24		/	
Plot 25		/	
Plot 26		/	
Plot 27		/	
Plot 28		/	
Plot 29		/	
Plot 30		/	
Plot 31			
Plot 32		/	
Plot 33		/	
Plot 34		/	
Plot 35		/	

TOTAL No. Cavity Trees: 0

Density Calculation:
(use formula provided²)

0 **Trees/ha**

¹No. of Plots: Sites ≤ 10 ha; 10 plots (minimum); each extra ha: 1 plot (up to max 35 plots).
Plots = 0.05 ha or 12.6m radius.
Select plots randomly.

²Total Cavity Tree Density = $\frac{\text{total \# cavity trees}}{(\# \text{ plots} \times 0.05 \text{ ha})}$

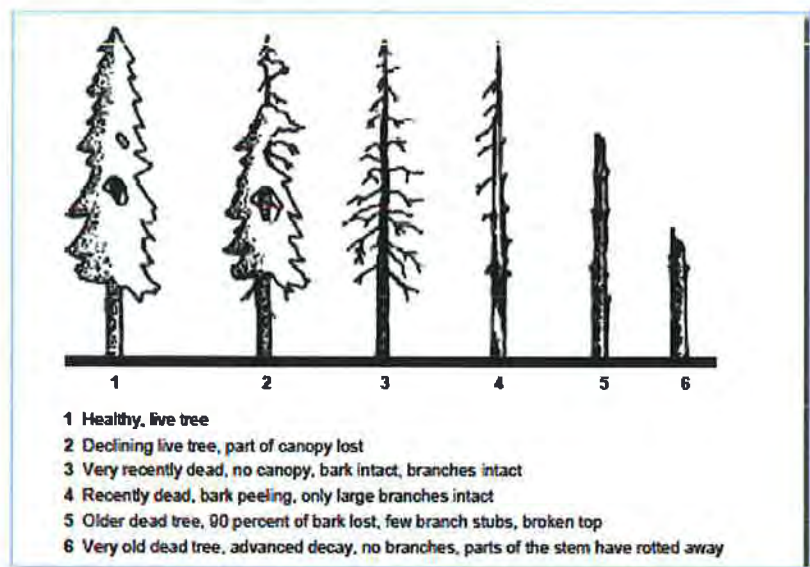


Figure 1: Decay classification system for cavity trees (Watt and Caceres, 1999)
NOTE: Decay classifications 4-6 should not be tallied in plots.

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Fax: (519) 836-2493

Bat Maternity Roost - Cavity Tree Density Plots Data Form

(FOR USE IN FOD & FOM COMMUNITIES ONLY)

Project Number: 1609502109Project Name: NRWCDATE April 23, 2013TIME (start) 11:10TIME (end) 2:50 pm.Field Personnel A. ORR

DATE

TIME (start)

TIME (end)

Field Personnel

Weather Conditions:

11-18°C1-20%NoneNone.

TEMP (°C)

WIND

CLOUD

PPT

PPT (in last 24 hrs)

Criteria for Cavity Tree Tally Inclusion: ☒ Cavity tree is ≥ 25 cm DBHNOTE: All criteria must be met in ☒ Cavity is ≥ 10 m high in treeorder for cavity tree to be tallied ☒ Size of cavity is small enough so large mammals (i.e. raccoons) cannot enter, but large enough for two bats☒ Cavity tree is a Decay Class of 1 - 3 (see decay classification below)

accessible area.

Full area = 33 ha.

Feature #: 28, 30, 31, 32Feature Size (ha): 4.9 haNo. of Plots to Survey¹: 33

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: <u>17</u>)	Comments
Plot 01	•	0621490 14751248	GPS = 140
Plot 02	••	0621469 14751235	GPS = 141
Plot 03	0	0621427 14751216	GPS = 142
Plot 04	0	0621394 14751199	GPS = 143
Plot 05	•	0621409 14751148	GPS = 154
Plot 06	•	0621396 14751139	GPS = 155
Plot 07	0	0621408 14751130	GPS = 156
Plot 08	0	0621415 14751119	GPS = 167
Plot 09	0	0621453 14751087	GPS = 158
Plot 10	0	0621440 14751060	GPS = 159
Plot 11	0	0621463 14751045	GPS = 160
Plot 12	0	0621433 14751014	GPS = 161
Plot 13	0	0621446 14750980	GPS = 162
Plot 14	0	0621483 14750990	GPS = 163
Plot 15	0	0621491 14750948	GPS = 164
Plot 16	0	0621578 14750938	GPS = 165
Plot 17	0	0621534 14750897	GPS = 166
Plot 18	0	0621483 14750827	GPS = 167
Plot 19	0	0621516 14750787	GPS = 168
Plot 20	0	0621555 14750752	GPS = 169
Plot 21	0	0621595 14750765	GPS = 170

Page 1 of 2

Signature: _____

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature: _____

(Project Manager)

REV: 2013-03-13

Plot No.	Total No. of Cavity Trees (based on criteria above)	Plot Center UTM (Zone: <u>17</u>)	Comments
Plot 22	0	0621605 '4750797	GPS = 171
Plot 23	0	0621574 '4750816	GPS = 172
Plot 24	0	0621563 '4750858	GPS = 173
Plot 25	0	0621602 '4750951	GPS = 174
Plot 26	0	0621633 '4750957	GPS = 175
Plot 27	0	0621659 '4750975	GPS = 176
Plot 28	0	0621683 '4750980	GPS = 177
Plot 29	0	0621701 '4750985	GPS = 178
Plot 30	0	0621727 '4751002	GPS = 179
Plot 31	0	0621746 '4751008	GPS = 180
Plot 32	0	0621821 '4751054	GPS = 181
Plot 33	0	0621897 '4751075	GPS = 182
Plot 34		/	
Plot 35		/	

TOTAL No.
Cavity Trees: 11

Density Calculation:
(use formula provided²)

6.6 Trees/ha

¹No. of Plots: Sites ≤ 10 ha; 10 plots (minimum); each extra ha: 1 plot (up to max 35 plots).
Plots = 0.05 ha or 12.6m radius.
Select plots randomly

²Total Cavity Tree Density = $\frac{\text{total \# cavity trees}}{(\# \text{ plots} \times 0.05 \text{ ha})}$

$$\frac{11}{33 \times 0.05}$$

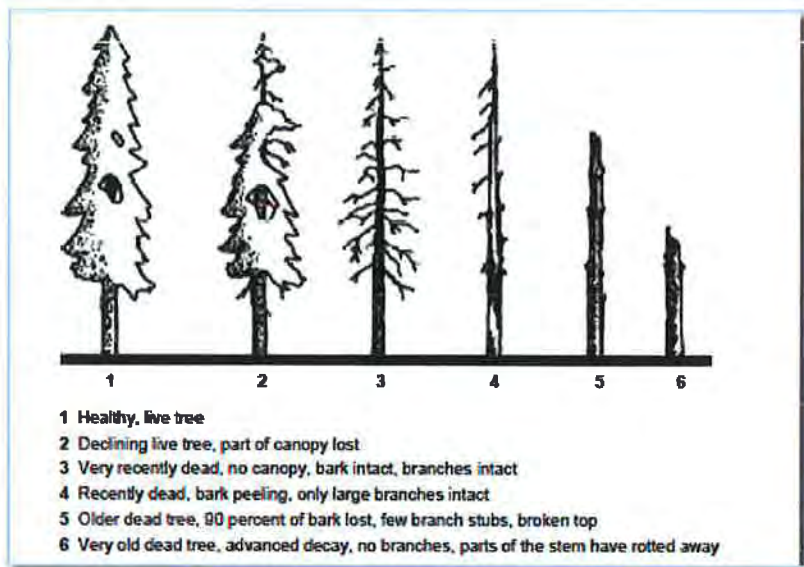


Figure 1: Decay classification system for cavity trees (Watt and Caceres, 1999)

NOTE: Decay classifications 4-6 should not be tallied in plots.

Page 2 of 2

Signature: _____

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature: _____

(Project Manager)

REV: 2013-03-13



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Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Migratory Bird Survey Observation Form

Project Number: 1609502109

Project Name: NBWC

Date: Sept 4, 2013

Field Personnel: A. ORR

Weather Conditions:

TEMP (°C):

WIND:

CLOUD:

PPT:

PPT (in last 24 hrs):

 180°

Abstract

0%

None

Name _____

Start Time: 8:10

End Time: 8:25

Start Point UTM: 620770 / 4749236

End Point UTM: 1021138/4749103

Habitat: FOD

Transect: 5

Feature #: M16A4

[illegible]

Pg. 1 of 1

Signature:

Andrea Liu
(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)

REV: 2011-05-03 / FORM 014



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1 – 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Migratory Bird Survey Observation Form

Project Number: 160950269

Project Name: NRWC

Date: Sept 4, 2013

Field Personnel: A. ORR

Weather Conditions:

TEMP (°C):

WIND:

CLOUD:

PPT:

PPT (in last 24 hrs):

20°

2.3

04.

None

None

Start Time: 9:20 am

End Time: 9:45 am

Start Point UTM: 627636 14750363

End Point UTM: 627904/4750264

Habitat: FOD

Transect: 4

Feature #: MISA.3

[illegible]Pg. 1 of 1

Signature:

Andrea R

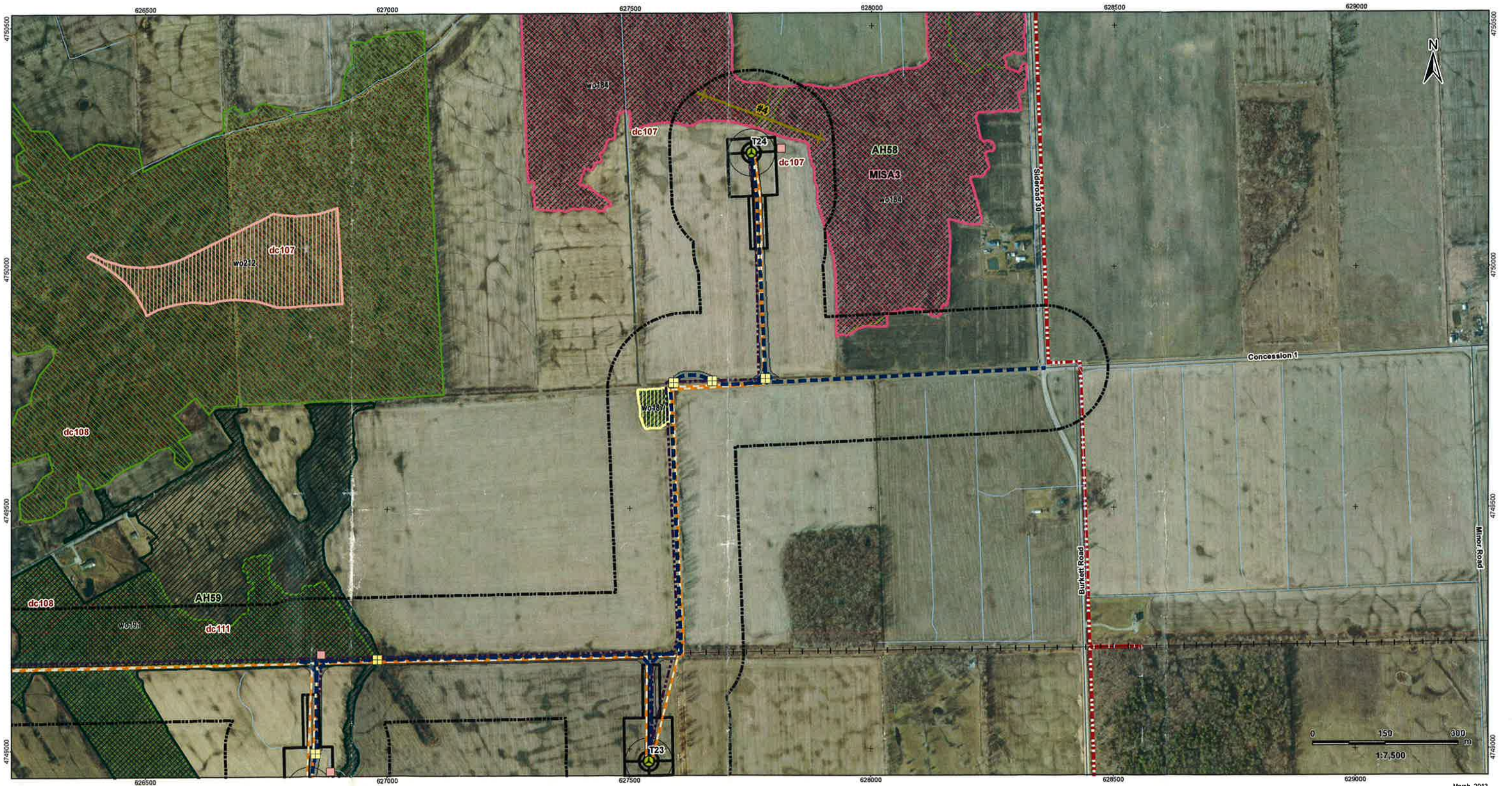
(Field Personnel)

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Signature:

(Project Manager)

REV: 2011-05-03 / FORM 014



March, 2013
160950269



Stantec

Legend

	Project Study Area		Preferred Transmission Route		Amphibian Breeding Stations		Other Rare Vegetation Community		Turtle Wintering Area
	Interconnector Study Area		Alternate Transmission Route		Snake Hibernacula		Amphibian Breeding Habitat		Bat Maternity Colonies
	120m Zone of Investigation		Temporary Laydown Area		Snake Hibernacula 30m Buffer		Cliff and Talus Communities		
	Proposed Turbine Location		Collector Lines – Underground or Overhead		MBB Point Count Location		Raptor Wintering Areas		
	Turbine Blade Length		Fibre Optic Line		Migratory Bird Transect		Woodland Raptor Nesting Habitat/ Woodland Area Sensitive Bird Breeding Habitat		
	Tap-in Location		Potential Access Road		Winter Raptor Transect		Woodland Vole Habitat		
	Junction Box		Access Road 20m Construction Area		Woodland Communities		Terrestrial Crayfish Habitat		
	Proposed Culvert		Potential Construction Laydown Area		Deer Congregation Areas (MNR)		Turtle Nesting Habitat/Snapping Turtle Habitat		
			Transformer Substation		Landbird Migratory Stopover		Turtle Habitat 30m Buffer		

Notes

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- Orthoregistry © First Base Solutions, 2010.



Client/Project

Niagara Region Wind Corporation
Natural Heritage Assessment Report

Figure No.
6.58

Title

Candidate Significant
Wildlife Habitat
Figure 6.58



Migratory Bird Survey Observation Form

Project Name: NRWC

Field Personnel: A. ORR

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	19°	0	0%	None	Rain

End Time: 9:30 am

End Point UTM: 621138 / 4749103

Transect:

Feature #: M15A4

Pg. 1 of 1

Andrew B.

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)

REV: 2011-05-03 / FORM

**Stantec**

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 1 – 70 Southgate Drive
 Guelph, ON
 Canada N1G 4P5
 Tel: (519) 836-6050
 Fax: (519) 836-2493

Migratory Bird Survey Observation Form

Project Number: 1160950269Project Name: NRWCDate: Oct. 8, 2013Field Personnel: H. ORR

Weather Conditions:

TEMP (°C):

4°

WIND:

0

CLOUD:

10%

PPT:

None

PPT (in last 24 hrs):

RainStart Time: 7:50 amEnd Time: 8:20 amStart Point UTM: 627636/4750363End Point UTM: 627904/4750264Habitat: FADTransect: 4Feature #: MISA3

Species	Tally
AMBO	
WTSP	
BTBW	
NOFL	
WBNU	
BWBL	
GRCH	
BCCH	
SOSP	
BRCK	
HOWR	
DOWO	
CAGO	25 - flyover, heading S.
	Incidentals.
	Red squirrel
	WTDC tracks

Pg. 1 of 1Signature: [Signature]

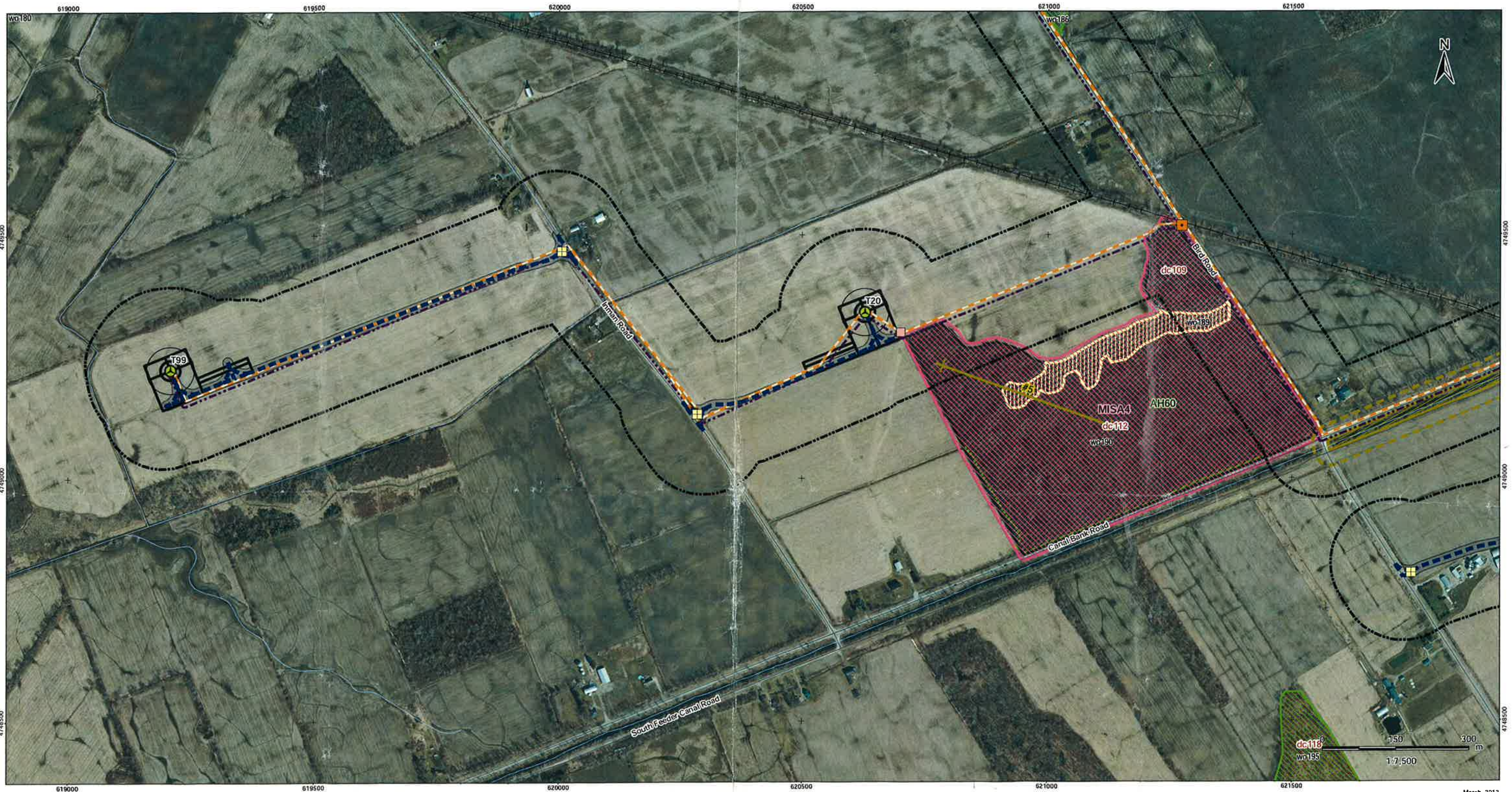
(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature: _____

(Project Manager)

REV: 2011-05-03 / FORM 014



March, 2013
160950269



Stantec

Legend

Project Study Area	Preferred Transmission Route	Amphibian Breeding Stations	Other Rare Vegetation Community	Turtle Wintering Area
Interconnector Study Area	Alternate Transmission Route	Snake Hibernacula	Amphibian Breeding Habitat	Bat Maternity Colonies
120m Zone of Investigation	Temporary Laydown Area	Snake Hibernacula 30m Buffer	Cliff and Talus Communities	
Proposed Turbine Location	Collector Lines – Underground or Overhead	MBB Point Count Location	Raptor Wintering Areas	
Turbine Blade Length	Fibre Optic Line	Migratory Bird Transect	Woodland Raptor Nesting Habitat/ Woodland Area Sensitive Bird Breeding Habitat	
Tap-in Location	Potential Access Road	Winter Raptor Transect	Woodland Vole Habitat	
Junction Box	Access Road 20m Construction Area	Woodland Communities	Terrestrial Crayfish Habitat	
Proposed Culvert	Potential Construction Laydown Area	Deer Congregation Areas (MNR)	Turtle Nesting Habitat/Snapping Turtle Habitat	
	Transformer Substation	Landbird Migratory Stopover	Turtle Habitat 30m Buffer	

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N).
2. Base features produced under license with the Ontario Ministry of Natural Resources @ Queen's Printer for Ontario, 2011.
3. Orthoimagery @ First Base Solutions, 2010.



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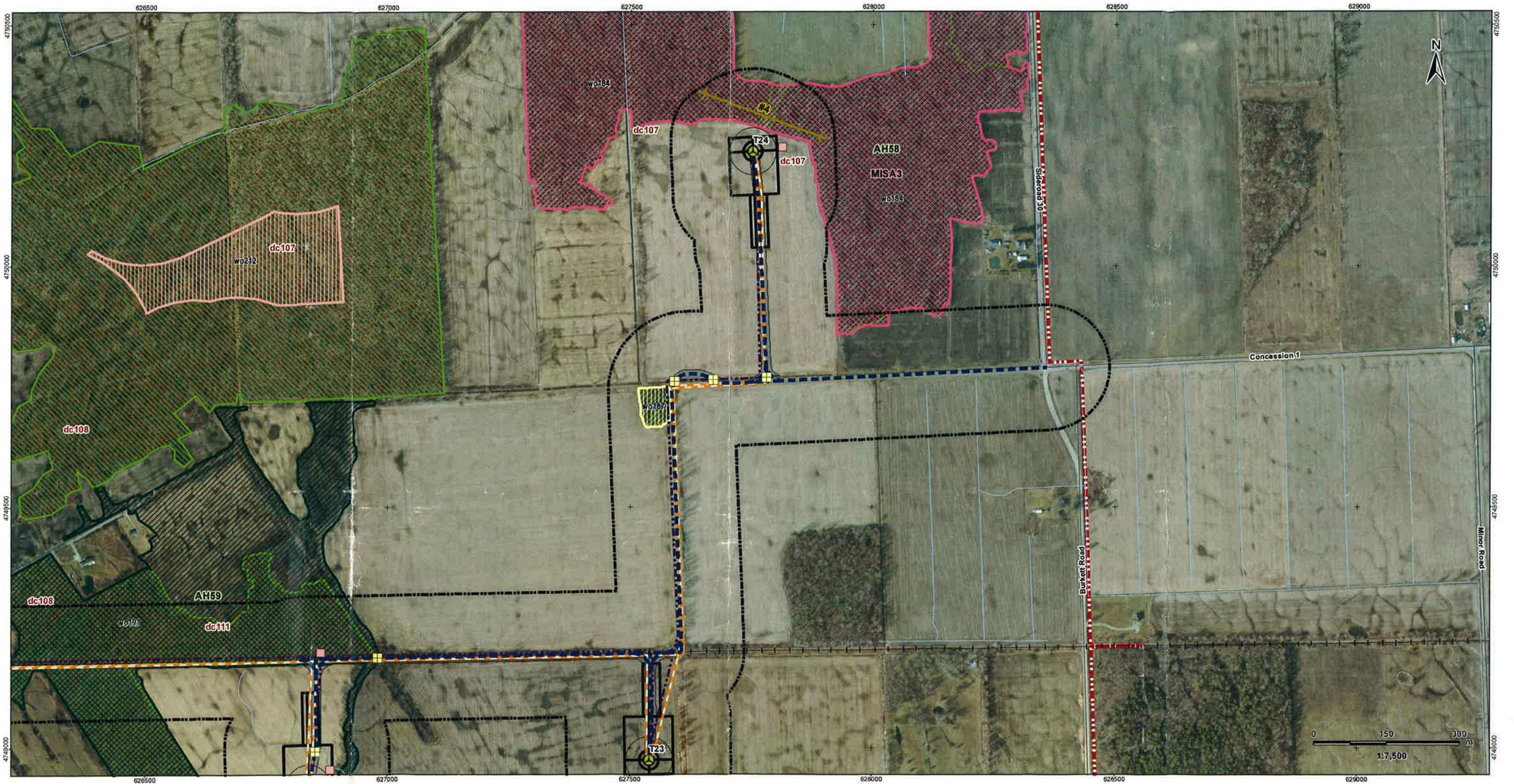
Niagara Region Wind Corporation
Natural Heritage Assessment Report

Figure No.
6.54

Title

Candidate Significant
Wildlife Habitat
Figure 6.54

V:\01609\Active\160950269\planning\drawing\mxd\20130212_REA_NHA_Figures\160950269_Figure_6_Candidate_Significant_Wildlife_Habitat_Mapbook.mxd
Revised: 2013-03-23 By: boomer



March, 2013
160950269



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Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation
- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Junction Box
- Proposed Culvert

- Preferred Transmission Route
- Alternate Transmission Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

- Amphibian Breeding Stations
- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- MBB Point Count Location
- Migratory Bird Transect
- Winter Raptor Transect
- Woodland Communities
- Deer Congregation Areas (MNR)
- Landbird Migratory Stopover

- Other Rare Vegetation Community
- Amphibian Breeding Habitat
- Cliff and Talus Communities
- Raptor Wintering Areas
- Woodland Raptor Nesting Habitat/Woodland Area Sensitive Bird Breeding Habitat
- Woodland Vole Habitat
- Terrestrial Crayfish Habitat
- Turtle Nesting Habitat/Snapping Turtle Habitat
- Turtle Habitat 30m Buffer

- Turtle Wintering Area
- Bat Maternity Colonies

Notes

- Coordinate System: NAD 1983 UTM Zone 17N).
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Natural Heritage Assessment Report

Figure No.
6.58

Title

Candidate Significant
Wildlife Habitat
Figure 6.58



Stantec Consulting Ltd.
1 – 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Migratory Bird Survey Observation Form

Project Number: 1609502169

Project Name: NRWC

Date: Sept. 9, 2013

Field Personnel: A. ORR

Weather Conditions:

TEMP (°C):

 10^0

WIND:

12

CLOUD:

50%

PPT:

None

PPT (in last 24 hrs):

None

Start Time: 7:25 am

End Time: 8:07 am

Start Point UTM: 620770 / 47492310

End Point UTM: 1621138 / 4749103

Habitat: FOD

Transect: 5

Feature #: MISA 4

[illegible]

Signature:

Andrea B.
(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)



Stantec Consulting Ltd.
1 – 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Migratory Bird Survey Observation Form

Project Name: NRWC

Field Personnel: A. ORR

Weather Conditions:

TEMP (°C):

WIND:

CLOUD:

PPT:

PPT (in last 24 hrs):

120

0

50,

NONE

NONE

End Time: 9:10 am

End Point UTM: 627904 / 4750264

Transect: 4

Feature #: MISA 3

[illegible]

Pg. 1 of 2

Signature:

Andrew B.

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)

REV: 2011-05-03 / FORM 014

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Revised: 2013-03-14 By: pwc/sall



March, 2013
160950269



Stantec

Legend

	Project Study Area		Preferred Transmission Route		Amphibian Breeding Stations		Other Rare Vegetation Community		Turtle Wintering Area
	Interconnector Study Area		Alternate Transmission Route		Snake Hibernacula		Amphibian Breeding Habitat		Bat Maternity Colonies
	120m Zone of Investigation		Temporary Laydown Area		Snake Hibernacula 30m Buffer		Cliff and Talus Communities		
	Proposed Turbine Location		Collector Lines - Underground or Overhead		MBB Point Count Location		Raptor Wintering Areas		
	Turbine Blade Length		Fibre Optic Line		Migratory Bird Transect		Woodland Raptor Nesting Habitat/ Woodland Area Sensitive Bird Breeding Habitat		
	Tap-In Location		Potential Access Road		Winter Raptor Transect		Woodland Vole Habitat		
	Junction Box		Access Road 20m Construction Area		Woodland Communities		Terrestrial Crayfish Habitat		
	Proposed Culvert		Potential Construction Laydown Area		Deer Congregation Areas (MNR)		Turtle Nesting Habitat/Snapping Turtle Habitat		
			Transformer Substation		Landbird Migratory Stopover		Turtle Habitat 30m Buffer		

Notes

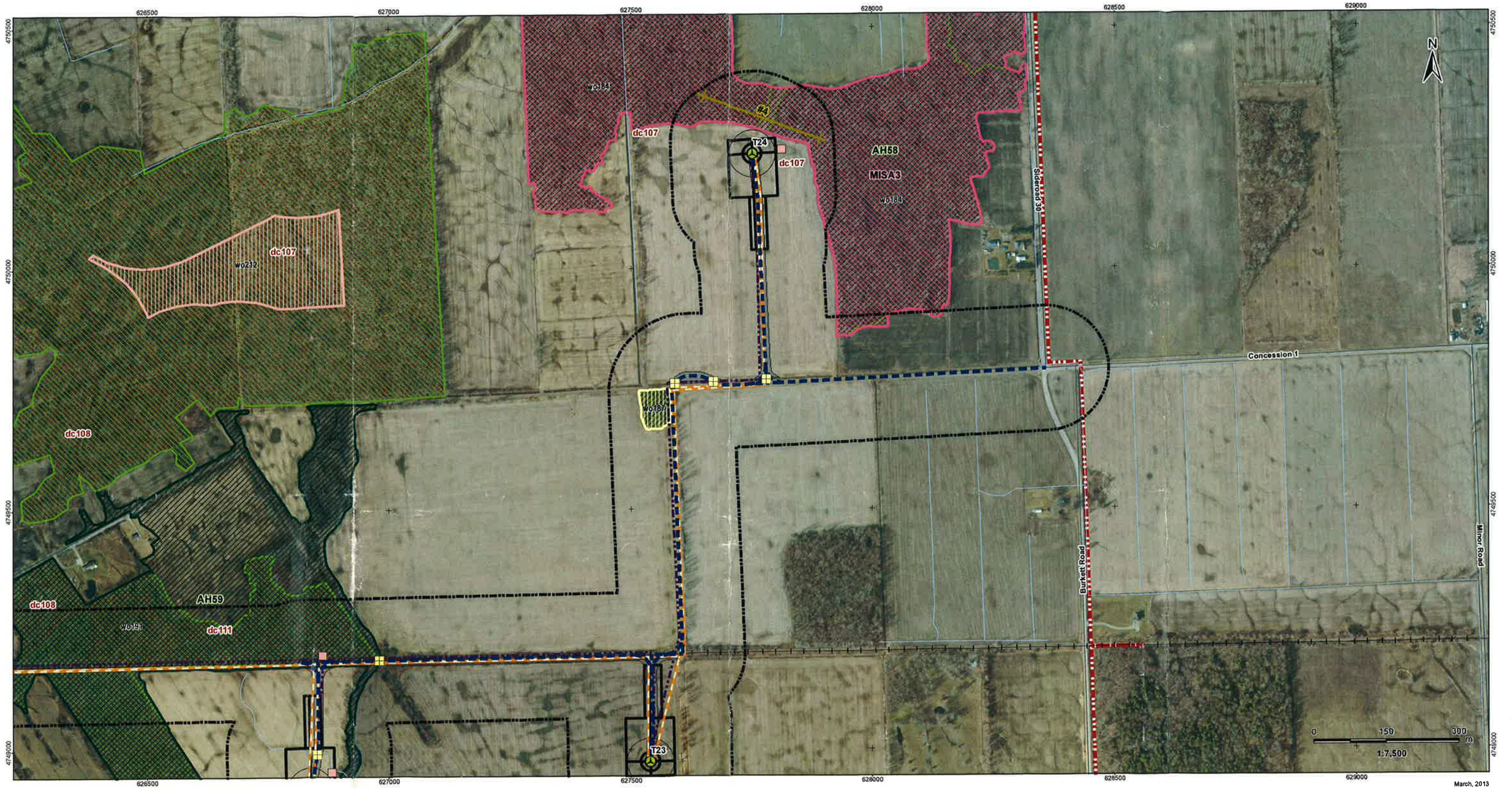
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Niagara Region Wind Corporation
Natural Heritage Assessment Report

Figure No.
6.54

Title
Candidate Significant
Wildlife Habitat
Figure 6.54



March, 2013
160950269



Stantec

Legend

Project Study Area	Preferred Transmission Route	Amphibian Breeding Stations	Other Rare Vegetation Community
Interconnector Study Area	Alternate Transmission Route	Snake Hibernacula	Amphibian Breeding Habitat
120m Zone of Investigation	Temporary Laydown Area	Snake Hibernacula 30m Buffer	Cliff and Talus Communities
Proposed Turbine Location	Collector Lines - Underground or Overhead	MBB Point Count Location	Raptor Wintering Areas
Turbine Blade Length	Fibre Optic Line	Migratory Bird Transect	Woodland Raptor Nesting Habitat/ Woodland Area Sensitive Bird Breeding Habitat
Tap-in Location	Potential Access Road	Winter Raptor Transect	Woodland Vole Habitat
Junction Box	Access Road 20m Construction Area	Woodland Communities	Terrestrial Crayfish Habitat
Proposed Culvert	Potential Construction Laydown Area	Deer Congregation Areas (MNR)	Turtle Nesting Habitat/ Snapping Turtle Habitat
	Transformer Substation	Landbird Migratory Stopover	Turtle Habitat 30m Buffer

Notes

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Natural Heritage Assessment Report

Figure No.
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Title

Candidate Significant
Wildlife Habitat
Figure 6.58



Migratory Bird Survey Observation Form

REV: 2011-05-03 / FORM 014



Migratory Bird Survey Observation Form

Project Name: NRW

Field Personnel: A. ORR

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	80	0-1	10%	None	None

End Time: 9:10 am

End Point UTM: 1027904 / 4750264

Transect: 4

Feature #: MISA.3

[illegible]

Pg. 1 of 1

Signature:

Andrea Chen
(Field Personnel)

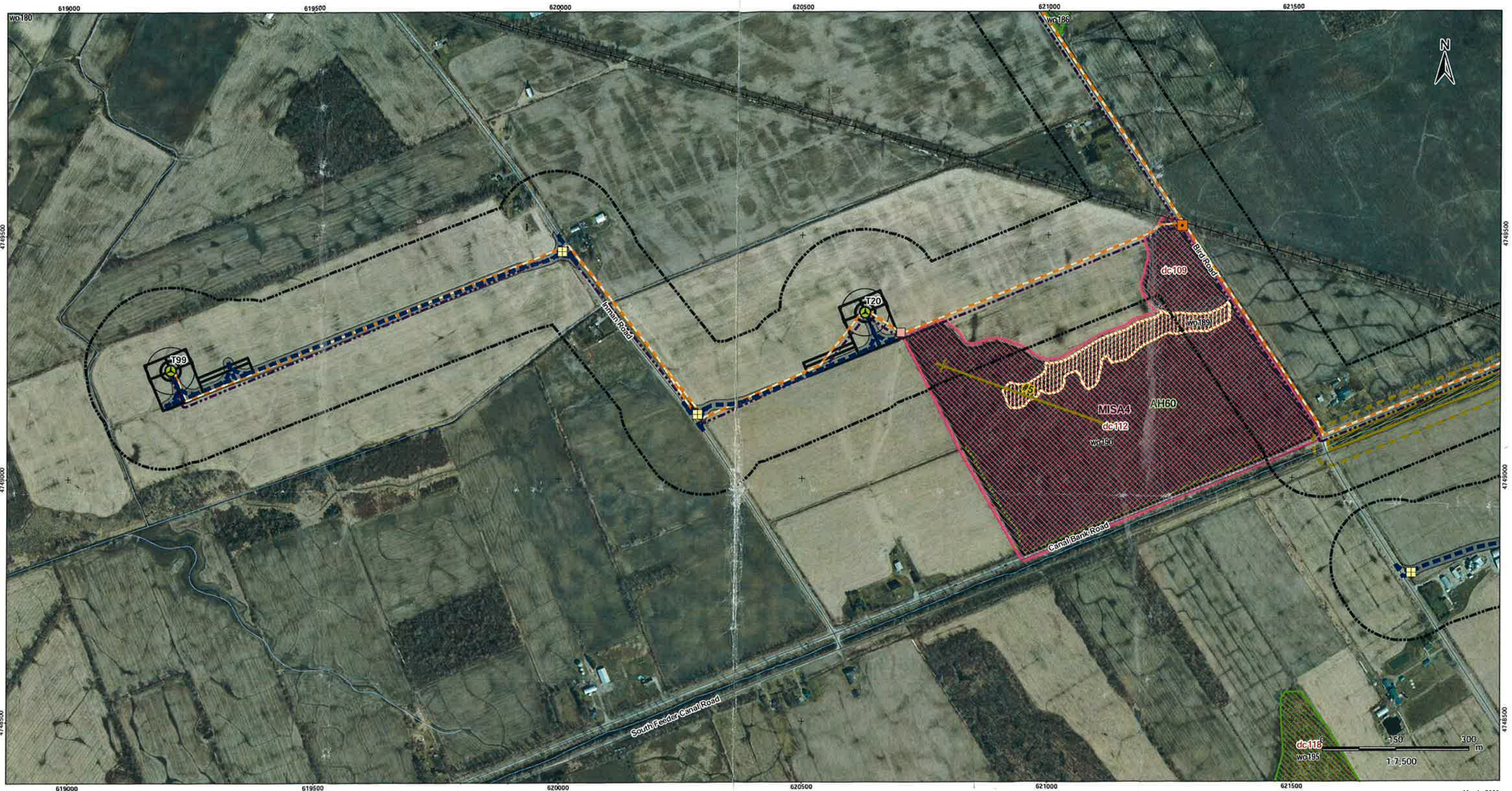
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Signature:

(Project Manager)

REV: 2011-05-03 / FORM 014

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Revised: 2013-03-14 By: pworsell



March, 2013
160950269



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Legend

	Project Study Area		Preferred Transmission Route		Amphibian Breeding Stations		Other Rare Vegetation Community
	Interconnector Study Area		Alternate Transmission Route		Snake Hibernacula		Amphibian Breeding Habitat
	120m Zone of Investigation		Temporary Laydown Area		Snake Hibernacula 30m Buffer		Cliff and Talus Communities
	Proposed Turbine Location		Collector Lines – Underground or Overhead		MBB Point Count Location		Raptor Wintering Areas
	Turbine Blade Length		Fibre Optic Line		Migratory Bird Transect		Woodland Raptor Nesting Habitat/ Woodland Area Sensitive Bird Breeding Habitat
	Tap-In Location		Potential Access Road		Winter Raptor Transect		Woodland Vole Habitat
	Junction Box		Access Road 20m Construction Area		Woodland Communities		Terrestrial Crayfish Habitat
	Proposed Culvert		Potential Construction Laydown Area		Deer Congregation Areas (MNR)		Turtle Nesting Habitat/Snapping Turtle Habitat
			Transformer Substation		Landbird Migratory Stopover		Turtle Habitat 30m Buffer

Notes

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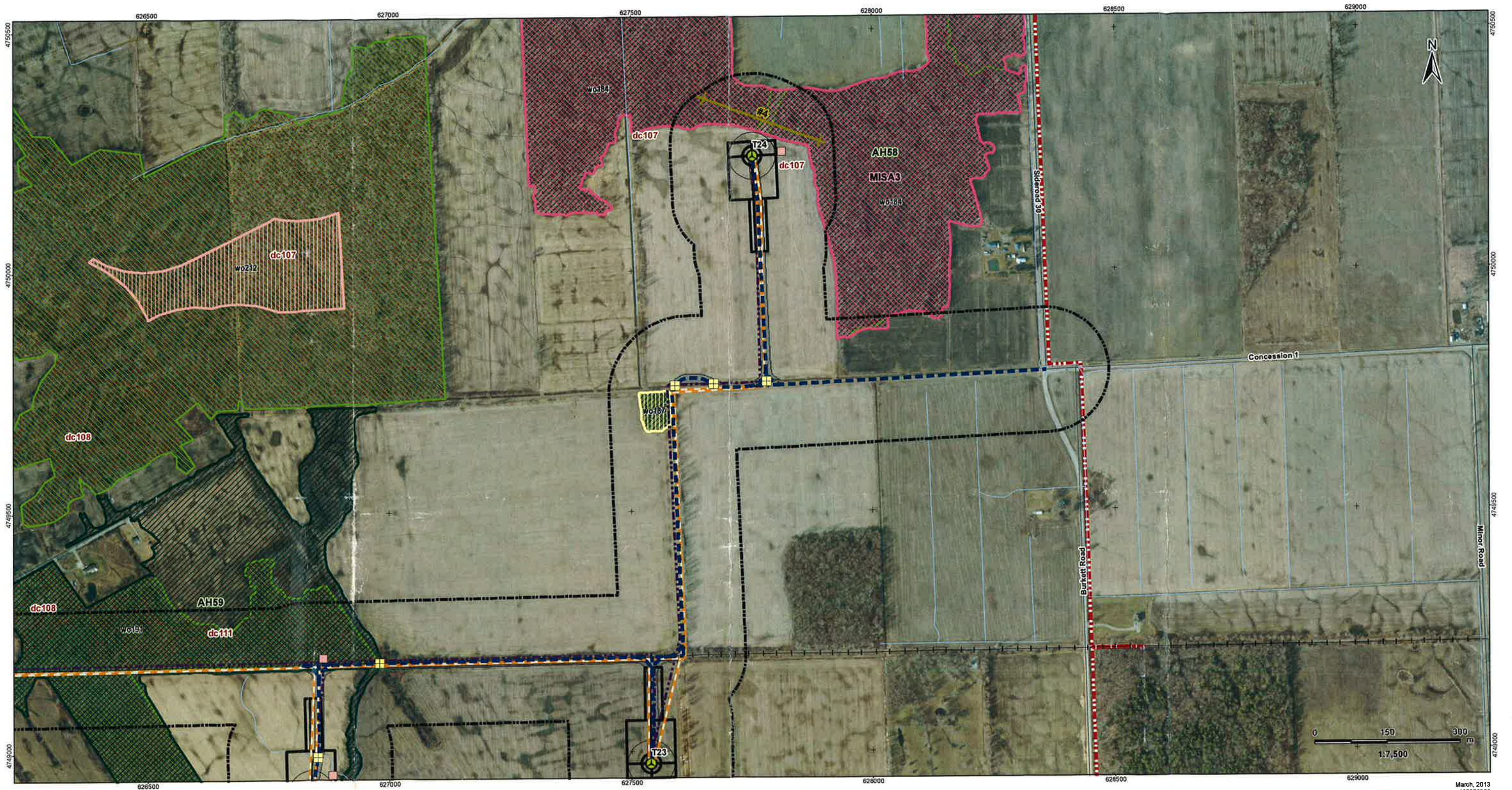
Niagara Region Wind Corporation
Natural Heritage Assessment Report

Figure No.
6.54

Title

Candidate Significant
Wildlife Habitat
Figure 6.54

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Revised: 2013-03-25 By: Cooper



March, 2013
160950269



Stantec

Legend

Project Study Area	Preferred Transmission Route	Amphibian Breeding Stations	Other Rare Vegetation Community
Interconnector Study Area	Alternate Transmission Route	Snake Hibernacula	Amphibian Breeding Habitat
120m Zone of Investigation	Temporary Laydown Area	Snake Hibernacula 30m Buffer	Cliff and Talus Communities
Proposed Turbine Location	Collector Lines - Underground or Overhead	MBB Point Count Location	Raptor Wintering Areas
Turbine Blade Length	Fibre Optic Line	Migratory Bird Transect	Woodland Raptor Nesting Habitat/ Woodland Area Sensitive Bird Breeding Habitat
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Junction Box	Access Road 20m Construction Area	Woodland Communities	Terrestrial Crayfish Habitat
Proposed Culvert	Potential Construction Laydown Area	Deer Congregation Areas (MNR)	Turtle Nesting Habitat/Snapping Turtle Habitat
	Transformer Substation	Landbird Migratory Stopover	Turtle Habitat 30m Buffer

Notes

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Client/Project

Niagara Region Wind Corporation
Natural Heritage Assessment Report

Figure No.
6.58

Title

Candidate Significant
Wildlife Habitat
Figure 6.58



Migratory Bird Survey Observation Form

Project Name: NRWC

Field Personnel: A ORR

PPT (in last 24 hrs):

hair.

End Time: 9:05

End Point UTM: 621138/4749103

Transect: 5

Species

Tally

NO FL

1

KP. 6A

1

BLJA

1

BRCC

1

Waibler - 5p

1

Am R O

1

CELW

111

Pg. 1 of 1

Signature:

Andrea [Signature]
(Field Personnel)

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)

REV: 2011-05-03 / FORM 014



Stantec Consulting Ltd.
1 – 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Migratory Bird Survey Observation Form

Project Number: 11609502169

Project Name: NRWC

Date: Sept. 13, 2013

Field Personnel: A ORR

Weather Conditions:

TEMP (°C):

WIND:

CLOUD:

PPT:

PPT (in last 24 hrs):

11 17

[illegible]

607

None

Rein

Start Time: 7:35 am

End Time: 8.05

Start Point UTM: 6271036 / 4750363

End Point UTM: 627904/4750264

Habitat: FOD

Transect: 4

Feature #: MISA 3

[illegible]

Signature:

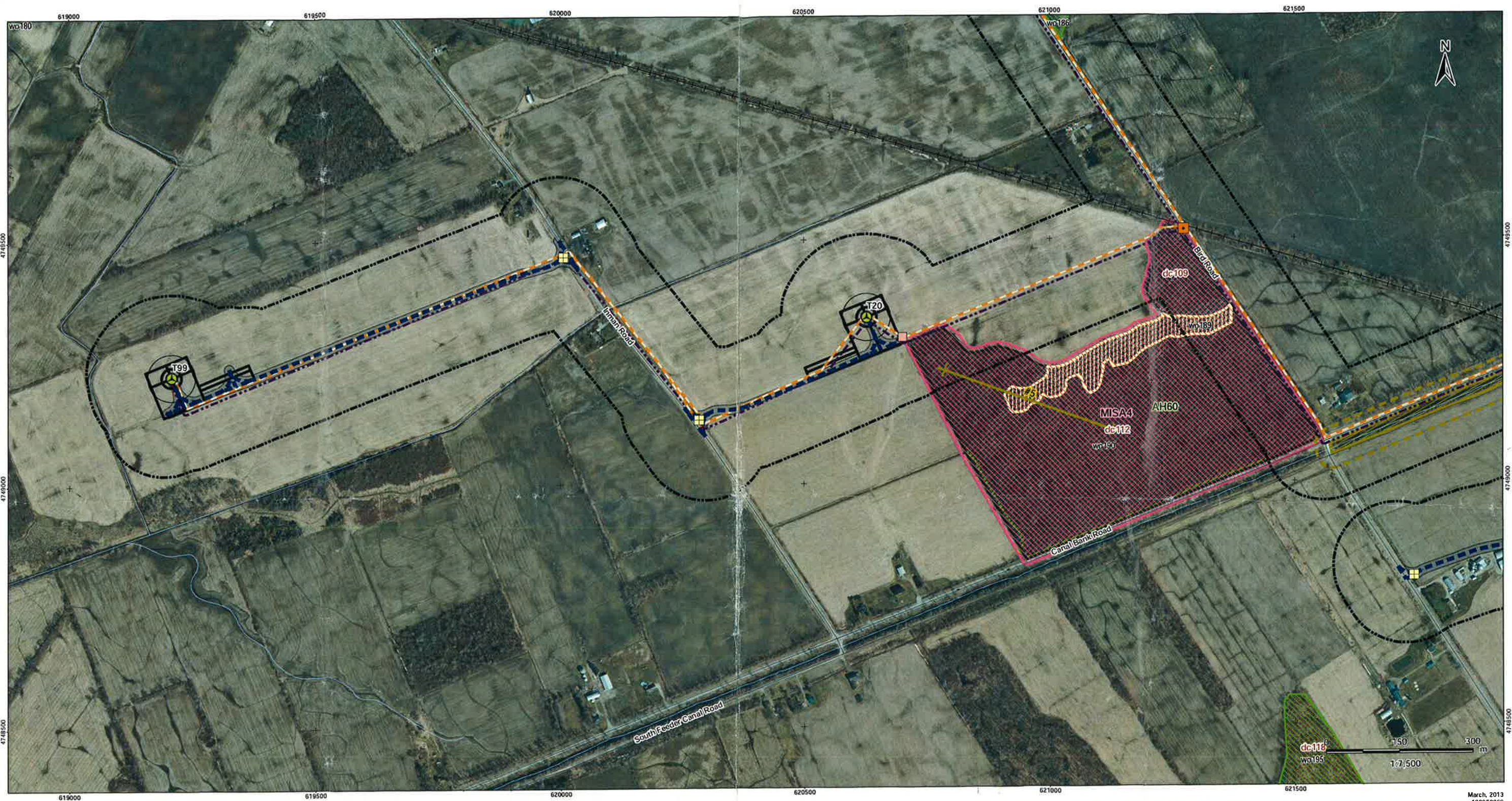
Andrea R.
(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)

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Revised: 2013.03.14 By: pwc/sall



March, 2013
160950269



Stantec

Legend

Project Study Area	Preferred Transmission Route	Amphibian Breeding Stations	Other Rare Vegetation Community	Turtle Wintering Area
Interconnector Study Area	Alternate Transmission Route	Snake Hibernacula	Amphibian Breeding Habitat	Bat Maternity Colonies
120m Zone of Investigation	Temporary Laydown Area	Snake Hibernacula 30m Buffer	Cliff and Talus Communities	
Proposed Turbine Location	Collector Lines - Underground or Overhead	MBB Point Count Location	Raptor Wintering Areas	
Turbine Blade Length	Fibre Optic Line	Migratory Bird Transect	Woodland Raptor Nesting Habitat/ Woodland Area Sensitive Bird Breeding Habitat	
Tap-in Location	Potential Access Road	Winter Raptor Transect	Woodland Vole Habitat	
Junction Box	Access Road 20m Construction Area	Woodland Communities	Terrestrial Crayfish Habitat	
Proposed Culvert	Potential Construction Laydown Area	Deer Congregation Areas (MNR)	Turtle Nesting Habitat/Snapping Turtle Habitat	
	Transformer Substation	Landbird Migratory Stopover	Turtle Habitat 30m Buffer	

Notes

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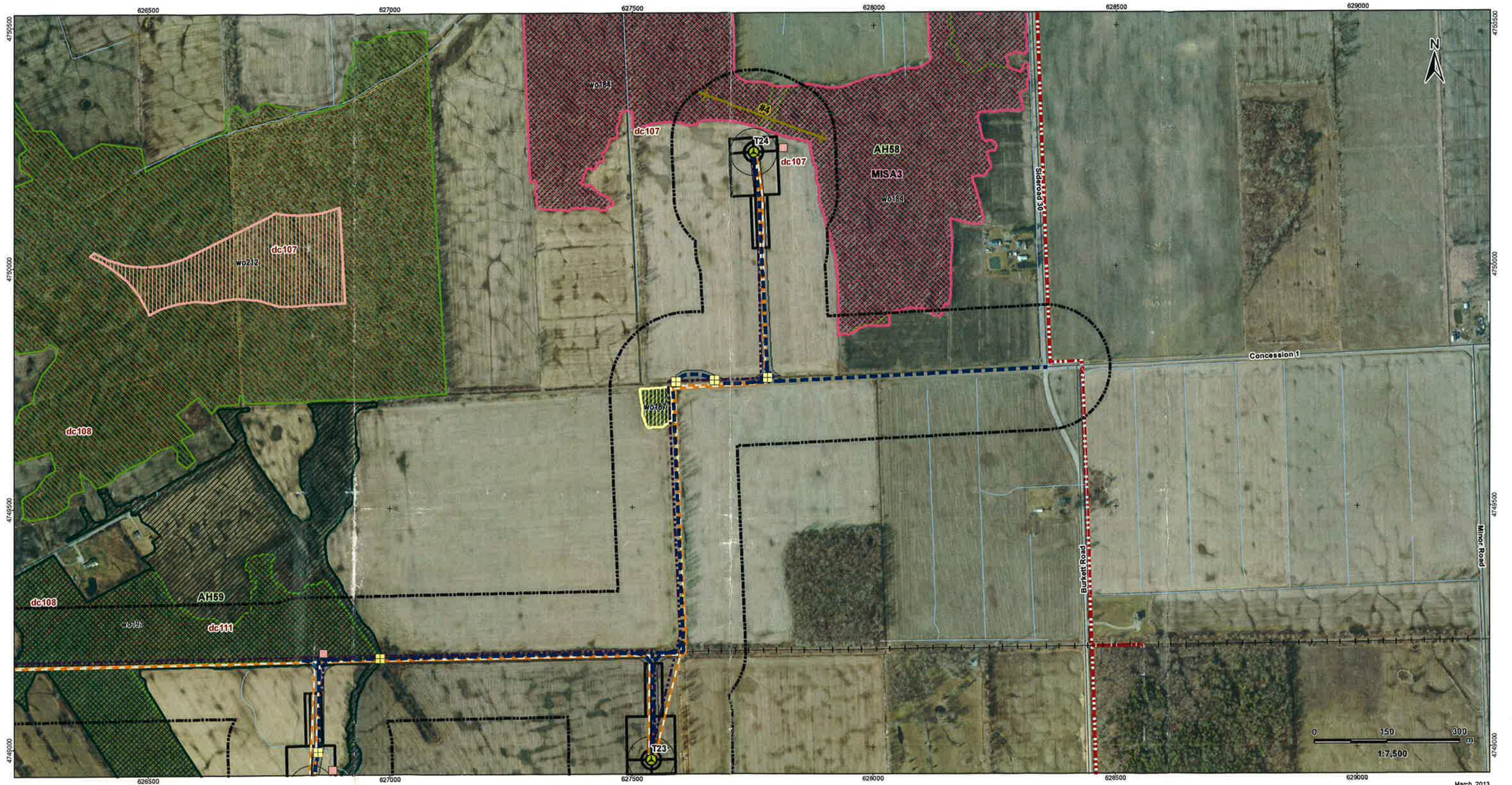


Client/Project
Niagara Region Wind Corporation
Natural Heritage Assessment Report

Figure No.
6.54

Title
Candidate Significant
Wildlife Habitat
Figure 6.54

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Revised: 2013-03-29 By: bcomper



March, 2013
160950289



Stantec

Legend

	Project Study Area		Preferred Transmission Route		Amphibian Breeding Stations		Other Rare Vegetation Community		Turtle Wintering Area
	Interconnector Study Area		Alternate Transmission Route		Snake Hibernacula		Amphibian Breeding Habitat		Bat Maternity Colonies
	120m Zone of Investigation		Temporary Laydown Area		Snake Hibernacula 30m Buffer		Cliff and Talus Communities		
	Proposed Turbine Location		Collector Lines - Underground or Overhead		MBB Point Count Location		Raptor Wintering Areas		
	Turbine Blade Length		Fibre Optic Line		Migratory Bird Transect		Woodland Raptor Nesting Habitat/ Woodland Area Sensitive Bird Breeding Habitat		
	Tap-in Location		Potential Access Road		Winter Raptor Transect		Woodland Vole Habitat		
	Junction Box		Access Road 20m Construction Area		Woodland Communities		Terrestrial Crayfish Habitat		
	Proposed Culvert		Potential Construction Laydown Area		Deer Congregation Areas (MNR)		Turtle Nesting Habitat/Snapping Turtle Habitat		
			Transformer Substation		Landbird Migratory Stopover		Turtle Habitat 30m Buffer		

Notes

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Client/Project

Niagara Region Wind Corporation
Natural Heritage Assessment Report

Figure No.
6.58

Title

Candidate Significant
Wildlife Habitat
Figure 6.58



Stantec Consulting Ltd.
1 – 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Migratory Bird Survey Observation Form

Project Number: 11609502169

Project Name: NRWC

Date: Oct. 17, 2013

Field Personnel: A. ORR

Weather Conditions:

TEMP (°C):

WIND:

CLOUD:

PPT:

PPT (in last 24 hrs):

10°

○

50%

None

from

Start Time: 7:00 am

End Time: 8:20 am

Start Point UTM: 620770 14749236

End Point UTM: 1621138 / 4749103

Habitat: FOD

Transect: 6

Feature #: MISA 4

[illegible]

Pg. 1 of 1

Signature:

Andiea R.
(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)

REV: 2011-05-03 / FORM



Stantec Consulting Ltd.
1 – 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Migratory Bird Survey Observation Form

Project Number: 1609502109

Project Name: NRWC

Date: OCT 17, 2013

Field Personnel: A. ORR

Weather Conditions:

TEMP (°C):

WIND:

CLOUD:

PPT:

PPT (in last 24 hrs):

10.

0

70%

None

Bam

Start Time: 9:00 am

End Time: 9:20 am

Start Point UTM: 1627636 / 4750363

End Point UTM: 627 904 14750264

Habitat: FOD

Transect: 4/

Feature #: MISA 3

[illegible]

Pg. 1 of 1

Signature:

Andrew Orr
(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)

REV: 2011-05-03 / FORM 014



March, 2013
160950269



Stantec

Legend

	Project Study Area		Preferred Transmission Route		Amphibian Breeding Stations		Other Rare Vegetation Community		Turtle Wintering Area
	Interconnector Study Area		Alternate Transmission Route		Snake Hibernacula		Amphibian Breeding Habitat		Bat Maternity Colonies
	120m Zone of Investigation		Temporary Laydown Area		Snake Hibernacula 30m Buffer		Cliff and Talus Communities		
	Proposed Turbine Location		Collector Lines - Underground or Overhead		MBB Point Count Location		Raptor Wintering Areas		
	Turbine Blade Length		Fibre Optic Line		Migratory Bird Transect		Woodland Raptor Nesting Habitat/Woodland Area Sensitive Bird Breeding Habitat		
	Tap-In Location		Potential Access Road		Winter Raptor Transect		Woodland Vole Habitat		
	Junction Box		Access Road 20m Construction Area		Woodland Communities		Terrestrial Crayfish Habitat		
	Proposed Culvert		Potential Construction Laydown Area		Deer Congregation Areas (MNR)		Turtle Nesting Habitat/Snapping Turtle Habitat		
			Transformer Substation		Landbird Migratory Stopover		Turtle Habitat 30m Buffer		

Notes

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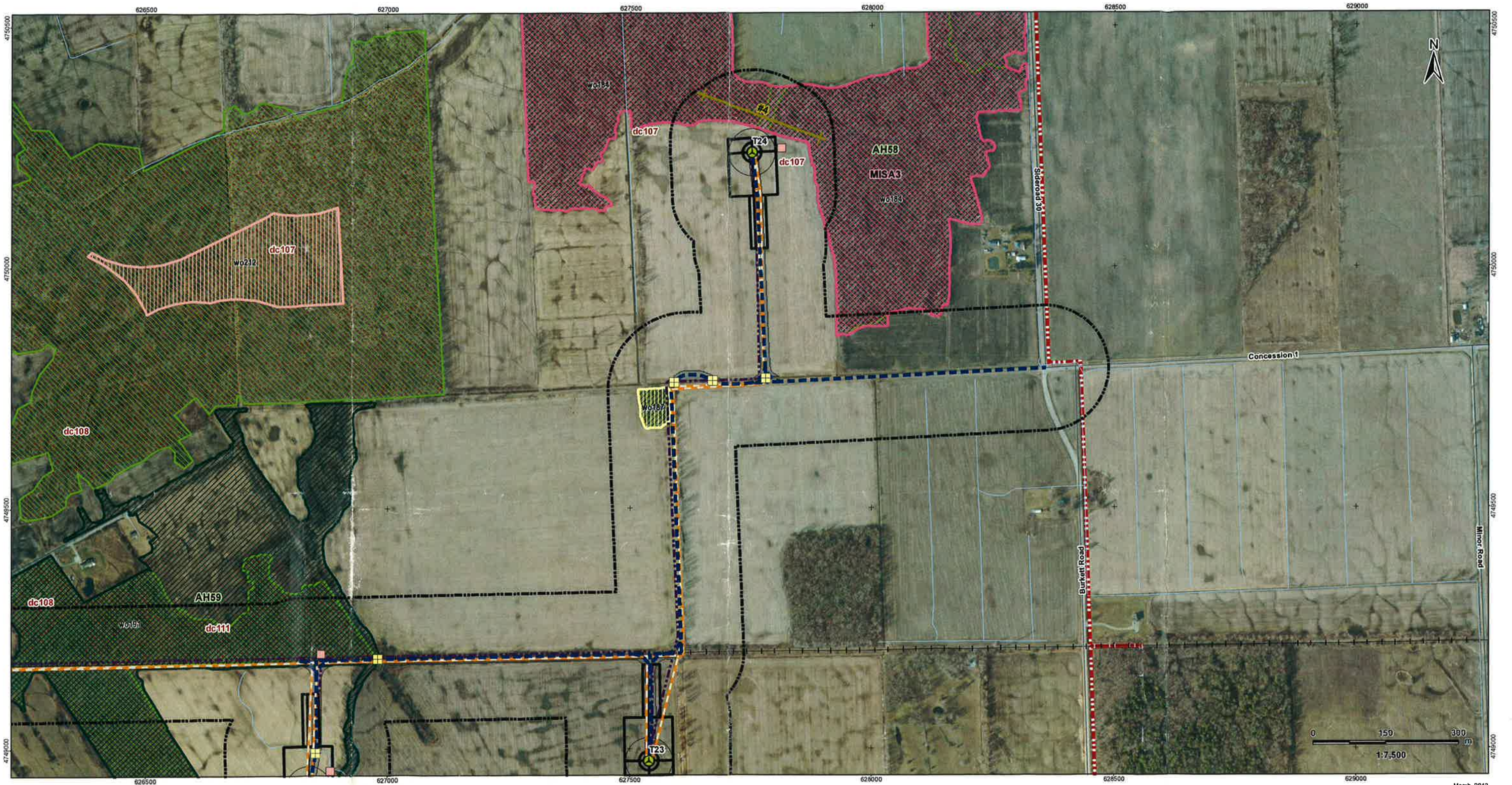


Client/Project
Niagara Region Wind Corporation
Natural Heritage Assessment Report

Figure No.
6.54

Title
Candidate Significant
Wildlife Habitat
Figure 6.54

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Revised: 2013-03-25 By: bcooper



March, 2013
160950269



Stantec

Legend

	Project Study Area		Preferred Transmission Route		Amphibian Breeding Stations		Other Rare Vegetation Community		Turtle Wintering Area
	Interconnector Study Area		Alternate Transmission Route		Snake Hibernacula		Amphibian Breeding Habitat		Bat Maternity Colonies
	120m Zone of Investigation		Temporary Laydown Area		Snake Hibernacula 30m Buffer		Cliff and Talus Communities		Raptor Wintering Areas
	Proposed Turbine Location		Collector Lines – Underground or Overhead		MBB Point Count Location		Woodland Raptor Nesting Habitat/ Woodland Area Sensitive Bird Breeding Habitat		Woodland Vole Habitat
	Turbine Blade Length		Fibre Optic Line		Migratory Bird Transect		Woodland Communities		Terrestrial Crayfish Habitat
	Tap-in Location		Potential Access Road		Winter Raptor Transect		Deer Congregation Areas (MNR)		Turtle Nesting Habitat/Snapping Turtle Habitat
	Junction Box		Access Road 20m Construction Area		Woodland Communities		Landbird Migratory Stopover		Turtle Habitat 30m Buffer
	Proposed Culvert		Potential Construction Laydown Area		Woodland Communities				
			Transformer Substation		Woodland Communities				

Notes

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Niagara Region Wind Corporation
Natural Heritage Assessment Report

Figure No.
6.58

Title

Candidate Significant
Wildlife Habitat
Figure 6.58



Migratory Bird Survey Observation Form

Project Name: NRWC

Field Personnel: A. ORR

Weather Conditions:

TEMP (°C):

130

WIND:

1

CLOUD:

30%

PPT:

None

PPT (in last 24 hrs):

None

Start Time: 8:45 am

End Time: 9:07 am

Start Point UTM: 620770 / 4749236

End Point UTM: 621138/4749103

Habitat: FOD

Transect: 5

Feature #: MISA 4

[illegible]

Pg. 1 of 1

Signature:

Andrea R.
(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)

REV: 2011-05-03 / FORM C



Migratory Bird Survey Observation Form

Project Name: NRW C

Field Personnel: A. ORR

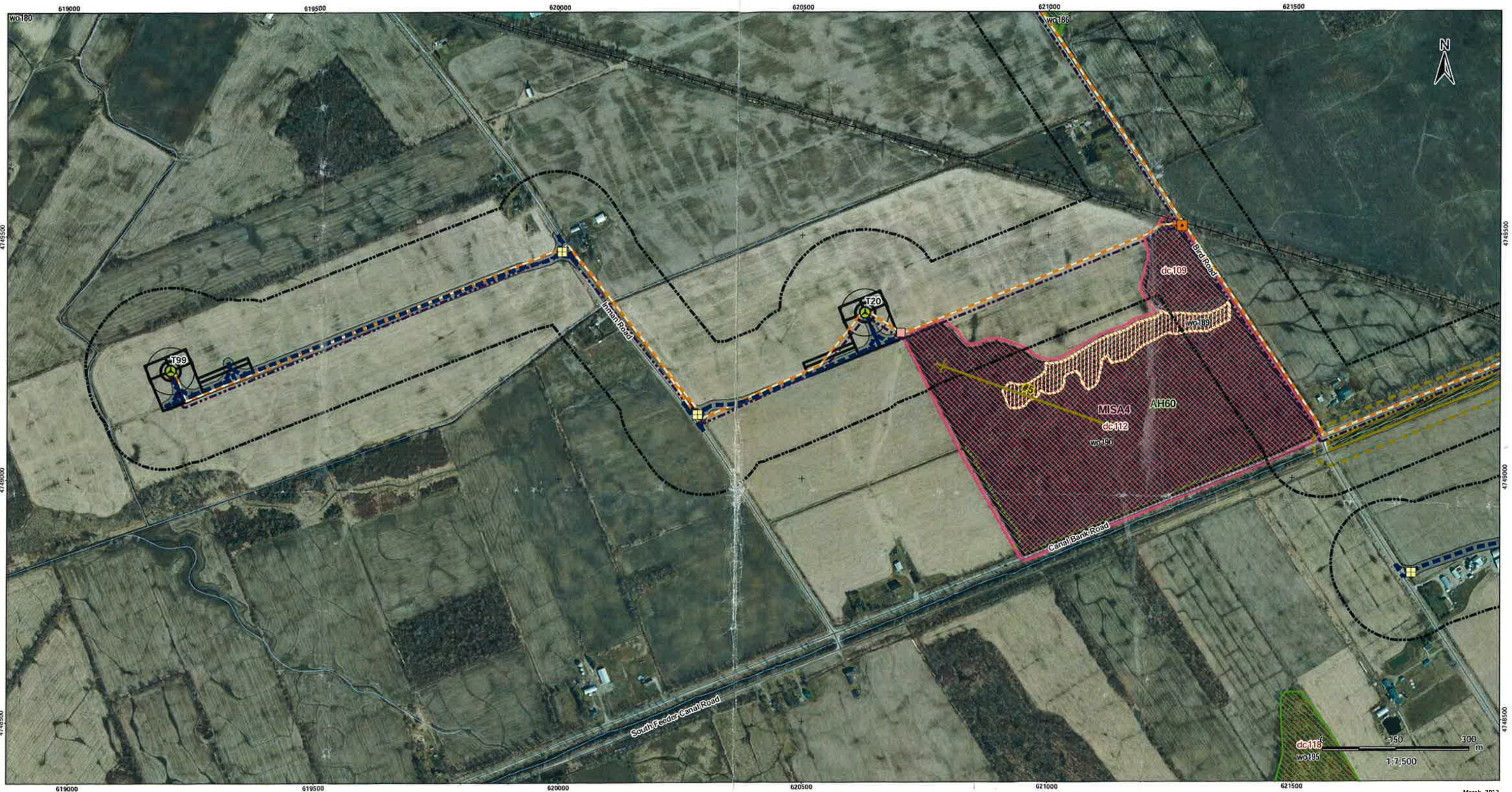
End Time: 8:10

End Point UTM: 1627904 / 4750264

Transect: 4

Feature #: MISA 3

REV: 2011-05-03 / FORM 014



March, 2013
160950269



Stantec

Legend

Project Study Area	Preferred Transmission Route	Amphibian Breeding Stations	Other Rare Vegetation Community	Turtle Wintering Area
Interconnector Study Area	Alternate Transmission Route	Snake Hibernacula	Amphibian Breeding Habitat	Bat Maternity Colonies
120m Zone of Investigation	Temporary Laydown Area	Snake Hibernacula 30m Buffer	Cliff and Talus Communities	
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Turbine Blade Length	Fibre Optic Line	Migratory Bird Transect	Woodland Raptor Nesting Habitat/ Woodland Area Sensitive Bird Breeding Habitat	
Tap-in Location	Potential Access Road	Winter Raptor Transect	Woodland Vole Habitat	
Junction Box	Access Road 20m Construction Area	Woodland Communities	Terrestrial Crayfish Habitat	
Proposed Culvert	Potential Construction Laydown Area	Deer Congregation Areas (MNR)	Turtle Nesting Habitat/Snapping Turtle Habitat	
	Transformer Substation	Landbird Migratory Stopover	Turtle Habitat 30m Buffer	

Notes

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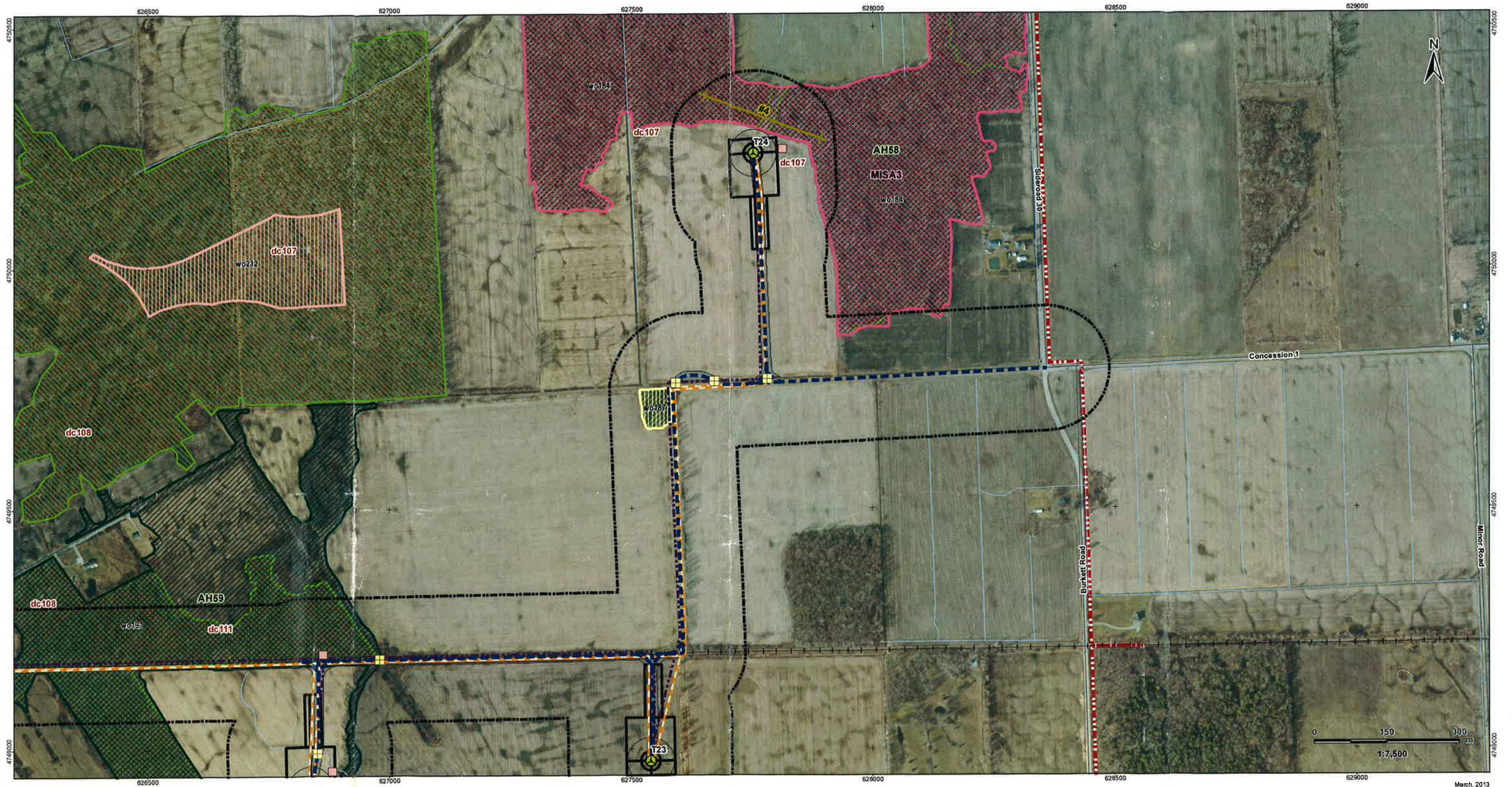
Niagara Region Wind Corporation
Natural Heritage Assessment Report

Figure No.
6.54

Title

Candidate Significant
Wildlife Habitat
Figure 6.54

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Revised: 2013-03-25 By: beaver



March, 2013
160950269



Stantec

Legend

	Project Study Area		Preferred Transmission Route		Amphibian Breeding Stations		Other Rare Vegetation Community		Turtle Wintering Area
	Interconnector Study Area		Alternate Transmission Route		Snake Hibernacula		Amphibian Breeding Habitat		Bat Maternity Colonies
	120m Zone of Investigation		Temporary Laydown Area		Snake Hibernacula 30m Buffer		Cliff and Talus Communities		
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	Turbine Blade Length		Fibre Optic Line		Migratory Bird Transect		Woodland Raptor Nesting Habitat/Woodland Area Sensitive Bird Breeding Habitat		
	Tap-in Location		Potential Access Road		Winter Raptor Transect		Woodland Vole Habitat		
	Junction Box		Access Road 20m Construction Area		Woodland Communities		Terrestrial Crayfish Habitat		
	Proposed Culvert		Potential Construction Laydown Area		Deer Congregation Areas (MNR)		Turtle Nesting Habitat/Snapping Turtle Habitat		
			Transformer Substation		Landbird Migratory Stopover		Turtle Habitat 30m Buffer		

Notes

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Client/Project
Niagara Region Wind Corporation
Natural Heritage Assessment Report

Figure No.
6.58

Title
**Candidate Significant
Wildlife Habitat
Figure 6.58**



Stantec Consulting Ltd.
1 - 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Migratory Bird Survey Observation Form

Project Number: 160950269

Project Name: NRWC

Date: Sep 24 / 2013

Field Personnel: J. Ball

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	8	0	0	NONE	NONE

Start Time: 8:30 am

End Time: 8:45am

Start Point UTM: 0627498/4750338

End Point UTM: 0627750/04750319

Habitat: FOD

Transect: 4

Feature #: MLSA 3

[illegible]

Pg. 1 of 1

Signature:

James Ball
(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)

REV: 2011-05-03 / FORM 014



Stantec Consulting Ltd.
1 - 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Migratory Bird Survey Observation Form

Project Number: 160950269

Project Name: NRWC

Date: Sep 24 / 2013

Field Personnel: J. Ball

Weather Conditions:	TEMP (°C): 8	WIND: 0	CLOUD: 0	PPT: NONE	PPT (in last 24 hrs): NONE
---------------------	-----------------	------------	-------------	--------------	-------------------------------

Start Time: 9:30 am

End Time: 9:50 AM

Start Point UTM: 0620750/4749216

End Point UTM: 0621033/4748993

Habitat: FOD

Transect: 5

Feature #: MLSA 4

[illegible]

Pg. 1 of 1

Signature:

: Jance Ball
(Field Person)

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)

REV: 2011-05-03 / FORM 014



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Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Migratory Bird Survey Observation Form

Project Number: 160950269

Project Name: NRWC

Date: Sep 30/2013

Field Personnel: J Ball

Weather Conditions:

TEMP (°C):

17

WIND:

2

CLOUD:

100

PPT:

NONE

PPT (in last 24 hrs):

unknown

Start Time: 7:32 am

End Time: 7:52 am

Start Point UTM: 0620767/4749230

End Point UTM: 0621133/474099

Habitat: FOD with dense shrub layer

Transect: 5

Feature #: MLSA 4

[illegible]

Signature:

Signature: Jane Ball
(Field Person)

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)



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**Reptile Survey
Observation Form**
hibernacula survey

SH1

Project Number 160950269

Project Name: Niagara Wind Farm

Date / Time: 2:50 PM - 3:10 PM, April 14/2013

Field Personnel: J. Ball

Weather Conditions: Temp: 9 Wind: 1 Cloud: 60% PPT: None PPT in last 24 hrs: Rain

(sunny at
time of survey)

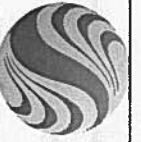
LOCATION	TIME	SPECIES	HABITAT DESCRIPTION	OTHER NOTES
SH1	N/A	None observed	brush piles of varying sizes at the edge of FOD are the hibernacula. Located just off accessible property. Searched accessible property thoroughly including the edge of the ag field and up to the edge of the wetland. Lifted loose bark and other debris. No UTM's taken	

Quality Control: This form is completed & legible ☒

Signature: Jane Ball
(Field Personnel)

Signature: _____
(Project Manager)

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**Reptile Survey
Observation Form**
Hibernacula survey

SH4

Project Number 160950269

Project Name: Niagara Wind Farm

Date / Time: April 14 / 2013 3:55-4:15pm

Field Personnel: J. Ball

Weather Conditions:

Temp:

9

Wind:

2

Cloud:

40%

PPT:

None

PPT in last 24 hrs:

Rain

~~SH4~~ ~~DO NOT ATTEMPT TO CROSS THE BRIDGE~~

LOCATION	TIME	SPECIES	HABITAT DESCRIPTION	OTHER NOTES
17T 0622248/7 4763247	N/A	None observed	Hibernacula is a pile of logs (posts). Searched south side of water body from the shore, up the slope and along the edge of the AG field Photos taken Full sun during entire survey. No debris in the area to check under	

Quality Control: This form is complete & legible

Signature: J. Ball
(Field Personnel)

Signature: _____

(Project Manager)

Page 1 of 1

REV: May 07 FORM 005



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Reptile Survey Observation Form

Project Number 160950269 Project Name: NRWC - Snake Hibernacula Survey
Date / Time: April 15, 2013 Field Personnel: A O R R

Weather Conditions:	Temp: <u>15-20</u>	Wind: <u>0</u>	Cloud: <u>0%</u>	PPT: <u>None</u>	PPT in last 24 hrs: <u>None</u>
---------------------	--------------------	----------------	------------------	------------------	---------------------------------

11:00 - 5pm

LOCATION	TIME	SPECIES	HABITAT DESCRIPTION	OTHER NOTES
SH3	11:20-11:40	N/A	Pile of down woody debris on edge of FOD/ Ag field UTM = 0626997 / 4756547	SPPE / CHFR
SH6	12:50-1:10	N/A	Pile of sand; low high on edge of FOD/ag field UTM = 0623697 / 4753108	SPPE
SH7 - tower?	2:30-2:50	N/A	Old fallen trees? or could be old silo of bricks. UTM = 0619391 / 4754525	Surficial timber used as origin of access. Could not go out 3m. Walk up a down edge of road / cup-3
SH5	3:55-4:15	1EA Garter	Pile of down woody debris in SWT cropn area. UTM = 0624562 / 4763842	SPPE & CHFR Great habitat for "hibernacula"
SH2	4:30-4:50	N/A	Large pile of stones and concrete in middle of Ag field / #444 UTM = 0623872 / 4764440	TUVU & CHFR Great habitat for "hibernacula"

Quality Control: This form is complete () & legible ()

Signature: [Signature]
(Field Personnel)

Signature: _____
(Project Manager)

Page 1 of 1

REV: May 07 FORM 005



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Reptile Survey Observation Form

Basking Turtles

Project Number	160950269	Project Name:	NRWC - Basking Turtles.		
Date / Time:	April 15, 2013	Field Personnel:	A. ORR		
Weather Conditions:	Temp: 15	Wind: 2	Cloud: 30%	PPT: None	PPT in last 24 hrs: None

LOCATION	TIME	SPECIES	HABITAT DESCRIPTION	OTHER NOTES
TL1	3:35	N/A	Welland River - along Rd. See photos. 06211619 / 4761185.	GBHE, CAGO

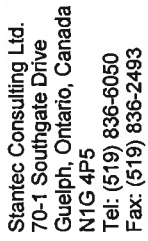
Quality Control: This form is complete () & legible ().

Signature: [Signature]
(Field Personnel)

Signature: _____
(Project Manager)

Page 1 of 1

REV: May 07 FORM 005



Reptile Survey Observation Form

Project Number	160450269		Project Name:	NBWC.	
Date / Time:	May 21, 2013		Field Personnel:	A ORR	
Weather Conditions:	Temp:	23-26°	Wind:	2-3	
			Cloud:	60-80%	
			PPT:	None	
					PPT in last 24 hrs:
					T. Storm

Start 10 am - 4 pm

LOCATION	TIME	SPECIES	HABITAT DESCRIPTION	OTHER NOTES
SH1	10:20-10:40	—	Pile of sticks/logs in forest edge (FOD)	Incidentals: <u>WAVI</u> , <u>WAGO</u> ,
SH2	11:05-11:25	—	Pile of rocks/mosses on log fire	Incidentals: <u>BOBO</u> , <u>TUNU</u> , <u>RUBEL</u> , <u>SOSP</u> , <u>KILL</u> ,
SH5	11:30-11:50	—	Pile of sticks/logs in forest edge	Sungate, then side of road in across. <u>WAVA</u>
SH4	12:10-12:30	—	Pile of logs in forest edge	Incidentals: <u>RUBEL</u> , <u>WAVI</u> , <u>SOSP</u> , <u>ANAL</u>
Basking Turtles / Wetland River	1:00-1:20	—	0022354 / 4761432	Incidentals: <u>BOBO</u> , <u>RUBEL</u> , <u>BARB</u>
SH3	1:35-1:55	—	Pile of sticks/logs in FOD	Incidentals: <u>TUNU</u> , <u>RUBEL</u> , <u>WAVI</u>
SH7	2:00-2:20	—	Down logs, pile of sticks, old forest edge	Sungate, then side of road in across

Quality Control: This form is complete () & legible ().

Signature:

(Field Personnel)

Signature:

Page 1 of 2 (Field Personnel)

(Project Manager)



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Turtle Overwintering and

Snake Hibernacula Surveys May 2/2013

160950269 Niagara Wind Farm

J. Ball

SH6 10:45-11:00am

Temp = 18°C Wind = 1 Cloud = 0 Precip = 0

Searched 30m on either side of SH6 along the Ag field. Did not enter crops as I did not wish to trample them. Searched 30m into the upland deciduous forest. Did not focus on the wet, lowland forest areas. No snakes observed.

SH3 11:35-11:55

Temp = 19°C Wind = 2 Cloud = 0 Precip = 0

17T 0620881/4756520 small brown snake observed within 100m of SH3. Observed on tractor trail within Ag field. Searched the upland forest within 30m of potential hibernacula as well as the edge of the Ag field. There are several brush piles. I focused on brush piles on the south side of the woodlot as piles of the north side were in wet, low-lying areas. Snake observed.

SH7 12:25-12:35

Temp 21°C Wind = 2 Cloud = 0 Precip = 0

No direct access. Searched entire shoulder of road along the length of the CUP3. Looked into the edge of CUP3 for snakes. No snakes observed.

Turtle Survey (Transmission Line Across River) (weather condition same as above)
12:50-13:05 17T 0622333/4761361

No turtles observed. Searched 120m of either side of proposed Transmission Line with focus on logs for basking (and riverbank).

Designed by:

Checked by:



Snake Hibernacula Surveys May 2/2013

160950269 Niagara Wind Farm J. Ball

Weather: Temp 23°C Wind=2 Cloud=0 Precip=0

SH5 13:40-13:45

searched lawn, swamp thicket and meadow marsh (within 30m of hibernaculum)
Concentrated on areas closest to hibernacula. No snakes found. Need to confirm whether we have access.

SH2 13:55-14:15

searched area surrounding old foundation including Ag field, manure pile (although I did not climb it), meadow marsh and road. No snakes observed - Photos taken.

SH4 14:30-14:50

searched sloped area up to the Ag field. Searched both side of bridge (north side up to the electric fence) since the Snake hibernacula identified may have originally included the bridge foundation. No Snakes observed.

SH1 15:30-15:50

Searched accessible area and edge of Ag field. No Snakes observed. Photo taken.



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(OVER-WINTERING
TURTLES) Reptile Survey
Observation Form

Project Number 160950269 Project Name: Niagara Wind Farm

Date / Time: April 18/2013 11:00-11:15 Field Personnel: J. Ball

Weather Conditions: Temp: 25 Wind: 2 Cloud: 80% PPT: NONE PPT in last 24 hrs: NONE

(sunny during survey)

LOCATION	TIME	SPECIES	HABITAT DESCRIPTION	OTHER NOTES
120m search on either side of transmission line	11:00-11:15	N/A	some logs for basking in water. As field all the way to river bank on north side thicket to edge of river on north side, checked logs and bank for basking turtles - none found	
0622459/4761388				

Quality Control: This form is complete & legible (✓)

Signature: J. Ball
(Field Personnel)

Signature: _____
(Project Manager)

Page 1 of 1

REV: May 07 FORM 005



Site Visit Record

TH62

Project Name: Niagara Wind Farm

Field Personnel: J. Ball

N/A

[illegible]

Quality Control: This form is complete () & legible ().

Signature: [Signature]
(Field Personnel)

Signature: _____

(Project Manager)

Page 10 of 11

REV: May, 07 Form 028



Site Visit Record

TH 28/TH 29

Project Name: Niagara Wind Farm

Field Personnel: J. Ball

PPT in last 24 hrs:

N/A

REV: May, 07 Form 028

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Site Visit Record

TH38

Project Number 1609 50269

Project Name: Niagara Wind Farm

Date / Time: June 10/2013

Field Personnel: J. Ball

Weather Conditions:

Temp:

9

Wind:

1

Cloud:

100%

PPT:

NONE

PPT in last 24 hrs:

N/A

[illegible]

Quality Control: This form is complete () & legible ().

Signature: Janet Ball

Signature: _____

(Field Personnel)

(Project Manager)

Page 9 of 1

REV: May, 07 Form 028



Site Visit Record

TH21

Project Name: Niagara Wind Farm

Field Personnel: J. Bal

N/A

[illegible]

Quality Control: This form is complete () & legible ().

Signature: [Signature]
(Field Personnel)

Signature: _____
(Project Manager)

Page 1 of 1

(Project Manager)
REV: May, 07 Form 028



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Site Visit Record

TH69

Project Number 160950269

Project Name: Niagara Wind Farm

Date / Time: June 10/2013

Field Personnel: J. Ball

Weather Conditions:

Temp:

70

Wind:

1

Cloud:

100

PPT:

NONE

PPT in last 24 hrs:

N/A

[illegible]

Quality Control: This form is complete () & legible ().

Signature: Janice Ball
(Field Personnel)

Signature: _____
(Project Manager)

Page 10 of 11

(Project Manager)
REV: May, 07 Form 028



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Site Visit Record

TH39 / TH40

Project Number 160950269

Project Name: Niagara Wind Farm

Date / Time: June 10/2013

Field Personnel: J. Ball

Weather Conditions:

Temp:

Wind:

Cloud:

PPT:

PPT in last 24 hrs:

19

1

100%

light rain

N/A

[illegible]

Quality Control: This form is complete () & legible ().

Signature: James Bell
(Field Personnel)

Signature: _____
(Project Manager)

Page 1 of 1

REV: May, 07 Form 028



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Site Visit Record

T#41

Project Number 160950269

Project Name: Niagara Wind Farm

Date / Time: June 10/2013

Field Personnel: J. Ball

Weather Conditions:

Temp:

Wind:

Cloud:

PPT:

PPT in last 24 hrs:

19

1

1000

RAIN

N/A

[illegible]

Quality Control: This form is complete () & legible ().

Signature: [Signature]
(Field Personnel)

Signature: _____
(Project Manager)

Page 10 of 10

(Project Manager)
REV: May, 07 Form 028



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Site Visit Record

TH9 / TH10

Project Number 160950269

Project Name: Niagara Wind Farm

Date / Time: June 10/2013

Field Personnel: J. Ball

Weather Conditions:

Temp:

20

Wind:

1

Cloud:

100

PPT:

light rain

PPT in last 24 hrs:

N/A

[illegible]

Quality Control: This form is complete () & legible ().

Signature: Janice Ball
(Field Personnel)

Signature: _____
(Project Manager)

Page 10 of 11

(Project Manager)
REV: May, 07 Form 028



Site Visit Record

Field Personnel: Melissa Cameron

PPT in last 24 hrs:
> 5mm

(Project Manager)
REV: May, 07 Form 028



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Site Visit Record

Project Number _____

Project Name: NWRC

Date / Time: June 11, 2013

Field Personnel: Melissa Cameron

Weather Conditions:

Temp: 22 °C

Wind: 2

Cloud: 90%

PPT: ☒

PPT in last 24 hrs:
 > 5 mm

[illegible]

Quality Control: This form is complete () & legible ().

Signature: Melina Canine
(Field Personnel)

Signature: _____
(Project Manager)

Page 2 of 5

REV: May, 07 Form 028



Site Visit Record

Project Name: NWRC

Field Personnel: Melissa Cameron

Temp:
24 °C

0000-0001-9687-456X

20%

 $\emptyset$

$> 5_{\text{min}}$

REV: May, 07 Form 028



Site Visit Record

Field Personnel: McGessa Cameron

PPT in last 24 hrs:
7.5 mm

(Project Manager)
REV: May, 07 Form 028



Site Visit Record

Field Personnel: Melissa Cahner

Weather Conditions:	Temp: 22°C	Wind: 0	Cloud: 80%	PPT: 0	PPT in last 24 hrs: 75mm
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[illegible]

(Project Manager)
REV: May, 07 Form 028