



March 29, 2018

**Via: Email**

Mr. Mike Poskin  
A/ Renewable Energy Coordinator  
Ministry of Natural Resources and Forestry  
Regional Resources Section – Southern Region  
300 Water Street  
Peterborough Ontario K9J 8M5

Dear Mr. Poskin:

**Re: Grand Bend Wind Farm Disturbance Monitoring Year 1  
Project No.: PIA019991.0005**

Grand Bend Wind GP Inc. as a general partner for and on behalf of Grand Bend Limited Partnership, operates a 100 MW wind facility located north of Grand Bend, Ontario. Renewable Energy Approval (REA) (Number 5186-9HBJXR) was issued by the Ministry of the Environment (now the Ministry of the Environment and Climate Change or “MOECC”) on June 26, 2014 prepared under Ontario Regulation 359/09 of the *Environmental Protection Act*.

The project is classified as a Class 4 Wind facility under the Regulation. The Grand Bend Wind Farm (“the Project”) is in Huron County, spanning the lower-tier municipalities of Bluewater and Huron South. Portions of the transmission line also traverse the municipality of Huron East and municipality of West Perth in Perth County. The Project Study Area is provided in Figure 1.

The basic project components include 40 turbines (Siemens SWT-3.0-113 direct drive wind turbine generators limited to produce 2.48 MW turbines each, with a total nominal name plate capacity of 100 MW), turbine access roads, a 36 kV electrical collection system, substation, a parts and storage (office / maintenance) building, a new buried transmission line within municipal road right-of-ways along Sararas Road, Rodgerville Road, and Road 183 with connection to the provincial power grid at the 230 kV transmission line south of the Seaforth Transformer Station.

Two significant natural heritage features were identified within 120 m of the Project Study Area which requires post-construction disturbance monitoring, as summarized in Table 1 below. As per Condition L3 of the REA, “The Company shall implement the post-construction monitoring described in [Neeagan Burnside’s] Environmental Effects Monitoring Plan (February 2013) described in Condition L1, including the following:

1. Disturbance Monitoring for Amphibian Breeding Habitat (ABH-001)
2. Disturbance Monitoring for Turtle Nesting Area (TNA-002).

Table 1 outlines the frequency and duration of monitoring for each significant natural feature as well as the potential contingency plans required for each significant feature detected. This summary table is based on Table 2.2 found in the Environmental Effects and Monitoring Plan.

Figure 1: The Project Study Area



**Table 1: Significant Features Subject to Post-Construction Habitat Monitoring**

Feature Type	# of Features	Feature Identifiers	Frequency and Duration of Post Construction Sample Collection	Technical and Statistical Value of Data	Contingency Measure
Turtle Nesting Areas	1	TNA-002  <b>Potential Negative Environmental Effects:</b> Collision between turtles and maintenance vehicles.	Records of collisions will be kept only if collisions occur.  Two years of habitat monitoring will be conducted on three separate occasions in late May, mid-June and early-July between 7 p.m. and 10 p.m..	Determine if there is significant mortality related to turtle/vehicle collisions during first 2 years of operations.  Determine if there is any change in the use of the habitat.	Upon submission of annual post-construction reports to MNRF it will be determined whether contingency measures are required and the contingency measures to be undertaken.
Amphibian Breeding Habitat (Woodland)	1	ABH-001  <b>Potential Negative Environmental Effects:</b> Habitat Displacement or Avoidance	Surveys will be conducted between one-half hour after sunset and midnight during each of the following three periods in 2017 and 2018:  <ul style="list-style-type: none"> <li>• April 15-30</li> <li>• May 15-30</li> <li>• June 15-30</li> </ul>	Determine if there is a displacement or avoidance effect caused by turbines located in proximity to amphibian breeding habitat.	Upon submission of annual post-construction reports to MNRF it will be determined whether contingency measures are required.  May include additional monitoring to determine cause of decline, possible turbine shut-down or blade feathering during breeding season.  Additional 2 years of monitoring if significant effects are observed.

As stated in the REA, Condition 11: “The Company shall report, in writing, the results of the post-construction disturbance monitoring described in Conditions L3, to the Director [of the MOECC] and the MNRF for two (2) years on an annual basis and within three months of the end of each calendar year in which the monitoring took place.”

The following describes Burnside’s methodology and results of the post-construction habitat monitoring in 2017.

## **Methodology**

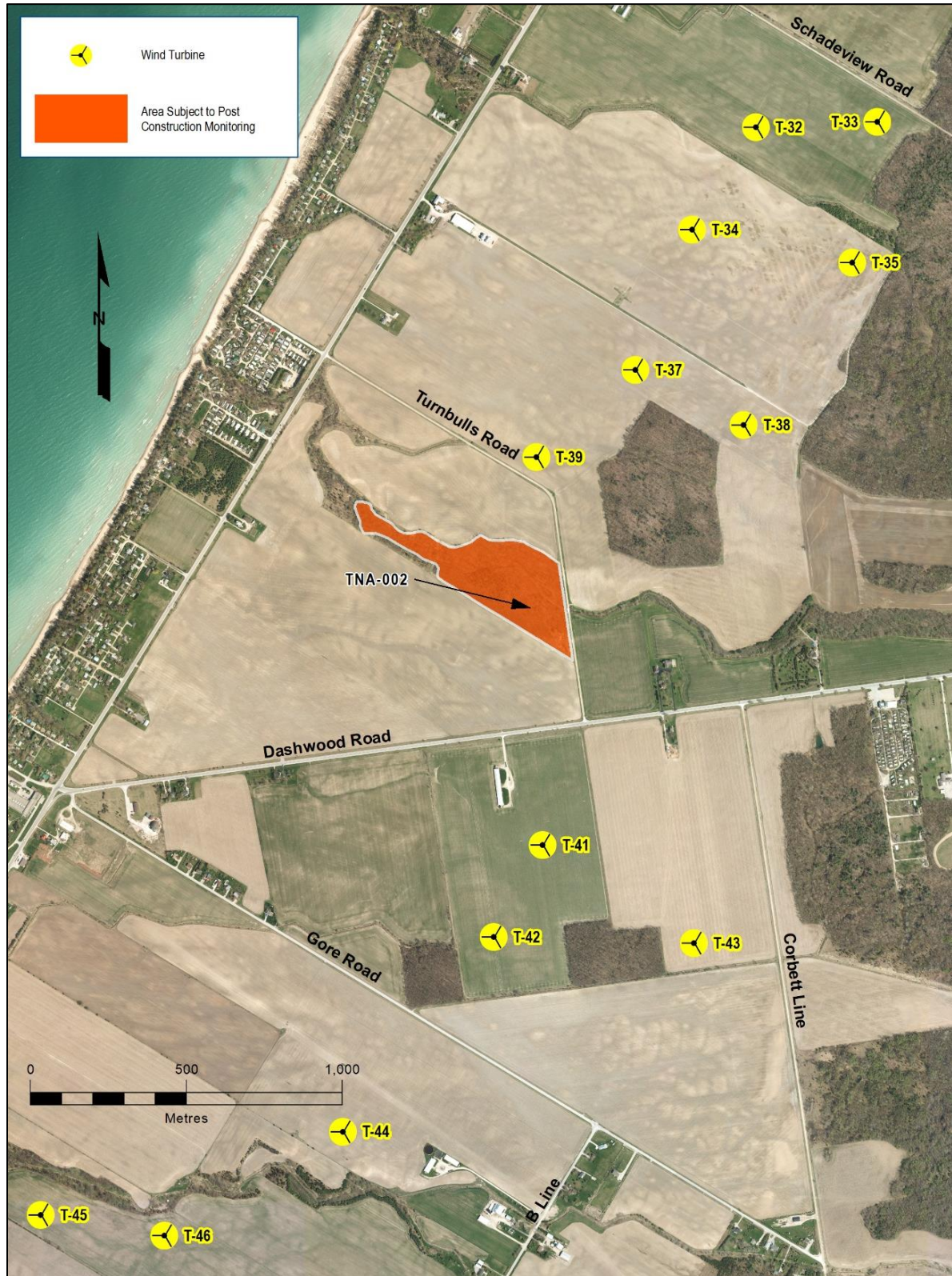
### ***Disturbance Monitoring for Turtle Nesting Areas: TNA-002***

Disturbance monitoring for Turtle Nesting Area TNA-002 was conducted on May 23, and June 14, 2017 around the Turnbull’s Road bridge and downstream of the dam under the bridge to approximately 180 m, as shown on Figure 2. Suitable weather conditions for turtle nesting were observed during the period of investigation as confirmed by other terrestrial ecologists in Southern Ontario. Typical conditions during all surveys were associated with significant warming trends ( $>14^{\circ}\text{C}$ ) and humid evenings during recommended time periods (7 to 10 p.m.). Based on the variability of suitable nesting habitat conditions within watercourses (changes to banks and morphology) nest locations may change from year to year. Survey methodology related to monitoring turtle nesting sites is based on observation of soil disturbance, digging, remnant shells, sun exposure, suitable soils and evidence of “scrapes” and scat.

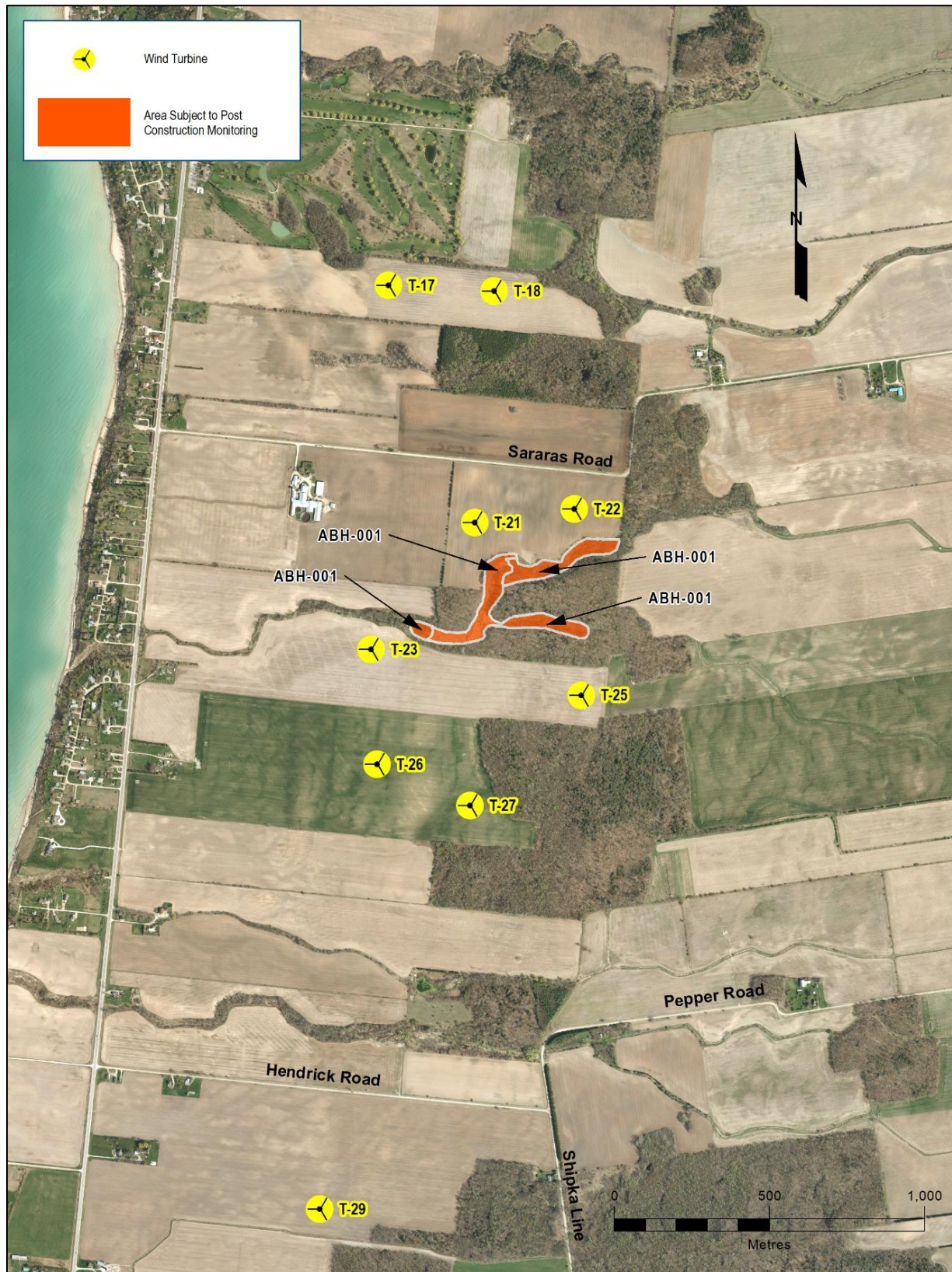
### ***Disturbance Monitoring for Amphibian Breeding Habitat (Woodland): ABH-001***

Amphibian surveys were conducted on April 19, May 23, and June 14, 2017 at ABH-001, as shown on Figure 3. This disturbance monitoring station is associated with a pond/wetland feature described in Table 1. The man-made pond northeast of T-23 was identified as significant amphibian breeding habitat based on the conclusions of Neegan Burnside’s Evaluation of Significance Report (February 2013). Access to the monitoring site was obtained from the Grand Bend Wind Farm turbine access road located off the Bluewater Highway #21. Breeding amphibian surveys were conducted according to Environment Canada’s Marsh Monitoring Program protocol (Bird Studies Canada). The locations and timing of these observations are summarized in Table 2 below.

Figure 2: Location of TNA-002



**Figure 3: Location of ABH-001**



**Table 2: Summary of Amphibian Survey Methodology and Weather Conditions in 2017**

Field Study	Methodology	Observer	Date(s)	Time(s)	Weather Conditions		
					Precipitation/ Cloud Cover <sup>1</sup>	Avg. Temp.	Wind <sup>2</sup>
Amphibian Call Survey #1	Point count surveys completed according to the Marsh Monitoring Protocol (MMP).	Chris Pfohl, C.E.T., EP, Aquatic Ecologist	2017-04-19	2000-2030	2	11°C	1
Amphibian Call Survey #2	Point count surveys completed according to the Marsh Monitoring Protocol (MMP).	Chris Pfohl, C.E.T., EP, Aquatic Ecologist	2017-05-23	2030-2130	2	18°C	1
Amphibian Call Survey #3	Point count surveys completed according to the Marsh Monitoring Protocol (MMP).	Chris Pfohl, C.E.T., EP, Aquatic Ecologist	2017-06-14	2100-2130	1	26°C	3

**1NAAMP/ Beaufort Sky Codes**

- 0 = clear (no cloud cover)
- 1 = partly cloudy (scattered or broken) or variable
- 2 = cloudy or overcast
- 3 = sandstorm, dust storm or blowing snow
- 4 = fog, smoke, thick dust, or haze
- 5 = drizzle or light rain
- 6 = rain
- 7 = snow or snow/rain mix
- 8 = showers
- 9 = thunderstorms

**2Beaufort Wind Scale**

- 0 = calm, smoke rises vertically (0-2km/hr)
- 1 = Light air movement, smoke drifts (3-5)
- 2 = Slight breeze, wind felt on face; leaves rustle (6-11)
- 3= Gentle breeze, leaves & twigs in constant motion (12-19)
- 4= Moderate breeze, small branches moving, raises dust & loose paper (20-30);
- 5= Fresh breeze, small trees begin to sway (31-39)
- 6= Strong breeze, large branches in motion (40-50)

## Results

### ***Disturbance Monitoring for Turtle Nesting Areas: TNA-002***

Two evening surveys were completed at TNA-002 adjacent to Turnbull's Road to confirm the presence and/or changes to turtle nesting habitat as outlined in the Environmental Effects and Monitoring Plan (February 2013). Based on the observations, no turtle nesting was observed within the area of TNA-002 although the potential for changes to individual site selection can occur. Snapping Turtles can select various nesting sites depending on location and conditions that aren't related to impacts from the wind farm. Due to the observed conditions and effort to locate nesting sites during prime nesting conditions, the third site visit was not completed in early July. In 2018, it is recommended that one survey occur in late May and two surveys occur in June. No turtle collisions were recorded during construction or during the first year of operations in 2017. The habitat has not changed as a result of the construction or operations at the wind farm facility.

### ***Disturbance Monitoring for Amphibian Breeding Habitat (Woodland): ABH-001***

Three evening surveys were completed at ABH-001 adjacent to T-23 to confirm the presence and estimated abundance of breeding frog species as outlined in the Environmental Effects and Monitoring Plan (February 2013). Amphibians recorded at the monitoring station included Spring Peeper (*Pseudacris crucifer*), Northern Leopard Frog (*Rana pipiens*), Gray Tree Frog (*Hyla versicolor*), and Green Frog (*Rana clamitans*).

A total of four amphibian species were recorded at ABH-001, similar to background surveys conducted prior to construction. Monitoring observations concluded that the Spring Peeper and Gray Treefrog calling levels were louder than the noise from the turbine blade rush. Based on a review of previous monitoring results from the same observation point, there have been no changes to the call frequency (Code 3) and number of species present during the three observation periods (April, May and June) in 2017. All species observed are ranked S5 (very common and secure in Ontario). Amphibian call survey results are summarized in Table 3 below.

**Table 3: Summary of Amphibian Call Survey Results for Surveys Completed at ABH-001 in 2017.**

Survey No.	Station ID	Species Observed (Common and Scientific Names)	Call Level Code <sup>1</sup>	Abundance Count <sup>2</sup>	Notes
1	ABH-001	Spring Peeper	3	TMTC	Low background blade rush noise; Spring Peeper calls louder than blade rush
2	ABH-001	Spring Peeper	3	TMTC	Low background blade rush noise; Spring Peeper calls louder than blade rush
	ABH-001	Gray Treefrog	3	TMTC	Low background blade rush noise; Gray Treefrog calls louder than blade rush



Survey No.	Station ID	Species Observed (Common and Scientific Names)	Call Level Code <sup>1</sup>	Abundance Count <sup>2</sup>	Notes
	ABH-001	Northern Leopard Frog	1	1	Low background blade rush noise
3	ABH-001	Gray Treefrog	2	7	Low background blade rush noise, windier than last visit
	ABH-001	Green Frog	2	8	Low background blade rush noise, windier than last visit

1 1 = individuals can be counted, calls not simultaneous; 2 = calls distinguishable, some simultaneous calling; and 3 = full chorus, calls continuous and overlapping.  
2 TMTTC = too many to count

Based on the amphibian monitoring results for 2017, no changes to the operation of the turbines in the vicinity of ABH-001 are proposed.

### Contingency Measures

Based on the results of the 2017 monitoring for ABH-001 and TNA-002 no contingency measures are proposed at this time. Both monitoring stations (TNA-002 and ABH-001) will be surveyed again in 2018, based on the proposed monitoring protocol.

Yours truly,

**R.J. Burnside & Associates Limited**



Chris Pfohl, C.E.T., EP, CAN-CISEC  
Sr. Aquatic Ecologist  
CP:sd

cc: Mr. Mohsen Keyvani, Ministry of Environment and Climate Change (Via: Email)  
Mr. Jim Mulvale, Northland Power Inc. (Via: Email)

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