NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Jericho Wind Energy Centre

2017 Wildlife Behaviour Monitoring

Natural Resource Solutions Inc. (NRSI) conducted post-construction monitoring at the operational Jericho Wind Energy Centre (Jericho WEC) located in the Municipality of Lambton Shores and the Township of Warwick, Lambton County, Ontario. This wind energy project has a generating capacity of 150MW and consists of 92 turbines. This document provides an executive summary of the methods and results of the third year of post-construction wildlife monitoring conducted at the Jericho WEC in 2017.

Methods

NRSI biologists conducted post-construction wildlife behaviour monitoring at the Jericho WEC following methods approved by the Ontario Ministry of Natural Resources and Forestry (MNRF) as part of the project's Natural Heritage Assessment (NHA) and Environmental Effects Monitoring Plan (EEMP) (AECOM 2013a, 2013b). As outlined in these documents, a total of 14 provincially significant wildlife habitats required post-construction surveys, including:

- Six (6) Bat Maternity Colony Habitats (BMC-143, BMC-155, BMC-168, BMC-216, BMC-217, BMC-382);
- Six (6) Amphibian Woodland Breeding Habitats (AWO-03, AWO-05, AWO-08, AWO-11, AWO-12, AWO-13);
- One (1) Amphibian Movement Corridor Habitat (AMC-01); and
- One (1) Bald Eagle Nesting, Foraging, and Perching Habitat (BEN-01).

These habitats were identified to be provincially significant in the NHA, completed prior to the construction of the project. Provincial significance of habitats was identified based on criteria established by the MNRF.

As per the Environmental Impact Study (EIS) report of the NHA and the EEMP (AECOM 2013a, 2013b), the following methods were implemented for the monitoring study:

- Acoustic through-the-night bat monitoring and evening visual bat surveys were conducted on at least 10 nights in June and early July;
- Amphibian surveys were conducted during the spring, including:
    - Calling anuran (frog) surveys (once in each of April, May, and June);
    - Egg mass surveys targeting salamanders/newts (once in March and if no egg masses found in March, once again in April); and
    - Larval surveys targeting salamanders/newts (once in late May or early June).
- Bald eagle behaviour surveys were conducted twice per week during the nesting season, beginning on February 17, and ending on August 18.

Results

Bat Maternity Colony Habitats

The results of the post-construction Bat Maternity Colony Habitat surveys completed by NRSI in 2017, in comparison with the baseline data collected from 2010-2011, are outlined in the table below.

Habitat ID	Pre-Construction Results (2010-2011)	Post-Construction Results (2015)	Post-Construction Results (2016)	Post-Construction Results (2017)
BMC-143	**Significant** Big Brown Bat Silver-haired Bat	**Significant** Big Brown Bat Silver-haired Bat	**Significant** Little Brown Myotis Big Brown Bat Silver-haired Bat	**Significant** Big Brown Bat Silver-haired Bat
BMC-155	**Significant** Big Brown Bat Silver-haired Bat	**Significant** Big Brown Bat Silver-haired Bat	**Significant** Big Brown Bat Silver-haired Bat	**Significant** Big Brown Bat Silver-haired Bat
BMC-168	**Significant** Big Brown Bat Silver-haired Bat	**Significant** Big Brown Bat Silver-haired Bat	**Significant** Big Brown Bat Silver-haired Bat	**Significant** Big Brown Bat Silver-haired Bat
BMC-216	**Significant** Big Brown Bat Silver-haired Bat	**Significant** Big Brown Bat Silver-haired Bat	**Significant** Big Brown Bat Silver-haired Bat	**Significant** Big Brown Bat Silver-haired Bat
BMC-217	**Significant** Big Brown Bat Silver-haired Bat	**Significant** Big Brown Bat Silver-haired Bat	**Significant** Big Brown Bat Silver-haired Bat	**Significant** Big Brown Bat Silver-haired Bat
BMC-382	**Significant** Little Brown Myotis Northern Myotis	**Not Significant** Does not meet standards of significance for any bat species	**Not Significant** Does not meet standards of significance for any bat species	**Not Significant** Does not meet standards of significance for any bat species

The results observed at BMC-382 indicate this habitat does not currently meet the provincial standards of significance, due to a reduction in documented calls of *Myotis* species. This decline in calls is most likely a direct result of the influence of the fungal disease white-nose syndrome, which has decimated populations of *Myotis* species in Ontario since the disease was first discovered in the province in 2010. The decline is not expected to be a result of any indirect change in use resulting from the nearby operational wind turbines, as other significant *Myotis* habitats in the province have experienced similar declines regardless of proximity to wind turbines.

Amphibian Woodland Breeding and Movement Corridor Habitats

The results of the post-construction Amphibian Woodland Breeding and Movement Corridor Habitat surveys completed by NRSI in 2017, in comparison with the baseline data collected in 2013, are outlined below:

Habitat ID	Pre-Construction Results (2013)	Post-Construction Results (2015)	Post-Construction Results (2016)	Post-Construction Results (2017)
AWO-03	**Significant** ≥20 individuals, 2 salamander species and ≥20 individuals, 2 frog species	**Significant** ≥20 individuals, 1 salamander species and ≥20 individuals, 4 frog species	**Significant** ≥20 individuals, 1 salamander species and ≥20 individuals, 4 frog species	**Significant** ≥20 individuals, ≥1 salamander species and ≥20 individuals, 3 frog species

Habitat ID	Pre-Construction Results (2013)	Post-Construction Results (2015)	Post-Construction Results (2016)	Post-Construction Results (2017)
AWO-05	**Significant** ≥20 individuals, 1 salamander species and ≥20 individuals, 2-3 frog species	**Significant** ≥20 individuals, 4 frog species	**Significant** ≥20 individuals, ≥1 salamander species and ≥20 individuals, 4 frog species	**Significant** ≥20 individuals, ≥1 salamander species and ≥20 individuals, 4 frog species
AWO-08	**Significant** ≥20 individuals, 1 salamander species	**Significant** ≥20 individuals, 3 frog species	**Significant** ≥20 individuals, 2 frog species	**Significant** ≥20 individuals, ≥1 salamander species and ≥20 individuals, 3 frog species
AWO-11	**Significant** ≥20 individuals, 1 salamander species	**Significant** ≥20 individuals, 3 frog species	**Significant** ≥20 individuals, 3 frog species	**Significant** ≥20 individuals, 1 salamander species and ≥20 individuals, 3 frog species
AWO-12	**Significant** ≥20 individuals, 3 frog species	**Significant** ≥20 individuals, 1 salamander species and ≥20 individuals, 4 frog species	**Significant** ≥20 individuals, 1 salamander species and ≥20 individuals, 3 frog species	**Significant** ≥20 individuals, 1 salamander species and ≥20 individuals, 3 frog species
AWO-13	**Significant** ≥20 individuals, 3 frog species	**Significant** ≥20 individuals, 3 frog species	**Significant** ≥20 individuals, 2 frog species	**Significant** ≥20 individuals, 3 frog species
AMC-01	**Significant** ≥20 individuals, 3 frog species	**Significant** ≥20 individuals, 3 frog species	**Significant** ≥20 individuals, 3 frog species	**Significant** ≥20 individuals, 2 frog species

The significant Amphibian Woodland Breeding Habitats and the Amphibian Movement Corridor Habitat all continue to meet the provincial standards for significance.

Bald Eagle and Osprey Nesting, Foraging, and Perching Habitat

The results of the post-construction Bald Eagle and Osprey Nesting, Foraging, and Perching habitat surveys completed by NRSI in 2017, in comparison with the baseline data collected in 2013, are outlined below:

Habitat ID	Pre-Construction Results (2013)	During-Construction Results (2014)	Post-Construction Results (2015)	Post-Construction Results (2016)	Post-Construction Results (2017)
BEN-01	**Significant** Adult pair of bald eagles, egg incubation, and first year juvenile	**Significant** Adult pair of bald eagles, egg incubation, and first year juvenile	**Significant** Adult pair of bald eagles, egg incubation, and first year juvenile	**Significant** Adult pair of bald eagles, egg incubation, and two first year juveniles	**Significant** Adult pair of bald eagles, egg incubation, and three first year juveniles

The identified bald eagle nesting, foraging, and perching habitat continues to meet the provincial standards for significance.

Summary

Post-construction wildlife monitoring conducted by NRSI in 2017 represents the third year of post-construction monitoring conducted at the Jericho Wind Energy Centre.

The results of the post-construction surveys have indicated that no displacement or avoidance effects resulting from the construction or operation of the Jericho WEC have been observed at any of the significant wildlife habitats during the third year of post-construction disturbance monitoring. While the bat maternity colony habitat BMC-382 is not significant after the third year of post-construction monitoring, this is expected to be a direct result of the influence of the fungal disease white-nose syndrome, which has greatly reduced populations of cave-hibernating bat species (including those species detected at this habitat during pre-construction surveys) in Ontario since it was first discovered in the province in 2010.

Three (3) years of post-construction monitoring required by the EIS of the NHA and EEMP (AECOM 2013a, 2013b) and the Renewable Energy Approval are now complete for each of the applicable significant wildlife habitats identified at the Jericho WEC.