Appendix A – Acoustic Assessment Results and Sound Waivers

SOUND LEVEL ASSESSMENT REPORT

Otter Tail Langdon Wind Repower Project
Cavalier County, North Dakota

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1.0 EXECUTIVE SUMMARY

The Langdon Wind Energy Center Repowering Project (the Project) is an existing wind park in Cavalier County, North Dakota that is planned to be repowered by Otter Tail Power Company (Otter Tail). Atwell has retained Epsilon Associates, Inc. (Epsilon) to conduct a sound level assessment for this Project. This report presents the results of the cumulative sound level modeling from the proposed repower and other nearby existing wind turbines in Cavalier County.

This sound level assessment includes computer modeling to predict worst-case future L_{eq} sound levels from the Project, and a comparison of operational sound levels to the North Dakota Administrative Code Energy Conversion Facility Siting Criteria of 45 dBA within 100 feet of an inhabited residence or community building. Sound level modeling was conducted for all Otter Tail Langdon Wind Repower wind turbines and existing Langdon Wind I and Langdon Wind II wind turbines within 1.5 miles of a modeling receptor.

The L_{eq} sound levels modeled at receptors in Cavalier County ranged from 30 to 49 dBA. The highest L_{eq} sound level modeled at a receptor that has signed a waiver with Otter Tail is 49 dBA. The highest L_{eq} sound level modeled at a receptor that has not signed a waiver with Otter Tail is 45 dBA. The L_{eq} sound levels at all receptors without a signed waiver are at or below the limit of 45 dBA within 100 feet of an inhabited residence or community building. Therefore, the Project meets the State's regulations with respect to sound.

2.0 INTRODUCTION

The proposed repower Project will consist of 27 repowered wind turbines. The proposed wind turbines are all GE 1.5MW units with a rotor diameter of 97 meters and a hub height of 80 meters. Figure 2-1 shows the locations of the 27 wind turbines in Cavalier County over aerial imagery.

A detailed discussion of sound from wind turbines is presented in a white paper prepared by the Renewable Energy Research Laboratory.[1] A few points are repeated herein. Wind turbine sound can originate from two different sources: mechanical sound from the interaction of turbine components, and aerodynamic sound produced by the flow of air over the rotor blades. Prior to the 1990's, both were significant contributors to wind turbine sound. However, recent advances in wind turbine design have greatly reduced the contribution of mechanical sound. Aerodynamic sound has also been reduced from modern wind turbines due to slower rotational speeds and changes in materials of construction. Aerodynamic sound, in general, is broadband (has contributions from a wide range of frequencies). It originates from encounters of the wind turbine blades with localized airflow inhomogeneities and wakes from other turbine blades and from airflow across the surface of the blades, particularly the front and trailing edges. Aerodynamic sound generally increases with increasing wind speed up to a certain point, then typically remains constant, even with higher wind speeds. However, sound levels in general also increase with increasing wind speed with or without the presence of wind turbines.

This report presents the findings of a sound level modeling analysis for the Project. The Project wind turbines were modeled in CadnaA using sound data from GE technical reports. The results of this analysis are found within this report.

[1] Renewable Energy Research Laboratory, Department of Mechanical and Industrial Engineering, University of Massachusetts at Amherst, Wind Turbine Acoustic Noise, June 2002, amended January 2006.

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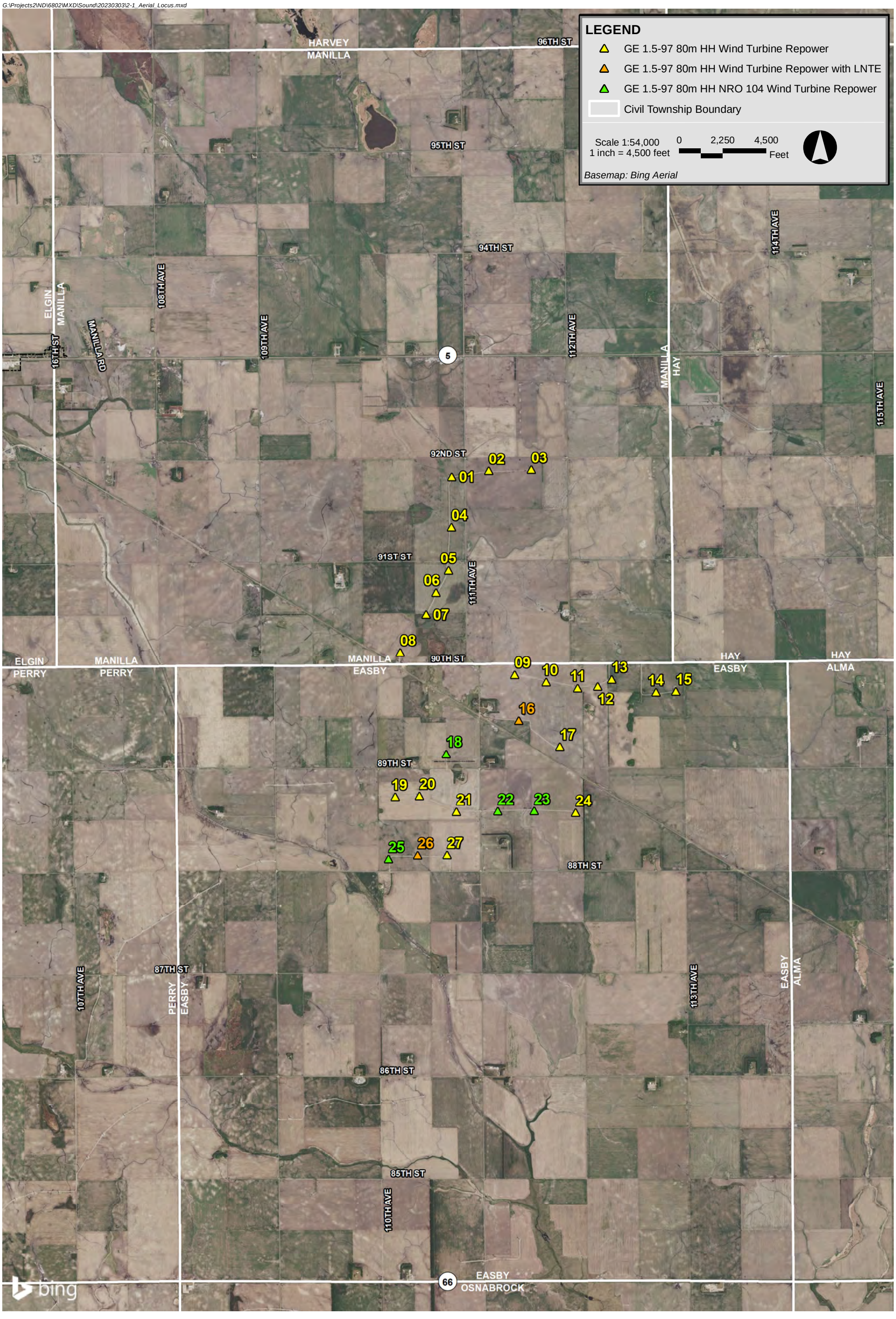

Otter Tail Langdon Wind Repower **Cavalier County, North Dakota**

Epsilon Associates Inc.

Figure 2-1
Aerial Locus

3.0 SOUND TERMINOLOGY

There are several ways in which sound levels are measured and quantified. All of them use the logarithmic decibel (dB) scale. The following information defines the sound level terminology used in this analysis.

The decibel scale is logarithmic to accommodate the wide range of sound intensities found in the environment. A property of the decibel scale is that the sound pressure levels of two or more separate sounds are not directly additive. For example, if a sound of 50 dB is added to another sound of 50 dB, the total is only a 3-decibel increase (53 dB), which is equal to doubling in sound energy, but not equal to a doubling in decibel quantity (100 dB). Thus, every 3-dB change in sound level represents a doubling or halving of sound energy. The human ear does not perceive changes in the sound pressure level as equal changes in loudness. Scientific research demonstrates that the following general relationships hold between sound level and human perception for two sound levels with the same or very similar frequency characteristics[2]:

- 3 dB increase or decrease results in a change in sound that is just perceptible to the average person,
- 5 dB increase or decrease is described as a clearly noticeable change in sound level, and
- 10 dB increase or decrease is described as twice or half as loud.

Another mathematical property of decibels is that if one source of sound is at least 10 dB louder than another source, then the total sound level is simply the sound level of the higher-level source. For example, a sound source at 60 dB plus another sound source at 47 dB is equal to 60 dB.

A sound level meter (SLM) that is used to measure sound is a standardized instrument.[3] It contains "weighting networks" (e.g., A-, C-, Z-weightings) to adjust the frequency response of the instrument. Frequencies, reported in Hertz (Hz), are detailed characterizations of sounds, often addressed in musical terms as "pitch" or "tone". The most commonly used weighting network is the A-weighting because it most closely approximates how the human ear responds to sound at various frequencies. The A-weighting network is the accepted scale used for community sound level measurements; therefore, sounds are frequently reported as detected with a sound level meter using this weighting. A-weighted sound levels emphasize middle frequency sounds (i.e., middle pitched – around 1,000 Hz), and de-emphasize low and high frequency sounds. These sound levels are reported in decibels designated as "dBA". The C-weighting network has a nearly flat response for frequencies between 63 Hz and 4,000 Hz and is noted as dBC. Z-weighted sound levels are measured sound levels without any weighting curve and are otherwise referred to as

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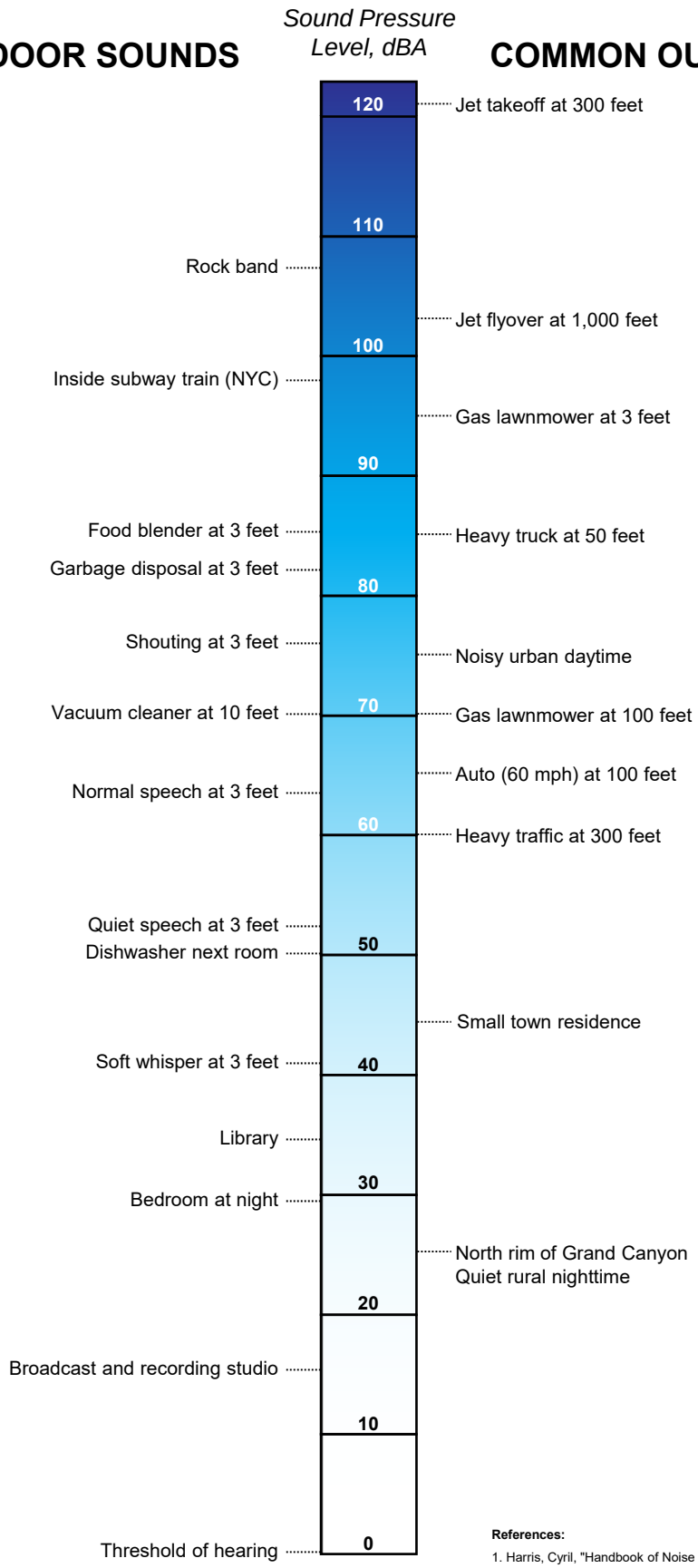
2 Bies, David, and Colin Hansen. 2009. *Engineering Noise Control: Theory and Practice*, 4th Edition. New York: Taylor and Francis.

3 *American National Standard Electroacoustics – Sound Level Meters – Part 1: Specifications,* ANSI S1.4-2014 (R2019), published by the Standards Secretariat of the Acoustical Society of America, Melville, NY.

"unweighted". Sound pressure levels for some common indoor and outdoor environments are shown in Figure 3-1.

Because the sounds in our environment vary with time they cannot simply be described with a single number. Two methods are used for describing variable sounds. These are exceedance levels and the equivalent level, both of which are derived from some number of moment-to-moment A-weighted sound level measurements. Exceedance levels are values from the cumulative amplitude distribution of all the sound levels observed during a measurement period. Exceedance levels are designated L_n, where n can have a value between 0 and 100 in terms of percentage. The L_{eq} is a sound level metric that is commonly reported in community sound level monitoring and is utilized in this report. The L_{eq} is described in further detail below.

- L_{eq}, the equivalent level, is the level of a hypothetical steady sound that would have the same energy (*i.e.,* the same time-averaged mean square sound pressure) as the actual fluctuating sound observed. The equivalent level is designated L_{eq} and is typically A-weighted. The equivalent level represents the time average of the fluctuating sound pressure, but because sound is represented on a logarithmic scale and the averaging is done with linear mean square sound pressure values, the L_{eq} is mostly determined by loud sounds if there are fluctuating sound levels.



References:

1. Harris, Cyril, "Handbook of Noise Acoustical Measurements and Noise Control", p 1-10., 1998
2. "Controlling Noise", USAF, AFMC, AFDTC, Elgin AFB, Fact Sheet, August 1996
3. California Dept. of Trans., "Technical Noise Supplement", Oct, 1998

Figure 3-1

Common Indoor and Outdoor Sound Levels

4.0 NOISE REGULATIONS

4.1 Federal Regulations

There are no federal community noise regulations applicable to this Project.

4.2 North Dakota State Regulations

The Project, located in North Dakota, is required to comply with the Zoning law, which states:

Section 69-06-08-01 Energy Conversion Facility Siting Criteria

4. Additional avoidance areas for wind energy conversion facilities. A wind energy conversion facility site must not include a geographic area where, due to operation of the facility, the sound levels within one hundred feet of an inhabited residence or a community building will exceed forty-five dBA. The sound level avoidance area criteria may be waived in writing by the owner of the occupied residence or the community building.

4.3 Cavalier County Regulations

There are no county community noise regulations applicable to this Project.

Therefore, modeling receptors were evaluated in this analysis against the 45 dBA limit.

5.0 MODELED SOUND LEVELS

5.1 Sound Sources

5.1.1 Project Wind Turbines

The sound level analysis for the Project includes 27 wind turbines. These 27 wind turbines are depicted in Figure 5-1. The array consists of one (1) wind turbine model: the GE 1.5-97 at a hub height of 80-meters. Wind turbines #16 and #26 will have Low Noise Trailing Edge (LNTE) blades. Wind turbines #18, #22, #23, and #25 will be in Noise Reduced Operations (NRO) 104 mode. The GE 1.5-97 wind turbines have a rotor diameter of 97 meters. Technical reports from GE[4,5,6] were provided to Epsilon which documented the expected sound power levels associated with the GE 1.5-97.

5.2.2 Existing Wind Turbines

Existing wind turbines are currently in the vicinity of the Project area and are assumed to remain operational. To predict the future wind turbine sound levels in the Project vicinity, a cumulative modeling analysis was conducted which included the sound level contribution from these wind turbines. Coordinates and descriptions for the existing nearby turbines were gathered from public information. The 16 existing wind turbines that were included in the cumulative modeling were modeled as GE 1.6-91 units with 80 meter hub heights and 91 meter rotor diameters. Sound power level data and octave band sound power levels for the wind turbine type were incorporated into the model using data contained within publicly available data[7].

5.2 Modeling Methodology

The sound impacts associated with the proposed wind turbines were predicted using the CadnaA sound level calculation software developed by DataKustik GmbH. This software uses the ISO 9613-2 international standard for sound propagation.[8] The benefits of this software are a more refined set of computations due to the inclusion of topography, ground attenuation, multiple building reflections (if applicable), drop-off with distance, and atmospheric absorption. The CadnaA

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4 General Electric Company, Technical Documentation Wind Turbine Generator Systems 1.6-97 RePower – 60 Hz Product Acoustic Specifications, Rev. 02, 2020.

5 General Electric Company, Technical Documentation Wind Turbine Generator Systems 1.6-97 RePower with LNTE – 60Hz Product Acoustic Specifications Normal Specifications, Rev. 01, 2021.

6 General Electric Company, Technical Documentation Wind Turbine Generator Systems 1.6-97 RePower with LNTE – 60Hz Product Acoustic Specifications Noise Reduced Operation, Rev. 01, 2021.

7 Epsilon Associates, Inc., Langdon I Wind Energy Center Re-power Project Cavalier County, North Dakota, December 4, 2017.

8 *Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation,* International Standard ISO 9613-2:1996 (International Organization for Standardization, Geneva, Switzerland, 1996).

software allows for octave band calculation of sound from multiple sources as well as computation of diffraction.

Inputs and significant parameters employed in the model are described below and summarized in Table 5-1 below.

- *Project Array:* This analysis is for the wind turbine array dated November 4, 2022. The proposed Project array is identified in Figure 5-1. The wind turbine coordinates are provided in Appendix A. This analysis also includes 16 existing Langdon Wind I and Langdon Wind II wind turbines within 1.5 miles of a modeling receptor. Therefore, a total of 43 wind turbines were included in the sound model.

- *Modeling Receptor Locations:* A modeling receptor dataset dated October 24, 2022 was provided to Epsilon. The dataset included 30 receptors. Atwell provided additional information indicating if each receptor was inhabited or uninhabited, the resulting 21 inhabited receptors were input to the CadnaA model. All modeling receptors were input as discrete points at a height of 1.5 meters above ground level to mimic the ears of a typical standing person. In order to provide robust modeling coverage of each inhabited location, additional modeling locations were included offset by 100 feet away from the center point of the receptor in each of the four cardinal directions (north, south, east and west). Therefore, each inhabited location was evaluated at a total of five locations; the center point of the receptor itself, and at the four offset locations on land 100 feet from the receptor. This resulted in a total of 105 receptors. The center points of the modeled locations (receptors) are shown in Figure 5-1. Details of each modeling location are presented in Appendix B.

- *Modeling Grid:* A modeling grid with 20-meter spacing was calculated for the entire Project Area and the surrounding region. The grid was modeled at a height of 1.5 meters above ground level for consistency with the discrete modeling points. This modeling grid allowed for the creation of sound level isolines.

- *Terrain Elevation:* Elevation contours for the modeling domain were directly imported into CadnaA which allowed for consideration of terrain shielding where appropriate. The terrain height contour elevations for the modeling domain were generated from elevation information derived from the National Elevation Dataset (NED) developed by the U.S. Geological Survey.

- *Source Sound Levels:* Sound power levels used in the modeling were described in Section 5.1. Documentation from GE provided levels that represent "worst-case" operational sound level emissions for the Project's proposed wind turbines were input into the model.

- *Meteorological Conditions:* A temperature of 10°C (50°F) and a relative humidity of 70% was assumed in the model.

- *Ground Attenuation:* Spectral ground absorption was calculated using a G-factor of 0 which corresponds to "hard ground" consisting of a hard ground surface. The model, consistent with the standard, allows inputs between 0 (hard ground) and 1 (porous ground). This is a conservative approach as the vast majority of the area is actually agricultural.

Octave band sound power levels corresponding to the highest available wind turbine broadband sound power level for each wind turbine type were input into CadnaA to model wind turbine generated L_{eq} sound pressure levels during conditions when worst-case sound power levels are expected. Sound pressure levels were modeled at 21 receptors within the vicinity of the Project. In addition to modeling at discrete points, sound levels were also modeled throughout a large grid of points, each spaced 20 meters apart to allow for the generation of sound level isolines.

Several modeling assumptions inherent in the ISO 9613-2 calculation methodology, or selected as conditional inputs by Epsilon, were implemented in the CadnaA model to ensure conservative results (i.e., higher sound levels), and are described below:

- All modeled sources were assumed to be operating simultaneously and at the design wind speed corresponding to the greatest sound level impacts.

- As per ISO 9613-2, the model assumed favorable conditions for sound propagation, corresponding to a moderate, well-developed ground-based temperature inversion, as might occur on a calm, clear night or equivalently downwind propagation.

- Meteorological conditions assumed in the model (T=10°C/RH=70%) were selected to minimize atmospheric attenuation in the 500 Hz and 1 kHz octave bands where the human ear is most sensitive.

- No additional attenuation due to tree shielding, air turbulence, or wind shadow effects was considered in the model.

Table 5-2 Summary of Key Sound Level Modeling Inputs

Modeling Parameter	Description / Value
Wind Turbine Array	Provided by Atwell
Terrain	U.S.G.S. Data
Wind Turbine Sound Power Levels	GE Specifications Documentation
Meteorological Conditions	T=10°C / RH=70%
Ground Absorption Factor	0

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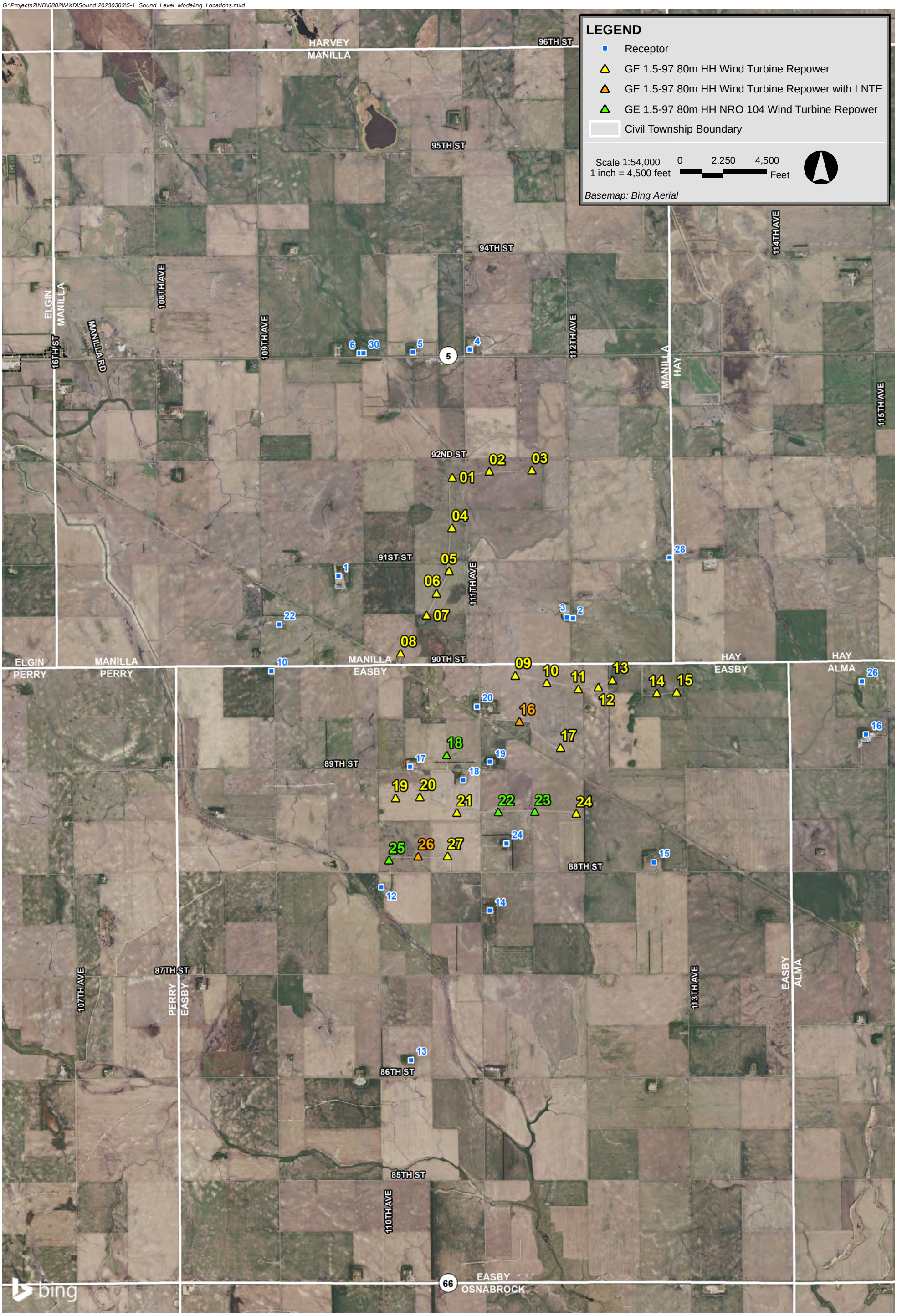

Otter Tail Langdon Wind Repower **Cavalier County, North Dakota**

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Figure 5-1

Sound Level Modeling Locations

5.3 Sound Level Modeling Results

All modeled sound levels, as output from CadnaA are A-weighted equivalent sound levels (L_{eq}, dBA). Table B-1.1 in Appendix B shows the predicted "Cumulative" broadband (dBA) sound levels at the 21 receptors modeled for the Project. The broadband L_{eq} sound levels range from 30 to 49 dBA. These sound levels represent the cumulative worst-case future L_{eq} sound levels produced by all Project wind turbines and other non-Project existing wind turbines in the vicinity of the Project. The maximum modeled sound level of 49 dBA occurs at receptor #17, which has signed a waiver with Otter Tail Power. The highest modeled sound level at a receptor which has not signed a waiver with Otter Tail Power is 45 dBA, which occurs at five receptors (#12, #13, #19, #20, and #24). Table B-1.2 in Appendix B shows the predicted "Cumulative" sound levels sorted from high to low.

In addition to the discrete modeling points, L_{eq} sound level isolines generated from the modeling grid are presented in Figure 5-2.

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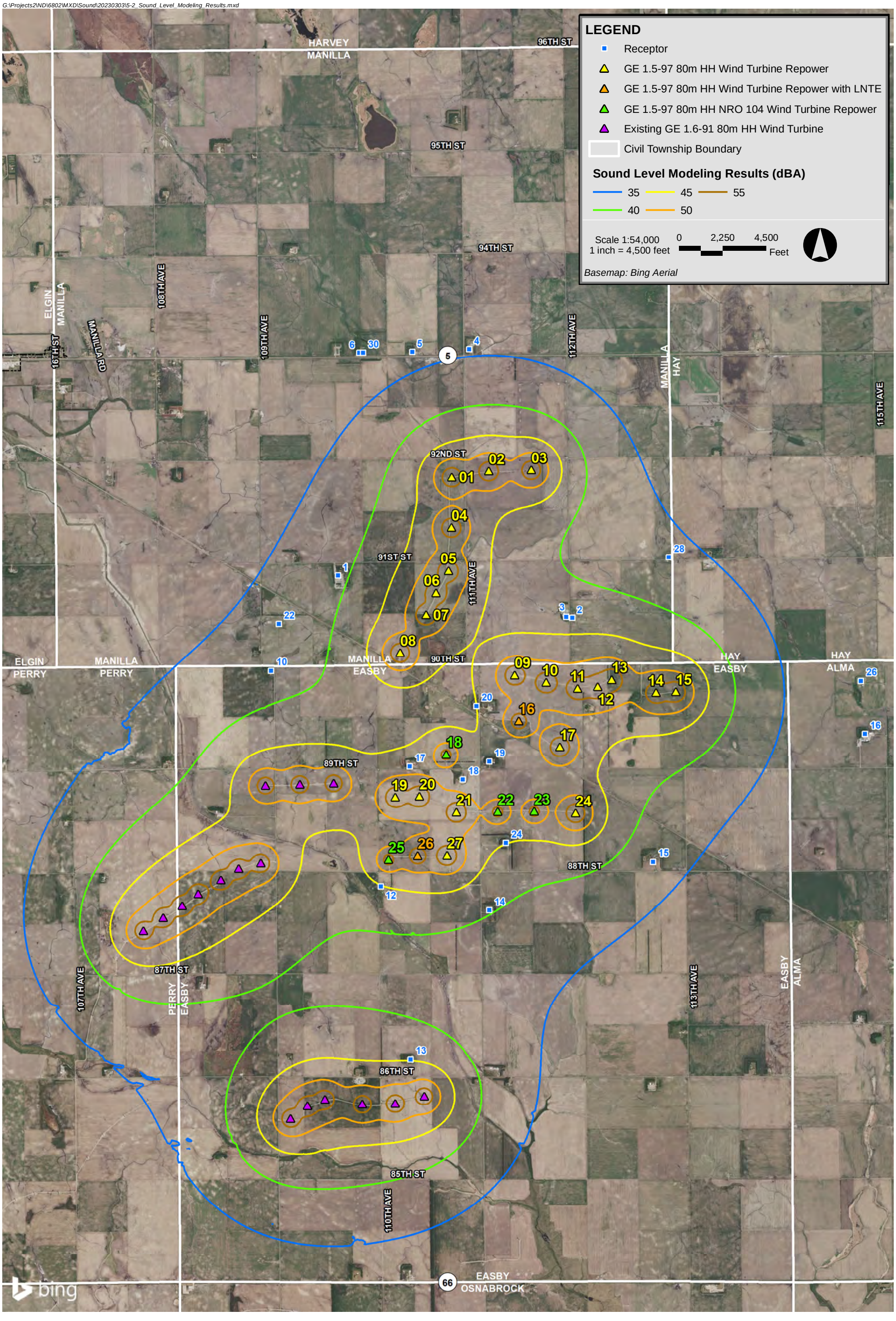

Otter Tail Langdon Wind Repower **Cavalier County, North Dakota**

Epsilon ASSOCIATES INC.

Figure 5-2

Sound Level Modeling Results

6.0 EVALUATION OF SOUND LEVELS

The Project is subject to the requirements contained in the North Dakota Energy Conversion Facility Siting Criteria**.** Sound levels from operation of the Project are limited by these regulations to 45 dBA within 100 feet of an inhabited residence or community building. All modeled sound levels, as output from CadnaA and presented in Appendix B, are A-weighted equivalent sound levels (L_{eq}, dBA). These levels may be used in evaluating measured sound pressure levels over typical averaging durations, (i.e., ten (10) minutes or one (1) hour).

A review of Table B-1.2 in Appendix B shows the highest sound level within 100 feet of an inhabited residence or community building that has not signed a waiver with Otter Tail Power in this analysis to be 45 dBA. This occurs at Receptors #12, #13, #19, #20, and #24. Therefore, the Project is in compliance with the North Dakota Administrative Code Energy Conversion Facility Siting Criteria with respect to sound.

7.0 CONCLUSIONS

A comprehensive sound level modeling assessment was conducted for the Otter Tail Langdon Wind Repower Project within Cavalier County, North Dakota. Cumulative sound levels resulting from the operation of all 27 Project wind turbines and other nearby wind turbines were calculated at 21 modeling receptors, and isolines were generated from a grid encompassing the area surrounding the wind turbines. The predicted L_{eq} sound levels at all receptors in the study area ranged from 30 to 49 dBA. Predicted cumulative sound levels at all receptor locations that have not signed waivers with Otter Tail Power are at or below the state limit of 45 dBA within 100 feet of an inhabited residence or community building; therefore, the Project meets the requirements with respect to sound in the regulations.

Appendix A
Sound Source Coordinates

Table A-1: Wind Turbine Coordinates

Wind Turbine ID	Wind Turbine Type	Hub Height (m)	Coordinates NAD83 UTM Zone 14N (meters)	
			X (Easting)	Y (Northing)
1	GE 1.5-97	80	554512.89	5399273.42
2	GE 1.5-97	80	555093.15	5399368.14
3	GE 1.5-97	80	555761.58	5399385.76
4	GE 1.5-97	80	554506.00	5398484.16
5	GE 1.5-97	80	554460.98	5397805.59
6	GE 1.5-97	80	554265.70	5397458.96
7	GE 1.5-97	80	554107.45	5397113.03
8	GE 1.5-97	80	553701.25	5396519.70
9	GE 1.5-97	80	555499.47	5396170.35
10	GE 1.5-97	80	555993.44	5396053.20
11	GE 1.5-97	80	556487.15	5395957.99
12	GE 1.5-97	80	556803.45	5395983.30
13	GE 1.5-97	80	557022.92	5396097.03
14	GE 1.5-97	80	557716.46	5395892.46
15	GE 1.5-97	80	558025.59	5395907.10
16	GE 1.5-97	80	555565.55	5395448.41
17	GE 1.5-97	80	556209.54	5395043.50
18	GE 1.5-97	80	554422.73	5394925.71
19	GE 1.5-97	80	553627.01	5394251.82
20	GE 1.5-97	80	554002.47	5394266.09
21	GE 1.5-97	80	554586.54	5394016.06
22	GE 1.5-97	80	555233.79	5394022.39
23	GE 1.5-97	80	555807.60	5394028.07
24	GE 1.5-97	80	556455.78	5394000.98
25	GE 1.5-97	80	553518.98	5393272.06
26	GE 1.5-97	80	553974.95	5393332.01
27	GE 1.5-97	80	554438.15	5393336.49

Appendix B

Sound Level Modeling Results - Tabular

Table B-1.1: Sound Level Modeling Results Sorted by Receptor ID

Receptor ID	Coordinates UTM NAD83 Zone 14N		Source Only L_{eq} Sound Level (dBA)
	X (m)	Y (m)	
1	552727.47	5397731.93	39
1-E	552757.93	5397732.22	39
1-N	552727.18	5397762.40	39
1-S	552727.75	5397701.46	39
1-W	552697.00	5397731.64	39
2	556403.32	5397067.11	43
2-E	556433.79	5397067.42	43
2-N	556403.02	5397097.58	43
2-S	556403.63	5397036.65	43
2-W	556372.86	5397066.81	43
3	556310.83	5397083.06	43
3-E	556341.30	5397083.37	43
3-N	556310.53	5397113.53	43
3-S	556311.14	5397052.60	43
3-W	556280.37	5397082.76	43
4	554786.86	5401286.18	34
4-E	554817.32	5401286.48	34
4-N	554786.56	5401316.65	34
4-S	554787.15	5401255.72	35
4-W	554756.39	5401285.89	34
5	553893.01	5401245.18	34
5-E	553923.48	5401245.47	34
5-N	553892.72	5401275.65	34
5-S	553893.31	5401214.71	34
5-W	553862.54	5401244.89	34
6	553064.00	5401229.01	32
6-E	553094.47	5401229.30	32
6-N	553063.71	5401259.48	32
6-S	553064.29	5401198.54	32
6-W	553033.54	5401228.72	32
10	551679.19	5396237.94	38
10-E	551709.66	5396238.22	38
10-N	551678.91	5396268.41	38
10-S	551679.47	5396207.48	38
10-W	551648.72	5396237.66	38
12	553399.70	5392853.28	45
12-E	553430.17	5392853.57	45
12-N	553399.41	5392883.75	45
12-S	553399.99	5392822.82	44
12-W	553369.24	5392852.99	45
13	553865.94	5390139.19	45
13-E	553896.41	5390139.48	45

Table B-1.1: Sound Level Modeling Results Sorted by Receptor ID

Receptor ID	Coordinates UTM NAD83 Zone 14N		Source Only L_{eq} Sound Level (dBA)
	X (m)	Y (m)	
13-N	553865.65	5390169.66	44
13-S	553866.23	5390108.73	45
13-W	553835.47	5390138.90	45
14	555099.83	5392477.80	40
14-E	555130.30	5392478.10	40
14-N	555099.53	5392508.27	41
14-S	555100.13	5392447.33	40
14-W	555069.36	5392477.50	41
15	557670.73	5393238.99	37
15-E	557701.20	5393239.31	37
15-N	557670.42	5393269.46	37
15-S	557671.04	5393208.53	37
15-W	557640.26	5393238.68	37
16	560994.89	5395249.28	31
16-E	561025.35	5395249.61	30
16-N	560994.56	5395279.75	31
16-S	560995.22	5395218.82	31
16-W	560964.42	5395248.95	31
17	553852.25	5394735.12	48
17-E	553882.72	5394735.41	48
17-N	553851.96	5394765.58	48
17-S	553852.54	5394704.65	49
17-W	553821.78	5394734.82	48
18	554687.38	5394531.49	48
18-E	554717.85	5394531.78	48
18-N	554687.09	5394561.95	48
18-S	554687.68	5394501.02	48
18-W	554656.91	5394531.19	48
19	555101.52	5394814.86	45
19-E	555131.99	5394815.15	45
19-N	555101.22	5394845.32	45
19-S	555101.82	5394784.39	45
19-W	555071.05	5394814.56	45
20	554900.85	5395685.10	45
20-E	554931.32	5395685.40	45
20-N	554900.55	5395715.57	45
20-S	554901.15	5395654.63	45
20-W	554870.38	5395684.80	45
22	551800.82	5396971.39	37
22-E	551831.29	5396971.67	37
22-N	551800.54	5397001.86	37
22-S	551801.10	5396940.92	37

Table B-1.1: Sound Level Modeling Results Sorted by Receptor ID

Receptor ID	Coordinates UTM NAD83 Zone 14N		Source Only L_{eq} Sound Level (dBA)
	X (m)	Y (m)	
22-W	551770.35	5396971.11	37
24	555362.96	5393534.70	45
24-E	555393.43	5393535.00	45
24-N	555362.66	5393565.17	45
24-S	555363.26	5393504.23	45
24-W	555332.50	5393534.40	45
26	560931.88	5396078.47	31
26-E	560962.34	5396078.80	31
26-N	560931.55	5396108.93	31
26-S	560932.21	5396048.00	31
26-W	560901.41	5396078.13	31
28	557918.14	5398017.75	36
28-E	557948.60	5398018.07	36
28-N	557917.82	5398048.22	36
28-S	557918.45	5397987.28	37
28-W	557887.67	5398017.44	37
30	553120.55	5401228.25	32
30-E	553151.02	5401228.54	32
30-N	553120.26	5401258.72	32
30-S	553120.84	5401197.78	33
30-W	553090.08	5401227.96	32

Table B-1.2: Sound Level Modeling Results Sorted by Sound Level

Receptor ID	Coordinates UTM NAD83 Zone 14N		Source Only L_{eq} Sound Level (dBA)
	X (m)	Y (m)	
17-S	553852.54	5394704.65	49
17	553852.25	5394735.12	48
17-E	553882.72	5394735.41	48
17-W	553821.78	5394734.82	48
18-S	554687.68	5394501.02	48
18-W	554656.91	5394531.19	48
17-N	553851.96	5394765.58	48
18	554687.38	5394531.49	48
18-E	554717.85	5394531.78	48
18-N	554687.09	5394561.95	48
24-N	555362.66	5393565.17	45
19	555101.52	5394814.86	45
19-E	555131.99	5394815.15	45
19-N	555101.22	5394845.32	45
19-S	555101.82	5394784.39	45
19-W	555071.05	5394814.56	45
20-E	554931.32	5395685.40	45
24-W	555332.50	5393534.40	45
12-N	553399.41	5392883.75	45
13-S	553866.23	5390108.73	45
24	555362.96	5393534.70	45
24-E	555393.43	5393535.00	45
20	554900.85	5395685.10	45
20-N	554900.55	5395715.57	45
20-S	554901.15	5395654.63	45
12-E	553430.17	5392853.57	45
24-S	555363.26	5393504.23	45
13-W	553835.47	5390138.90	45
20-W	554870.38	5395684.80	45
12	553399.70	5392853.28	45
13	553865.94	5390139.19	45
13-E	553896.41	5390139.48	45
12-W	553369.24	5392852.99	45
12-S	553399.99	5392822.82	44
13-N	553865.65	5390169.66	44
2-S	556403.63	5397036.65	43
3-S	556311.14	5397052.60	43
2	556403.32	5397067.11	43
2-E	556433.79	5397067.42	43
2-W	556372.86	5397066.81	43
3	556310.83	5397083.06	43
3-E	556341.30	5397083.37	43

Table B-1.2: Sound Level Modeling Results Sorted by Sound Level

Receptor ID	Coordinates UTM NAD83 Zone 14N		Source Only L_{eq} Sound Level (dBA)
	X (m)	Y (m)	
3-W	556280.37	5397082.76	43
2-N	556403.02	5397097.58	43
3-N	556310.53	5397113.53	43
14-N	555099.53	5392508.27	41
14-W	555069.36	5392477.50	41
14	555099.83	5392477.80	40
14-E	555130.30	5392478.10	40
14-S	555100.13	5392447.33	40
1-E	552757.93	5397732.22	39
1-S	552727.75	5397701.46	39
1	552727.47	5397731.93	39
1-N	552727.18	5397762.40	39
1-W	552697.00	5397731.64	39
10-S	551679.47	5396207.48	38
10	551679.19	5396237.94	38
10-E	551709.66	5396238.22	38
10-N	551678.91	5396268.41	38
10-W	551648.72	5396237.66	38
15-W	557640.26	5393238.68	37
15	557670.73	5393238.99	37
15-N	557670.42	5393269.46	37
15-S	557671.04	5393208.53	37
15-E	557701.20	5393239.31	37
22-E	551831.29	5396971.67	37
22-S	551801.10	5396940.92	37
22	551800.82	5396971.39	37
22-N	551800.54	5397001.86	37
22-W	551770.35	5396971.11	37
28-S	557918.45	5397987.28	37
28-W	557887.67	5398017.44	37
28	557918.14	5398017.75	36
28-E	557948.60	5398018.07	36
28-N	557917.82	5398048.22	36
4-S	554787.15	5401255.72	35
4	554786.86	5401286.18	34
4-E	554817.32	5401286.48	34
4-W	554756.39	5401285.89	34
4-N	554786.56	5401316.65	34
5-S	553893.31	5401214.71	34
5-E	553923.48	5401245.47	34
5	553893.01	5401245.18	34
5-W	553862.54	5401244.89	34

Table B-1.2: Sound Level Modeling Results Sorted by Sound Level

Receptor ID	Coordinates UTM NAD83 Zone 14N		Source Only L_{eq} Sound Level (dBA)
	X (m)	Y (m)	
5-N	553892.72	5401275.65	34
30-S	553120.84	5401197.78	33
6-S	553064.29	5401198.54	32
30	553120.55	5401228.25	32
30-E	553151.02	5401228.54	32
6	553064.00	5401229.01	32
6-E	553094.47	5401229.30	32
30-N	553120.26	5401258.72	32
30-W	553090.08	5401227.96	32
6-N	553063.71	5401259.48	32
6-W	553033.54	5401228.72	32
26	560931.88	5396078.47	31
26-S	560932.21	5396048.00	31
26-W	560901.41	5396078.13	31
26-E	560962.34	5396078.80	31
26-N	560931.55	5396108.93	31
16-W	560964.42	5395248.95	31
16	560994.89	5395249.28	31
16-N	560994.56	5395279.75	31
16-S	560995.22	5395218.82	31
16-E	561025.35	5395249.61	30

THIS INSTRUMENT WAS DRAFTED BY
AND AFTER RECORDING RETURN TO:
Otter Tail Power Company
PO Box 496
Fergus Falls, MN 56538
Attention: Bryce Haugen
(218) 739-8385

THIS SOUND WAIVER AGREEMENT (this "**Agreement**"), is dated and effective as of March 6, 2023 ("**Effective Date**"), by and between Marvin Heck and Martha Heck, as Trustees under the Heck Family Revocable Living Trust, dated December 31, 2005 ("**Owner**"), with a mailing address of 203 2nd Ave, Box 236, Munich, North Dakota 58352 and Otter Tail Power Company, a Minnesota corporation ("**OTP**"), with a mailing address of PO Box 496, Fergus Falls, Minnesota 56538.

RECITALS:

A. Owner owns a residence located on certain real property in Cavalier County, North Dakota, as more particularly described on the attached Exhibit A ("**Owner Property**").

B. OTP owns, operates, and maintains a wind energy generation facility ("**Project**") on certain real property located adjacent to and in the vicinity of the Owner Property (collectively, the "**Project Property**"). OTP intends to install new turbine technology on the Project ("**Project Upgrades**").

C. To the extent applicable, OTP intends for the Project, with the Project Upgrades, to comply with the North Dakota Public Service Commission's ("**Commission**") siting rules for wind energy generation facilities. One of the Commission's current rules states that sound levels from a wind energy generation facility must not exceed 45 A-weighted decibels ("**dBA**") within 100 feet of an inhabited residence ("**Sound Requirement**"), unless a waiver is obtained from the owner of the residence. North Dakota Administrative Code Section 69-06-08-01(4). Based on a third-party sound expert's analysis, Project sound levels with the Project Upgrades may exceed 45 dBA (but are expected to be below 50 dBA) within 100 feet of Owner's residence on the Owner Property.

D. Owner is willing to grant to OTP a waiver of the Sound Requirement for the Owner's residence on the Owner Property as it relates to OTP's Project on the Project Property, as set forth below.

AGREEMENT:

NOW, THEREFORE, in consideration of the premises and other good and valuable consideration, the receipt and adequacy of which are hereby acknowledged, the parties hereto agree that the Recitals set forth above are hereby incorporated into the Agreement and further agree as follows:

1. **Sound Waiver.** Owner agrees to and hereby does waive the Project's compliance with the Sound Requirement with respect to the residence on the Owner Property.

2. **Cooperation**. Owner agrees to not publicly oppose or otherwise object to the Project and to execute and deliver such reasonably requested documents and take such action as may be reasonably requested by OTP to carry out the purposes and intent of this Agreement.

3. **Term of Agreement**. The term of this Agreement shall commence on the Effective Date and shall continue until December 31, 2105.

4. **Consideration**. The consideration for this Agreement is set forth on the attached Exhibit B, which Exhibit B shall be removed before recording this Agreement in the official real property records of the county in which the Owner Property is located. Owner and OTP agree that such removal of Exhibit B prior to recording shall not affect the validity of this Agreement.

5. **Termination**. Owner shall have the right, at any time during the Term, to terminate this Agreement as to all or any part of the Owner Property by providing written notice to Owner. Following any such termination, OTP is authorized to file a release of this Agreement in the official real property records of the county in which the Owner Property is located.

6. **Authority; Title**. Owner represents and warrants that it is the sole owner of the Owner Property in fee simple and has the full and unrestricted right and authority to execute and deliver this Agreement and to grant to OTP the waiver and other rights granted hereunder. Each person signing this Agreement on behalf of Owner is authorized to do so, and all persons having any ownership or interest in the Owner Property have signed this Agreement on behalf of Owner.

7. **Assignment**. OTP shall have the right at any time, without need for consent from Owner, to assign or convey all or any portion of this Agreement to an assignee or assignees, on an exclusive or nonexclusive basis, or to mortgage or collaterally assign all or any part of its interest in the Agreement and its rights under the Agreement to any entity (each a "**Mortgagee**" and collectively, "**Mortgagees**"). OTP may mortgage or encumber any part of OTP's rights and interests under the Agreement without the need for consent from Owner, provided that any such mortgage attaches only to OTP's rights and does not otherwise attach to the Owner Property. Owner shall have the right to sell, convey, or transfer its interest in the Owner Property, or a portion thereof, without the need for consent from OTP, provided that Owner shall, prior to any such sale, conveyance, or other transfer, give written notice to OTP thereof, which notice shall include the name, address, and telephone number of the proposed transferee.

8. **Notice**. All communications required or permitted by this Agreement shall be given in writing by personal delivery (confirmed by courier delivery service) or first-class U.S. mail, postage prepaid, return receipt requested, certified, addressed as follows:

If to Owner:

Marvin Heck & Martha Heck, Trustees
203 2nd Ave, Box 236
Munich, North Dakota 58352

If to OTP:

Otter Tail Power Company
Attn: Bryce Haugen
PO Box 496
Fergus Falls, Minnesota 56538
Phone: 218-739-8385
E-mail: bhaugen@otpco.com

Any party may change its address for purposes of this paragraph by giving notice of such change to the other parties in the manner provided in this Section 7. Any notice provided for herein shall become effective only upon actual receipt by the party to whom it is given, unless such notice is mailed by certified mail, return receipt requested, in which case it shall be deemed to be received five (5) business days after the date mailed.

9. **Recording**. Owner and OTP agree that this Agreement may be recorded by OTP in the official real property records of the county in which the Owner Property is located.

10. **Miscellaneous**. This Agreement shall be governed by the laws of the State of North Dakota. This Agreement constitutes the entire agreement between OTP and Owner with respect to the subject matter hereof and supersedes any and all prior oral or written understandings, representations or statements among the parties with respect to the subject matter hereof. This Agreement may not be amended except in a writing executed by both parties. This Agreement may be executed in two or more counterparts and by different parties on separate counterparts, all of which shall be considered one and the same agreement and each of which shall be deemed an original. Nothing herein shall be deemed to create a joint venture or partnership between parties hereto. In the event of breach of this Agreement, OTP shall be entitled to all remedies provided at law or in equity, including injunctive relief. The prevailing party in any action arising out of, or in connection with, this Agreement shall be entitled to be reimbursed its costs and expenses, including reasonable attorney fees, by the non-prevailing party. NEITHER PARTY SHALL BE ENTITLED TO, AND OWNER AND OTP HEREBY WAIVE ANY AND ALL RIGHTS TO RECOVER, CONSEQUENTIAL, INCIDENTAL, AND PUNITIVE OR EXEMPLARY DAMAGES, HOWEVER ARISING, WHETHER IN CONTRACT, IN TORT, OR OTHERWISE, UNDER OR WITH RESPECT TO ANY ACTION TAKEN IN CONNECTION WITH THIS AGREEMENT.

[Signature pages follow.]

Dated this 28 day of February, 2023.

OWNER:

Marvin Heck

Marvin Heck, Trustee

Martha Heck

Martha Heck, Trustee

STATE OF NORTH DAKOTA §
§
COUNTY OF Cavalier §

On this 28th day of February, in the year 2023 before me personally appeared Marvin Heck and Martha Heck, as Trustees under the Heck Family Revocable Living Trust, dated December 31, 2005, known to me to be the person who is described in and who executed the within instrument, and acknowledged to me that that person (or they) executed the same.

My commission expires: Dec. 5, 2024
[SEAL]

Marianne Hall
Notary Public

Marianne Hall
Notary Public
State of North Dakota
My Commission Expires December 5, 2024

OTP:

Otter Tail Power Company,
a Minnesota corporation

By: Bryce C. Haugen

Its: Energy Developer

STATE OF MINNESOTA)
) ss.
COUNTY OF Ottertail)

The foregoing instrument was acknowledged before me this 6th day of March, 2023, by Bryce C. Haugen, the Energy Developer of Otter Tail Power Company, a Minnesota corporation, on behalf of the corporation.

Notary Public

KIMBERLY ANN WARD
Notary Public
Minnesota
My Commission Expires
Jan 31, 2027

EXHIBIT A

Legal Description of the Owner Property

The Southwest Quarter (SW-1/4) of Section Four (4),

Township One Hundred Sixty (160), Range Fifty-nine (59) West.

Cavalier County, State of North Dakota

Parcel Identification Number: 08021000

WIND FARM EASEMENT AGREEMENT

1. **Parties**. This is an agreement dated 15 of May, 2007 between Edwin Pearson and Gail Pearson, husband and wife, and their successors in interest ("Owner"), as owners of the real property described on attached Exhibit A ("Owner's Property"), and Langdon Wind, LLC, a Delaware limited liability company, a Delaware limited liability company, and its successors in interest ("FPLE").

2. **Purpose**. This agreement is a grant by Owner to FPLE of the easements and other specified rights in Owner's Property needed by FPLE for its Langdon Wind Farm. It establishes the rights of the parties and their duties to each other with regard to the financing, construction, operation, repair, maintenance, replacement, and removal of all Wind Farm Improvements whether located on or off Owner's Property.

3. **Definitions**. Capitalized terms used in this agreement have the meaning given them in the text of the agreement or in this definitions section.

"Access Rights" means the right of unobstructed ingress and egress to and from the Wind Farm Improvements by FPLE, its agents, contractors, successors and assigns.

"Annual Installment Payments" means the amounts shown in the Easement Compensation Sheet attached as **Exhibit D.**

"Collection Facilities" means the underground and above ground electrical collection and telecommunications lines, splice boxes, and all other devices and equipment used to connect the Turbines to electrical collection lines connected to the power grid and to the Wind Farm's Met Towers and operations and maintenance facilities.

"Easements" means the Turbine Site Easement, Access Easement, Collection Easement, Construction Easement, Wind Non-Obstruction Easement, Noise Easement, Overhang Easement, Met Tower Site Easement and Met Tower Access Easement.

"Easement Properties" means the portions of Owner's Property subject to the Easements granted in Section 6 of this agreement.

"Effective Date" means the date when all conditions precedent set forth in Sections 5.1 and 5.2 of this agreement are satisfied or waived, and all other documents required by FPLE have been signed and delivered by Owner.

"**Exhibit B**" means the preliminary Easement Plan attached to this agreement at the time it is signed showing the approximate planned location of all Wind Farm Improvements and Easements located on the Owner's Property.

"**Exhibit C**" means the final as-built Easement Plan to be attached to this agreement by FPLE as a replacement for **Exhibit B** after construction of the Wind Farm Improvements showing the

to the location of all structures greater than forty (40) feet in height located one thousand (1000) or less from any Turbine or Met Tower whether located on the Wind Farm. Approval shall be based on whether, in FPLE's sole judgment, informed by appropriate professional engineering and meteorological opinions, the proposed structures at the proposed location are likely to cause Interference.

This Wind Non-Obstruction Easement shall not be interpreted to prevent Owner from granting oil and gas exploration or production rights on Owner's Property, however no drilling rigs or other structures shall be located within three hundred (300) feet of any Turbine or within two hundred twenty-five (225) feet of any Met Tower except with FPLE's prior written consent. Owner shall notify FPLE as soon as Owner knows of oil and gas exploration or production plans. To the extent it does not interfere with the proposed oil or gas exploration or production, Owner shall cooperate with FPLE in the exercise of Owner's oil and gas rights to minimize Interference. In the event any oil and gas related activities are commenced on Owner's Property, Owner agrees not to object to an action by FPLE against a third party to reasonably protect FPLE's interests hereunder. In turn, FPLE agrees not to interfere with Owner's right to surface damages from oil and gas operations, exploration, drilling or granting of pipeline easements, as long as any compensation that Owner may receive shall not diminish or adversely affect any compensation due to FPLE for the Wind Farm Improvements.

6.6 Noise Easement. Owner grants FPLE an easement for the right and privilege to generate and maintain audible noise levels in excess of fifty (50) dbA on and above the Noise Easement Property at any or all times of the day or night ("Noise Easement"). The "Noise Easement Property" shall mean the Owner's Property except those portions within a 200-foot radius circle (or lesser distance with Owner's prior written consent) centered on the inside of each presently existing, occupied residence on the Owner's Property. If noise levels emanating from the Turbines exceed fifty (50) dbA without the Owner's written consent as measured within 200 feet (or lesser agreed distance) from the inside of a presently existing residence on Owner's Property by an independent professional applying commonly accepted measurement instruments and standards, FPLE shall reduce the noise level to 50 dbA at 200 feet (or lesser agreed distance) from the residence. Measures to be taken by FPLE may include installing insulation or sound deadening material in the offending Turbine(s); installing landscaping, insulation, and sound deadening material at the residence; or, changing the operation of the Turbine(s) to reduce noise output.

6.7 Overhang Easement. Owner grants FPLE an easement for the right and privilege to permit the rotors of Turbines located on adjacent properties to overhang a portion of the Owner's Property identified and shown on **Exhibit B** (the "Overhang Easement Property") by no more than 110 feet at a height of at least 100 feet above the ground ("Overhang Easement"). Owner shall not interfere with the operation of Turbine rotors that overhang the Overhang Easement Property.

6.8 Met Tower Site Easement. Owner grants FPLE an easement to construct, operate, replace, relocate, remove, and maintain a Met Tower and Collection Facilities on each Met Tower Site identified and located as shown on **Exhibits B** or **C**. Each Met Tower Site subject to the burden of this easement is referred to as a "Met Tower Site Easement Property."

Owner:
Edwin Pearson and Gail Pearson
Husband and Wife

Edwin Pearson
Edwin Pearson

Gail Pearson
Gail Pearson

FPLE:
Langdon Wind, LLC,
A Delaware limited liability company

By: _____
Name: Dean R. Gosselin
Title: Vice President

EXHIBIT A

Legal description of Owner's Property

Parcel 1
Northeast Quarter (NE¼) of Section 34, Township 161 North, Range 59 West of the Fifth Principal Meridian in Cavalier County, North Dakota.

Parcel 2
Northeast Quarter of the Northeast Quarter (NE¼ NE¼) of Section 9, Township 160 North, Range 59 West of the Fifth Principal Meridian in Cavalier County, North Dakota.

State of North Dakota]
County of Cavalier]
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AFTER RECORDING RETURN TO

Orin Shakerdge, Esq.
FPL Energy, LLC
700 Universe Blvd. (LAW/JB)
Juno Beach, FL 33408

(This space reserved for recording information)

ASSIGNMENT AND ASSUMPTION OF REAL PROPERTY INTERESTS

THIS ASSIGNMENT AND ASSUMPTION OF REAL PROPERTY INTERESTS (the "**Assignment**") is made and dated as of this 26th day of November, 2007 (the "**Effective Date**") by and between Langdon Wind, LLC, a Delaware limited liability company ("**Assignor**") and Otter Tail Corporation, a Minnesota Corporation doing business as Otter Tail Power Company ("**Assignee**").

RECITALS

WHEREAS, Assignor is currently developing a wind-powered electric generating project with a nameplate capacity of approximately 159 megawatts ("**MW**") located in Cavalier County, North Dakota (the "**Langdon Project**");

WHEREAS, Assignee desires to purchase a 40.5 MW portion of the Langdon Project and the Assets related thereto (the "**OTP Project**");

WHEREAS, Assignor desires to sell, and Assignee desires to purchase the OTP Project on the terms and subject to the conditions set forth in the Purchase and Sale Agreement entered into by and between Assignor and Assignee on August 30, 2007 ("**Agreement**");

WHEREAS, Assignor entered into Wind Farm Easement Agreements and Collection Easements (collectively the "**Easements**") with various property owners for the purpose of constructing, operating and maintaining the Langdon Project;

WHEREAS, pursuant to the Agreement, Assignor desires to assign to Assignee, and Assignee desires to accept from Assignor an assignment of those Easements in the Langdon Project for the OTP Project as more specifically set forth herein.

NOW, THEREFORE, in consideration of Ten and NO/100 Dollars ($10.00), and other good and valuable consideration, the receipt and adequacy of which is hereby acknowledged, the parties agree as follows:

AGREEMENT

State of North Dakota]
County of Cavalier]
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1. Assignor hereby grants, assigns, transfers and conveys to Assignee, all of its rights, title and interest in and to the Easements set forth in **Exhibit "A"** and legally described in **Exhibit "B"** attached hereto and made a part hereof..

2. Assignee hereby accepts said assignment as the successor to the Easements and agrees to comply with each of the terms and conditions of the assigned Easements, from and after the Effective Date. Assignor and Assignee shall provide written notice of this Assignment to the various property owners that are parties to the Easements.

3. If any provision of this Assignment or the application of any such provision to any person or circumstance shall be held invalid, illegal or unenforceable in any respect by a court of competent jurisdiction, such invalidity, illegality or unenforceability shall not affect any other provision hereof.

4. No provision set forth in this Assignment shall be deemed to enlarge, alter or amend the terms or provisions of the Easements. This Assignment shall be governed by and construed in accordance with the laws of the State of North Dakota.

5. This Assignment may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

6. This Assignment shall be binding upon and inure to the benefit of the parties hereto and their respective successors and assigns and may be executed in counterparts, each of which shall be deemed an original and all of which shall be one and the same instrument.

State of North Dakota]
County of Cavalier]
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IN WITNESS WHEREOF, Langdon and OTP have executed this Assignment as of the Effective Date.

LANGDON:
Langdon Wind, LLC,
a Delaware limited liability company

By: _____
Name: Dean R. Gosselin
Title: Vice President

STATE OF FLORIDA

COUNTY OF PALM BEACH

The foregoing instrument was duly acknowledged before me this 20th day of November, 2007, by Dean R. Gosselin, as Vice President of Langdon Wind, LLC, a Delaware limited liability company, who subscribed to the foregoing instrument and acknowledged that he executed the same on behalf of said limited liability company and that he was duly authorized to do so.

NOTARY PUBLIC-STATE OF FLORIDA
Nancy E. Llama
Commission # DD708596
Expires: NOV. 14, 2011
BONDED THRU ATLANTIC BONDING CO., INC.

_____
Notary Public, State of Florida
Nancy E. Llama
Notary Printed Name
11/14/2011
My Commission Expires:

State of North Dakota]
County of Cavalier]
Recorded : 11/26/2007 at 4:10 PM

(This space reserved for recording information)

IN WITNESS WHEREOF, Langdon and OTP have executed this Assignment as of the Effective Date.

OTP:
Otter Tail Corporation,
a Minnesota corporation d/b/a Otter Tail Power Company

By: Chuck MacFarlane
Name: Chuck MacFarlane
Title: President

STATE OF MINNESOTA

COUNTY OF OTTER TAIL

The foregoing instrument was duly acknowledged before me this 19th day of November, 2007, by Chuck MacFarlane, as President of Otter Tail Corporation, a Minnesota corporation d/b/a Otter Tail Power Company, who subscribed to the foregoing instrument and acknowledged that he executed the same on behalf of said limited liability company and that he was duly authorized to do so.

Darla M. Neville
Notary Public, State of Minnesota
Darla M. Neville
Notary Printed Name
1-31-2010
My Commission Expires:

DARLA M. NEVILLE
Notary Public
Minnesota
My Commission Expires January 31, 2010

State of North Dakota]
County of Cavalier]
Recorded : 11/26/2007 at 4:10 PM

(This space reserved for recording information)

EXHIBIT A
Easements to be Assigned

Tract 43.
That certain Wind Farm Easement Agreement by and between Richard Moos and Wanda Moos, husband and wife, subject to a life estate in Rosalia Moos, a single woman ("Owner") and Langdon Wind, LLC, a Delaware limited liability company ("FPLE") dated May 15, 2007. Memorandum of Easements recorded as Document No.: 227979 in Cavalier County, North Dakota.

Tract 44.
That certain Wind Farm Easement Agreement by and between Marvin Heck and Martha Beth Heck, husband and wife, subject to a life estate of Edwin Pearson, a married man to Gail Pearson ("Owner") and Langdon Wind, LLC, a Delaware limited liability company ("FPLE") dated May 15, 2007. Memorandum of Easements recorded as Document No.: 227981 in Cavalier County, North Dakota.

Tract 45.
That certain Wind Farm Easement Agreement by and between Dawn Heck, a single woman and Stacy Heck, a single woman, and subject to a life estate of Edwin Pearson, a married man to Gail Pearson ("Owner") and Langdon Wind, LLC, a Delaware limited liability company ("FPLE") dated May 15, 2007. Memorandum of Easements recorded as Document No.: 227995 in Cavalier County, North Dakota.

Tracts 46A & 46B. That certain Wind Farm Easement Agreement by and between Edwin Pearson and Gail Pearson, husband and wife ("Owner") and Langdon Wind, LLC, a Delaware limited liability company ("FPLE") dated May 15, 2007. Memorandum of Easements recorded as Document No.: 227996 in Cavalier County, North Dakota.

Tract 47.
That certain Wind Farm Easement Agreement by and between Jeff Ratzlaff, a single man and Mark Ratzlaff and Rebecca Ratzlaff, husband and wife ("Owner") and Langdon Wind, LLC, a Delaware limited liability company ("FPLE") dated May 15, 2007. Memorandum of Easements recorded as Document No.: 227991 in Cavalier County, North Dakota.