APPENDIX L – SOUND STUDY

SOUND LEVEL ASSESSMENT REPORT

Sweetland Wind Project
Hand County, South Dakota

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1.0 EXECUTIVE SUMMARY

The Sweetland Wind Farm, LLC (the Project) is a proposed wind power electric generation facility expected to consist of up to 71 wind turbines in Hand County, South Dakota. The Project is being developed by Scout Clean Energy, LLC (SCE). Epsilon Associates, Inc. (Epsilon) has been retained by SCE to conduct a sound level modeling study for the Project. This report presents results of the study.

A sound level modeling analysis was conservatively conducted for 86 turbines, including 71 proposed wind turbine locations and 15 alternate locations and a collector substation. All wind turbines for this Project are proposed to be General Electric (GE) 2.82-127 units.[1] The purpose of this assessment is to predict worst-case sound levels generated by the facility in Hand County when the wind turbines are operational and to compare the modeling results to applicable limits. Sound levels from the Project are limited by agreement to 50 dBA at participating occupied residences and 45 dBA at non-participating occupied residences in Hand County.

Using the Project specific data provided by SCE, the L_{eq} sound levels modeled at participating occupied receptors are at or below 50 dBA and sound levels modeled at non-participating occupied receptors are at or below 43 dBA. Therefore, the Project meets the requirements with respect to sound in the Hand County Development Agreement dated December 4, 2018 (Development Agreement).

1 Two of which will be GE 2.82-127 Low Noise Trailing Edge (LNTE) units.

2.0 INTRODUCTION

The Project is located in Hand County, South Dakota, consisting of 71 GE wind turbines and a collector substation.[2] A total of 15 alternate wind turbine locations are also proposed for the Project. The wind turbines will be GE 2.82-127 units with a rotor diameter of 127 meters.[3] A total of 64 primary and 9 alternate wind turbines are proposed to have a hub height of 114 meters and a total of 7 primary and 6 alternate wind turbines are proposed to have a hub height of 89 meters. Figure 2-1 shows the locations of the 71 proposed and 15 alternate wind turbines, the substation, and the Project boundary over aerial imagery in Hand County.

A detailed discussion of sound from wind turbines is presented in a white paper prepared by the Renewable Energy Research Laboratory.[4] A few points are repeated herein. Wind turbine noise 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 sources were significant contributors to wind turbine noise. However, recent advances in wind turbine design have greatly reduced the contribution of mechanical noise. Aerodynamic noise has also been reduced in modern wind turbines due to slower rotational speeds and changes in materials of construction. Aerodynamic noise, 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 results of a sound level modeling analysis for the Project. The wind turbines were modeled with the Cadna/A software package using sound data from GE technical documents.

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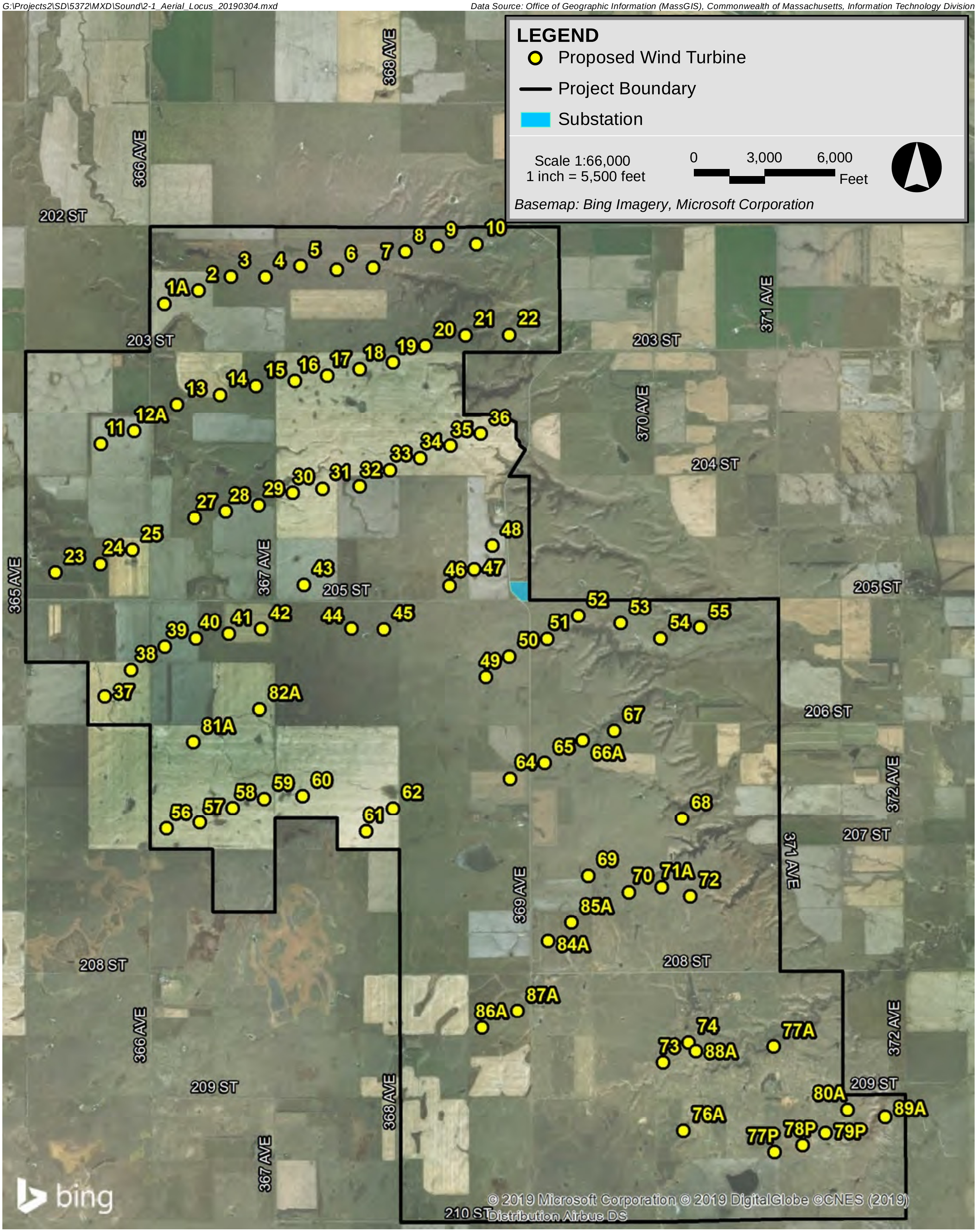
[2] The Project will also have a switchyard. The switchyard is not expected to have any significant sources of sound.

[3] Two of which will be GE 2.82-127 Low Noise Trailing Edge (LNTE) units.

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

Data Source: Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information Technology Division



Sweetland Wind **Hand County, South Dakota**

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Figure 2-1

Aerial Locus Map

3.0 SOUND TERMINOLOGY

There are several ways in which sound (noise) levels are measured and quantified. All of them use the logarithmic decibel (dB) scale. The following information defines the sound level measurement 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. Relative to this characteristic, a change in sound levels of less than 3 dB is imperceptible to the human ear.

Another mathematical property of decibels is that if one source of noise 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.[5] 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". Sound pressure levels for some common indoor and outdoor environments are shown in Figure 3-1.

Because the sounds in the environment vary with time, many different sound metrics may be used to quantify them. There are two typical methods used for describing variable sounds. These are exceedance levels and equivalent levels, both of which are derived from a large number of moment-to-moment A-weighted sound pressure level measurements. Exceedance levels are values from the cumulative amplitude distribution of all of the sound levels observed during a measurement period. Exceedance levels are designated L_n, where "n" is a value (typically an integer between 1 and 99) in terms of percentage. Equivalent levels are

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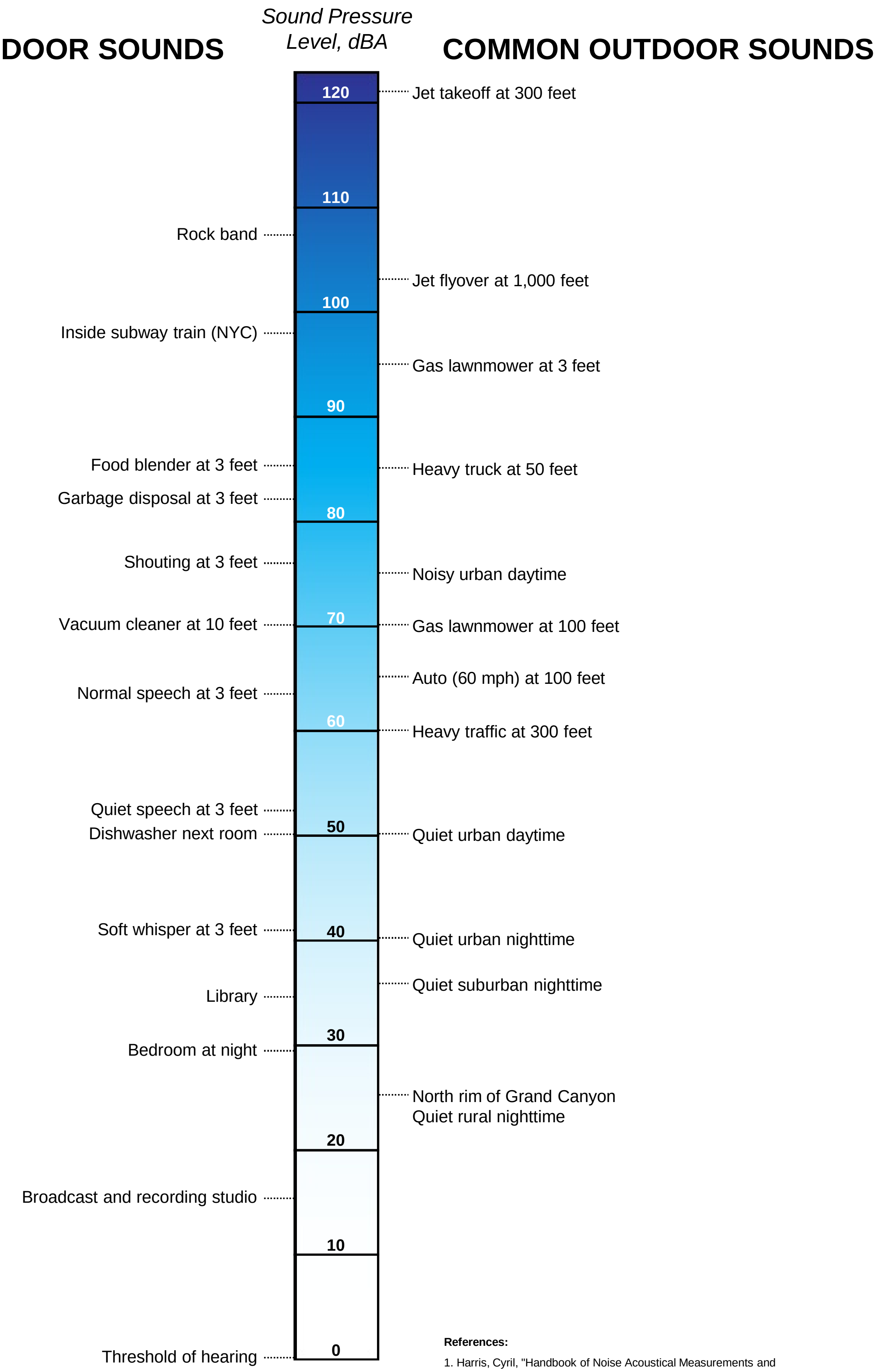
5 *American National Standard Specification for Sound Level Meters*, ANSI S1.4-1983 (R2006), published by the Standards Secretariat of the Acoustical Society of America, Melville, NY.

designated L_{eq} and quantify a hypothetical steady sound that would have the same energy as the actual fluctuating sound observed. Two sound level metrics that are commonly reported in community noise monitoring and/or utilized in this report are described below.

- L_{90} is the sound level in dBA exceeded 90 percent of the time during a measurement period. The L_{90} is close to the lowest sound level observed. It is essentially the same as the residual sound level, which is the sound level observed when there are no obvious nearby intermittent noise sources.

- 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 commonly 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 time-averaged mean square sound pressure values, the L_{eq} is mostly determined by occasional loud noises.



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

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Figure 3-1

Common Sound Levels in the Environment

4.0 NOISE REGULATIONS

4.1 Federal Regulations

There are no federal noise regulations applicable to this Project.

4.2 South Dakota State Regulations

There are no state noise regulations applicable to this Project.

4.3 Hand County Regulations

Hand County currently has no zoning ordinance containing language regulating sound levels from wind energy projects. However, Hand County has a Development Agreement with Scout Clean Energy for this Project. The proposed Sweetland Wind Project is therefore subject to the following sound level requirements per the agreement:

> *Developer agrees to site Project wind turbines such that sound levels resulting from Project wind turbines will not exceed 50 dBA at the currently occupied residences of participating landowners and 45 dBA at the currently occupied residences of non-participating landowners, unless waived in writing by the owner of the occupied residence.*

Participating receptors (occupied residences) have been evaluated in this analysis against the 50 dBA limit and non-participating receptors have been evaluated against the 45 dBA limit.

5.0 FUTURE CONDITIONS

5.1 Equipment and Operating Conditions

The sound level analysis conservatively includes 86 wind turbines, although only up to 71 turbines will be constructed (15 locations are alternate locations). Global coordinates for the 86 wind turbines are provided in Appendix A. All wind turbines are GE 2.82-127 units with a rotor diameter of 127 meters. A total of 64 primary and 9 alternate wind turbines are proposed to have a hub height of 114 meters and a total of 7 primary and 6 alternate wind turbines are proposed to have a hub height of 89 meters. The hub height of each wind turbine in the layout is included in Appendix A. A technical report from GE[6] was provided by SCE which documented the expected sound power levels associated with the GE 2.82-127 wind turbine. According to this technical document, which included broadband and octave-band A-weighted sound power levels for various wind speeds, the maximum sound power level for the GE 2.82-127 of 110.0 dBA occurs at hub height wind speeds of 10 m/s (and above). These sound power levels are defined as "calculated apparent" by the turbine manufacturer and therefore do not include any uncertainty factor.

In order to meet the limits in the Development Agreement, select wind turbines will be required to have Low Noise Trailing Edge (LNTE) blades which produce lower sound levels compared to the standard blade counterparts. A technical report from GE[7] was provided by SCE which documented the expected sound power levels associated with the GE 2.82-127 LNTE wind turbine. According to this technical document, which included broadband and octave-band A-weighted sound power levels for various wind speeds, the maximum sound power level for the GE 2.82-127 LNTE of 108.5 dBA occurs at hub height wind speeds of 10 m/s (and above). These sound power levels are also defined as "calculated apparent" by the wind turbine manufacturer and therefore do not include any uncertainty factor. Two wind turbines are required to be LNTE units and these wind turbines are identified in Appendix A.

In addition to the wind turbines, there will be a collector substation associated with the Project. The substation is proposed to be located southeast of wind turbine #48 as shown in Figure 5-1. Two 110 megavolt-ampere (MVA) transformers are proposed for the substation. Epsilon has estimated octave-band sound power levels using the MVA rating provided by SCE and techniques in the Electric Power Plant Environmental Noise Guide (Edison Electric Institute), Table 4.5 Sound Power Levels of Transformers. Table 5-1 below summarizes the sound power level data used in the modeling per transformer.

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6 General Electric Company, Technical Documentation Wind Turbine Generator Systems 2.x-127 – 60 Hz Product Acoustic Specifications, 2018.

7 General Electric Company, Technical Documentation Wind Turbine Generator Systems 2.x-127 with LNTE – 60 Hz Product Acoustic Specifications, 2018.

Table 5-1 Modeled Substation Transformer Sound Power Levels

		Sound Power Levels per Octave-Band Center Frequency [Hz]								
Maximum Rating	**Broadband dBA**	**31.5 dB**	**63 dB**	**125 dB**	**250 dB**	**500 dB**	**1k dB**	**2k dB**	**4k dB**	**8k dB**
110 MVA	99	96	102	104	99	99	93	88	83	76

5.2 Modeling Methodology

The noise impacts associated with the proposed wind turbines were predicted using the Cadna/A noise calculation software developed by DataKustik GmbH. This software uses the ISO 9613-2 international standard for sound propagation (Acoustics - Attenuation of sound during propagation outdoors - Part 2: General method of calculation). The benefits of this software are a more refined set of computations due to the inclusion of topography, ground attenuation, multiple building reflections, drop-off with distance, and atmospheric absorption. The Cadna/A 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:

- *Project Layout:* A project layout dated February 6, 2019 was provided by SCE. The 71 proposed wind turbines and 15 alternates were input into the model. The substation location was provided by SCE on January 2, 2019. Specific locations of the transformers were not provided, so Epsilon conservatively modeled them on the north side of the substation area closest to the nearest modeling receptor. The proposed wind turbines, substation, and transformers are shown in Figure 5-1.

- *Parcel Participation:* A dataset containing property parcels in the proximity of the Project was provided by SCE on January 7, 2019. Parcels identified as Wind Energy Lease and Easement Agreement ('Controlled Land') and Good Neighbor Agreement ('GNA') within the dataset have been considered participating parcels. Participating parcels within the Project boundary are indicated on Figure 5-1.[8] Parcels containing wind turbines that were not identified as 'Controlled Land' or 'GNA' have been given "pending participation" status and are indicated as such on the figure. All other parcels are considered non-participating properties.

- *Modeling Locations:* A modeling receptor dataset was provided by SCE for occupied residences in Hand County within ~4 miles of any proposed wind turbine on January

[8] Participating parcels that extend beyond the Project boundary have been excluded from figures.

2, 2019. A total of 41 receptors from this dataset were input into the Cadna/A model.[9] These were all modeled as discrete points at a height of 1.5 meters above ground level to mimic the ears of a typical standing person. These locations are shown in Figure 5-1. Participation status for each of the 41 modeling receptors was assigned based on the parcel data previously described. The receptors are indicated as either participating, pending participation, or non-participating on Figure 5-1.

- *Terrain Elevation:* Elevation contours for the modeling domain were directly imported into Cadna/A 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:* Octave-band sound power levels for the GE 2.82-127 and GE 2.82-127 LNTE wind turbines from the provided technical reports were input to the model. These sound levels represent "worst-case" operational sound level emissions. The substation transformer sound power levels as presented in Table 5-1 were input to the model.

- *Uncertainty factor:* Typically, uncertainty factors provided by manufacturers for wind turbine sound power levels are 2 decibels or less. For this analysis an uncertainty factor of 2.0 dBA was assumed and added to the sound power level for the modeled wind turbines.

- *Ground Attenuation:* Spectral ground absorption was calculated using a G-factor of 0.5 which corresponds to "mixed ground" consisting of both hard and porous ground cover.

The highest wind turbine sound power level for each wind turbine type including uncertainty was input into Cadna/A to model wind turbine generated sound pressure levels during conditions when worst-case sound power levels are expected. Sound pressure levels due to operation of all 86 wind turbines and the substation transformers were conservatively modeled at 41 receptors in Hand County. In addition to modeling at discrete points, sound levels were also modeled throughout a large grid of receptor points, each spaced 20 meters apart to allow for the generation of sound level isolines.

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9 The original dataset contained 42 receptors; however, it was later determined that one of the receptors was not an occupied residence, as confirmed by the Hand County Tax Assessor on February 1, 2019. This receptor was excluded from the model.

Several modeling assumptions inherent in the ISO 9613-2 calculation methodology, or selected as conditional inputs by Epsilon, were implemented in the Cadna/A 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 (temperature = 10°C & relative humidity = 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.

5.3 Sound Level Results

Table B-1 in Appendix B shows the predicted "Project-Only" broadband (dBA) L_{eq} sound levels under conditions specified in the previous section for the 41 receptors in Hand County. A brief description of each receptor is provided in the table for identification. The sound levels range from 35 to 50 dBA at participating receptors and from 27 to 43 dBA at non-participating receptors.

In addition to the 41 receptor points, L_{eq} sound level isolines generated from the modeling grid are presented in Figure 5-2. Wind turbines with LNTE blades are identified in the figure.

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Data Source: Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information Technology Division

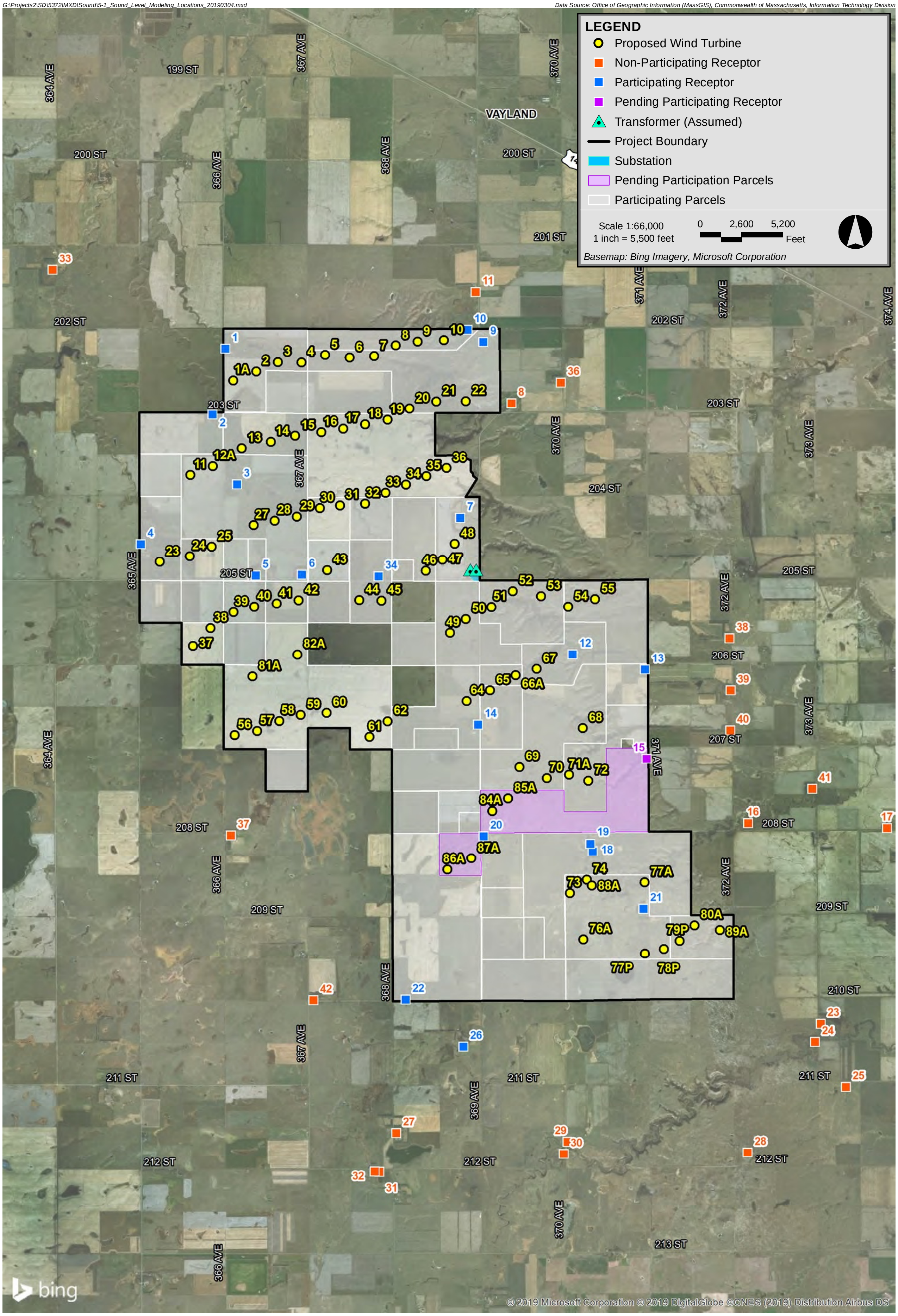

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Figure 5-1
Sound Level Modeling Locations

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Data Source: Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information Technology Division

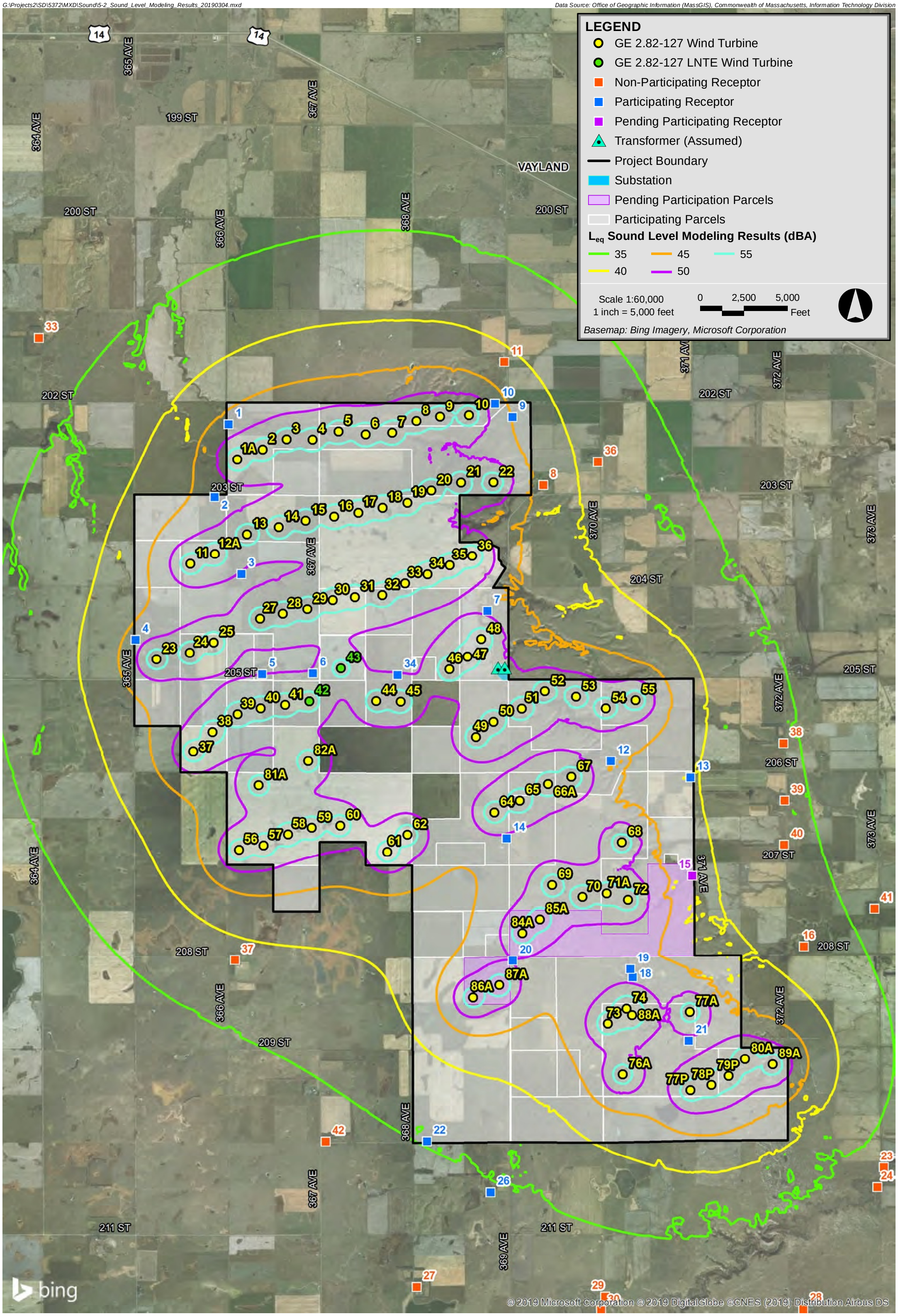

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Figure 5-2

L_{eq} Sound Level Modeling Results

6.0 CONSTRUCTION NOISE

The majority of the construction activity related to the Sweetland Wind Project will occur around each of the wind turbine sites. By its very nature, construction activity moves around the site. Full construction activity will generally occur at one wind turbine site at a time, although there will be some overlap at adjacent sites for maximum efficiency. There are generally three phases of construction at a wind energy project – excavation, foundations, and turbine erection. Table 6-1 presents the equipment sound levels for the louder pieces of construction equipment expected to be used at this site along with their phase of construction. Reference sound source information in Table 6-1 was obtained from either Epsilon field measurements or the FHWA's Roadway Construction Noise Model database.

Construction of the Project is expected to take multiple months. Construction of a single wind turbine from excavation to foundation pouring to turbine erection is roughly a three-week process. However, work will not proceed in that order for each wind turbine to be erected. For example, depending on weather all foundations might be poured before any turbine erection work begins. Excavation work is expected to occur from sunrise to the sunset. Concrete foundation work and turbine erection work could extend into the overnight hours depending on the weather and timing of a concrete pour which must be continuous. Excavation work will typically be daytime only.

Table 6-1 Sound Levels for Construction Noise Sources

Phase	Equipment	Sound Level at 50 feet (dBA)
Excavation	Grader	85
Excavation	Bulldozer	82
Excavation	Front-end loader	79
Excavation	Backhoe	78
Excavation	Dump truck	76
Excavation	Roller	80
Excavation	Excavator	81
Excavation	Rock drill	89
Foundation	Concrete mixer truck	79
Foundation	Concrete pump truck	81
Foundation	Concrete batch plant	83
Turbine erection	Large crane #1	81
Turbine erection	Large crane #2	81
Turbine erection	Component delivery truck	84
Turbine erection	Air compressor	78

7.0 EVALUATION OF SOUND LEVELS

7.1 Modeled Sound Levels

All modeled sound levels, as output from Cadna/A 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).

7.2 Evaluation

The Project is subject to the requirements contained in the Development Agreement. The sound level limits in this agreement are 50 dBA at participating occupied residences and 45 dBA at non-participating occupied residences. The predicted worst-case L_{eq} sound levels from the Sweetland Wind Project are at or below the 50 dBA limit at all modeled participating receptors and below the 45 dBA limit at all modeled non-participating receptors.

A review of Table B-1 in Appendix B shows the highest L_{eq} sound level for a non-participating receptor to be 43 dBA. Therefore, the Project meets the requirements with respect to sound in the Developer Agreement.

8.0 CONCLUSIONS

A comprehensive sound level analysis was conducted for the proposed Sweetland Wind Project within Hand County, South Dakota. A total of 71 wind turbines are proposed to be built for this Project. Sound levels resulting from the operation of 71 wind turbines and 15 alternates were calculated at 41 receptor points (occupied residences), and isolines were generated from a grid encompassing the area surrounding the wind turbines using the proposed layout. The L_{eq} sound levels modeled at participating occupied receptors were at or below 50 dBA and sound levels modeled at non-participating occupied receptors were at or below 43 dBA. All L_{eq} sound levels meet the respective limits of 50 dBA and 45 dBA. Therefore, the Project meets the requirements with respect to sound in the Development Agreement.

Appendix A

Wind Turbine Coordinates

Table A-1: Wind Turbine Coordinates (Layout 190206)

Wind Turbine ID	Wind Turbine Type	Hub Height (m)	Coordinates NAD83 UTM Zone 14N (meters)	
			X (Easting)	Y (Northing)
1A	GE 2.82-127	89	511012.21	4921687.08
2	GE 2.82-127	114	511453.33	4921859.46
3	GE 2.82-127	114	511870.19	4922038.85
4	GE 2.82-127	114	512321.24	4922032.65
5	GE 2.82-127	114	512774.51	4922174.47
6	GE 2.82-127	114	513244.56	4922123.89
7	GE 2.82-127	114	513710.73	4922151.63
8	GE 2.82-127	114	514128.93	4922358.66
9	GE 2.82-127	114	514543.93	4922430.56
10	GE 2.82-127	114	515045.88	4922458.48
11	GE 2.82-127	114	510193.66	4919873.20
12A	GE 2.82-127	89	510620.94	4920044.27
13	GE 2.82-127	114	511176.44	4920385.98
14	GE 2.82-127	114	511733.46	4920510.93
15	GE 2.82-127	114	512198.31	4920625.64
16	GE 2.82-127	114	512699.15	4920693.91
17	GE 2.82-127	114	513119.71	4920762.30
18	GE 2.82-127	114	513540.47	4920848.10
19	GE 2.82-127	114	513970.65	4920934.88
20	GE 2.82-127	114	514387.31	4921145.50
21	GE 2.82-127	114	514905.57	4921284.73
22	GE 2.82-127	114	515470.08	4921288.61
23	GE 2.82-127	114	509603.78	4918211.78
24	GE 2.82-127	114	510183.19	4918322.66
25	GE 2.82-127	114	510600.13	4918502.72
27	GE 2.82-127	114	511405.11	4918917.06
28	GE 2.82-127	114	511804.96	4919001.75
29	GE 2.82-127	114	512229.95	4919082.95
30	GE 2.82-127	114	512672.33	4919240.36
31	GE 2.82-127	114	513058.38	4919293.06
32	GE 2.82-127	114	513537.27	4919326.90
33	GE 2.82-127	114	513931.55	4919533.22
34	GE 2.82-127	114	514321.46	4919691.24
35	GE 2.82-127	114	514711.34	4919849.29
36	GE 2.82-127	114	515101.21	4920007.25
37	GE 2.82-127	114	510243.63	4916605.53
38	GE 2.82-127	114	510579.50	4916943.29
39	GE 2.82-127	89	511017.08	4917250.36
40	GE 2.82-127	114	511418.75	4917354.69
41	GE 2.82-127	114	511845.57	4917412.66
42	GE 2.82-127 LNTE	89	512265.78	4917475.42
43	GE 2.82-127 LNTE	114	512815.20	4918054.27
44	GE 2.82-127	114	513429.64	4917481.64
45	GE 2.82-127	89	513853.67	4917471.46
46	GE 2.82-127	89	514702.38	4918039.82
47	GE 2.82-127	114	515021.66	4918255.13
48	GE 2.82-127	89	515255.92	4918559.94
49	GE 2.82-127	114	515168.17	4916854.45

Table A-1: Wind Turbine Coordinates (Layout 190206)

Wind Turbine ID	Wind Turbine Type	Hub Height (m)	Coordinates NAD83 UTM Zone 14N (meters)	
			X (Easting)	Y (Northing)
50	GE 2.82-127	114	515469.25	4917120.17
51	GE 2.82-127	114	515962.07	4917348.53
52	GE 2.82-127	114	516365.98	4917651.25
53	GE 2.82-127	114	516911.45	4917557.34
54	GE 2.82-127	114	517426.35	4917351.11
55	GE 2.82-127	114	517943.89	4917497.10
56	GE 2.82-127	114	511042.17	4914893.71
57	GE 2.82-127	114	511469.67	4914971.97
58	GE 2.82-127	114	511894.42	4915162.79
59	GE 2.82-127	114	512305.67	4915277.95
60	GE 2.82-127	114	512803.14	4915317.02
61	GE 2.82-127	114	513621.17	4914858.56
62	GE 2.82-127	114	513970.70	4915157.35
64	GE 2.82-127	114	515484.40	4915543.47
65	GE 2.82-127	89	515930.55	4915748.62
66A	GE 2.82-127	89	516423.31	4916038.94
67	GE 2.82-127	114	516827.22	4916161.87
68	GE 2.82-127	114	517706.12	4915026.43
69	GE 2.82-127	114	516494.56	4914281.40
70	GE 2.82-127	114	517021.22	4914069.27
71A	GE 2.82-127	114	517443.63	4914133.45
72	GE 2.82-127	114	517815.36	4914019.51
73	GE 2.82-127	114	517461.35	4911864.45
74	GE 2.82-127	89	517789.29	4912125.25
76A	GE 2.82-127	114	517721.01	4910983.29
77A	GE 2.82-127	114	518892.06	4912070.45
77P	GE 2.82-127	114	518901.20	4910709.17
78P	GE 2.82-127	114	519264.70	4910797.24
79P	GE 2.82-127	114	519563.99	4910955.49
80A	GE 2.82-127	89	519848.54	4911253.43
81A	GE 2.82-127	114	511384.00	4916015.74
82A	GE 2.82-127	89	512244.18	4916438.26
84A	GE 2.82-127	114	515973.83	4913442.12
85A	GE 2.82-127	114	516278.60	4913679.95
86A	GE 2.82-127	114	515116.95	4912318.92
87A	GE 2.82-127	89	515575.65	4912534.49
88A	GE 2.82-127	114	517882.92	4912011.96
89A	GE 2.82-127	114	520332.80	4911161.95

Appendix B

Predicted Sound Levels at Occupied Residences

Table B-1: Modeled Sound Pressure Levels at Occupied Residences

Receptor ID	Description	Coordinates UTM NAD83 Zone 14N		Participation Status	Source Only Broadband L_{eq} Sound Level (dBA)
		X (m)	Y (m)		
1	Dale& Leanna Resel	510861.20	4922299.80	Participating	47
2	Dale& Leanna Resel	510617.45	4921033.54	Participating	47
3	John& Kimberly Fanning	511084.98	4919693.62	Participating	50
4	Jeremy& Marci Stevens	509240.44	4918553.74	Participating	47
5	James& Renae Aalbers	511442.82	4917952.72	Participating	50
6	Eric Fanning	512329.39	4917967.20	Participating	50
7	Jason D Resel	515363.03	4919055.61	Participating	49
8	Lyle& Rebecca Resel	516342.30	4921246.06	Non-Participating	43
9	James Major	515803.65	4922429.04	Participating	45
10	36891 St	515499.23	4922661.77	Participating	47
11	Steve Runge	515658.09	4923385.39	Non-Participating	42
12	Craig& Cheryl Van Asperen	517511.88	4916440.42	Participating	46
13	Cole Mehling	518901.01	4916154.62	Participating	41
14	Karen& Clinton Haigh	515701.85	4915097.07	Participating	49
15	Gilbert& Stephanie Rodgers	518930.64	4914440.16	Pending Participation	41
16	Reynolds Family Farms LLC	520879.37	4913213.26	Non-Participating	38
17	L Brewer 37386	523539.62	4913117.77	Non-Participating	32
18	Jay Anderberg	517896.23	4912672.02	Participating	49
19	Jay Anderberg cabin	517856.16	4912818.41	Participating	47
20	Jeremy& Marci Stevens	515809.40	4912961.25	Participating	50
21	Wayne& Joan Horsley Residence	518872.55	4911572.32	Participating	49
22	Travis Letsche	514315.01	4909824.50	Participating	35
23	Robert Duxbury	522266.31	4909368.02	Non-Participating	33
24	Paul Duxbury	522159.03	4909019.95	Non-Participating	33
25	Dean Duxbury	522748.18	4908152.95	Non-Participating	30
26	Leon& Lori Boomsma	515422.97	4908930.39	Participating	35
27	Scot Parmely	514136.35	4907279.00	Non-Participating	31
28	Non-valuated property	520868.09	4906901.58	Non-Participating	31
29	Non-valuated property	517417.40	4907112.62	Non-Participating	27
30	M Anson	517347.17	4906873.43	Non-Participating	32
31	Joe Jensen	513813.93	4906527.92	Non-Participating	30
32	Howard Jensen	513722.68	4906535.03	Non-Participating	30
33	Kevin& Marcie Bertsch	507556.69	4923810.27	Non-Participating	33
34	Dale G Christiansen	513798.02	4917935.51	Participating	50
36	Larry& Deanne Rowen	517289.54	4921647.66	Non-Participating	39
37	Robert& Patricia Moriarty	510971.00	4912975.40	Non-Participating	38
38	Jerrit Mehling	520521.55	4916748.02	Non-Participating	36
39	Deborah A Mehling Rev Trust	520543.07	4915750.09	Non-Participating	36
40	Gregory Roy Mehling	520533.48	4914986.86	Non-Participating	36
41	Kenneth& Dieanne Wedge	522108.26	4913867.58	Non-Participating	34
42	Daniel W Jensen	512549.23	4909816.85	Non-Participating	33