

Attachment C

Noise Assessment Report

Big Bend Wind, LLC
Docket No. IP-7013/WS-19-619
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Noise Assessment Report

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Big Bend Wind

Big Bend Wind, LLC

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1.0 Introduction

Big Bend Wind is a proposed wind power project in Cottonwood and Watonwan Counties, Minnesota (“Project”). The Project includes up to 51 turbines for a total capacity of up to 311.1 MW.

Big Bend Wind, LLC (“Applicant”) filed a Site Permit Application with the Minnesota Public Utility Commission (“MN PUC”) in November 2020 (MN PUC Docket 19-619) to construct the Project. As part of the docket, the Applicant filed a Supplemental and Amended Site Permit Application in September 2021 that included a revised noise analysis¹ (“2021 Noise Assessment”) which concluded that the Project, with projected turbine-only sound levels of less than 47 dBA, would not significantly contribute to total sound levels in excess of 50 dBA. In September 2022, the MN PUC approved the Big Bend Wind Project. Since that approval, the Project has removed two turbine locations from the layout (for 51 total in this report) and updated the turbine models. Big Bend is no longer considering the Nordex N163 turbine model and the GE model is now a 6.1 MW turbine (no changes to the physical dimensions). Therefore, this noise assessment report provides updated sound propagation modeling using the revised turbine layout and turbine models and provides a comparison of the model results with the State sound level limits.

Based on the information provided in this report, the Project is expected to produce sound levels that are below the Minnesota Pollution Control Agency (“MPCA”) sound level limits.

This report includes:

- A description of the Project,
- A discussion of noise standards,
- A brief summary of background sound levels from the 2021 Noise Assessment,
- Sound propagation modeling procedure and results, and
- Conclusions

In addition, an introduction to acoustics is provided in Appendix A, supporting information is provided in Appendices B through F, including information about Paxwood Acoustics in Appendix E and a quick reference to the background sound level monitoring from the 2021 Noise Assessment in Appendix F.

¹ RSG, *Big Bend Wind Project Revised Noise Assessment*, September 2021, Bing Bend Wind, LLC.

2.0 Project Description

The Project includes up to 51 turbines for a total capacity of up to 311.1 MW in Cottonwood and Watonwan Counties. The two turbine models under consideration are the GE 6.1-158 (GE 158) with a hub height of 117 meters and the Vestas V162-6.0 MW (V162) with a hub height of 119 meters. The blades of the GE 158 have Low-Noise Trailing Edges, and the V162 has serrated trailing edges, both of which reduce the overall sound emissions from the turbines.

A map showing the turbine layout and the surrounding area is provided in Figure 1. There are nine proposed turbine locations in Watonwan County to the east, and 42 proposed turbine locations in Cottonwood County to the west.

As shown in Figure 1, the Project area is north of MN Route 60 (MN-60) and south of MN Route 30 (MN-30). Nearby cities include Mountain Lake and Butterfield which are along MN-60 to the south and Darfur which is on MN-30 to the northeast. The primary land use around the Project area is agricultural with some rural residences, and the terrain is relatively flat.

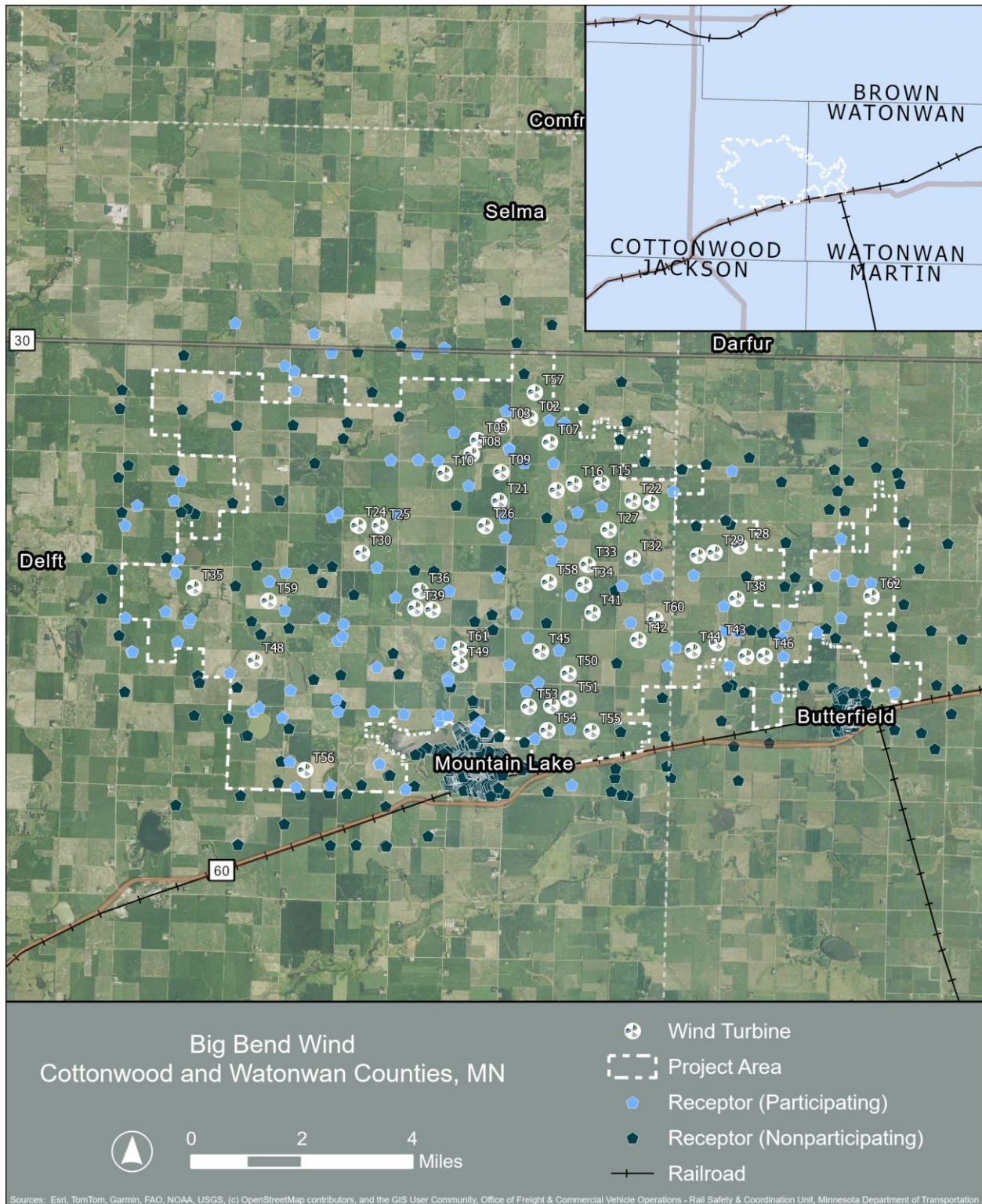


Figure 1: Map of the Project and Surrounding Area

3.0 Noise Standards

3.1 Local Standards

As discussed in the 2021 Noise Assessment, both Watonwan and Cottonwood Counties have zoning ordinances that speak to wind power development and both ordinances point to the established MPCA limits to regulate noise.

3.2 State Standards

In April 2025, the MN PUC published draft application guidance² that applies to large energy infrastructure projects (“Guidance”). The document points to the MPCA limits that are described further below as the sound level limits that are applicable to wind power projects such as Big Bend Wind. Section 3.7.6 of the Guidance says that,

Noise standards are public health standards. They protect people from noise generated by all sources at a specific time and place. The total sum of noise at a specific time and location cannot exceed the standards. The MPCA evaluates whether a specific noise source is in violation by determining if the source causes or significantly contributes to a violation of the standards.

Section 5.11 of the Guidance recommends that pre-construction sound propagation modeling be conducted to assess potential noise impacts.

MPCA Limits

The MPCA noise standards are codified in Minnesota Rules Chapter 7030. The sound level limits are specifically listed in MN Rules Part 7030.0040, which limits daytime and nighttime sound levels (L_{50} and L_{10}) by Noise Area Classification (NAC). These limits are reproduced in Table 1 below.

Table 1: MPCA Noise Limits from MN Rules Part 7030.0040

Noise Area Classification	Daytime Limit (dBA)		Nighttime Limit (dBA)	
	L_{50}	L_{10}	L_{50}	L_{10}
1	60	65	50	55
2	65	70	65	70
3	75	80	75	80

² MN PUC, Draft Application Guidance for Large Energy Infrastructure Facilities in Minnesota, April 2025.

As shown in Table 1, the most stringent limit is the nighttime L_{50} limit of 50 dBA at NAC 1 receptors. Residences are included in NAC 1. Daytime is defined in the rules as 7 AM to 10 PM and nighttime is 10 PM to 7 AM. Lastly, the definitions in MN Rules Part 7030.0020, indicate that the L_{50} and L_{10} are over a one-hour period.

These are the same limits to which the Project was evaluated in the 2021 Noise Assessment.

4.0 Background Sound Levels

Background sound level monitoring was completed for the 2021 Noise Assessment. Section 5 of the 2021 Noise Assessment by RSG is provided as Appendix F to this report for quick reference to that section of this public document. It provides details of the monitoring campaign including the procedures and equipment that were used, how the data was processed, where monitoring took place, and the detailed monitoring results for each location. A brief summary of the most relevant aspects of the monitoring is provided in this section.

The background sound level monitoring was conducted in November of 2019 over a period of approximately nine days at five monitor locations (identified as Monitors 1 through 5) spread throughout the Project area. A summary of the locations, common sources of sound, and the daytime and nighttime L_{50} are provided in Table 2.

Overall, background sound levels were similar across the Project area with slightly higher overall nighttime sound levels (L_{50}) at the southern monitors (Monitors 4 and 5), although there was some agricultural activity near Monitors 1 and 2 that caused sound levels (L_{50}) to exceed 50 dBA for a few hours over the nine-day monitoring period. Outside of this, nighttime sound levels were consistently below 50 dBA with an average nighttime L_{50} over the monitoring period of 33 dBA across the Project area. The monitoring indicated that at night background sound levels were largely driven by natural sounds with no particular or consistent localized anthropogenic noise that would be regularly additive to the proposed Project.

Table 2: Summary of Background Sound Level Monitoring from the 2021 Noise Assessment

Monitor	Location	Common Sound Sources	Sound Level (L50, dBA)
1	Northwest corner of Project area, Edge of a field, 250 ft east of County Rd. 9, 1,360 ft south of 310 th St.	Biogenic sounds Wind through trees Occasional vehicle passbys, aircraft, & farm equipment	Daytime: 36 Nighttime: 32 Max. 1-hr at night: 60 Min. 1-hr at night: 21
2	Northern section of Project area, Near a farm residence, 115 ft south of 310 th St, 300 ft west of County Rd. 1.	Biogenic sounds Wind through trees Vehicle passbys Local & distant farm equipment Occasional aircraft	Daytime: 40 Nighttime: 31 Max. 1-hr at night: 58 Min. 1-hr at night: 20
3	More central to the Project area, Near a farm residence, 150 ft west of County Rd. 49, 545 ft north of 330 th St.	Biogenic sounds Wind through trees Distant train horn & farm equipment Occasional vehicle passbys & aircraft	Daytime: 36 Nighttime: 31 Max. 1-hr at night: 49 Min. 1-hr at night: 20
4	Southern section of Project area, Near a farm residence, 460 ft south of 360 th St, 2,200 ft east of County Rd. 1.	Biogenic sounds Local farm equipment Distant traffic & trains Occasional vehicle passbys & aircraft	Daytime: 40 Nighttime: 36 Max. 1-hr at night: 47 Min. 1-hr at night: 23
5	Southeast corner of Project area, Agricultural outbuilding parcel outside of Butterfield. ~0.5 mi west of 650 th Ave, 0.75 mi north of Township Rd. 105 ~0.5 mi east of a water treatment facility	Biogenic sounds Wind through trees Distant traffic, trains, & mechanical equip. Occasional aircraft	Daytime: 39 Nighttime: 36 Max. 1-hr at night: 44 Min. 1-hr at night: 28

5.0 Sound Propagation Modeling

5.1 Modeling Procedure & Settings

Sound propagation modeling was completed using the modeling software CadnaA made by DataKustik GmbH. CadnaA implements the international sound propagation standard, ISO 9613-2 “Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation.” Both CadnaA and the ISO 9613-2 standard are used by noise control professionals across the United States and are regularly relied upon by local and state jurisdictions. The model takes into account source sound emissions, topography, receptor locations, and several other factors. It calculates sound levels for meteorological conditions that are favorable for sound propagation, assuming that all receptors are downwind of the sound sources.

The modeling conducted for this report followed the ANSI/ACP wind turbine sound modeling standard³ including a +2 dB factor added to the turbine sound power level and using a ground factor of $G=0.5$.

For this assessment, USGS terrain data was used for the Project to create the three-dimensional topography throughout the surrounding area. Other site features, including the proposed locations of equipment and nearby receptors, were provided by the Applicant.

Model input data and parameters are provided in Appendix B.

The model was used to calculate sound pressure levels throughout the area at a grid of receptors that were spaced every 50 feet (15.24 meters) while each turbine was operating at its highest rated sound power level. Each receptor was modeled at 13 feet (4 meters) above ground level. Based on the grid of receptors, sound level iso-lines are generated throughout the area so that the projected sound levels can be shown throughout the surrounding area. In addition to the grid of receptors used to generate sound level iso-lines, discrete receptors were modeled at 973 residences near the Project, many of which are in Mountain Lake or Butterfield.

Modeling was completed for the two turbine models under consideration, the GE 158 and the V162, both using the same 51 turbine layout. One turbine, T34, was modeled using noise reduced operations (NRO) for the GE 158 scenario.

³ ANSI/ACP Standard 111-1, *Wind Turbine Sound Modeling*, American National Standards Institute, 2022.

5.2 Model Results

Model results for each turbine model are provided in map format in Appendix C and tabular format for each discrete receptor in Appendix D. For both turbine models, turbine-only sound levels are projected to be 47 dBA or less at all participating receptors and 45 dBA or less at all nonparticipating receptors. When summed with background sound levels, the total projected sound levels (L_{50}) should consistently be 50 dBA or less except for infrequent periods when background itself is at or above 50 dBA.

A summary of the results similar to how they were reported in the 2021 Noise Assessment is provided below in Table 3. The rows in Table 3 that are indicated as “Total” sound are the projected turbine only levels summed with the overall sitewide nighttime L_{50} of 33 dBA. For any given hour, the hourly L_{50} may be higher or lower than the “Total” sound in Table 3 depending on the background for that given hour.

Table 3: Summary of Model Results (dBA)

Turbine Model	Sound Source	Statistical L_{50} Metric ⁴	Residence Classification		
			All Residences	Participating Residences	Non-Participating Residences
GE 158	Turbine-only	Avg	33	38	33
		Max	47	47	44
		Min	17	20	17
	Total (Background + Project)	Avg	36	40	36
		Max	47	47	44
		Min	33	33	33
V162	Turbine-only	Avg	31	36	31
		Max	44	44	41
		Min	16	19	16
	Total (Background + Project)	Avg	35	38	35
		Max	45	45	42
		Min	33	33	33

⁴ As noted in the 2021 Noise Assessment, the average L_{50} across all receptors is meant to convey the overall potential impact across the Project area so that the results of the different turbine models can be easily compared. The maximum L_{50} represents the results highest projected sound level at receptors while the minimum L_{50} represents the lowest projected sound level at receptors.

6.0 Conclusions

Paxwood Acoustics conducted sound propagation modeling for Big Bend Wind which is an update to the modeling that was provided in the 2021 Noise Assessment. No additional monitoring was conducted for this noise assessment, but the background sound levels from the 2021 Noise Assessment are summarized in Section 4.0 and detailed in Appendix F.

The turbine models currently under consideration and evaluated in this report are the GE 158 and the V162, which use low noise trailing edge and serrated trailing edge technology respectively, to reduce overall sound emissions from the turbines. The turbine layout includes 51 turbine locations, which are the same locations for both turbine models.

Sound propagation modeling was completed using the ANSI/ACP wind turbine sound modeling standard³ including a +2 dB factor added to the turbine sound power level and using a ground factor of $G=0.5$. As discussed in Section 5.2 and detailed in Appendix C and D, the projected turbine-only sound levels are 47 dBA or less at all participating receptors and 45 dBA or less at all nonparticipating receptors. When summed with background sound levels, the total projected sound levels (L_{50}) should consistently be 50 dBA or less except for infrequent periods when background itself is at or above 50 dBA.

Given this, Big Bend Wind is expected to produce sound levels that are below the MPCA noise limits and are not expected to significantly contribute to total sound levels above 50 dBA, the lowest nighttime MPCA limit.

Appendix A: Introduction to Acoustics

Sound, Sources, and Perception

Sound in air is caused by fluctuations in air pressure which can be due to a variety of sources. The sources of sound can generally be grouped into three major categories: anthropogenic, biogenic, and geophonic. Anthropogenic sounds are human caused sounds such as voices, instruments, vehicles, and mechanical and electrical equipment. Biogenic sounds are those that are caused by organisms such as animal calls or animal interaction with the environment. And lastly geophonic sounds are those caused by the environment itself such as waves hitting a shoreline or wind interacting with plants or other objects.

There are three primary characteristics of sound that affect human perception: frequency which may also be referred to as pitch or tone, amplitude which relates to perceived loudness or volume, and temporal fluctuations, which is to say that sound can change with time.

Frequency

Humans can hear sound over a range of frequencies typically from 20 Hz to 20,000 Hz. While not strictly defined, this range can be divided into three subranges which are described as low frequency (20 Hz to around 250 Hz), mid frequency (around 250 Hz to around 4,000 Hz), and high frequency (around 4,000 Hz to 20,000 Hz). The mid frequency range is where most human speech occurs. More defined ranges of frequency are divided into octave bands (31.5 Hz, 63 Hz, 125 Hz, 250 Hz, 500 Hz, 1 kHz, 2 kHz, 4 kHz, 8 kHz, and 16 kHz), or even further into 1/3 octave bands which are three smaller bands within each octave band. Sound below 20 Hz is referred to as infrasound and is not typically audible to the human ear. Sound above 20,000 Hz is referred to as ultrasound and is also not audible to the human ear.

Most sounds are broadband in nature and contain energy at a range of frequencies. If however, a sound contains notably more energy at a specific frequency compared to the adjacent frequencies, then the sound can be perceived as a tone, such as a note in music.

Amplitude

Humans can hear sound over a wide range of pressures, from approximately 20 micropascals to over 20 million micropascals. Sound can occur outside of this range, but below 20 micropascals is typically inaudible to humans and above 20 million micropascal can cause pain. In acoustics, this wide range of audible sound pressures is compressed using a logarithmic scale to create a range of sound pressure levels from 0 dB (20

micropascals) to 120 dB (20 million micropascals). It is in this logarithmic scale, denoted as decibel or dB, that acousticians and environmental regulations quantify the amplitude of sound.

Temporal Changes

Both frequency and amplitude can change with time. A sound may be constant in both frequency and level, but this is fairly uncommon. If one considers the fluctuation in sounds from people having conversations, birds chirping, or vehicles passing by, it becomes apparent how much sound can change from one instance to the next. It is for this reason that acousticians use a variety of metrics to define and describe sound. These metrics are discussed further below.

Weighting Networks, Sound Pressure Level, and Metrics

Weighting Networks

Humans are most sensitive to sound between 500 Hz and 5 kHz. Our sensitivity with sound decreases below 500 Hz and above 5 kHz. In order to account for this varying sensitivity, the A-weighting network or filter was developed to mimic the sensitivity of the human ear and how we perceive loudness. A-weighting discounts sound in varying degrees by frequency below 500 Hz and above 5,000 Hz. Between 1,000 Hz and 4,000 Hz, the A-weighting network amplifies sound slightly to account for the increased sensitivity of the human ear in that range. Since the A-weighting network accounts for human sensitivity at different frequencies, it is widely used in environmental acoustics and most environmental regulations. When a sound level is A-weighted, an “A” is typically added to the end of the abbreviation for decibel: dBA.

There are other weighting networks with different purposes, such as C, G, or Z, but A-weighting is most used in environmental acoustics. If a sound is not weighted or sometimes referred to as unweighted, it is considered Z-weighted or dBZ.

Sound Pressure Level

As was discussed previously, in acoustics, the amplitude of sound is often referred to in terms of sound pressure level. Representative sound pressure levels of some common sound sources and environments are shown in Figure 2. The sound levels presented in Figure 2 are meant to be illustrative, so any specific source or environment may be similar to or fall outside of the ranges shown in the graphic.

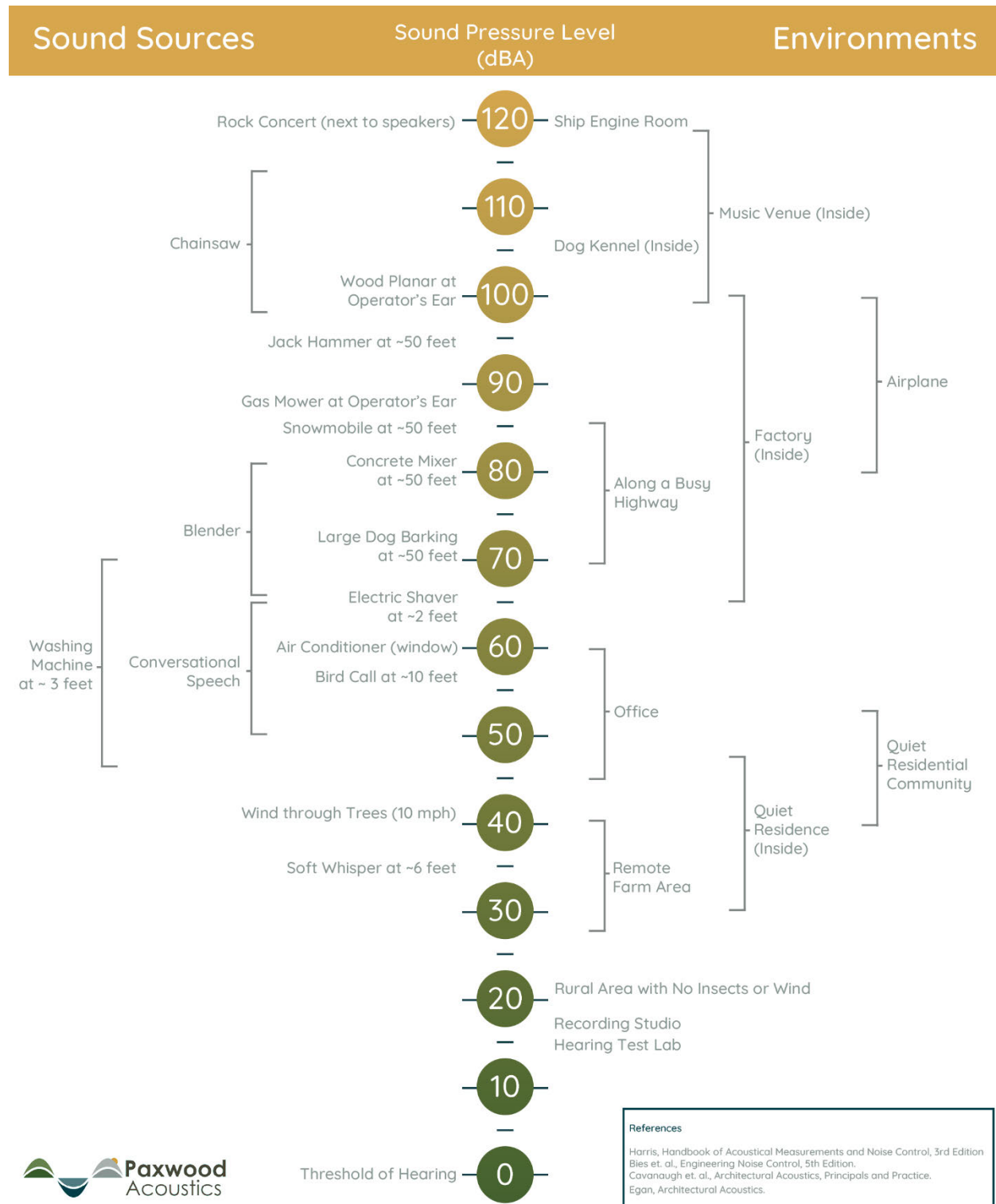


Figure 2: Representative Sound Pressure Levels (dBA) of Common Sound Sources & Environments

Since sound is a logarithmic function, one cannot use regular arithmetic operations to add and subtract sound levels. So, for example, conversational speech typically occurs at a level between 55 dBA and 65 dBA. If one person is speaking at a level of 60 dBA and another person is also speaking at a level of 60 dBA, the total sound level is not 120 dBA. (And a good thing too, otherwise, two people talking at the same time would quickly approach the threshold of pain, 120 dBA.) Instead, two voices at the same level only causes an increase of 3 dB, so 60 dBA plus 60 dBA equals 63 dBA. To illustrate this further, Table 4 provides a general guide on how two sound levels sum together.

Table 4: Guide to Sound Level Summation

If the difference between two sound levels is:	Add the following value to the greater of the two sound levels:
0 or 1 dB	3 dB
2 or 3 dB	2 dB
4 or 9 dB	1 dB
10 dB or more	0 dB
Note: For the precise calculation - $L_{p_{total}} = 10 \times \log_{10} \left(10^{L_{p1}/10} + 10^{L_{p2}/10} \right)$	

In terms of perception of sound level there are two helpful rules of thumb to be aware of:

- 1) A change in broadband sound level of 10 dB is perceived as a halving or doubling of loudness, depending on if the amplitude of the sound decreased or increased, and 2)
- Changes in sound level of less than 3 dB are generally considered not perceptible.

Sound Level Metrics

With sound levels in an environment continuously changing, different sound level metrics are used to describe the sound level versus time. Some common sound level metrics are briefly described below:

- Equivalent Continuous Sound Level (L_{eq}): The L_{eq} is the level of the average sound pressure over a specified period of time. It takes into account quieter, long-term sound levels along with louder, short-duration sound levels to provide an overall sound level for a given time period. The louder sound levels, even with a short-duration, can have a strong influence on the L_{eq} . The L_{eq} is often used in environmental acoustics to convey an average representation of the acoustical environment, even though it is influenced more strongly by higher sound levels that occur over the specified interval. An L_{eq} may be as short as 1-second or up to an hour or more depending on the purpose of the quantification.
- Statistical Sound Levels (L_n): Statistical sound levels or percentile sound levels describe the level that is exceeded for a specified percentage of time. The L_{10} , for example, is the level that is exceeded 10% of the time. The L_{50} , is the median sound

level: half the time the sound level is above the L_{50} and half the time the sound level is below the L_{50} . And the L_{90} is the sound level that is exceeded 90% of the time.

- **Maximum Sound Level (L_{max}):** The phrase “maximum sound level” may be used to describe the maximum L_{eq} or L_n over a given time period, but it can also be used to describe the sound level over a very short-duration typically using either a 1-second time constant which is referred to as slow-response, or a 125-millisecond time constant which is referred to as a fast-response. If the L_{max} metric is being used, it is good practice to note which time constant is being applied by adding the notation S or F to the abbreviation: L_{Smax} or L_{Fmax} . The most appropriate time constant to use depends on the specific context of the quantification.
- **Day-Night Level (L_{dn}):** The L_{dn} is similar to the L_{eq} except that it is specifically applied over an entire day or 24-hour period with a 10 dB penalty applied to sound levels between 10 PM and 7 AM to account for greater sensitivity at night.

Appendix B: Model Settings & Input

Table 5: Sound Propagation Model Settings

Model Parameter	Setting
Ground Attenuation	ISO 9613-2 spectral ground attenuation with a ground factor of 0.5 in accordance with ANSI/ACP Standard 111-1. ³
Topography	USGS terrain.
Foliage Attenuation	No attenuation due to forest was taken into account in the model.
Atmospheric Attenuation	Based on 70% relative humidity and 10° C.
Search Radius	5 miles (8,000 meters).
Receptor Grid	50 feet by 50 feet (15 meters by 15 meters) throughout the Project and surrounding area at a height of 13 feet (4 meters).

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Table 6: Turbine Model Input Data

Turbine ID	Modeled Sound Power Level ⁵ (dBA)		Coordinates (UTM NAD83 Z15N)		Elevation (ground + hub height, m)
	V162 STE	GE 158 LNTE	X (m)	Y (m)	
T02			346729	4877324	481
T03			345911	4877090	480
T05			345221	4876669	483
T07			347323	4876612	483
T08			345043	4876264	486
T09			345902	4875743	487
T10			344250	4875708	493
T15			348824	4875428	488
T16			348018	4875400	485
T17			347509	4875218	485
T21			345844	4874904	492
T22			349722	4874905	486
T23			350249	4874851	488
T24			341741	4874190	516
T25			342373	4874189	516
T26			345434	4874179	501
T27			349033	4874066	487
T28			352839	4873599	482

⁵ The sound power level data for the turbines in Table 6 includes the +2 dB factor per ANSI/ACP Standard 111-1. The sound power level spectral data in Table 7 does not include the +2 dB factor as it is meant to show the sound power data from the turbine manufacturer.

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Turbine ID	Modeled Sound Power Level ⁵ (dBA)		Coordinates (UTM NAD83 Z15N)		Elevation (ground + hub height, m)
	V162 STE	GE 158 LNTE	X (m)	Y (m)	
T29			352113	4873404	486
T30			341851	4873394	517
T31			351626	4873322	489
T32			349729	4873239	487
T33			348416	4873060	491
T34			348311	4872465	493
T35			336961	4872386	544
T36			343555	4872300	515
T38			352748	4872065	482
T39			343407	4871792	514
T40			343897	4871741	514
T41			348562	4871656	498
T42			349885	4870869	493
T43			352181	4870785	481
T44			351475	4870559	488
T45			347063	4870535	505
T46			353566	4870395	481
T47			353028	4870392	486
T48			338730	4870264	526
T49			344694	4870150	508
T50			347864	4869894	502
T51			347860	4869166	506
T52			347362	4868961	508
T53			346709	4868926	509
T54			347246	4868233	508
T55			348530	4868218	505
T56			340194	4867083	533
T57			346880	4878068	479
T58			347287	4872540	499
T59			339133	4872002	521
T60			350379	4871461	489
T61			344687	4870606	501
T62			356677	4872141	463

Table 7: Turbine Sound Power Level (dBA) by Octave Band Center Frequency



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Appendix C: Model Result Maps

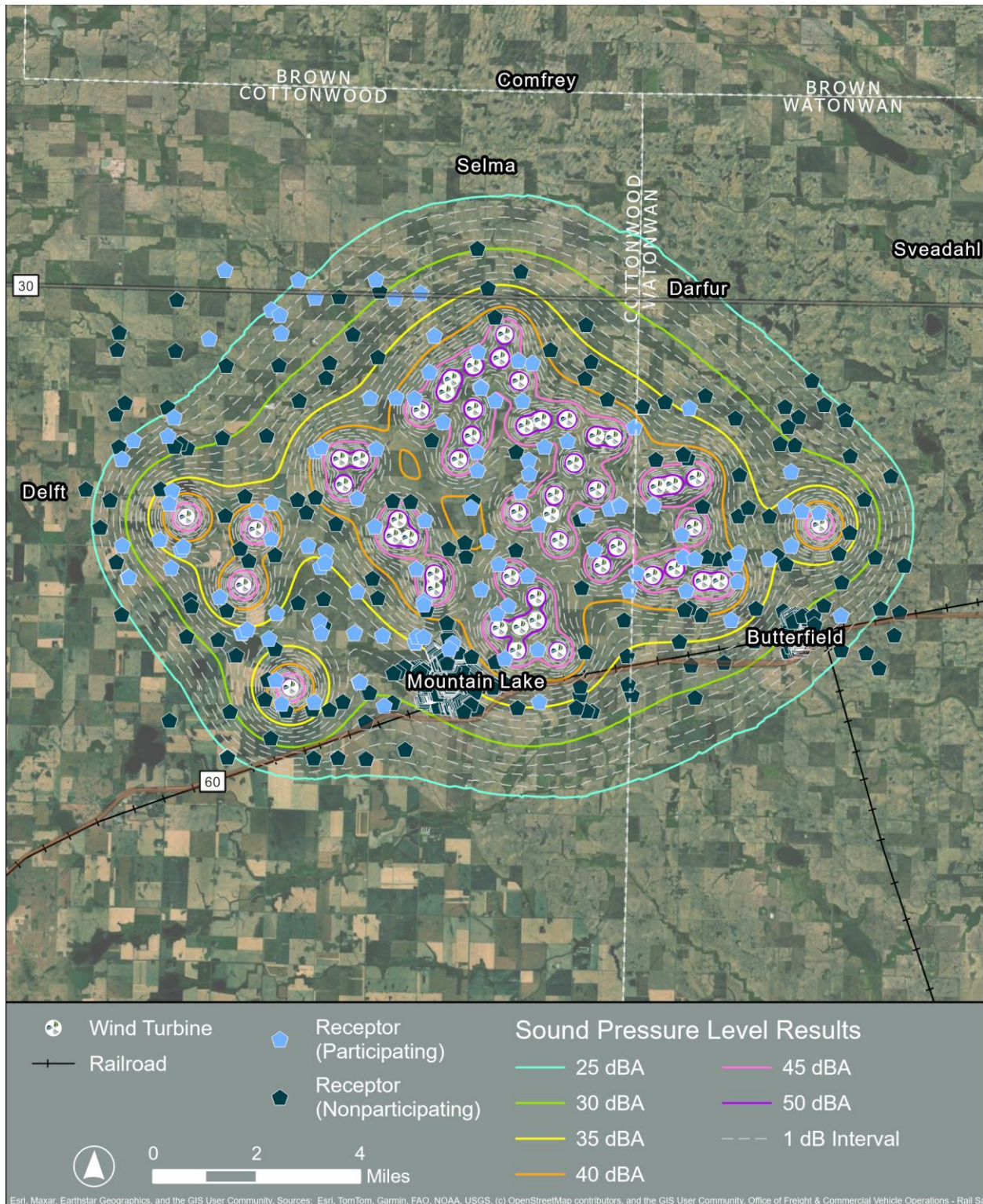


Figure 3: Model Results Map for GE 158

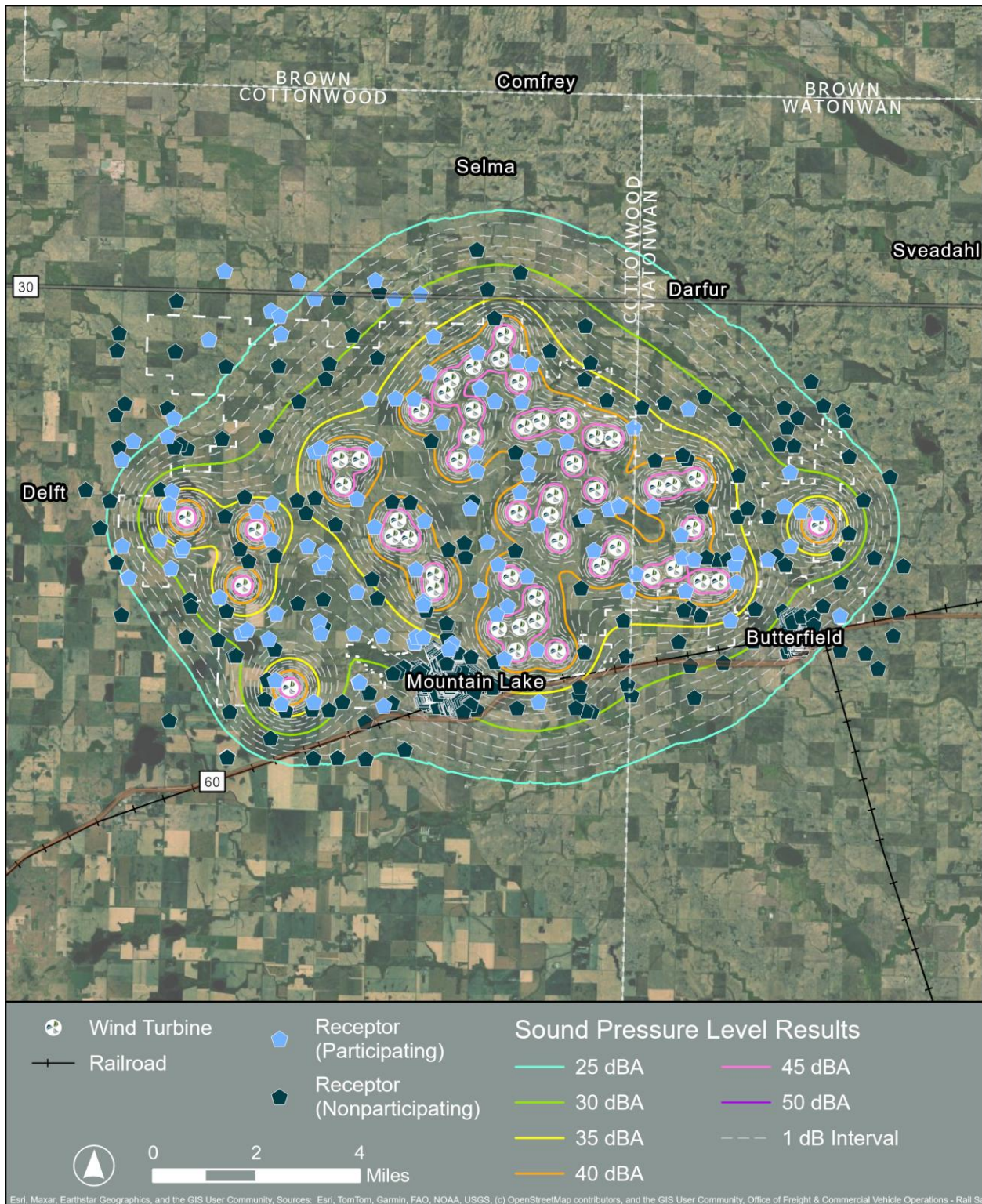


Figure 4: Model Results Map for the V162

Appendix D: Tabular Model Results & Receptor Maps

Table 8: Tabular Model Results for Each Discrete Receptor⁶

Receptor ID	Participation Status	Sound Pressure Level (dBA)		Coordinates (UTM NAD83 Z 15N)		Elevation (ground + 4 meters)
		GE 6.1-158, HH 117 m	V 6.0-162, HH 119 m	X (m)	Y (m)	
		LNTE	STE			
0	participant	46	43	352523	4870126	375
1	participant	47	44	352429	4871159	378
2	participant	47	44	352382	4871867	380
3	participant	45	42	351503	4872768	380
4	nonparticipant	42	39	352444	4874389	371
5	participant	45	42	352790	4871108	372
6	participant	38	35	353923	4869212	375
7	participant	44	41	354115	4870403	371
8	participant	42	39	354060	4870950	372
9	participant	39	37	354160	4871301	370
10	participant	32	30	355786	4873825	357
11	participant	36	33	355611	4872760	361
12	participant	37	34	355788	4871518	364
13	participant	36	33	355093	4871103	365
14	participant	28	26	357338	4869349	362
15	participant	40	37	356120	4872599	358
16	participant	46	43	356660	4872537	356
17	participant	23	22	337669	4877954	415
18	participant	27	26	339916	4878129	406
19	participant	38	36	344680	4878049	375
20	nonparticipant	26	25	338203	4877119	408
21	nonparticipant	29	27	339845	4877128	415
22	nonparticipant	32	30	341306	4876736	401
23	nonparticipant	31	30	341423	4877202	402
24	participant	37	35	342686	4876113	395
25	participant	44	41	344526	4876919	382
26	participant	46	43	344063	4876099	384
27	participant	41	38	343489	4876121	391

⁶ Maps of the receptor locations showing the receptor IDs are provided following the table in Figure 5 through Figure 8.

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Receptor ID	Participation Status	Sound Pressure Level (dBA)		Coordinates (UTM NAD83 Z 15N)		Elevation (ground + 4 meters)
		GE 6.1-158, HH 117 m	V 6.0-162, HH 119 m	X (m)	Y (m)	
		LNTE	STE			
28	participant	47	44	346045	4877547	374
29	participant	46	43	346121	4876467	375
30	participant	46	43	346133	4876425	375
32	participant	44	41	347732	4877194	373
33	participant	46	43	347298	4877275	370
34	participant	45	42	346577	4876037	377
35	participant	46	43	347426	4876019	377
36	nonparticipant	38	36	351171	4875823	372
37	nonparticipant	38	36	351159	4875846	373
38	nonparticipant	29	27	336591	4874598	425
39	participant	41	38	340973	4874461	409
40	participant	42	39	341151	4874584	406
41	nonparticipant	32	31	340476	4876025	405
42	participant	44	41	342874	4874531	406
44	participant	47	44	346003	4874437	386
45	participant	45	42	344951	4875368	386
46	nonparticipant	43	40	347229	4874434	380
47	participant	45	42	348113	4874596	377
48	participant	46	43	348826	4874772	378
49	participant	42	39	350906	4875206	377
50	participant	37	34	336518	4873233	431
51	participant	41	38	336426	4872830	431
52	participant	38	36	339628	4872846	411
53	participant	43	40	339152	4872589	412
54	participant	44	41	342284	4872991	406
55	nonparticipant	44	41	343385	4872908	405
56	participant	44	41	346021	4873868	389
57	participant	43	40	347619	4874180	379
58	participant	42	40	347637	4873755	381
59	participant	44	41	347374	4873197	386
60	participant	44	41	350141	4872674	379
61	participant	43	40	350439	4872803	378
62	participant	43	40	350460	4872763	379
63	participant	29	27	334966	4871532	441
64	participant	36	33	336130	4871707	435
65	participant	37	35	336802	4871389	435
66	participant	38	36	336866	4871494	433

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Receptor ID	Participation Status	Sound Pressure Level (dBA)		Coordinates (UTM NAD83 Z 15N)		Elevation (ground + 4 meters)
		GE 6.1-158, HH 117 m	V 6.0-162, HH 119 m	X (m)	Y (m)	
		LNTE	STE			
68	participant	43	40	339605	4871738	412
69	participant	36	34	340748	4871519	404
70	participant	36	34	341312	4871350	402
71	participant	45	42	342830	4872120	405
72	participant	44	41	344389	4872311	403
73	participant	40	38	346342	4871655	394
74	participant	45	44	347938	4872183	387
75	participant	44	41	349417	4872460	382
76	participant	46	43	349669	4871388	384
77	participant	33	31	336487	4870827	435
78	participant	39	36	338000	4869923	428
79	participant	39	36	338000	4869923	428
80	participant	35	33	341142	4870860	409
81	participant	35	33	341279	4870990	407
82	participant	35	33	342281	4870098	409
83	participant	45	42	344122	4870798	403
84	participant	45	42	344360	4869798	404
85	participant	44	41	344353	4869692	402
86	participant	42	39	346127	4870164	401
87	participant	44	41	346682	4870947	397
88	participant	46	43	347586	4870582	394
89	participant	46	43	346980	4869652	399
90	participant	47	44	346633	4869395	401
91	participant	42	40	350747	4870134	383
92	participant	46	43	350980	4870668	382
93	participant	34	32	338684	4868796	429
94	participant	34	32	338712	4868821	429
95	participant	35	32	338858	4868915	427
96	participant	34	32	339533	4868625	416
97	participant	35	33	339769	4869422	408
98	participant	33	31	341105	4869168	413
99	participant	33	31	341155	4868800	416
100	participant	33	31	342192	4868804	411
101	participant	34	32	343071	4868728	409
102	participant	35	33	344109	4868502	406
103	participant	35	33	344081	4868518	407
104	participant	36	34	344140	4868696	404

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Receptor ID	Participation Status	Sound Pressure Level (dBA)		Coordinates (UTM NAD83 Z 15N)		Elevation (ground + 4 meters)
		GE 6.1-158, HH 117 m	V 6.0-162, HH 119 m	X (m)	Y (m)	
		LNTE	STE			
105	participant	37	34	344353	4868681	391
106	participant	38	35	345261	4868483	398
107	participant	37	35	345147	4868312	401
108	participant	47	44	346879	4868012	400
109	participant	46	43	347898	4868294	400
110	participant	43	40	339746	4867346	423
111	participant	43	40	339927	4866608	428
112	participant	38	35	340942	4866660	422
113	participant	31	29	342343	4867290	407
114	participant	31	29	342365	4867276	407
115	participant	30	28	343118	4866540	412
116	nonparticipant	35	33	347271	4866472	399
117	participant	36	34	347952	4866662	402
118	nonparticipant	29	28	352799	4866793	391
119	nonparticipant	32	30	350835	4866871	396
120	nonparticipant	32	31	349596	4866355	399
121	nonparticipant	33	31	349422	4866374	399
122	nonparticipant	34	32	349103	4866475	398
123	nonparticipant	35	33	349213	4866873	397
124	nonparticipant	37	34	349228	4867141	400
125	nonparticipant	33	31	350713	4867207	394
126	nonparticipant	32	31	352670	4867794	387
127	nonparticipant	32	30	353699	4867885	380
128	nonparticipant	35	33	352311	4868532	387
129	nonparticipant	35	33	350682	4868084	390
130	nonparticipant	40	37	352982	4869356	382
131	nonparticipant	38	36	350592	4869202	390
132	nonparticipant	37	35	346440	4867166	403
133	nonparticipant	38	35	346470	4867238	402
134	nonparticipant	36	34	345927	4867324	403
135	nonparticipant	36	34	345925	4867282	403
136	nonparticipant	36	34	345907	4867282	403
137	nonparticipant	37	34	345913	4867372	402
138	nonparticipant	37	34	345950	4867371	402
139	nonparticipant	37	35	345940	4867443	401
140	nonparticipant	37	35	345907	4867442	401
141	nonparticipant	37	34	345865	4867455	401

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Receptor ID	Participation Status	Sound Pressure Level (dBA)		Coordinates (UTM NAD83 Z 15N)		Elevation (ground + 4 meters)
		GE 6.1-158, HH 117 m	V 6.0-162, HH 119 m	X (m)	Y (m)	
		LNTE	STE			
142	nonparticipant	37	34	345847	4867444	402
143	nonparticipant	37	34	345820	4867444	402
144	nonparticipant	36	34	345860	4867395	402
145	nonparticipant	36	34	345824	4867406	402
146	nonparticipant	36	34	345879	4867329	403
147	nonparticipant	36	34	345930	4867261	404
148	nonparticipant	37	35	345942	4867487	400
149	nonparticipant	37	35	345944	4867530	399
150	nonparticipant	37	35	345945	4867560	399
151	nonparticipant	38	35	345946	4867582	399
152	nonparticipant	37	35	345912	4867536	400
153	nonparticipant	37	35	345886	4867537	400
154	nonparticipant	37	35	345861	4867583	399
155	nonparticipant	37	35	345819	4867579	400
156	nonparticipant	37	34	345748	4867576	400
157	nonparticipant	37	34	345815	4867464	402
158	nonparticipant	43	40	346580	4867902	399
159	nonparticipant	41	39	352621	4869576	380
160	nonparticipant	43	40	351577	4874192	386
161	nonparticipant	22	21	335051	4875960	432
162	nonparticipant	33	32	349402	4878386	372
164	nonparticipant	27	25	343773	4865177	412
165	nonparticipant	26	25	342515	4864903	420
166	nonparticipant	26	25	342556	4864887	420
167	nonparticipant	32	30	344750	4866880	406
168	nonparticipant	32	30	344826	4866883	406
169	nonparticipant	32	30	344835	4866860	406
170	nonparticipant	32	30	344751	4866843	406
171	nonparticipant	31	30	344543	4866734	403
172	nonparticipant	31	30	344570	4866748	403
173	nonparticipant	31	30	344610	4866766	404
174	nonparticipant	31	29	344475	4866630	402
175	nonparticipant	31	30	344609	4866705	403
176	nonparticipant	31	29	344635	4866594	403
177	nonparticipant	31	30	344665	4866665	403
178	nonparticipant	31	30	344668	4866729	405
179	nonparticipant	31	30	344688	4866662	404

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Receptor ID	Participation Status	Sound Pressure Level (dBA)		Coordinates (UTM NAD83 Z 15N)		Elevation (ground + 4 meters)
		GE 6.1-158, HH 117 m	V 6.0-162, HH 119 m	X (m)	Y (m)	
		LNTE	STE			
180	nonparticipant	32	30	344731	4866747	406
181	nonparticipant	31	30	344712	4866671	405
182	nonparticipant	31	30	344732	4866678	405
183	nonparticipant	31	30	344756	4866692	405
184	nonparticipant	31	30	344694	4866622	404
185	nonparticipant	31	30	344728	4866632	405
186	nonparticipant	31	30	344759	4866635	405
187	nonparticipant	31	30	344811	4866658	406
188	nonparticipant	32	30	344797	4866711	406
189	nonparticipant	31	30	344785	4866604	405
190	nonparticipant	32	30	344828	4866711	406
191	nonparticipant	32	30	344878	4866732	406
192	nonparticipant	31	30	344823	4866637	406
193	nonparticipant	32	30	344772	4866770	406
194	nonparticipant	32	30	344788	4866774	406
195	nonparticipant	32	30	344824	4866785	406
196	nonparticipant	32	30	344846	4866783	406
197	nonparticipant	32	30	344837	4866739	406
198	nonparticipant	32	30	344863	4866753	406
199	nonparticipant	32	30	344794	4866823	406
200	nonparticipant	32	30	344907	4866794	406
201	nonparticipant	32	30	344593	4866823	407
202	nonparticipant	33	31	344902	4866980	406
203	nonparticipant	33	31	344898	4867036	406
204	nonparticipant	32	31	344758	4867070	403
205	nonparticipant	33	31	344832	4867143	403
206	nonparticipant	33	31	344811	4867135	403
207	nonparticipant	33	31	344787	4867127	403
208	nonparticipant	33	31	344744	4867116	403
209	nonparticipant	33	31	344722	4867109	404
210	nonparticipant	32	31	344701	4867101	405
211	nonparticipant	32	31	344681	4867093	405
212	nonparticipant	33	31	344959	4866998	405
213	nonparticipant	33	31	344953	4867020	405
214	nonparticipant	33	31	344946	4867052	405
215	nonparticipant	33	31	344930	4867105	404
216	nonparticipant	33	31	344923	4867124	403

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Receptor ID	Participation Status	Sound Pressure Level (dBA)		Coordinates (UTM NAD83 Z 15N)		Elevation (ground + 4 meters)
		GE 6.1-158, HH 117 m	V 6.0-162, HH 119 m	X (m)	Y (m)	
		LNTE	STE			
217	nonparticipant	33	31	344916	4867138	403
218	nonparticipant	33	31	344912	4867161	403
219	nonparticipant	33	31	344865	4867161	403
220	nonparticipant	33	31	344867	4867146	403
221	nonparticipant	33	31	344873	4867132	403
222	nonparticipant	33	31	344881	4867110	404
223	nonparticipant	33	31	344908	4867176	403
224	nonparticipant	33	31	344892	4867214	403
225	nonparticipant	33	31	344772	4867174	403
226	nonparticipant	33	31	344814	4867192	403
227	nonparticipant	33	31	344850	4867198	404
228	nonparticipant	33	31	344833	4867234	404
229	nonparticipant	33	31	344878	4867252	404
230	nonparticipant	33	31	344870	4867273	404
231	nonparticipant	33	31	344829	4867261	404
232	nonparticipant	33	31	344816	4867301	404
233	nonparticipant	33	31	344862	4867296	404
234	nonparticipant	35	33	345372	4867332	406
235	nonparticipant	34	32	345349	4867253	404
236	nonparticipant	35	33	345407	4867339	407
237	nonparticipant	34	32	345281	4867351	406
238	nonparticipant	35	33	345325	4867370	406
239	nonparticipant	35	33	345320	4867395	406
240	nonparticipant	35	33	345354	4867384	406
241	nonparticipant	35	33	345402	4867392	406
242	nonparticipant	35	33	345431	4867404	405
243	nonparticipant	35	33	345396	4867421	405
244	nonparticipant	35	33	345400	4867448	404
245	nonparticipant	35	33	345402	4867474	404
246	nonparticipant	35	33	345399	4867503	403
247	nonparticipant	35	33	345401	4867530	402
248	nonparticipant	35	33	345401	4867554	401
249	nonparticipant	35	33	345460	4867413	404
250	nonparticipant	35	33	345434	4867349	406
251	nonparticipant	35	33	345465	4867362	405
252	nonparticipant	35	33	345487	4867372	405
253	nonparticipant	34	32	345360	4867046	404

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Receptor ID	Participation Status	Sound Pressure Level (dBA)		Coordinates (UTM NAD83 Z 15N)		Elevation (ground + 4 meters)
		GE 6.1-158, HH 117 m	V 6.0-162, HH 119 m	X (m)	Y (m)	
		LNTE	STE			
254	nonparticipant	34	32	345362	4867014	404
255	nonparticipant	34	32	345422	4866985	405
256	nonparticipant	34	32	345466	4867118	406
257	nonparticipant	34	32	345444	4866998	405
258	nonparticipant	34	32	345451	4866969	405
259	nonparticipant	34	32	345481	4867010	405
260	nonparticipant	34	32	345470	4866934	405
261	nonparticipant	34	32	345489	4866945	405
262	nonparticipant	34	32	345506	4866950	405
263	nonparticipant	34	32	345522	4867027	405
264	nonparticipant	34	32	345484	4867063	406
265	nonparticipant	34	32	345530	4866958	405
266	nonparticipant	34	32	345516	4867070	406
267	nonparticipant	34	32	345556	4867036	406
268	nonparticipant	34	32	345574	4866969	405
269	nonparticipant	34	32	345484	4866894	405
270	nonparticipant	34	32	345515	4866902	405
271	nonparticipant	34	32	345535	4866911	406
272	nonparticipant	34	32	345550	4866912	406
273	nonparticipant	34	32	345570	4866916	406
274	nonparticipant	34	32	345591	4866928	406
275	nonparticipant	34	32	345586	4867044	406
276	nonparticipant	34	32	345594	4866983	405
277	nonparticipant	34	32	345546	4867080	406
278	nonparticipant	34	32	345570	4867093	406
279	nonparticipant	35	33	345615	4867105	405
280	nonparticipant	34	32	345545	4867110	405
281	nonparticipant	35	32	345573	4867116	405
282	nonparticipant	34	32	345612	4867051	406
283	nonparticipant	34	32	345618	4866994	405
284	nonparticipant	34	32	345663	4867004	405
285	nonparticipant	34	32	345652	4867042	405
286	nonparticipant	35	33	345663	4867071	405
287	nonparticipant	34	32	345688	4866966	405
288	nonparticipant	34	32	345706	4866917	405
289	nonparticipant	35	33	345704	4867048	405
290	nonparticipant	35	33	345754	4867031	405

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Receptor ID	Participation Status	Sound Pressure Level (dBA)		Coordinates (UTM NAD83 Z 15N)		Elevation (ground + 4 meters)
		GE 6.1-158, HH 117 m	V 6.0-162, HH 119 m	X (m)	Y (m)	
		LNTE	STE			
291	nonparticipant	35	33	345780	4866997	404
292	nonparticipant	35	33	345798	4867004	404
293	nonparticipant	35	33	345768	4867037	405
294	nonparticipant	34	32	345797	4866912	404
295	nonparticipant	34	32	345734	4866956	404
296	nonparticipant	35	33	345551	4867201	405
297	nonparticipant	35	33	345598	4867165	405
298	nonparticipant	35	33	345599	4867217	404
299	nonparticipant	35	33	345627	4867227	404
300	nonparticipant	35	33	345656	4867232	404
301	nonparticipant	35	33	345646	4867177	404
302	nonparticipant	35	33	345637	4867115	405
303	nonparticipant	35	33	345679	4867151	404
304	nonparticipant	36	33	345713	4867279	403
305	nonparticipant	35	33	345669	4867279	403
306	nonparticipant	35	33	345619	4867282	403
307	nonparticipant	35	33	345598	4867284	403
308	nonparticipant	35	33	345748	4867149	404
309	nonparticipant	35	33	345759	4867103	405
310	nonparticipant	35	33	345713	4867238	404
311	nonparticipant	35	33	345793	4867164	405
312	nonparticipant	35	33	345805	4867122	405
313	nonparticipant	35	33	345796	4867094	405
314	nonparticipant	35	33	345865	4867137	404
315	nonparticipant	35	33	345839	4867129	405
316	nonparticipant	35	33	345821	4867055	404
317	nonparticipant	35	33	345805	4867048	404
318	nonparticipant	35	33	345893	4867086	404
319	nonparticipant	36	34	345879	4867199	404
320	nonparticipant	36	33	345948	4867109	404
321	nonparticipant	36	34	345993	4867152	404
322	nonparticipant	35	33	345878	4867027	404
323	nonparticipant	35	33	345827	4867019	405
324	nonparticipant	35	33	345940	4866954	404
325	nonparticipant	36	34	345632	4867452	403
326	nonparticipant	36	34	345654	4867450	403
327	nonparticipant	36	34	345674	4867448	403

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Receptor ID	Participation Status	Sound Pressure Level (dBA)		Coordinates (UTM NAD83 Z 15N)		Elevation (ground + 4 meters)
		GE 6.1-158, HH 117 m	V 6.0-162, HH 119 m	X (m)	Y (m)	
		LNTE	STE			
328	nonparticipant	36	34	345699	4867449	403
329	nonparticipant	36	34	345729	4867451	402
330	nonparticipant	36	34	345755	4867451	402
331	nonparticipant	36	34	345624	4867398	404
332	nonparticipant	36	34	345682	4867399	404
333	nonparticipant	36	34	345735	4867396	403
334	nonparticipant	36	34	345763	4867394	403
335	nonparticipant	36	33	345536	4867445	403
336	nonparticipant	31	29	344813	4866507	405
337	nonparticipant	31	30	345073	4866480	405
338	nonparticipant	32	30	345073	4866588	406
339	nonparticipant	32	30	345155	4866517	406
340	nonparticipant	32	30	345154	4866577	405
341	nonparticipant	32	30	345177	4866551	405
342	nonparticipant	32	30	345230	4866608	405
343	nonparticipant	32	30	345138	4866641	406
344	nonparticipant	32	30	345175	4866616	406
345	nonparticipant	32	30	345223	4866546	404
346	nonparticipant	32	30	345224	4866505	405
347	nonparticipant	32	30	345225	4866474	405
348	nonparticipant	32	30	345263	4866608	405
349	nonparticipant	32	30	345325	4866601	404
350	nonparticipant	32	30	345389	4866375	406
351	nonparticipant	32	30	345415	4866380	406
352	nonparticipant	32	30	345452	4866384	405
353	nonparticipant	32	30	345363	4866423	405
354	nonparticipant	32	30	345387	4866425	405
355	nonparticipant	32	30	345409	4866426	405
356	nonparticipant	32	30	345444	4866424	405
357	nonparticipant	32	31	345406	4866588	404
358	nonparticipant	32	30	345484	4866422	405
359	nonparticipant	32	30	345516	4866464	403
360	nonparticipant	32	31	345542	4866483	401
361	nonparticipant	32	31	345582	4866473	403
362	nonparticipant	32	30	345581	4866431	404
363	nonparticipant	32	31	345658	4866458	403
364	nonparticipant	32	31	345648	4866439	404

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Receptor ID	Participation Status	Sound Pressure Level (dBA)		Coordinates (UTM NAD83 Z 15N)		Elevation (ground + 4 meters)
		GE 6.1-158, HH 117 m	V 6.0-162, HH 119 m	X (m)	Y (m)	
		LNTE	STE			
365	nonparticipant	32	30	345675	4866361	403
366	nonparticipant	33	31	345708	4866454	403
367	nonparticipant	33	31	345789	4866420	403
368	nonparticipant	33	31	345822	4866437	403
369	nonparticipant	33	31	345852	4866438	404
370	nonparticipant	33	31	346010	4866417	407
371	nonparticipant	33	31	345385	4866659	405
372	nonparticipant	32	31	345361	4866653	405
373	nonparticipant	33	31	345444	4866656	404
374	nonparticipant	33	31	345394	4866700	404
375	nonparticipant	33	31	345445	4866712	403
376	nonparticipant	33	31	345449	4866697	403
377	nonparticipant	33	31	345467	4866597	404
378	nonparticipant	33	31	345526	4866650	404
379	nonparticipant	33	31	345486	4866686	403
380	nonparticipant	33	31	345535	4866560	402
381	nonparticipant	33	31	345588	4866595	403
382	nonparticipant	33	31	345575	4866651	403
383	nonparticipant	33	31	345654	4866648	403
384	nonparticipant	33	31	345744	4866649	403
385	nonparticipant	33	31	345760	4866595	400
386	nonparticipant	33	31	345799	4866595	399
387	nonparticipant	33	31	345824	4866577	399
388	nonparticipant	34	32	344729	4867554	404
389	nonparticipant	34	32	344711	4867579	404
390	nonparticipant	34	32	344798	4867714	400
391	nonparticipant	34	32	344817	4867664	401
392	nonparticipant	34	32	344828	4867635	403
393	nonparticipant	34	32	344841	4867620	403
394	nonparticipant	34	32	344846	4867589	403
395	nonparticipant	34	32	344858	4867551	404
396	nonparticipant	33	32	344482	4867617	395
397	nonparticipant	34	32	344913	4867548	404
398	nonparticipant	34	32	344904	4867576	404
399	nonparticipant	34	32	344941	4867543	404
400	nonparticipant	34	32	345013	4867549	403
401	nonparticipant	34	32	344881	4867641	404

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Receptor ID	Participation Status	Sound Pressure Level (dBA)		Coordinates (UTM NAD83 Z 15N)		Elevation (ground + 4 meters)
		GE 6.1-158, HH 117 m	V 6.0-162, HH 119 m	X (m)	Y (m)	
		LNTE	STE			
402	nonparticipant	34	32	344863	4867674	402
403	nonparticipant	34	32	344761	4867777	401
404	nonparticipant	35	33	344836	4867763	400
405	nonparticipant	34	33	344882	4867717	402
406	nonparticipant	35	33	344896	4867754	402
407	nonparticipant	35	33	344993	4867740	401
408	nonparticipant	35	33	345319	4867639	399
409	nonparticipant	36	33	345356	4867641	399
410	nonparticipant	36	34	345397	4867638	399
411	nonparticipant	36	34	345458	4867642	400
412	nonparticipant	36	34	345494	4867635	401
413	nonparticipant	36	34	345552	4867631	399
415	nonparticipant	29	27	342542	4866036	418
416	nonparticipant	26	24	334279	4872084	442
417	nonparticipant	27	26	341679	4864929	422
418	nonparticipant	27	26	341682	4864918	422
419	nonparticipant	28	26	340928	4864906	426
420	nonparticipant	31	29	339590	4865531	430
421	nonparticipant	31	29	344313	4866680	405
422	nonparticipant	31	29	344321	4866721	404
423	nonparticipant	31	29	344371	4866680	403
424	nonparticipant	31	29	344380	4866740	403
425	nonparticipant	31	30	344405	4866810	402
426	nonparticipant	31	30	344397	4866858	403
427	nonparticipant	31	30	344487	4866840	404
428	nonparticipant	32	30	344522	4866852	406
429	nonparticipant	32	30	344557	4866860	407
430	nonparticipant	32	30	344582	4866871	407
431	nonparticipant	32	30	344622	4866882	407
432	nonparticipant	32	30	344636	4866885	407
433	nonparticipant	32	30	344648	4866891	407
434	nonparticipant	32	30	344656	4866906	406
435	nonparticipant	32	30	344674	4866924	406
436	nonparticipant	32	30	344667	4866943	405
437	nonparticipant	32	30	344659	4866965	403
438	nonparticipant	32	30	344637	4867015	403
439	nonparticipant	32	31	344621	4867080	406

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Receptor ID	Participation Status	Sound Pressure Level (dBA)		Coordinates (UTM NAD83 Z 15N)		Elevation (ground + 4 meters)
		GE 6.1-158, HH 117 m	V 6.0-162, HH 119 m	X (m)	Y (m)	
		LNTE	STE			
440	nonparticipant	32	31	344596	4867085	406
441	nonparticipant	32	30	344576	4867084	406
442	nonparticipant	32	30	344562	4867069	405
443	nonparticipant	32	30	344537	4867073	405
444	nonparticipant	32	30	344511	4867086	406
445	nonparticipant	32	30	344485	4867084	406
446	nonparticipant	32	30	344464	4867084	406
447	nonparticipant	32	30	344441	4867084	406
448	nonparticipant	32	30	344403	4867078	405
449	nonparticipant	32	30	344334	4867153	405
450	nonparticipant	32	30	344427	4867136	406
451	nonparticipant	32	30	344394	4867190	405
452	nonparticipant	32	30	344467	4867129	406
453	nonparticipant	32	31	344494	4867196	406
454	nonparticipant	32	30	344511	4867129	407
455	nonparticipant	32	31	344298	4867305	406
456	nonparticipant	33	31	344223	4867501	403
457	nonparticipant	33	31	344226	4867539	402
458	nonparticipant	33	31	344192	4867630	401
459	nonparticipant	33	31	344248	4867728	396
460	nonparticipant	33	31	344164	4867706	395
461	nonparticipant	33	31	344097	4867692	394
462	nonparticipant	33	31	344005	4867683	392
463	nonparticipant	32	31	343806	4867708	394
464	nonparticipant	32	31	343763	4867732	393
465	nonparticipant	32	31	343735	4867738	393
466	nonparticipant	32	30	343547	4867593	393
467	nonparticipant	33	31	344526	4867272	406
468	nonparticipant	33	31	344514	4867474	404
469	nonparticipant	33	31	344585	4867490	404
470	nonparticipant	33	32	344663	4867500	405
471	nonparticipant	33	32	344662	4867472	406
472	nonparticipant	33	31	344660	4867442	406
473	nonparticipant	34	32	344706	4867502	405
474	nonparticipant	33	32	344707	4867473	405
475	nonparticipant	33	32	344729	4867441	405
476	nonparticipant	33	31	344707	4867416	406

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Receptor ID	Participation Status	Sound Pressure Level (dBA)		Coordinates (UTM NAD83 Z 15N)		Elevation (ground + 4 meters)
		GE 6.1-158, HH 117 m	V 6.0-162, HH 119 m	X (m)	Y (m)	
		LNTE	STE			
477	nonparticipant	33	31	344711	4867386	406
478	nonparticipant	33	31	344661	4867413	406
479	nonparticipant	33	31	344663	4867391	406
480	nonparticipant	33	31	344662	4867372	406
481	nonparticipant	33	31	344652	4867351	406
482	nonparticipant	33	31	344612	4867197	405
483	nonparticipant	33	31	344639	4867196	405
484	nonparticipant	33	31	344682	4867281	405
485	nonparticipant	33	31	344690	4867150	404
486	nonparticipant	33	31	344725	4867163	404
487	nonparticipant	33	31	344743	4867263	405
488	nonparticipant	33	31	344755	4867210	404
489	nonparticipant	33	31	344704	4867198	404
490	nonparticipant	33	31	344736	4867307	406
491	nonparticipant	33	31	344753	4867361	405
492	nonparticipant	32	31	344659	4867134	406
493	nonparticipant	32	30	344717	4866947	406
494	nonparticipant	32	31	344699	4867030	403
495	nonparticipant	32	30	344737	4866923	407
496	nonparticipant	32	31	344741	4867042	403
497	nonparticipant	32	31	344797	4866967	406
498	nonparticipant	32	31	344782	4867010	405
499	nonparticipant	32	31	344766	4867006	404
500	nonparticipant	32	30	344795	4866938	406
501	nonparticipant	32	30	344804	4866896	406
502	nonparticipant	33	32	344847	4867342	404
503	nonparticipant	33	32	344832	4867381	405
504	nonparticipant	33	32	344826	4867397	404
505	nonparticipant	34	32	344813	4867442	404
506	nonparticipant	34	32	344797	4867466	403
507	nonparticipant	34	32	344885	4867472	403
508	nonparticipant	34	32	344831	4867500	404
509	nonparticipant	34	32	344894	4867443	404
510	nonparticipant	34	32	344959	4867498	404
511	nonparticipant	34	32	344931	4867482	403
512	nonparticipant	34	32	344944	4867454	403
513	nonparticipant	34	32	344951	4867432	403

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Receptor ID	Participation Status	Sound Pressure Level (dBA)		Coordinates (UTM NAD83 Z 15N)		Elevation (ground + 4 meters)
		GE 6.1-158, HH 117 m	V 6.0-162, HH 119 m	X (m)	Y (m)	
		LNTE	STE			
514	nonparticipant	34	32	344957	4867412	404
515	nonparticipant	34	32	344962	4867389	404
516	nonparticipant	34	32	344968	4867376	404
517	nonparticipant	34	32	344914	4867379	404
518	nonparticipant	34	32	344904	4867407	404
519	nonparticipant	34	32	344922	4867357	404
520	nonparticipant	34	32	344930	4867341	404
521	nonparticipant	34	32	344939	4867307	405
522	nonparticipant	34	32	344979	4867352	404
523	nonparticipant	34	32	344990	4867325	404
524	nonparticipant	34	32	345002	4867280	405
525	nonparticipant	33	32	344953	4867273	404
526	nonparticipant	33	32	344962	4867255	404
527	nonparticipant	33	32	344969	4867241	404
528	nonparticipant	33	31	344939	4867186	403
529	nonparticipant	33	31	344958	4867116	404
530	nonparticipant	33	31	344998	4867155	403
531	nonparticipant	33	31	344993	4867169	403
532	nonparticipant	33	31	344931	4867224	403
533	nonparticipant	33	31	344977	4867082	405
534	nonparticipant	33	31	344990	4867011	405
535	nonparticipant	33	31	345016	4867020	405
536	nonparticipant	33	31	345044	4867024	405
537	nonparticipant	33	31	345017	4867093	404
538	nonparticipant	33	31	345076	4867096	404
539	nonparticipant	33	31	345045	4867154	403
540	nonparticipant	33	31	345142	4867060	404
541	nonparticipant	33	32	345161	4867076	403
542	nonparticipant	33	32	345150	4867105	403
543	nonparticipant	33	32	345139	4867121	403
544	nonparticipant	33	32	345077	4867156	403
545	nonparticipant	34	32	345097	4867175	403
546	nonparticipant	33	32	345030	4867203	404
547	nonparticipant	33	32	345023	4867219	404
548	nonparticipant	34	32	345015	4867259	404
549	nonparticipant	34	32	345113	4867217	404
550	nonparticipant	34	32	345050	4867270	405

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Receptor ID	Participation Status	Sound Pressure Level (dBA)		Coordinates (UTM NAD83 Z 15N)		Elevation (ground + 4 meters)
		GE 6.1-158, HH 117 m	V 6.0-162, HH 119 m	X (m)	Y (m)	
		LNTE	STE			
551	nonparticipant	34	32	345086	4867285	405
552	nonparticipant	34	32	345148	4867253	404
553	nonparticipant	34	32	345164	4867188	403
554	nonparticipant	34	32	345121	4867293	405
555	nonparticipant	34	32	345181	4867146	403
556	nonparticipant	34	32	345211	4867200	403
557	nonparticipant	34	32	345189	4867264	404
558	nonparticipant	34	32	345222	4867275	404
559	nonparticipant	34	32	345223	4867240	403
560	nonparticipant	34	32	345287	4867249	404
561	nonparticipant	34	32	345235	4867218	403
562	nonparticipant	34	32	345208	4867323	404
563	nonparticipant	34	32	345048	4867340	405
564	nonparticipant	34	32	345079	4867340	405
565	nonparticipant	34	32	345101	4867348	405
566	nonparticipant	34	32	345086	4867388	404
567	nonparticipant	34	32	345116	4867399	404
568	nonparticipant	34	32	345139	4867406	404
569	nonparticipant	34	32	345144	4867372	405
570	nonparticipant	34	32	345191	4867347	404
571	nonparticipant	34	32	345192	4867376	404
572	nonparticipant	34	32	345268	4867298	405
573	nonparticipant	34	32	345288	4867302	405
574	nonparticipant	34	32	345308	4867308	405
575	nonparticipant	34	33	345324	4867315	405
576	nonparticipant	35	33	345349	4867325	406
577	nonparticipant	35	33	344944	4867742	402
578	nonparticipant	35	33	345006	4867695	403
579	nonparticipant	35	33	345046	4867699	402
580	nonparticipant	35	33	345028	4867734	401
581	nonparticipant	35	33	345060	4867741	401
582	nonparticipant	35	33	345144	4867694	401
583	nonparticipant	35	33	345151	4867744	400
584	nonparticipant	36	33	345197	4867777	398
585	nonparticipant	35	33	345200	4867747	398
586	nonparticipant	35	33	345197	4867711	399
587	nonparticipant	35	33	345196	4867679	400

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Receptor ID	Participation Status	Sound Pressure Level (dBA)		Coordinates (UTM NAD83 Z 15N)		Elevation (ground + 4 meters)
		GE 6.1-158, HH 117 m	V 6.0-162, HH 119 m	X (m)	Y (m)	
		LNTE	STE			
588	nonparticipant	35	33	345149	4867669	401
589	nonparticipant	35	33	345126	4867671	401
590	nonparticipant	36	34	345217	4867936	397
591	nonparticipant	35	33	345235	4867642	400
592	nonparticipant	35	33	345260	4867638	399
593	nonparticipant	35	33	345286	4867644	399
594	nonparticipant	32	30	343409	4867547	391
595	participant	34	32	352617	4875800	365
596	nonparticipant	43	40	352567	4874236	371
597	nonparticipant	36	33	354694	4869562	371
598	nonparticipant	38	35	354152	4872437	370
599	nonparticipant	36	34	354454	4872703	364
600	nonparticipant	37	34	354182	4873719	364
601	nonparticipant	32	31	354055	4875479	362
602	nonparticipant	25	24	356437	4876650	351
603	nonparticipant	28	27	355599	4875833	352
604	nonparticipant	28	27	356021	4875517	352
605	nonparticipant	29	28	355687	4875216	352
606	nonparticipant	30	28	355902	4874643	353
607	nonparticipant	31	29	355446	4874682	356
608	nonparticipant	35	33	355352	4871213	367
609	nonparticipant	35	32	355630	4870935	365
610	nonparticipant	32	30	355553	4869487	370
611	nonparticipant	29	28	356806	4869653	364
612	nonparticipant	31	29	357363	4870377	361
613	nonparticipant	36	34	357276	4871269	358
614	nonparticipant	37	34	357615	4871921	355
615	nonparticipant	32	29	358069	4872952	351
616	nonparticipant	28	27	357627	4874308	350
617	nonparticipant	25	24	357430	4875734	351
618	nonparticipant	26	24	357505	4875420	352
619	nonparticipant	26	25	356819	4875899	350
620	nonparticipant	32	31	353119	4876184	363
621	nonparticipant	44	41	353033	4872732	371
622	nonparticipant	35	33	355110	4872432	365
623	nonparticipant	44	41	353498	4871094	374
624	nonparticipant	44	41	353171	4871171	372

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Receptor ID	Participation Status	Sound Pressure Level (dBA)		Coordinates (UTM NAD83 Z 15N)		Elevation (ground + 4 meters)
		GE 6.1-158, HH 117 m	V 6.0-162, HH 119 m	X (m)	Y (m)	
		LNTE	STE			
625	nonparticipant	32	30	354643	4868550	376
626	nonparticipant	29	27	355692	4868205	370
627	nonparticipant	29	27	355705	4868226	370
628	nonparticipant	28	27	355890	4868247	371
629	nonparticipant	29	27	355778	4868387	371
630	nonparticipant	28	26	355951	4868260	371
631	nonparticipant	28	26	356003	4868263	371
632	nonparticipant	28	26	356051	4868273	371
633	nonparticipant	28	26	356076	4868276	371
634	nonparticipant	28	26	356066	4868302	372
635	nonparticipant	28	26	356128	4868280	370
636	nonparticipant	28	26	356112	4868326	370
637	nonparticipant	28	26	356112	4868349	370
638	nonparticipant	28	26	356044	4868344	371
639	nonparticipant	28	27	355995	4868317	372
640	nonparticipant	28	27	356050	4868375	370
641	nonparticipant	28	27	356046	4868391	370
642	nonparticipant	28	27	356045	4868412	369
643	nonparticipant	28	26	356116	4868389	369
644	nonparticipant	28	27	356100	4868440	368
645	nonparticipant	28	26	356172	4868448	368
646	nonparticipant	28	26	356176	4868477	368
647	nonparticipant	28	26	356186	4868367	368
648	nonparticipant	28	26	356303	4868492	368
649	nonparticipant	28	26	356390	4868511	369
650	nonparticipant	28	27	355970	4868434	372
651	nonparticipant	29	27	355906	4868513	370
652	nonparticipant	29	27	355902	4868535	370
653	nonparticipant	29	27	355893	4868586	370
654	nonparticipant	29	27	355956	4868520	370
655	nonparticipant	28	27	355989	4868484	369
656	nonparticipant	28	27	356007	4868520	368
657	nonparticipant	28	27	356040	4868494	368
658	nonparticipant	28	27	356092	4868505	368
659	nonparticipant	28	27	356160	4868520	368
660	nonparticipant	28	27	356139	4868541	368
661	nonparticipant	28	26	356212	4868528	369

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Receptor ID	Participation Status	Sound Pressure Level (dBA)		Coordinates (UTM NAD83 Z 15N)		Elevation (ground + 4 meters)
		GE 6.1-158, HH 117 m	V 6.0-162, HH 119 m	X (m)	Y (m)	
		LNTE	STE			
662	nonparticipant	28	26	356262	4868539	368
663	nonparticipant	28	27	356203	4868559	368
664	nonparticipant	28	27	356206	4868592	368
665	nonparticipant	28	27	356230	4868596	368
666	nonparticipant	28	26	356282	4868604	369
667	nonparticipant	28	26	356251	4868605	369
668	nonparticipant	28	27	356097	4868534	368
669	nonparticipant	28	27	356030	4868540	369
670	nonparticipant	29	27	356027	4868567	369
671	nonparticipant	29	27	355940	4868594	369
672	nonparticipant	29	27	356018	4868599	369
673	nonparticipant	29	27	356015	4868632	370
674	nonparticipant	29	27	356011	4868647	370
675	nonparticipant	29	27	356066	4868631	369
676	nonparticipant	28	27	356138	4868631	369
677	nonparticipant	28	27	356190	4868643	369
678	nonparticipant	28	27	356219	4868645	369
679	nonparticipant	28	27	356265	4868655	369
680	nonparticipant	28	27	356265	4868681	369
681	nonparticipant	29	27	356132	4868668	369
682	nonparticipant	29	27	356131	4868692	369
683	nonparticipant	28	26	356318	4868612	369
684	nonparticipant	28	26	356339	4868628	369
685	nonparticipant	28	26	356427	4868604	369
686	nonparticipant	28	26	356408	4868633	369
687	nonparticipant	28	26	356331	4868663	369
688	nonparticipant	28	26	356383	4868682	369
689	nonparticipant	28	26	356421	4868689	369
690	nonparticipant	28	26	356457	4868686	369
691	nonparticipant	28	26	356366	4868697	369
692	nonparticipant	28	26	356446	4868715	369
693	nonparticipant	28	26	356494	4868564	368
694	nonparticipant	28	26	356498	4868606	368
695	nonparticipant	29	27	356392	4868940	368
696	nonparticipant	29	27	356392	4868989	368
697	nonparticipant	29	27	356422	4869067	368
698	nonparticipant	29	27	356382	4869063	368

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Receptor ID	Participation Status	Sound Pressure Level (dBA)		Coordinates (UTM NAD83 Z 15N)		Elevation (ground + 4 meters)
		GE 6.1-158, HH 117 m	V 6.0-162, HH 119 m	X (m)	Y (m)	
		LNTE	STE			
699	nonparticipant	29	27	356377	4869031	368
700	nonparticipant	29	27	356327	4869052	368
701	nonparticipant	29	27	356331	4869023	368
702	nonparticipant	29	27	356309	4869087	368
703	nonparticipant	29	27	356374	4869101	368
704	nonparticipant	29	27	356437	4869110	368
705	nonparticipant	29	27	356438	4869161	368
706	nonparticipant	29	27	356390	4869157	368
707	nonparticipant	29	27	356355	4869151	368
708	nonparticipant	29	27	356307	4869137	368
709	nonparticipant	29	27	356302	4869170	368
710	nonparticipant	29	27	356412	4869220	370
711	nonparticipant	29	28	356053	4868972	369
712	nonparticipant	29	28	356080	4868980	368
713	nonparticipant	29	28	356079	4869006	368
714	nonparticipant	30	28	356073	4869033	368
715	nonparticipant	30	28	356055	4869050	368
716	nonparticipant	30	28	356006	4868977	369
717	nonparticipant	30	28	355993	4869003	369
718	nonparticipant	30	28	355994	4869031	369
719	nonparticipant	30	28	355949	4868966	370
720	nonparticipant	30	28	355946	4868986	370
721	nonparticipant	30	28	355947	4869008	369
722	nonparticipant	30	28	355943	4869023	369
723	nonparticipant	29	28	355969	4868875	371
724	nonparticipant	30	28	355889	4868864	370
725	nonparticipant	30	28	355881	4868899	370
726	nonparticipant	30	28	355878	4868939	370
727	nonparticipant	30	28	355870	4868966	370
728	nonparticipant	30	28	355844	4868823	371
729	nonparticipant	30	28	355839	4868859	371
730	nonparticipant	30	28	355839	4868894	371
731	nonparticipant	30	28	355829	4868931	371
732	nonparticipant	30	28	355828	4868944	371
733	nonparticipant	30	28	355807	4868818	371
734	nonparticipant	30	28	355933	4869063	369
735	nonparticipant	30	28	355928	4869079	369

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Big Bend Wind

Noise Assessment Report

Receptor ID	Participation Status	Sound Pressure Level (dBA)		Coordinates (UTM NAD83 Z 15N)		Elevation (ground + 4 meters)
		GE 6.1-158, HH 117 m	V 6.0-162, HH 119 m	X (m)	Y (m)	
		LNTE	STE			
736	nonparticipant	30	28	355926	4869091	369
737	nonparticipant	30	28	355917	4869113	369
738	nonparticipant	30	28	355917	4869134	369
739	nonparticipant	30	28	355986	4869080	368
740	nonparticipant	30	28	355980	4869124	368
741	nonparticipant	30	28	355971	4869143	368
742	nonparticipant	30	28	356059	4869086	368
743	nonparticipant	30	28	356057	4869101	368
744	nonparticipant	30	28	356099	4869163	367
745	nonparticipant	30	28	355885	4869055	370
746	nonparticipant	30	28	355860	4869054	370
747	nonparticipant	30	28	355849	4869113	370
748	nonparticipant	30	28	355870	4869117	370
749	nonparticipant	30	28	355807	4869058	371
750	nonparticipant	30	29	355802	4869095	371
751	nonparticipant	31	29	355794	4869128	371
752	nonparticipant	31	29	355782	4869165	371
753	nonparticipant	31	29	355770	4869187	371
754	nonparticipant	30	29	355755	4869047	372
755	nonparticipant	31	29	355711	4869040	372
756	nonparticipant	30	28	355760	4868992	372
757	nonparticipant	30	29	355694	4868990	372
758	nonparticipant	31	29	355689	4869183	372
759	nonparticipant	31	29	355698	4869275	370
760	nonparticipant	31	29	355723	4869356	370
761	nonparticipant	31	29	355751	4869319	370
762	nonparticipant	31	29	355809	4869334	370
763	nonparticipant	31	29	355817	4869271	370
764	nonparticipant	31	29	355843	4869284	370
765	nonparticipant	31	29	355886	4869292	370
766	nonparticipant	30	29	355951	4869296	368
767	nonparticipant	30	29	355935	4869318	368
768	nonparticipant	31	29	355931	4869376	368
769	nonparticipant	30	29	356001	4869360	368
770	nonparticipant	30	28	356005	4869310	368
771	nonparticipant	30	28	356030	4869257	367
772	nonparticipant	30	28	356003	4869256	367

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Big Bend Wind

Noise Assessment Report

Receptor ID	Participation Status	Sound Pressure Level (dBA)		Coordinates (UTM NAD83 Z 15N)		Elevation (ground + 4 meters)
		GE 6.1-158, HH 117 m	V 6.0-162, HH 119 m	X (m)	Y (m)	
		LNTE	STE			
773	nonparticipant	30	28	356012	4869188	367
774	nonparticipant	30	28	356036	4869192	367
775	nonparticipant	30	28	356032	4869238	367
776	nonparticipant	30	28	355964	4869180	368
777	nonparticipant	30	28	355961	4869199	368
778	nonparticipant	30	28	355956	4869255	368
779	nonparticipant	30	28	355911	4869176	369
780	nonparticipant	30	29	355907	4869212	369
781	nonparticipant	30	29	355894	4869247	369
782	nonparticipant	31	29	355823	4869224	371
783	nonparticipant	30	29	355849	4869163	370
784	nonparticipant	30	28	356273	4869294	369
785	nonparticipant	29	28	356327	4869308	368
786	nonparticipant	29	28	356329	4869276	369
787	nonparticipant	29	28	356285	4869243	368
788	nonparticipant	30	28	356217	4869348	368
789	nonparticipant	30	28	356142	4869333	367
790	nonparticipant	29	27	356488	4869268	367
791	nonparticipant	29	27	356488	4869322	367
792	nonparticipant	28	27	356521	4869056	367
793	nonparticipant	35	33	351866	4875985	366
794	nonparticipant	25	24	357345	4868269	366
795	nonparticipant	24	22	358127	4868180	363
796	nonparticipant	23	21	359000	4868732	358
797	nonparticipant	29	27	358409	4871152	355
798	participant	20	19	338161	4880092	394
799	participant	25	24	340457	4879785	385
800	nonparticipant	30	28	342979	4879428	381
801	participant	28	27	342860	4879804	374
802	participant	32	30	344257	4879373	373
803	nonparticipant	30	28	346022	4880757	383
804	nonparticipant	35	33	346353	4879521	376
805	nonparticipant	32	31	347374	4880046	380
806	nonparticipant	17	16	334869	4878152	423
807	nonparticipant	18	18	336665	4879160	409
808	participant	25	24	339609	4878853	401
809	participant	26	25	339876	4878698	403

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Big Bend Wind

Noise Assessment Report

Receptor ID	Participation Status	Sound Pressure Level (dBA)		Coordinates (UTM NAD83 Z 15N)		Elevation (ground + 4 meters)
		GE 6.1-158, HH 117 m	V 6.0-162, HH 119 m	X (m)	Y (m)	
		LNTE	STE			
810	participant	27	26	340969	4879236	393
811	nonparticipant	28	27	341727	4879250	382
812	nonparticipant	31	29	342147	4878086	389
813	participant	31	29	343459	4879213	380
814	nonparticipant	43	40	346568	4878623	373
815	nonparticipant	18	17	334807	4877612	426
816	nonparticipant	22	21	336624	4877581	419
817	nonparticipant	35	33	342925	4877379	387
818	nonparticipant	39	37	348298	4877605	371
819	nonparticipant	39	36	349372	4876711	374
820	nonparticipant	36	34	349560	4877237	370
821	nonparticipant	40	38	350071	4876070	374
822	nonparticipant	23	21	334761	4875604	436
823	participant	26	24	335312	4874792	438
824	participant	26	24	336576	4875510	421
825	nonparticipant	25	23	336378	4875819	423
826	participant	27	26	336384	4874934	422
827	nonparticipant	30	28	336991	4874550	421
828	nonparticipant	29	27	336774	4874696	422
829	nonparticipant	30	28	338085	4874866	413
830	nonparticipant	32	30	339459	4874939	412
831	nonparticipant	43	40	344595	4874794	390
832	nonparticipant	24	22	333832	4873272	436
833	nonparticipant	25	23	334862	4874592	439
834	participant	26	24	334958	4874215	439
835	nonparticipant	27	25	334586	4872932	429
836	nonparticipant	35	32	336162	4873279	434
837	nonparticipant	37	34	338786	4873051	411
838	nonparticipant	40	37	340983	4873020	409
839	nonparticipant	37	35	340423	4872948	412
840	nonparticipant	43	40	343945	4872887	405
841	participant	40	37	345816	4872706	392
842	nonparticipant	40	38	345892	4872903	392
843	nonparticipant	39	36	338174	4872453	418
844	nonparticipant	41	38	338637	4871428	416
845	nonparticipant	39	36	339725	4871223	408
847	nonparticipant	39	36	341617	4872198	407

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Big Bend Wind

Noise Assessment Report

Receptor ID	Participation Status	Sound Pressure Level (dBA)		Coordinates (UTM NAD83 Z 15N)		Elevation (ground + 4 meters)
		GE 6.1-158, HH 117 m	V 6.0-162, HH 119 m	X (m)	Y (m)	
		LNTE	STE			
848	nonparticipant	37	35	340697	4872553	410
849	nonparticipant	42	39	345132	4871418	401
850	nonparticipant	41	38	345666	4871176	401
851	nonparticipant	40	38	345635	4871615	397
853	nonparticipant	43	40	347220	4871377	394
854	nonparticipant	44	41	349219	4872327	381
856	nonparticipant	27	25	334781	4871010	440
857	participant	27	26	335152	4870543	436
858	participant	28	26	335176	4870542	436
859	nonparticipant	33	30	337070	4869855	436
860	nonparticipant	32	30	337119	4869638	436
861	nonparticipant	41	38	338904	4871049	407
862	nonparticipant	34	32	340446	4869737	412
863	nonparticipant	33	31	341233	4869865	411
864	nonparticipant	38	36	342758	4870493	407
865	nonparticipant	37	34	342923	4869891	409
866	nonparticipant	42	39	349266	4870209	389
867	nonparticipant	25	23	334947	4869374	441
868	nonparticipant	32	29	337953	4868597	432
869	nonparticipant	38	35	338227	4869503	429
870	nonparticipant	32	29	338448	4868102	429
871	nonparticipant	32	30	338518	4868105	426
872	nonparticipant	35	32	339725	4868307	415
873	nonparticipant	29	27	336967	4868688	435
874	nonparticipant	38	35	338219	4869504	429
875	nonparticipant	33	31	341232	4869013	415
876	nonparticipant	33	31	341232	4869013	415
877	nonparticipant	36	34	344669	4868346	398
878	nonparticipant	36	34	344721	4868250	405
879	nonparticipant	36	34	344634	4868277	396
880	nonparticipant	35	33	344647	4868236	399
881	nonparticipant	35	33	344664	4868206	402
882	nonparticipant	35	33	344679	4868180	404
883	nonparticipant	35	33	344691	4868155	405
884	nonparticipant	35	33	344708	4868129	407
885	nonparticipant	35	33	344749	4868074	407
886	nonparticipant	35	33	344752	4868013	406

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Big Bend Wind

Noise Assessment Report

Receptor ID	Participation Status	Sound Pressure Level (dBA)		Coordinates (UTM NAD83 Z 15N)		Elevation (ground + 4 meters)
		GE 6.1-158, HH 117 m	V 6.0-162, HH 119 m	X (m)	Y (m)	
		LNTE	STE			
887	nonparticipant	35	33	344761	4867974	405
888	nonparticipant	35	33	344773	4867945	405
889	nonparticipant	35	33	344846	4868005	404
890	nonparticipant	35	33	344907	4867995	402
891	nonparticipant	36	34	344933	4868048	404
892	nonparticipant	36	33	344905	4868049	405
893	nonparticipant	35	33	344872	4868050	405
894	nonparticipant	36	33	344892	4868073	405
895	nonparticipant	35	33	344795	4867894	404
896	nonparticipant	35	33	344803	4867873	404
897	nonparticipant	35	33	344805	4867852	403
898	nonparticipant	35	33	344812	4867827	401
899	nonparticipant	35	33	344828	4867812	401
900	nonparticipant	35	33	344949	4867811	400
901	nonparticipant	35	33	344887	4867861	401
902	nonparticipant	35	33	344887	4867891	401
903	nonparticipant	35	33	345021	4867901	400
904	nonparticipant	35	33	344998	4867808	400
905	nonparticipant	35	33	345080	4867809	400
906	nonparticipant	35	33	345110	4867806	400
907	nonparticipant	35	33	345136	4867810	400
908	nonparticipant	36	33	345156	4867808	399
909	nonparticipant	36	34	345205	4867815	397
910	nonparticipant	36	34	345155	4867859	399
911	nonparticipant	36	33	345113	4867871	399
912	nonparticipant	36	34	345144	4867902	399
913	nonparticipant	36	34	345161	4867967	398
914	nonparticipant	36	34	345161	4867998	398
915	nonparticipant	36	34	345124	4867997	398
916	nonparticipant	36	34	345213	4868052	396
917	nonparticipant	37	34	345307	4868046	395
918	nonparticipant	37	35	345355	4868046	395
919	nonparticipant	37	35	345499	4868043	395
920	nonparticipant	38	35	345548	4868047	395
921	nonparticipant	37	35	345419	4868097	394
922	nonparticipant	37	35	345422	4868130	394
923	nonparticipant	38	35	345479	4868127	394

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Receptor ID	Participation Status	Sound Pressure Level (dBA)		Coordinates (UTM NAD83 Z 15N)		Elevation (ground + 4 meters)
		GE 6.1-158, HH 117 m	V 6.0-162, HH 119 m	X (m)	Y (m)	
		LNTE	STE			
924	nonparticipant	38	35	345482	4868161	394
925	nonparticipant	38	35	345467	4868172	394
926	nonparticipant	38	35	345442	4868188	394
927	nonparticipant	37	35	345411	4868192	394
928	nonparticipant	38	35	345411	4868201	394
929	nonparticipant	36	34	345060	4868051	399
930	nonparticipant	36	34	345032	4868050	401
931	nonparticipant	36	34	345006	4868052	402
932	nonparticipant	36	34	344982	4868051	403
933	nonparticipant	36	34	344959	4868051	403
934	nonparticipant	36	33	344979	4868001	401
935	nonparticipant	36	34	345003	4868001	400
936	nonparticipant	35	33	345082	4867861	399
937	nonparticipant	38	36	345108	4868670	394
938	nonparticipant	39	37	345101	4869058	397
939	nonparticipant	40	37	345073	4869116	396
940	nonparticipant	39	37	345842	4868063	398
941	nonparticipant	40	38	349380	4868208	396
942	nonparticipant	38	35	339407	4866737	429
943	nonparticipant	40	37	339495	4867354	424
944	nonparticipant	29	27	338320	4866355	436
945	nonparticipant	40	37	339495	4867354	424
946	nonparticipant	40	37	340056	4866386	426
947	nonparticipant	37	34	340891	4866430	422
948	nonparticipant	34	31	341412	4866409	418
950	nonparticipant	32	30	341834	4866663	416
951	nonparticipant	30	29	342614	4866948	410
952	nonparticipant	30	29	342664	4866947	411
953	nonparticipant	30	28	343379	4866634	411
954	nonparticipant	39	37	346917	4867222	402
955	nonparticipant	39	36	346902	4867214	402
957	nonparticipant	38	35	346601	4867154	403
958	nonparticipant	38	35	346574	4867159	403
959	nonparticipant	37	35	346504	4867107	403
960	nonparticipant	23	21	336434	4866082	431
961	nonparticipant	25	23	338235	4864957	430
962	nonparticipant	25	23	338247	4864948	430

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Big Bend Wind

Noise Assessment Report

Receptor ID	Participation Status	Sound Pressure Level (dBA)		Coordinates (UTM NAD83 Z 15N)		Elevation (ground + 4 meters)
		GE 6.1-158, HH 117 m	V 6.0-162, HH 119 m	X (m)	Y (m)	
		LNTE	STE			
963	nonparticipant	26	24	358896	4873681	351
964	nonparticipant	25	24	359309	4870901	357
965	nonparticipant	22	21	358521	4867711	360
966	nonparticipant	25	24	358569	4869565	359
967	nonparticipant	23	22	359166	4869438	357
969	nonparticipant	42	39	352433	4874356	371
970	nonparticipant	41	38	352474	4869517	382
971	nonparticipant	42	40	344430	4869517	393
973	nonparticipant	25	23	338242	4864932	430
974	nonparticipant	42	39	353841	4871109	372
975	nonparticipant	33	31	344236	4867651	400
976	nonparticipant	33	31	344270	4867644	400
977	nonparticipant	33	31	344307	4867641	399
978	nonparticipant	33	31	344344	4867638	398
979	nonparticipant	33	31	344230	4867580	401
980	nonparticipant	33	31	344283	4867533	402
981	nonparticipant	33	31	344286	4867500	403
982	nonparticipant	33	31	344256	4867479	403
983	nonparticipant	32	31	344454	4867197	405
984	nonparticipant	32	30	345598	4866341	405

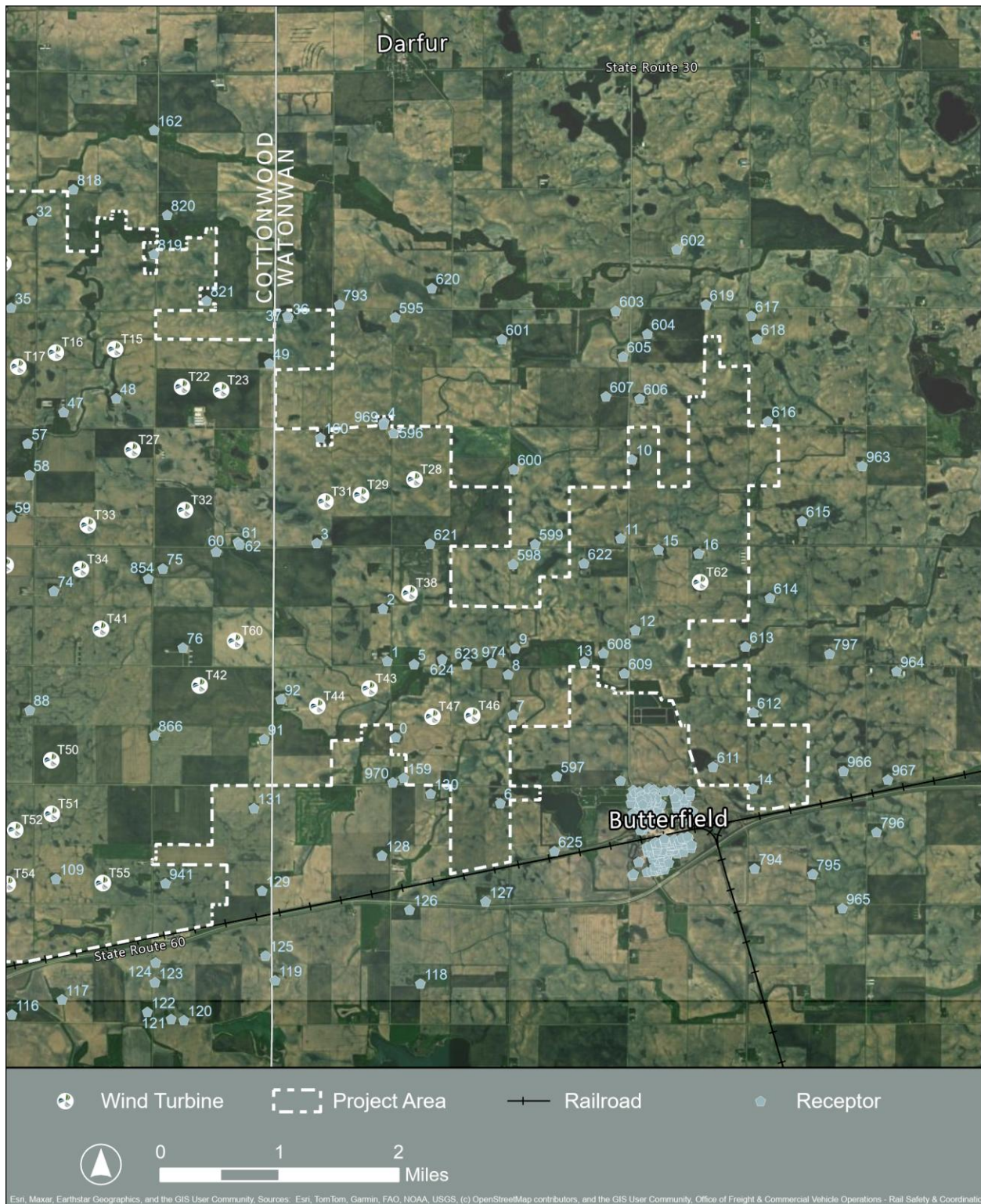


Figure 5: Receptor Map, Eastern Area

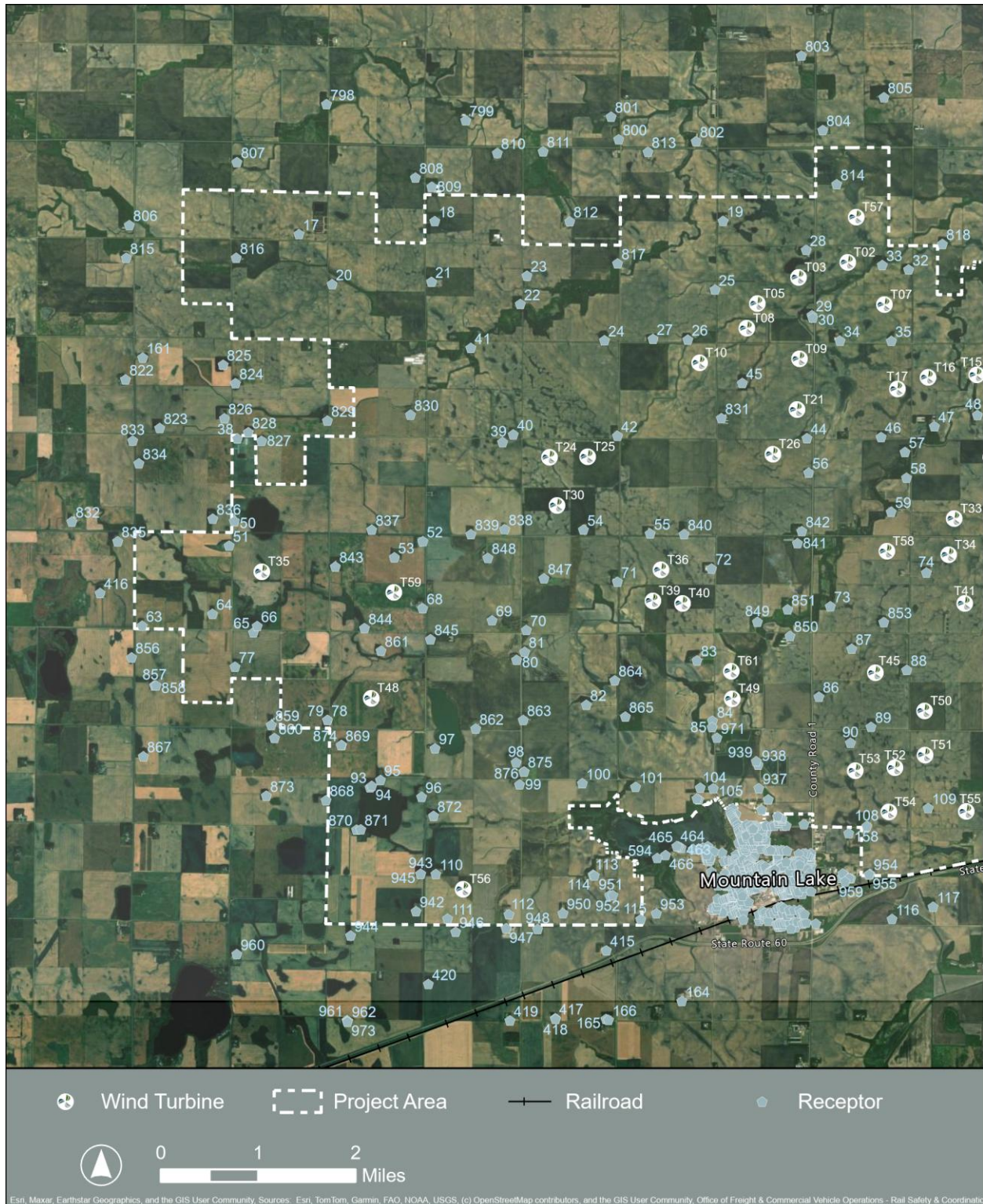


Figure 6: Receptor Map, Western Area

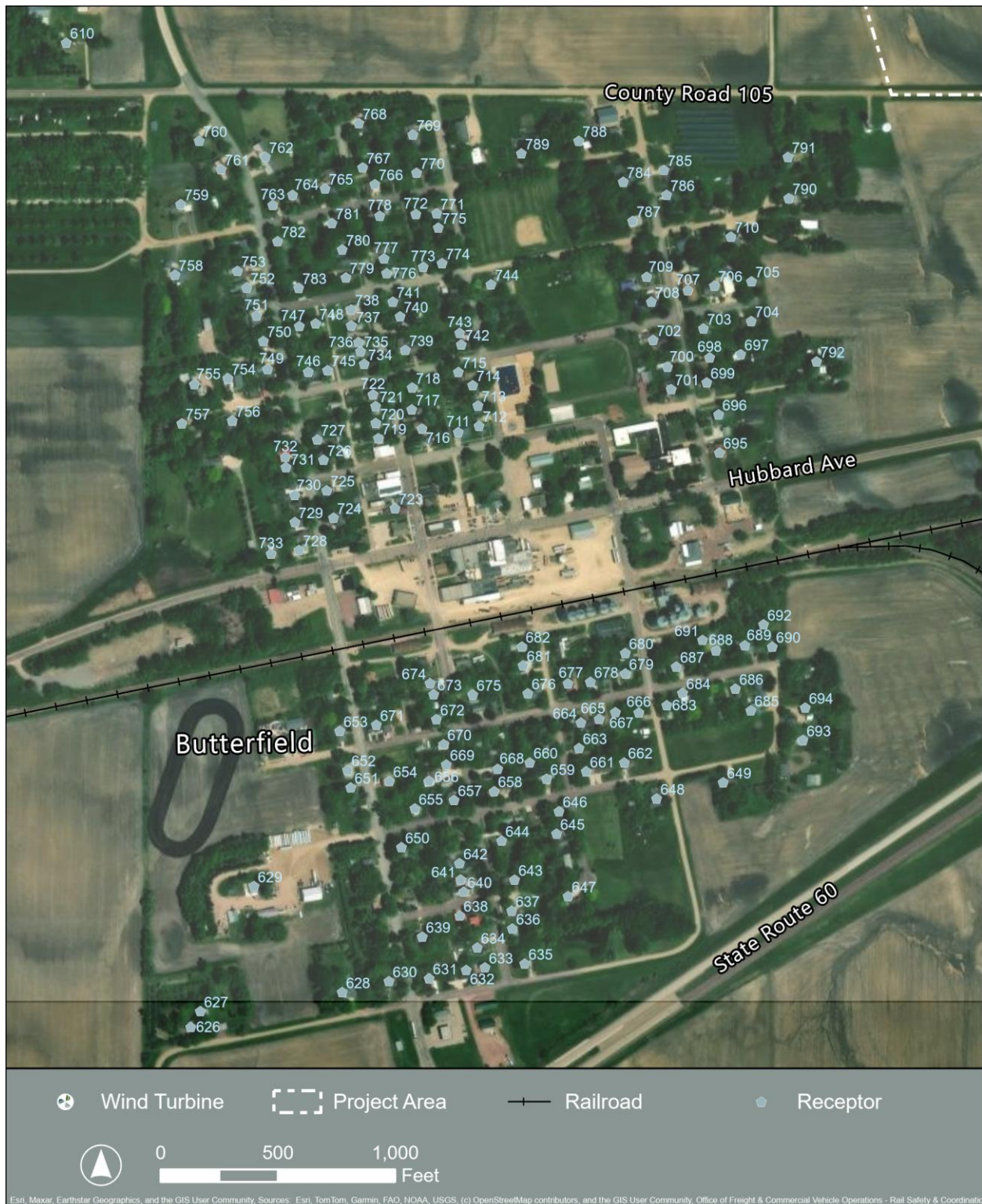


Figure 7: Receptor Map, Butterfield Area

Noise Assessment Report



Appendix E: Qualifications

Paxwood Acoustics provides professional consulting services in acoustics and noise control engineering with a focus on environmental permitting and compliance. Eddie Duncan, Principal Consultant, is a Board-Certified Noise Control Engineer (#09002) through the Institute of Noise Control Engineering and is a member of the Acoustical Society of America. Mr. Duncan has been practicing acoustic consulting for over 20 years. In that time, he has managed over 400 acoustics projects and has worked on 120+ wind power projects, 85+ solar projects, and 70+ transmission projects. He has also managed noise assessments for a growing portfolio of BESS projects which have often been a component of other renewable energy projects.

Prior to starting Paxwood Acoustics, Mr. Duncan was a Senior Director at RSG where he prepared the report for the 2021 Noise Assessment of Big Bend Wind.

Appendix F: Section 5, Sound Level Monitoring of the 2021 Noise Assessment

This appendix contains Section 5 of the 2021 Noise Assessment that was conducted by RSG. It was not written by Paxwood Acoustics, but as part of a public document, it is provided here as a quick reference to the background sound levels measured in the Project area.

Revised Noise Assessment, Big Bend Wind Project

5.0 SOUND LEVEL MONITORING

5.1 MONITORING PROCEDURES

Background sound level monitoring was conducted from November 12 to November 21, 2019 throughout the Project area to quantify the existing sound levels, including the nighttime L_{50} , and to identify existing sources of sound. Monitoring locations were selected per the guidance provided in the Department of Commerce's "Guidance for Large Wind Energy Conversion System Noise Study Protocol and Report," July 2019. The guidance recommends a minimum of three locations within the Project area. For this Project there were a total of five onsite locations and one offsite monitor. The guidance also recommends that one monitor location be in proximity to the worst-case modeled receptor. Monitors 2 and 3 are representative of the worst-case Project sound levels. A map of all the monitor locations is provided in Figure 6, and each monitor location is described further in Section 5.2.

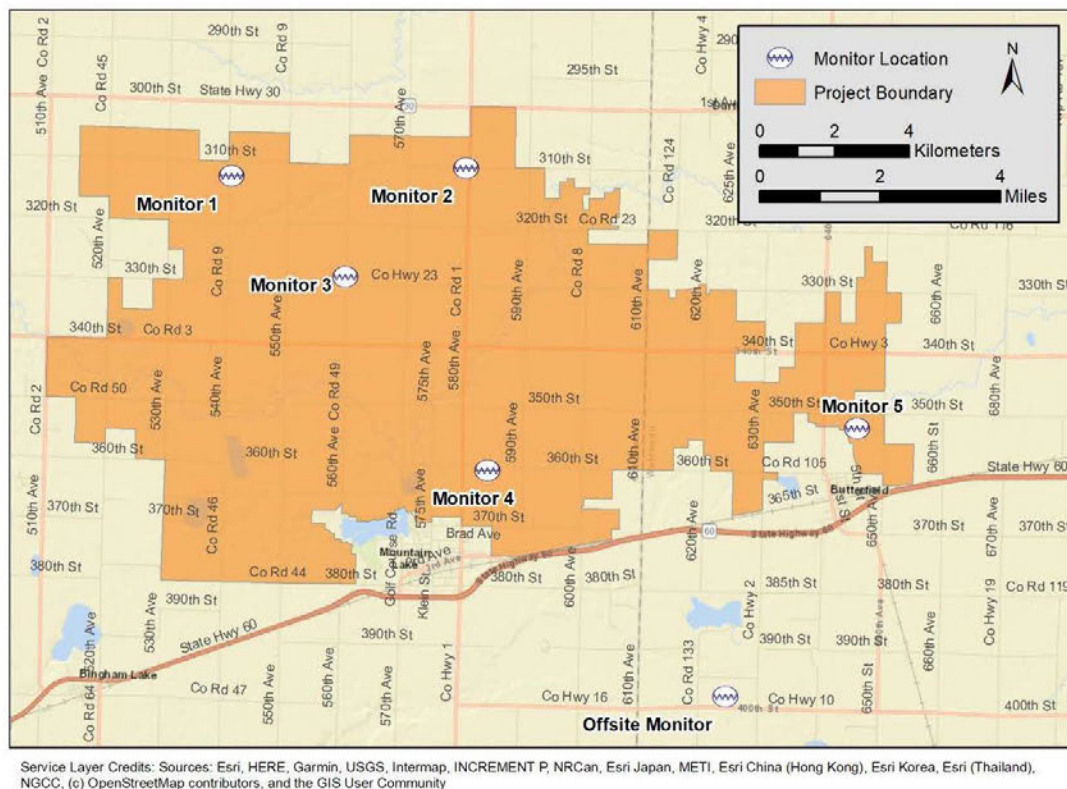


FIGURE 6: MAP OF BACKGROUND SOUND MONITOR LOCATIONS

Revised Noise Assessment, Big Bend Wind Project

Equipment

Background sound level monitoring was performed with ANSI/IEC Class 1 Cesva SC310, Cirrus CR:171B, and Svantek 979 sound level meters with a minimum frequency range of 20 Hz to 10 kHz. Meters were set to log, at a minimum, 1/3 octave band sound levels once each second for the entire measurement period. Sound level meter microphones were mounted on wooden stakes at a height of approximately 1.5 meters (5 feet) and covered with 180 mm (7 inch) windscreens to minimize the impact of wind-caused distortion on measurements. The sound level meters either had internal audio recording or were connected to Edirol audio recorders, recording audio data at a minimum resolution of 96 kbps in .mp3 format. Before and after the measurement periods, the meters were calibrated with a B&K 4231 calibrator. The monitoring equipment meets LWECS Guidance.

A list of the equipment used at each monitor is shown in Table 3. At each site, an ONSET anemometer was located at microphone height. At Monitor 5, a wind direction sensor was also included in the setup. Monitor 3 also logged temperature and relative humidity. Wind data was logged at a rate of once each minute. Regional precipitation periods were collected from the FAA automated weather station KMVM in Windom, MN, about 12 miles to the southwest.

TABLE 3: SOUND MONITOR EQUIPMENT SPECIFICATIONS BY SITE

Monitor Location	Sound Level Meter	1/3 Octave Band Frequency Range	Audio Recorder	Weather Station
Monitor 1	Cesva SC310	10 Hz – 20 kHz	Edirol R-05	ONSET HOBO Wind Speed Sensor
Monitor 2	Cesva SC310	20 Hz – 10 kHz	Edirol R-05	ONSET HOBO Wind Speed Sensor
Monitor 3	Svantek 979	0.8 Hz – 20 kHz	Internal	ONSET HOBO Wind Speed and Temperature Sensors
Monitor 4	Cirrus CR: 171B	6.3 Hz – 20 kHz	Edirol R-05	ONSET HOBO Wind Speed Sensor
Monitor 5	Cirrus CR: 171B	6.3 Hz – 20 kHz	Edirol R-05	ONSET HOBO Wind Speed and Direction Sensors
Offsite	Cesva SC310	10 Hz – 20 kHz	Edirol R-05	ONSET HOBO Wind Speed Sensor

Data Processing

For each period A-, C-, and Z-weighted equivalent average sound levels (L_{eq}) were calculated. For A- and C-weighted sound levels, the L_{10} , L_{50} , and L_{90} statistical sound levels were also calculated.

A second set of data was also generated with periods removed from the data that either contained anomalous sound events or periods with conditions that could lead to false sound level readings.

Revised Noise Assessment, Big Bend Wind Project

Periods that were removed from the sound level data included:

- Wind speeds above 11 mph (5 m/s),
- Precipitation and thunderstorm events, and
- Personnel and animal interaction with equipment.

5.2 MONITOR LOCATION DESCRIPTIONS

Monitor 1

Monitor 1 was located at the edge of a field in the northwest corner of the Project area. The monitor was located 250 feet east of County Road 9 (540th Ave.), and 1,360 feet south of 310th Street. The nearest residence was a farm approximately 700 feet south of the monitor. The area around the monitor is largely agricultural with scattered farm residences, although little farming was being done at the time of the monitoring. A photograph of the monitor setup is provided in Figure 7, and a map of the surrounding area is shown in Figure 8.



FIGURE 7: PHOTOGRAPH OF MONITOR 1 LOOKING TO THE SOUTH

Revised Noise Assessment, Big Bend Wind Project

**FIGURE 8: AERIAL VIEW OF MONITOR 1 AND THE SURROUNDING AREA**

Revised Noise Assessment, Big Bend Wind Project

Monitor 2

Monitor 2 was located at a farm residence in the northern portion of the Project area. The monitor was located approximately 115 feet south of 310th Street, and 300 feet west of County Road 1 (580th Ave.). The area around the monitor is largely agricultural with scattered farm residences. The monitor was placed just west of a wind break. A photograph of the monitor setup is provided in Figure 9, and a map of the surrounding area is shown in Figure 10.



FIGURE 9: PHOTOGRAPH OF MONITOR 2 LOOKING TO THE NORTH

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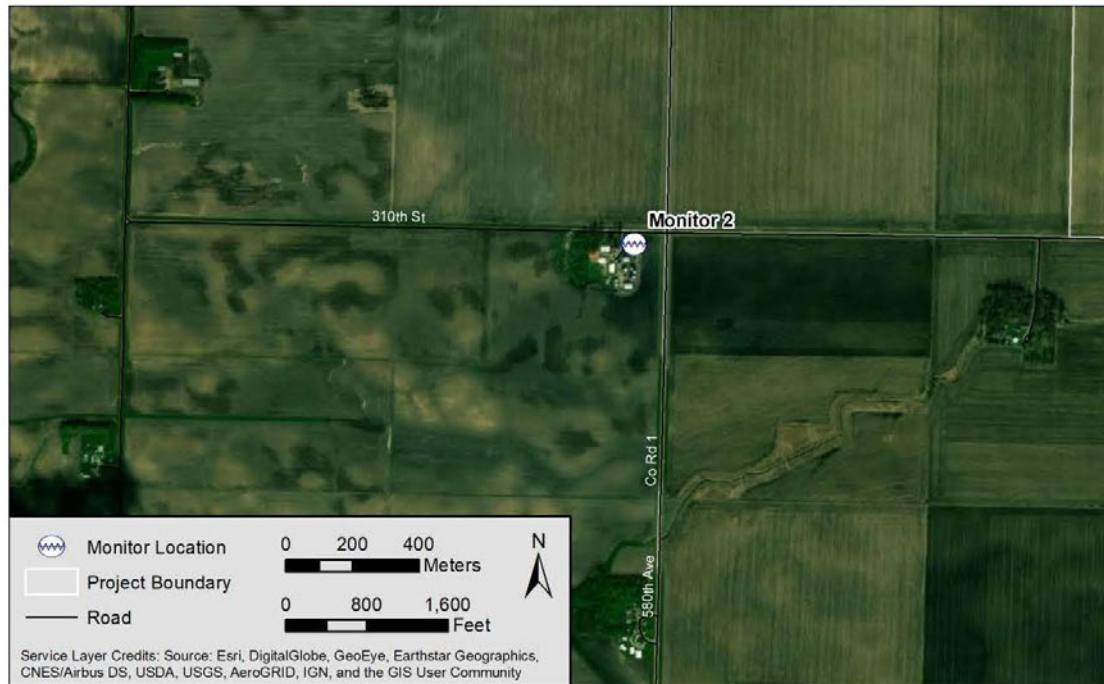


FIGURE 10: AERIAL VIEW OF MONITOR 2 AND THE SURROUNDING AREA

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Monitor 3

Monitor 3 was located at a farm residence in the middle of the Project area. The monitor was located approximately 150 feet west of County Road 49, and 545 feet north of County Highway 23 (330th St.). The area around the monitor is largely agricultural with scattered farm residences. The monitor was located approximately 100 feet north-northeast of a large outbuilding and 320 feet north of the farm residence. A photograph of the monitor setup is provided in Figure 11, and a map of the surrounding area is shown in Figure 12.



FIGURE 11: PHOTOGRAPH OF MONITOR 3 LOOKING TO THE SOUTH

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**FIGURE 12: AERIAL VIEW OF MONITOR 3 AND THE SURROUNDING AREA**

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Monitor 4

Monitor 4 was located at a farm residence in the southern portion of the Project area. The monitor was located approximately 460 feet south of 360th Street and 2,200 feet east of Country Road 1. The area around the monitor is largely agricultural with scattered farm residences. Mountain Lake is located approximately 1.25 miles southwest of the monitor location. The monitor was located approximately 70 feet north-northeast of an outbuilding, and 170 feet north of a larger outbuilding. A photograph of the monitor setup is provided in Figure 13, and a map of the surrounding area is shown in Figure 14.



FIGURE 13: PHOTOGRAPH OF MONITOR 4 LOOKING TO THE SOUTH

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**FIGURE 16: AERIAL VIEW OF MONITOR 5 AND THE SURROUNDING AREA**

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Offsite Monitor

The offsite monitor was located at the edge of a field south-southeast of the Project area, over 4 miles from the nearest proposed turbine. The monitor was located just approximately 865 feet north of County Highway 10 (400th Street) and about half a mile east of County Road 133 (620th Ave.) The area around the monitor is primarily agricultural with scattered farm residences. The closest residence was approximately 760 feet south-southwest of the monitor. A photograph of the monitor setup is provided in Figure 17, and a map of the surrounding area is shown in Figure 18.



FIGURE 17: PHOTOGRAPH OF THE OFFSITE MONITOR LOOKING TO THE SOUTHEAST

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FIGURE 18: AERIAL VIEW OF THE OFFSITE MONITOR AND THE SURROUNDING AREA

5.3 MONITORING RESULTS

For each monitor site, sound level time-history monitoring results are presented in a single chart in this report section. Each chart contains hourly sound levels, gust wind speed measured adjacent to each microphone, “hub height” average wind speed, precipitation events, and indications of data exclusions in conformance with LWECs Guidance. Points on the sound level graph represent data summarized for a single one-hour interval. The top portion of the chart displays A-weighted sound levels, the middle portion presents C-weighted levels, and the bottom portion shows wind speeds and times when there were data exclusions. All portions of the chart indicate day/night by shading: night is defined as 22:00 to 07:00 and shaded in grey.

The specific sound level metrics reported are L_{eq} , L_{90} , L_{50} , and L_{10} . Equivalent continuous sound levels (L_{eq}) are the energy-average level over one hour. Tenth-percentile sound levels (L_{90}) are the statistical value above which 90% of the sound levels occurred during one hour. Fiftieth-percentile sound levels (L_{50}) represent the median sound level of that one-hour period. Ninetieth-percentile sound levels (L_{10}) are the statistical value above which 10% of the sound levels occurred during one hour. Data that were excluded from processing (e.g., due to high wind and rain periods) are included in the graphs but shown in lighter colors. Furthermore, rectangular markers on the lower portion of the chart indicate periods for which data was

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excluded and designate if the period was eliminated as a result of rain, wind gusts over 11 mph, or anomalous events.

Sound level data and wind gust data presented in the charts are those measured at each corresponding site. Wind data from the monitoring location, measured at the microphone height of 1.5 meters (5 feet), are presented as the maximum gust speed occurring at any time over a 10-minute interval; they are not averaged. The average 10-minute hub height wind speed extrapolated from the Project met-tower closest to the monitoring location is also displayed on the chart. Lastly, regional one-hour precipitation totals, as reported by KMWM in Windom, MN, are plotted with respect to the secondary axis on the right-hand side of the chart. Note that the precipitation may not line up exactly with precipitation exclusions because the airport is approximately 12 miles southwest of the project site and some localized rain events were not registered at the airport.

Lastly, one-third octave band statistical sound level results are also presented for periods when a representative wind speed (9 m/s) existed at a height of 109 meters (358 feet). This condition reflects the wind conditions that would result in turbines producing near maximum sound power (9 m/s wind speed or greater at hub height). Only periods with this representative wind speed were used for the unweighted statistical one-third octave band metrics in the figures, providing a baseline for direct comparison with post-construction measurements. Each vertical orange and grey bar shows the lower 10th, median, and upper 10th percentile (L_{90} , L_{50} , and L_{10}) sound level for a single 1/3 octave band. The top of the orange bar is the upper 10th percentile sound pressure level, the white dot is the median, and the bottom of the grey bar is the lower 10th percentile sound level. The entire length of the bar indicates the middle 80th percentile of sound pressure levels. The blue dots indicate the equivalent continuous sound pressure level (L_{eq}) for that 1/3 octave band. At the far right of the chart are the A-, C-, and Z-weighted overall levels.

Results Summary

Exclusion Periods

Periods were excluded at each monitor through both manual identification and automated processing. Manual processing included the review of spectrograms created from the measured one-second one-third octave band data, accompanied by audio recordings made through the sound level meter's microphone. In this way, typical sources and anomalous events were identified.

Exact rain periods were manually identified from the spectrogram to ensure that data during rain events at each monitor were excluded. Automated processing of wind speed permitted the identification of gusts above 5 m/s (11.2 mph) on a one-minute basis. That is, if a gust within a specific one-minute period was measured above 5 m/s (11.2 mph), then that whole minute was eliminated.

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A summary of each monitor's total runtime and the amount of time excluded from the reported sound levels for rain, wind, and anomalous events are shown in Table 4.

TABLE 4: SUMMARY OF EXCLUSION PERIODS AT EACH MONITOR

Location	Run-Time (hr)	Exclusion Statistics							
		Rain		Wind		Anomalies		Total	
		(hr)	(%)	(hr)	(%)	(hr)	(%)	(hr)	(%)
1	210	27.4	13.1	54.6	26.0	11.4	5.4	87.3	41.6
2	210	27.4	13.1	34.7	16.5	7.8	3.7	64.8	30.9
3	210	27.4	13.1	25.8	12.3	0.2	0.1	50.8	24.2
4	210	27.4	13.1	68.4	32.6	8.9	4.3	95.3	45.4
5	215	26.3	12.2	25.8	12.0	0.4	0.2	53.1	24.7
Offsite	214	26.3	12.3	46.1	21.5	0.4	0.2	71.5	33.4

Overall Sound Levels

The A-weighted sound levels are listed for all seven sites in Table 5, and the C-weighted sound levels are listed Table 6. The reported levels represent all valid periods, that is, all periods that were not excluded due to weather or anomalous activity, as discussed in the previous section. In both tables, the equivalent continuous levels (L_{eq}) at night are less than (or equal to) daytime levels at all sites except at Monitor 1, which is typical and indicate the influence of human activity on the measured sound levels during the day.

As shown in Table 5, the average nighttime L_{50} across all the onsite monitors was 33 dBA with more rural locations (Monitors 1, 2, and 3) resulting in slightly lower levels and less rural locations (Monitors 4 and 5) having slightly higher levels.

TABLE 5: PRECONSTRUCTION MONITORING SUMMARY (A-WEIGHTED RESULTS)

Location	Sound Levels (dBA)											
	Overall				Day				Night			
	L_{eq}	L_{90}	L_{50}	L_{10}	L_{eq}	L_{90}	L_{50}	L_{10}	L_{eq}	L_{90}	L_{50}	L_{10}
Monitor 1	48	25	35	46	44	27	36	45	50	23	32	55
Monitor 2	50	26	37	53	51	31	40	54	47	23	31	50
Monitor 3	46	25	34	48	48	27	36	51	39	23	31	42
Monitor 4	42	28	39	46	43	32	40	46	42	26	36	46
Monitor 5	42	31	38	46	43	31	39	47	41	31	36	42
Onsite Average	46	27	36	48	46	29	38	48	44	25	33	47
Offsite	41	28	35	42	42	30	36	42	38	26	33	41

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TABLE 6: PRECONSTRUCTION MONITORING SUMMARY (C-WEIGHTED RESULTS)

Location	Sound Levels (dBC)											
	Overall				Day				Night			
	L _{eq}	L ₉₀	L ₅₀	L ₁₀	L _{eq}	L ₉₀	L ₅₀	L ₁₀	L _{eq}	L ₉₀	L ₅₀	L ₁₀
Monitor 1	57	44	52	61	57	45	53	61	57	44	51	61
Monitor 2	59	40	49	60	61	44	51	62	55	38	45	56
Monitor 3	62	41	50	59	63	44	51	62	52	39	46	55
Monitor 4	57	45	54	60	57	48	55	60	56	43	52	59
Monitor 5	56	44	52	59	57	46	54	60	54	42	50	57
Onsite Average	58	43	52	60	59	45	53	61	55	41	49	58
Offsite	58	45	53	58	60	46	53	59	55	44	52	58

Meteorology

As discussed above, local meteorological data was collected from anemometers alongside the monitors, Project met towers, and the Windom Airport ASOS station (KMWM). According to the temperature sensor at Monitor 3, local temperatures ranged from -8.9°C to 11.0°C (16°F to 52°F) during the monitoring period. According to KMWM, precipitation events took place on November 18th and 20th. Based on review of the spectrograms, a precipitation event was also identified on November 16th that lasted into the 17th. All of the monitor sites had a light layer of snow on the ground during the monitor setup, but the snow had melted by the end of the monitoring period.

A summary of the 1.5-meter (5-foot) wind speeds measured at each monitoring location over the deployment period at each site is provided in Table 7.

TABLE 7: SUMMARY OF MEASURED 1.5-METER (5-FOOT) WIND SPEEDS

Location	Measured 1.5-meter Wind (mph)			
	10-min Wind Speed		10-min Gust Speed	
	Average	Maximum	Average	Maximum
1	4.3	11.0	9.0	22.5
2	3.0	19.4	5.7	31.5
3	2.9	14.8	6.6	24.8
4	5.7	18.6	10.2	29.9
5	2.9	14.8	6.6	24.8
Offsite	5.0	16.8	9.2	28.7

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Monitor 1

Monitoring results for Monitor 1 are presented in Figure 19. The primary noise sources at this location were occasional car passbys, biogenic sounds (birds especially), aircraft overflights, occasional distant agricultural equipment, and wind rustling through trees. The location's sound levels generally exhibited a diurnal pattern. It also had the second greatest amount of wind exclusions during the monitoring period. The quietest nighttime periods were between 20 and 25 dBA, and some higher nighttime periods were between 40 and 45 dBA. The highest nighttime hourly L_{50} at this site was 60 dBA which occurred for several hours during one night (11/13/19) due to sound from nearby agricultural activity. Nighttime hourly L_{50} s were less than 50 dBA at all other times. Over the entire monitoring period, the daytime L_{50} at this site was 36 dBA and the nighttime L_{50} was 32 dBA.

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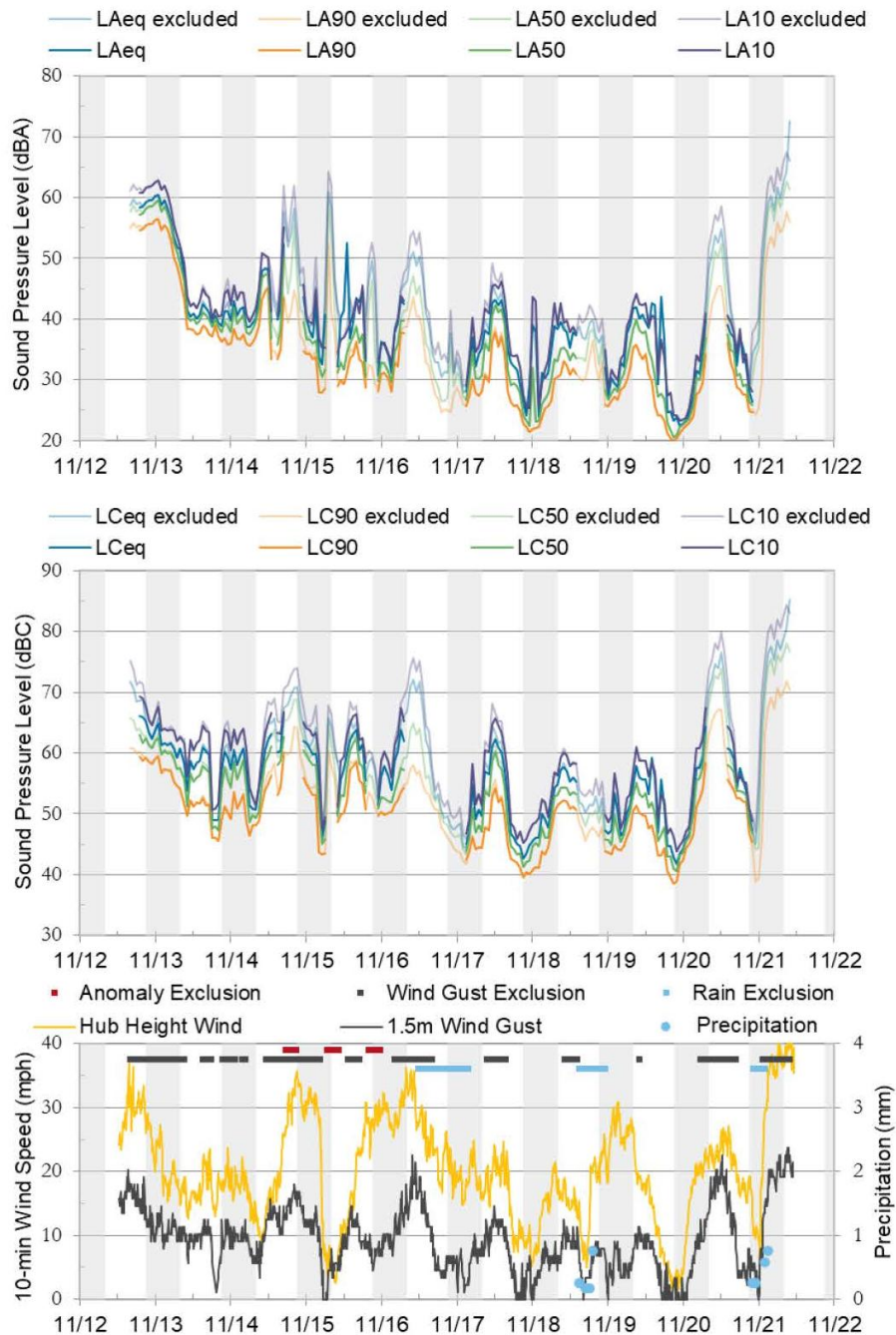


FIGURE 19: PRE-CONSTRUCTION MONITORING RESULTS AT MONITOR 1

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Monitor 2

Results for Monitor 2 are presented in Figure 20. The primary noise sources at this location were car and truck passbys, biogenic sounds (birds especially), occasional aircraft overflights, distant agricultural equipment, local agricultural operations, and wind rustling through trees. The location generally exhibited a diurnal pattern. The quietest nighttime periods were between 20 and 25 dBA, and some higher nighttime periods were between 40 and 45 dBA. The highest nighttime hourly L_{50} at this site was 58 dBA which occurred for a few hours during one early morning (11/21/19) due to sound from nearby agricultural activity. Nighttime hourly L_{50} s were less than 50 dBA at all other times. Over the entire monitoring period, the daytime L_{50} at this site was 40 dBA and the nighttime L_{50} was 31 dBA.

Monitor 2 represents one of the areas with the highest projected sound levels by the pre-construction sound propagation model, so the statistical spectral levels for a representative wind speed (9 m/s) at a representative hub height (109 meters) are presented in Figure 21.

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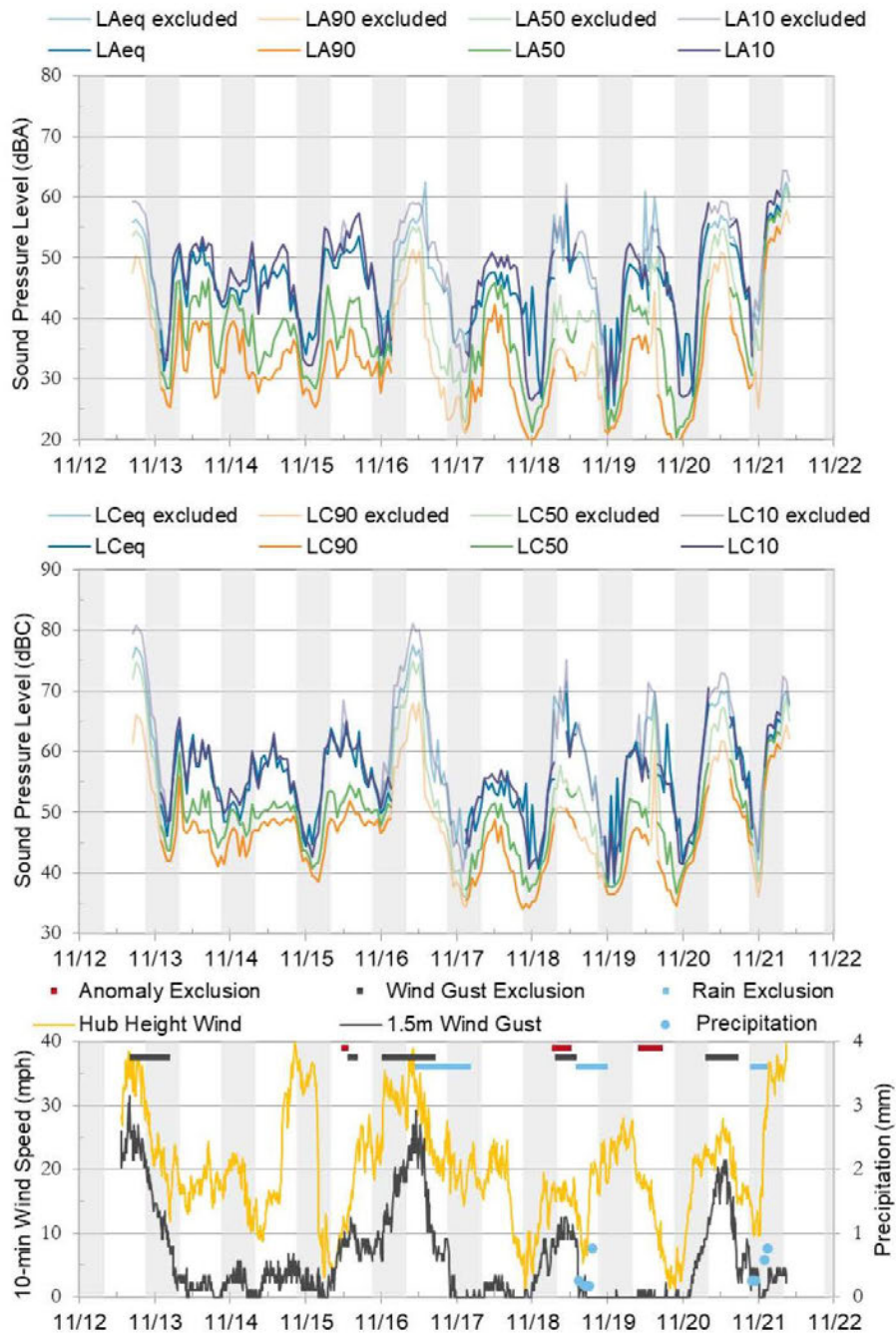


FIGURE 20: PRE-CONSTRUCTION MONITORING RESULTS AT MONITOR 2

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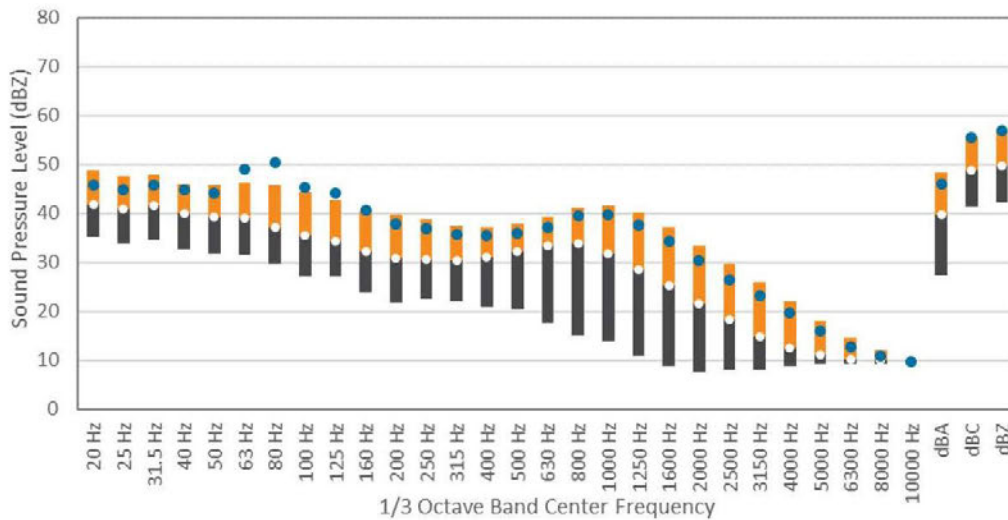


FIGURE 21: 1/3 OCTAVE BAND AND OVERALL STATISTICAL SOUND LEVELS AT MONITOR 2 (FOR PERIODS WITH 9 m/s WIND SPEED AT HUB HEIGHT)

Monitor 3

Results for Monitor 3 are presented in Figure 22. The primary noise sources at this location were occasional vehicle passbys, biogenic sounds (birds especially), occasional aircraft overflights, distant agricultural equipment, distant train horn, and wind rustling through trees. The location generally exhibited a diurnal pattern. The quietest nighttime periods were between 20 and 25 dBA, and some higher nighttime periods were around 40 dBA. The highest nighttime hourly L_{50} at this site was 49 dBA. Over the entire monitoring period, the daytime L_{50} at this site was 36 dBA and the nighttime L_{50} was 31 dBA.

Monitor 3 represents one of the areas with the highest projected sound levels by the pre-construction sound propagation model, so the statistical spectral levels for a representative wind speed (9 m/s) at a representative hub height (109 meters) are presented in Figure 23.

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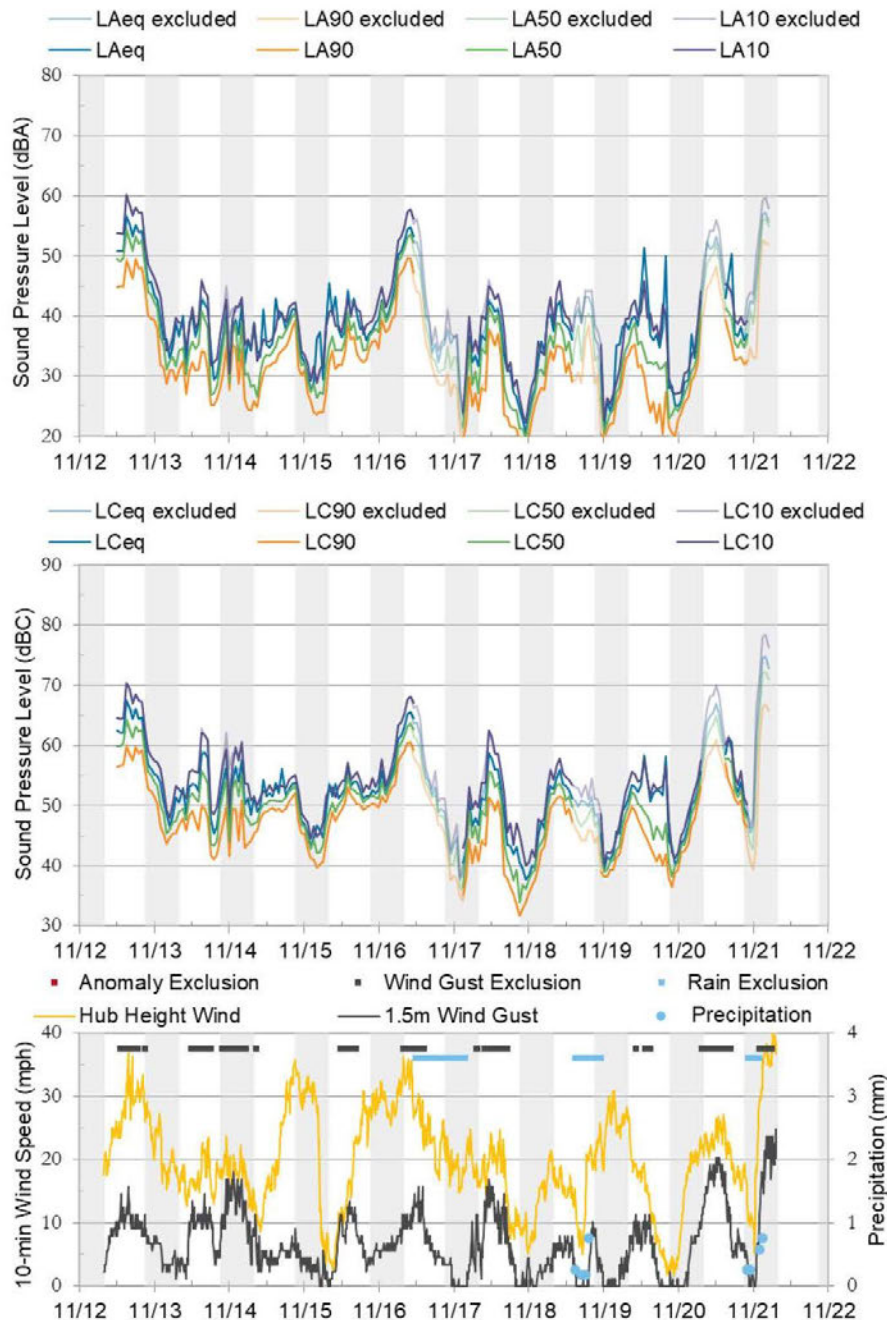


FIGURE 22: PRE-CONSTRUCTION MONITORING RESULTS AT MONITOR 3

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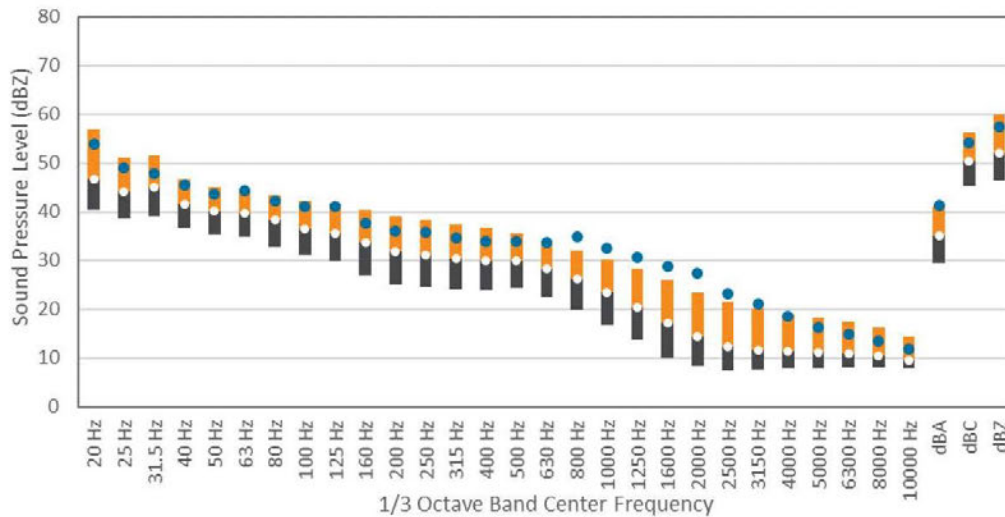


FIGURE 23: 1/3 OCTAVE BAND AND OVERALL STATISTICAL SOUND LEVELS AT MONITOR 3 (FOR PERIODS WITH 9 m/s WIND SPEED AT HUB HEIGHT)

Monitor 4

Results for Monitor 4 are presented in Figure 24. The primary noise sources at this location were occasional vehicle passbys, distant traffic, biogenic sounds, occasional aircraft overflights, local agricultural operations, and distant train passbys. The location generally exhibited a diurnal pattern, and had the highest number of exclusions due to wind speed. The quietest nighttime periods were between 25 and 30 dBA, and some higher nighttime periods were between 40 and 50 dBA. The highest nighttime hourly L_{50} at this site was 47 dBA. Over the entire monitoring period, the daytime L_{50} at this site was 40 dBA and the nighttime L_{50} was 36 dBA.

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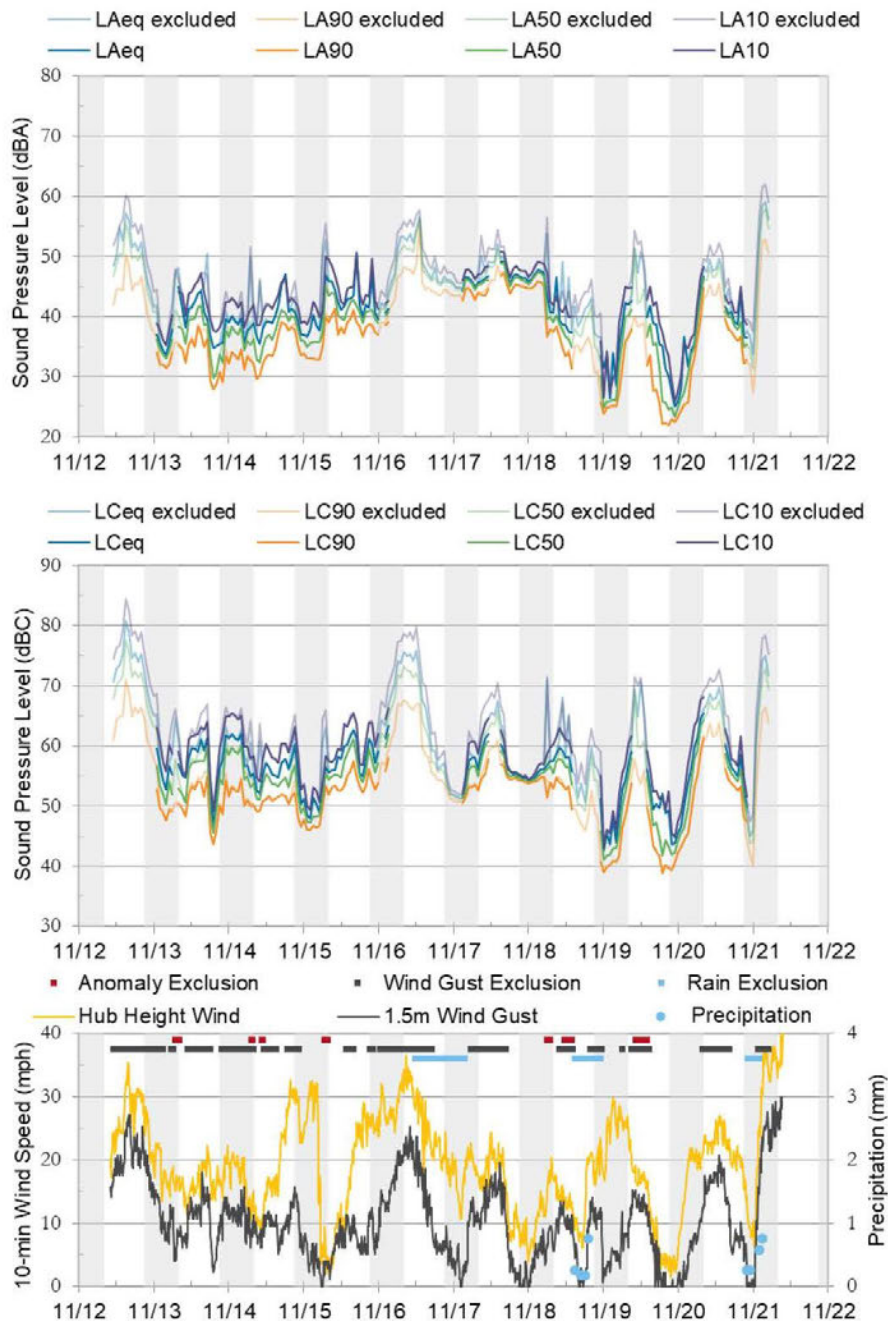


FIGURE 24: PRE-CONSTRUCTION MONITORING RESULTS AT MONITOR 4

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Monitor 5

Results for Monitor 5 are presented in Figure 25. Monitor 5 was similar in soundscape to Monitor 4. The primary noise sources at this location were, distant traffic, biogenic sounds (primarily birds), distant mechanical equipment, occasional aircraft overflights, distant train passbys, and wind rustling through trees. The location generally exhibited a diurnal pattern. The quietest nighttime periods were between 25 and 30 dBA, and some higher nighttime periods were between 40 and 50 dBA. The highest nighttime hourly L_{50} at this site was 44 dBA. Over the entire monitoring period, the daytime L_{50} at this site was 39 dBA and the nighttime L_{50} was 36 dBA.

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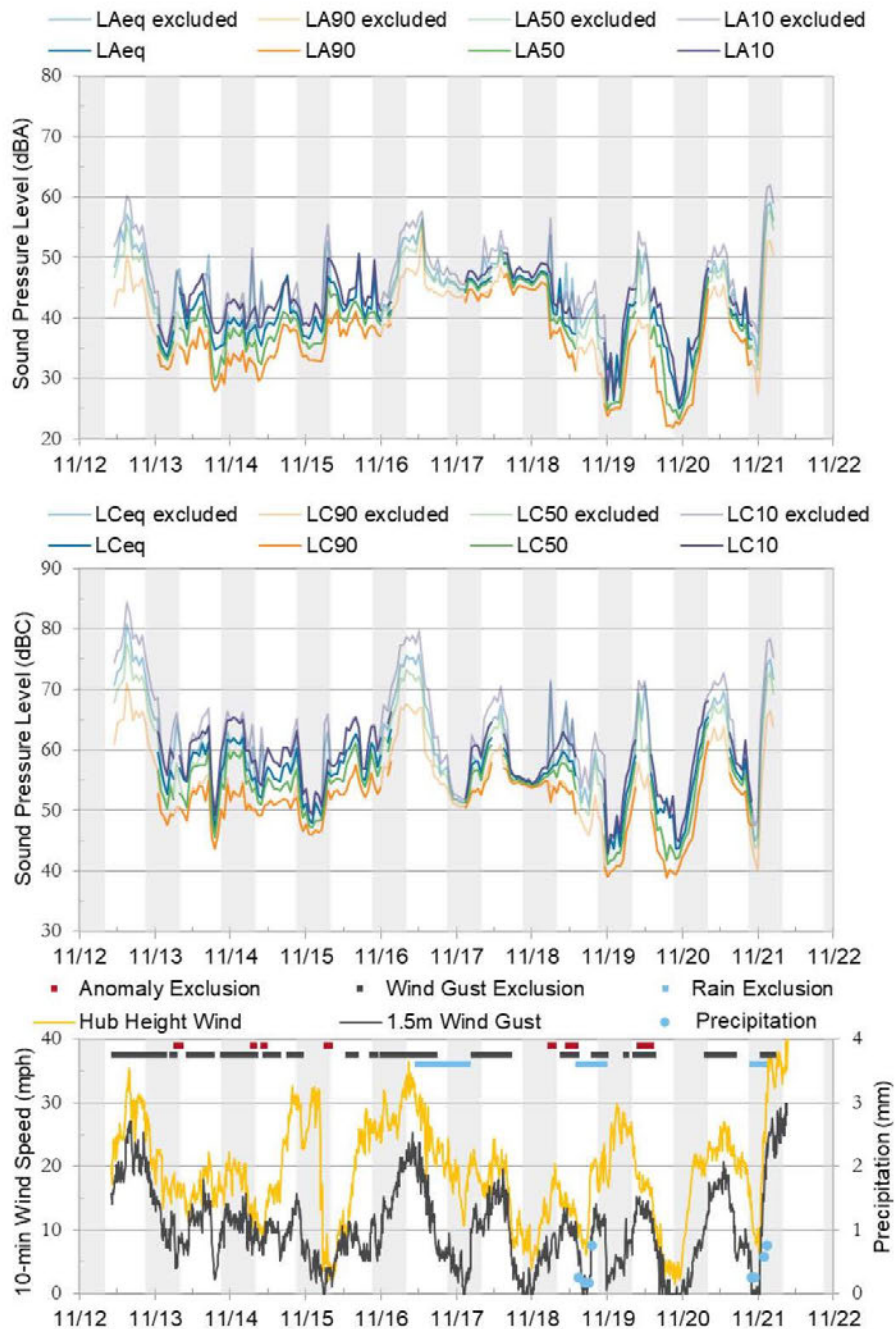


FIGURE 25: PRE-CONSTRUCTION MONITORING RESULTS AT MONITOR 5

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Offsite Monitor

Results for the offsite monitor are presented in Figure 26. The primary noise sources at this location were distant traffic, biogenic sounds, occasional vehicle passbys, occasional aircraft overflights, local agricultural operations, distant train horn, and wind rustling through trees. The location generally exhibited a diurnal pattern, and sound levels were more similar to Monitors 1 through 3 than Monitors 4 and 5. The quietest nighttime periods were around 25 dBA, and some higher nighttime periods were between 40 and 45 dBA. Over the entire monitoring period, the daytime L_{50} at this site was 36 dBA and the nighttime L_{50} was 33 dBA.

Statistical spectral levels for a representative wind speed (9 m/s) at a representative hub height (109 meters) are presented in Figure 27.

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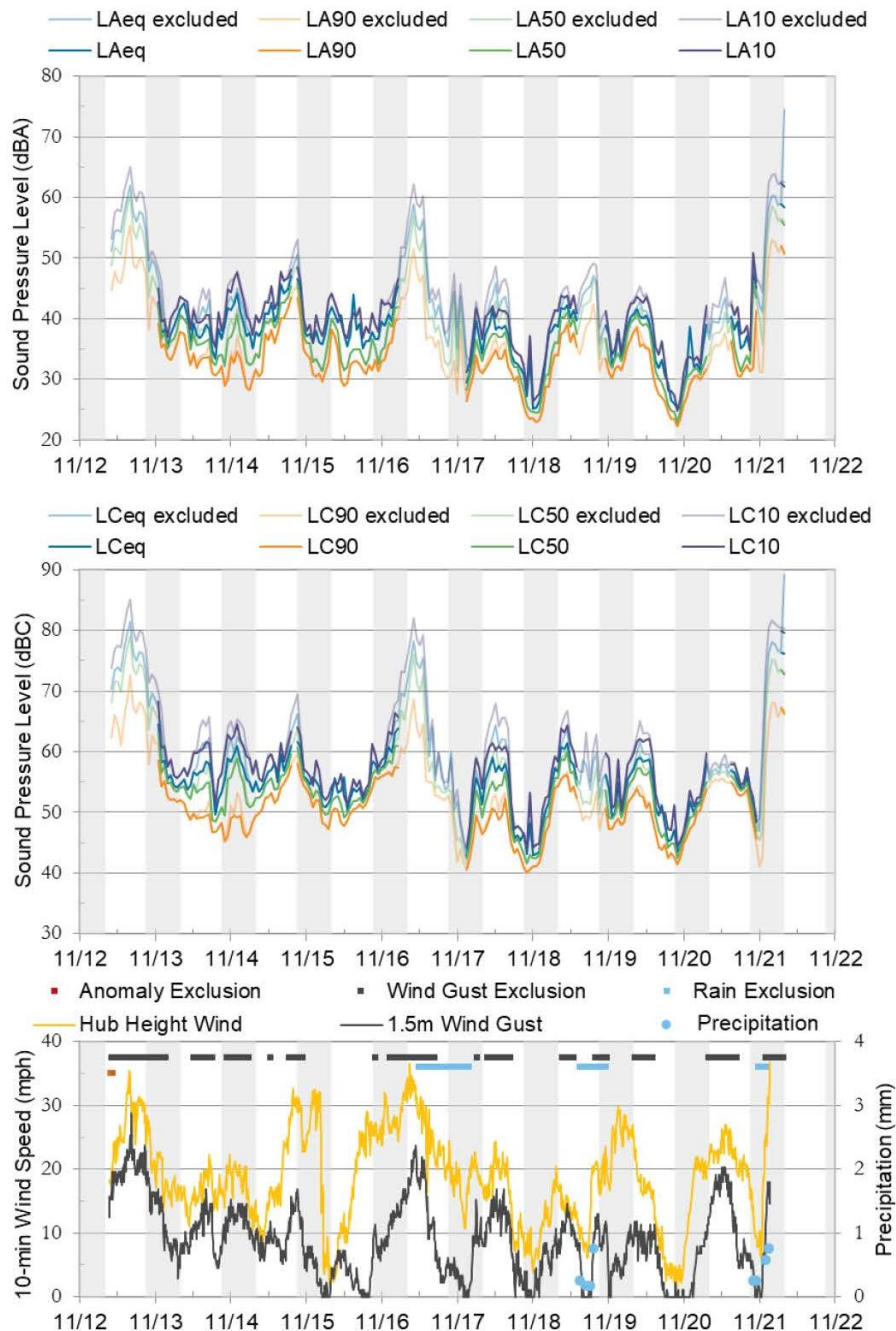


FIGURE 26: PRE-CONSTRUCTION MONITORING RESULTS AT THE OFFSITE MONITOR

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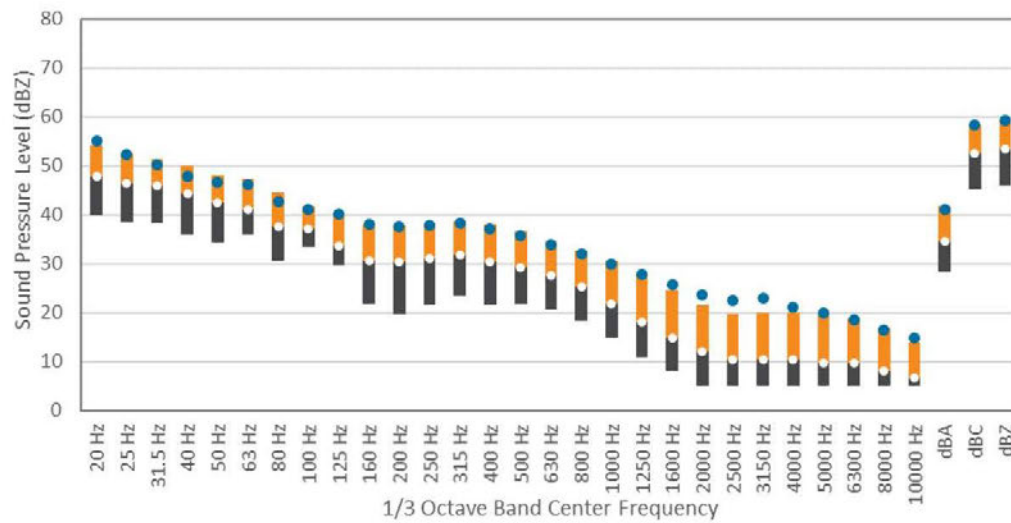


FIGURE 27: 1/3 OCTAVE BAND AND OVERALL STATISTICAL SOUND LEVELS AT THE OFFSITE MONITOR (FOR PERIODS WITH 9 m/s WIND SPEED AT HUB HEIGHT)