SOUND LEVEL ASSESSMENT REPORT

Antrim Wind Energy Project
Antrim, NH

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1.0 INTRODUCTION AND SUMMARY

The Antrim Wind Energy Project is a 28.8 megawatt (MW) wind power generation facility proposed for Hillsborough County, New Hampshire. The Project will be entirely within the Town of Antrim, generally located on Tuttle Hill south of NH Route 9. The wind farm will have nine (9) 3.2 MW Siemens SWT-3.2-113 wind turbines using a hub height of either 92.5 or 79.5 meters, and a rotor diameter of 113 meters.

This sound level assessment included a sound-monitoring program to determine existing sound levels in the vicinity of the Project, computer modeling to predict future sound levels when the wind turbines are operational, and a comparison of the worst-case operational sound levels associated with the wind turbines to accepted criteria. Every residence is at least 2,600 feet (one-half mile) from the nearest wind turbine. The worst-case sound levels will be less than 40 dBA at any residence. There are no federal or existing local noise regulations that apply to this project. However, the results of this sound level impact assessment show that the Project will easily comply with recent NH SEC decisions on comparable wind turbine projects in Lempster and Groton, NH, community noise guidelines published by the World Health Organization, and noise guidelines put out by the US Environmental Protection Agency. The Project will also comply with the limit set in the draft rules currently being considered by the NH SEC.

2.0 SOUND METRICS

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

The decibel scale is logarithmic to accommodate the wide range of sound intensities found in the environment. The sound pressure level, L_p, is defined as ten times the common logarithm of the square of the ratio of the sound pressure to the reference sound pressure of 20 micropascals (μPa). Sound pressure level is expressed in decibels and given by the formula below:

$$Lp = 10 \log_{10} \left(\frac{p}{po}\right)^2$$

Where p is the sound pressure, and p_o is the reference sound pressure of 20 μPa.

A property of the decibel scale is that the sound pressure levels of two separate sounds are not directly additive. For example, if a sound of 50 dB is added to another sound of 50 dB, the total is only a three-decibel increase (to 53 dB), not a doubling to 100 dB. Thus, every three dB change in sound levels represents a doubling or halving of sound energy. Related to this is the fact that a change in sound levels of less than three dB is imperceptible to the human ear.

Another property of decibels is that if one source of noise is 10 dB (or more) louder than another source, then the total sound level is simply the sound level of the higher source. For example, a source of sound at 60 dB plus another source of sound at 47 dB is 60 dB.

The sound level meter used to measure noise is a standardized instrument.[1] It contains "weighting networks" to adjust the frequency response of the instrument to approximate that of the human ear under various circumstances. One network is the A-weighting network (there are also B- and C-weighting networks). The A-weighted scale (dBA) most closely approximates how the human ear responds to sound at various frequencies, and is the accepted scale used for community sound level measurements.

Sound waves are composed of energy at various frequencies or cycles per second (Hertz, or "Hz"). An octave band is a frequency band where the highest frequency is twice the lowest frequency. For example, an octave filter with a centre frequency of 1000 Hz has a lower frequency of 707 Hz and an upper frequency of 1414 Hz. Commonly used octave band frequencies are 31.5, 63, 125, 250, 500, 1000, 2000, 4000, and 8000 Hz.

Sounds are frequently reported as detected with the A-weighting network of the sound level meter. A-weighted sound levels emphasize the middle frequency (*i.e.,* middle pitched – around

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

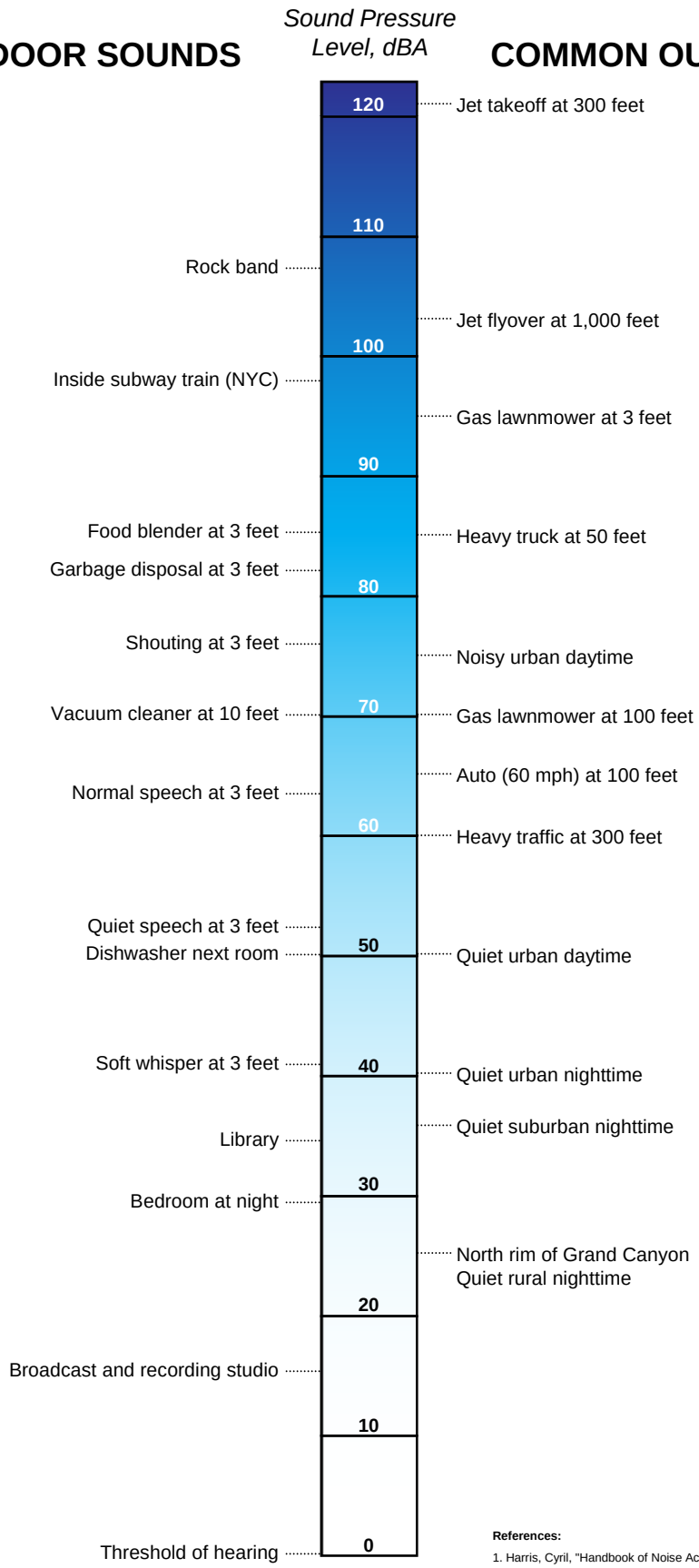
1,000 Hertz sounds), and de-emphasize lower and higher frequency sounds which are less perceptible to the human ear.

A-weighted sound levels are reported in decibels designated as "dBA." Sound pressure levels for some common indoor and outdoor environments are shown in Figure 2-1.

Because the sounds in our environment vary with time they cannot simply be described with a single number. Two methods are used for describing variable sounds. These are exceedance levels and the equivalent level, both of which are derived from a large number of moment-to-moment A-weighted sound level measurements. Exceedance levels are values from the cumulative amplitude distribution of all of the sound levels observed during a measurement period. Exceedance levels are designated L_n, where n can have a value of 0 to 100 percent. Several sound level metrics that are commonly reported in community noise monitoring are described below.

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

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



References:

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

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Figure 2-1

Common Indoor and Outdoor Sound Levels

3.0 NOISE REGULATIONS

3.1 Federal Regulations

There are no federal community noise regulations applicable to wind farms.

3.2 New Hampshire State Regulations

There are no State of New Hampshire community noise regulations applicable to the wind farm. However, the New Hampshire Site Evaluation Committee (SEC) through rulemaking docket 2014-04 issued draft rules December 16, 2014 outlining application requirements and criteria for energy facilities. As part of these regulations, section 301.08(f)(2)a. contains wind energy facility sound standards which state the following:

> *A-weighted equivalent sound levels produced by the applicant's energy facility during operations shall not exceed the greater of 45 dBA or 5 dBA above ambient levels between the hours of 8:00 a.m. and 8:00 p.m. each day, and the greater of 40 dBA or 5 dBA above ambient levels at all other times during each day, as measured at the exterior wall of any existing permanently occupied building on a non-participating landowner's property, or at the non-participating landowner's property line if it is less than 300 feet from an existing occupied building, and these sound levels shall not be exceeded for more than 3 minutes within any 60 minute period.*

In the past, the New Hampshire SEC has considered the sound levels associated with a wind energy project when evaluating an application for a certificate of site and facility, and imposed conditions. For example, the SEC included several sound-related conditions in its orders approving the Lempster and Groton wind energy projects.[2] Notably, the SEC required that sound from the Lempster project not exceed 45 dBA or 5 dBA above the ambient sound level, whichever is greater, immediately outside the residences of non-participating landowners, and required that sound levels generated by the Groton project not exceed 55 dBA or 5 dBA above ambient, whichever is greater in the day time and 45 dBA or 5 dBA above ambient, whichever is greater in the night time at the outside façades of homes.

In Docket 2012-01, the previous Antrim Wind Energy docket, the SEC assessed predicted sound levels and would have imposed conditions pursuant to which sound levels could not exceed a

[2] Docket 2006-01, Application of Lempster Wind, LLC, Decision Issuing Certificate of Site and Facility with Conditions at 47-49 (June 28, 2007); Docket 2010-01, Application of Groton Wind, LLC, Decision Issuing Certificate of Site and Facility with Conditions at 80-89 (May 6, 2011).

daytime limit of 45 dBA or 5 dBA above ambient, whichever is greater, and a nighttime limit of 40 dBA or 5 dBA above ambient, whichever is greater.[3]

3.3 Local Regulations

There are Residential Noise Restrictions in effect as part of the Agreement between the Town of Antrim, NH and Antrim Wind Energy, LLC dated March 8, 2012. Section 11.1 of that Agreement states "sound from the Wind Farm during Operations at the exterior facades of homes shall not exceed 50 dBA or 5 dBA above ambient, whichever is greater during daytime and 45 dBA or 5 dBA above ambient, whichever is greater, at night." In addition, pre-construction sound modeling will be done for the wind farm (Section 11.2), and post-construction compliance noise measurements will be done during both daytime and nighttime hours, as well as during both summer and winter seasons (Section 11.3).

3.4 Other Criteria for Comparison

The science of sound analysis around wind farms has developed significantly since the early wind projects of the 1990s. There is no one sound standard to follow. Therefore it is helpful to look at a number of organizations that have proposed sound limits that are based on rigorous study and science. Comparing these guidelines to the limits set in past SEC dockets and the limits currently under consideration by the SEC will help establish the scientific framework for imposing proper sound limits.

A useful guideline for putting sound levels in perspective is the "Guideline for Community Noise" (World Health Organization, Geneva, 1999). This document states that daytime and evening outdoor living area sound levels at a residence should not exceed an L_{eq} of 55 dBA to prevent serious annoyance and an L_{eq} of 50 dBA to prevent moderate annoyance from a steady, continuous noise. At night, sound levels at the outside facades of the living spaces should not exceed an L_{eq} of 45 dBA, so that people may sleep with bedroom windows open. The time base for these WHO sound levels is 16 hours for daytime and 8 hours for nighttime. In other words, they are not 10-minute averages but over a longer period of time.

Since the 1999 World Health Organization (WHO) "Guideline for Community Noise" report was issued, WHO released another report in 2009 entitled "Night Noise Guidelines for Europe." The 2009 WHO report recommends a Night noise guideline (NNG) of 40 dBA. This is a health-based limit to protect the public (Executive Summary pp. XVII-XVIII). However, the 40 dBA guideline is an "$L_{night,\ outside}$" descriptor, which is NOT the same as a short-term measurement. $L_{night,\ outside}$ is defined as the A-weighted long-term average sound level determined over all the night periods of a year; in which the night is eight hours (23:00 to 07:00 local time). Thus, the

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[3] Docket 2012-01, Application of Antrim Wind Energy, LLC, Decision and Order Denying Application for Certificate of Site and Facility at 68-69 (April 25, 2013).

$L_{night,\ outside}$ is an annual average, and is not an appropriate descriptor to use for evaluating a permit's compliance criteria.

Since $L_{night,\ outside}$ considers 365 nights of operation, there will be some nights the wind turbines do not operate at all and many others where they will operate at a level below maximum sound level. Therefore, the $L_{night,\ outside}$ sound level will ALWAYS be lower than the worst-case (highest) short-term sound level measured on a given night. In other words, the $L_{night,\ outside}$ guideline of 40 dBA, is not a 10-minute or 1-hour sound level, but is an annual level. Therefore the most recent guideline from the WHO in 2009 is less stringent than the level proposed in their 1999 guidelines, and still highly protective of public health. The Project will easily meet both guidelines.

Another useful guideline for comparing sound levels is the "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety" (U.S. Environmental Protection Agency, Office of Noise Abatement and Control, Washington, DC, 550/9-74-004, March 1974). This document, often referred to as the "Levels" document, identifies an L_{dn} of 55 dBA outdoors in residential areas as the maximum level below which no effects on public health and welfare occur due to interference with speech or other activities. This level includes a 10 dBA "penalty" for sound levels at night (10 p.m. to 7 a.m.). This level will permit normal speech communication, and would also protect against sleep interference inside a home with the windows open. A constant sound level of 48.6 dBA 24 hours per day would be equal to an L_{dn} of 55 dBA. Although this reference is a bit dated, it is still relevant, and frequently cited today, due to the extensive research done by this independent federal government agency. No further research from the US EPA Office of Noise Abatement and Control has been conducted since the 1970's as this agency was eliminated by the Reagan Administration for cost-cutting measures in 1981.

4.0 SOUND FROM WIND TURBINES

A detailed discussion of sound from wind turbines is presented in a white paper prepared by the Renewable Energy Research Laboratory.[4] A few points are repeated herein. Wind turbine noise can originate from two different sources; mechanical sound from the interaction of turbine components, and aerodynamic sound produced by the flow of air over the rotor blades. Prior to the 1990's, both were significant contributors to wind turbine noise. However, modern wind turbine design has greatly reduced the contribution of mechanical noise. Aerodynamic noise has also been reduced from wind turbines due to slower rotational speeds and changes in materials of construction.

Aerodynamic noise, in general, is broadband (i.e., it has contributions from a wide range of frequencies). It originates from encounters of the wind turbine blades with localized airflow inhomogeneities and wakes from other turbine blades and from airflow across the surface of the blades, particularly the front and trailing edges. Aerodynamic sound generally increases with increasing wind speed up to a certain point, then remains constant, even with higher wind speeds. However, sound levels in general also increase with increasing wind speed with or without the presence of wind turbines.

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

5.0 EXISTING SOUND LEVELS

5.1 Overview

The wind turbine project is located at Tuttle Hill in the Town of Antrim, Hillsborough County, New Hampshire, south of Keene Road (Route 9). The wind farm will have nine (9) 3.2-megawatt (MW) Siemens SWT-3.2-113 wind turbines, eight of which will have a hub height of 92.5 meters and one of which will have a hub height of 79.5 meters. All turbines will have a rotor diameter of 113 meters. The coordinates for each wind turbine were provided by Antrim Wind Energy, LLC.

5.2 Sound Level Environment

An ambient sound level survey was conducted to characterize the current acoustical environment under varying wind conditions in the community. Existing noise sources in the project area include: noise from wind blowing through vegetation, birds, traffic, running water from brooks, aircraft, insects, vehicular traffic on local roads and Route 9 (for some locations), construction activities, and mechanical noise/boats on Gregg Lake. The standards that have been applied for sounds levels from wind projects in New Hampshire have, in general, contained both an absolute and a relative standard, as discussed in Section 3.2 of this report. The purpose of performing an ambient sound level survey is to help inform the upper limit for that standard. That is, without an ambient sound study, all projects could always be subject to an absolute maximum limit – such as 40 dBA at night and 45 dBA during the day. Because the precedence in New Hampshire has both an absolute and relative component to the sound standard (e.g., the greater of 45 dBA or 5 dBA above ambient during the day and the greater of 40 dBA or 5 dBA above ambient at night), we perform a background study to inform the upper limit. Thus, if background sound levels were consistently at 50 dBA during the day, a project could operate at a maximum limit of 55 dBA under the standard during the daytime. If background sound levels at night were at levels such that those levels plus 5 dBA equals less than the absolute standard (e.g., background levels of 30 dBA plus 5 dBA equals 35 dBA and is less than a 40 dBA nighttime limit) then the absolute standard applies. Under this type of standard, which is the established norm in New Hampshire, measuring the quietest periods during the background ambient sound study will not impact the results, as the lower limit for the project will still be controlled by the absolute component of the standard.

5.3 Sound Level Measurement Locations

The selection of the sound monitoring locations is representative of nearby residences in various directions from the wind farm. Figure 5-1 shows the proposed wind turbine locations as well as the actual measurement locations overlaid upon an aerial photograph of the surrounding area. Each sound level monitoring location is described below. The coordinates for the sound level measurement locations were obtained by Epsilon staff in the field using a Global Positioning System (GPS) instrument with an accuracy of 3 meters or less. All distances shown are rounded to the nearest 100 feet.

- Location L1 – 354 Keene Road (Route 9)
    - Approximately 3,000 feet to the closest proposed wind turbine (#1). This location is representative of the nearest residents to the north of the wind farm along Route 9.
- Location L2 – 47 Loveren Mill Road
    - Approximately 5,500 feet to the closest proposed wind turbine (#1). This location is representative of the nearest residents to the north of the wind farm along Loveren Mill Road, set far back from traffic on Route 9.
- Location L3 – Salmon Brook Road
    - Approximately 4,200 feet to the closest proposed wind turbine (#5). This location is representative of the nearest residents to the west of the wind farm along Salmon Brook Road.
- Location L4 – 72 Reed Carr Road
    - Approximately 3,600 feet to the closest proposed wind turbine (#1). This location is representative of the nearest residents to the east and northeast of the wind farm along Reed Carr Road and Craig Road.
- Location L5 – Gregg Lake Road
    - Approximately 8,700 feet to the closest proposed wind turbine (#3). This location is representative of the residents to the southeast of the wind farm along Gregg Lake Road to the north of Gregg Lake.

Table 5-1 lists the GPS coordinates for the five sound level measurement locations. The 2-meter meteorological tower at Location L5 was located in the vicinity of these coordinates, which are presented in WGS 1984 format.

Table 5-1 GPS Coordinates -- Sound Level Measurement Locations

Location	Latitude	Longitude
Location L1 – Keene Road	43.07548	-72.00855
Location L2 – Loveren Mill Road	43.07901	-72.02127
Location L3 – Salmon Brook Road	43.05612	-72.03526
Location L4 – Reed Carr Road	43.07005	-71.99473
Location L5 – Gregg Lake Road	43.04306	-71.98836

5.4 Sound Measurement Methodology

A comprehensive sound level measurement program was developed to quantify the ambient sound levels around the wind farm. Over two weeks of ambient sound level measurements were taken from Friday, September 16, 2011 through Tuesday, October 4, 2011. Measurement procedures were consistent with the most recent version of ANSI S12.18 Method 1. [5] Continuous sound level measurements were made at all five locations, and ground-level wind speeds were continuously measured and logged at one location. Conditions in the measured area have not since been altered in any manner that could materially affect these background sound measurements. Therefore, the sound level measurement program conducted in 2011 still provides a reasonable representation of community sound levels. A 60-meter-high meteorological tower located approximately 50 feet from turbine #2 also measured and logged wind speeds during the sound level measurement period. Meteorological data from the nearby Jaffrey Municipal Airport Silver Ranch National Weather Service (NWS) station were also archived for the duration of the measurement period. These data are included in Appendix A.

Sound levels were measured at a height of approximately five feet above the ground at locations where there were no large reflective surfaces to affect the measured levels. Below is a description of the measurement program for each location.

5.4.1 Location L1 – Keene Road (Route 9)

One continuous programmable unattended sound level meter was placed on the side of the driveway at #354 Keene Road approximately 150 feet back from the street, at the edge of the woods. This setback is comparable to those of nearby houses due west along Keene Road. This meter continuously measured and stored broadband (A-weighted) and one-third octave band sound level statistics from 10:00 a.m. Friday, September 16 until 10:20 a.m. Tuesday, October 4, for a total of 432 hours. Field personnel checked on the integrity of the equipment during the first day and third night of monitoring, and during an interim field visit on September 23.

5.4.2 Location L2 – Loveren Mill Road

One continuous programmable unattended sound level meter was placed about 20 feet north of the driveway at #47 Loveren Mill Road approximately 50 feet back from the street. This meter continuously measured and stored broadband (A-weighted) sound level statistics from 10:50 a.m. Friday, September 16 until 11:50 a.m. Tuesday, October 4, for a total of 433 hours. Field personnel checked on the integrity of the equipment during the first day and third night of monitoring, and during an interim field visit on September 23.

5.4.3 Location L3 – Salmon Brook Road

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[5] *American National Standard – Procedures for Outdoor Measurement of Sound Pressure Level*, ANSI S12.18-1994 (Reaffirmed by ANSI June 15, 2009), published by the Standards Secretariat of the Acoustical Society of America, Melville, NY.

One continuous programmable unattended sound level meter was placed in the woods just south of Salmon Brook Road beyond the driveway at #156. This meter, approximately 125 feet beyond a red metal gate, continuously measured and stored broadband (A-weighted) sound level statistics from 11:40 a.m. Friday, September 16 until 9:50 a.m. Tuesday, October 4, for a total of 430 hours. Field personnel checked on the integrity of the equipment during the first day and third night of monitoring, and during an interim field visit on September 23.

5.4.4 Location L4 – Reed Carr Road

One continuous programmable unattended sound level meter was placed in the backyard of #72 Reed Carr Road near a garden facing the ridgeline where the proposed turbines will be located. This meter continuously measured and stored broadband (A-weighted) and one-third octave band sound level statistics from 1:10 p.m. Friday, September 16 until 10:40 a.m. Tuesday, October 4, for a total of 429 hours. Field personnel checked on the integrity of the equipment during the first day and third night of monitoring, and during an interim field visit on September 23.

5.4.5 Location L5 – Gregg Lake Road

One continuous programmable unattended sound level meter was placed just east of the covered picnic tables at the Antrim Town Beach on Gregg Lake Road. This meter continuously measured and stored broadband (A-weighted) sound level statistics from 2:00 p.m. Friday, September 16 until 11:00 a.m. Tuesday, October 4, for a total of 429 hours. In addition, continuous ground-level wind speed measurements were made at this location, at a height of two meters above ground level (AGL). Field personnel checked on the integrity of the equipment during the first day and third night of monitoring, and during an interim field visit on September 23.

5.5 Measurement Equipment

Two Larson-Davis (LD) model 831 sound level meters, equipped with an LD 831PRM preamplifier, a PCB 377B20 half-inch microphone, and an environmental protection kit were used to collect continuous A-weighted (dBA) and one-third octave band ambient sound pressure level data at Locations L1 and L4. Three Larson Davis Model 820 sound level meters, equipped with an LD 828PRM preamplifier, a PCB 377B02 half-inch microphone, and an environmental protection kit were used for the continuous A-weighted (dBA) ambient monitoring at Locations L2, L3, and L5. Each meter was tripod-mounted at a height of five feet above ground and set to log data every ten minutes along with a one-minute time history ("fast" response).

All meters meet Type 1 ANSI/ASA S1.4 Part 1 (2014) standards for sound level meters and were calibrated and certified as accurate to standards set by the National Institute of Standards and Technology. These calibrations were conducted by an independent laboratory within 12 months of being put into the field. Each meter has data logging capability and was programmed to log statistical data every ten minutes for the following parameters: L_1, L_{10}, L_{50}, L_{90}, L_{max}, L_{min}, and L_{eq}. The LD 831 and the LD 820 sound level meters, and their respective microphones, are compliant with IEC 61672 standards. All measurement equipment was calibrated in the field

before and after the surveys with the manufacturer's acoustical calibrator which meets the standards of IEC 60942-2003 Class 1L and ANSI/ASA S1.40-2006 (R2011).

5.6 Measured Sound Levels

A brief summary of the measured sound levels and noise sources from each location is provided below. Several weather events were notable during the 18-day measurement program, including 18 periods of precipitation which resulted in short-term increases in sound levels. These periods were excluded from the analysis.

5.6.1 Location L1 – Keene Road (Route 9)

Sound levels at the L1 monitor were influenced by vehicular traffic on Route 9, steady fan or water noise, leaf rustle, insect noise, and bird calls. The range of sound levels from the continuous measurements are summarized below, and presented graphically in Appendix B. The diurnal fluctuations in sound level (Leq) are very apparent at this location, driven mainly by engine and tire noise from traffic on Route 9, with a range of about 15 dBA between daytime and nighttime hours. Some short-term increases in sound levels can be seen immediately following rain events.

- The continuous steady-state (L_{90} dBA) measurements ranged from 27 to 63 dBA;
- The continuous equivalent level (L_{eq} dBA) measurements ranged from 30 to 68 dBA.

5.6.2 Location L2 - Loveren Mill Road

Sound levels at the L2 monitor were influenced by traffic noise along Route 9, aircraft, birds chirping, insect noise, and rustling vegetation. The range of sound levels from the continuous measurements are summarized below, and presented graphically in Appendix B. The sound levels at this location are primarily controlled by the insect and bird noise in the area as well as vehicular traffic on local roads. Some short-term increases in sound levels can be seen immediately following rain events.

- The continuous steady-state (L_{90} dBA) measurements ranged from 21 to 68 dBA;
- The continuous equivalent level (L_{eq} dBA) measurements ranged from 23 to 77 dBA.

The L_{90} of 68 dBA was likely caused by rain. More typical L_{90} values were from about 25 to 50 dBA. The L_{eq} of 77 dBA was likely caused by a passing vehicle. More typical L_{eq} values were from about 25 to 55 dBA.

5.6.3 Location L3 – Salmon Brook Road

Sound levels at the L3 monitor were influenced by flowing water from a nearby brook, aircraft, distant traffic noise from Route 9, crackling branches, and bird noise. The range of sound levels from the continuous measurements are summarized below, and presented graphically in

Appendix B. The sound levels at this location are primarily controlled by typical forest sources including water noise and bird calls. Some short-term increases in sound levels can be seen immediately following rain events.

- The continuous steady-state (L_{90} dBA) measurements ranged from 22 to 68 dBA;
- The continuous equivalent level (L_{eq} dBA) measurements ranged from 23 to 70 dBA.

The L_{90} of 68 dBA was likely caused by rain. More typical L_{90} values were from about 25 to 50 dBA. The L_{eq} of 70 dBA was likely caused by a passing vehicle. More typical L_{eq} values were from about 25 to 45 dBA.

5.6.4 Location L4 – Reed Carr Road

Sound levels at the L4 monitor were influenced by insect noise, distant vehicular traffic on Route 9, occasional vehicles passing on Reed Carr Road, and bird calls. Daytime sound levels during the first week were influenced by deck construction at the residence. No construction took place at night. The range of sound levels from the continuous measurements are summarized below, and presented graphically in Appendix B.

- The continuous steady-state (L_{90} dBA) measurements ranged from 23 to 60 dBA;
- The continuous equivalent level (L_{eq} dBA) measurements ranged from 25 to 66 dBA.

The L_{90} of 60 dBA was caused by rain. More typical L_{90} values were from about 25 to 55 dBA. The L_{eq} of 66 dBA was likely caused by a passing vehicle. More typical L_{eq} values were from about 30 to 60 dBA.

5.6.5 Location L5 – Gregg Lake Road

Sound levels at the L5 monitor were influenced by traffic on Gregg Lake Road, insects, birds, distant dogs barking, and mechanical noise from across the lake to the east. The range of sound levels from the continuous measurements are summarized below, and presented graphically in Appendix B.

- The continuous steady-state (L_{90} dBA) measurements ranged from 19 to 54 dBA;
- The continuous equivalent level (L_{eq} dBA) measurements ranged from 20 to 74 dBA.

The L_{90} of 54 dBA was caused by rain. More typical L_{90} values were from about 20 to 50 dBA. The L_{eq} of 74 dBA was likely caused by a passing vehicle or boat. More typical L_{eq} values were from about 25 to 55 dBA.

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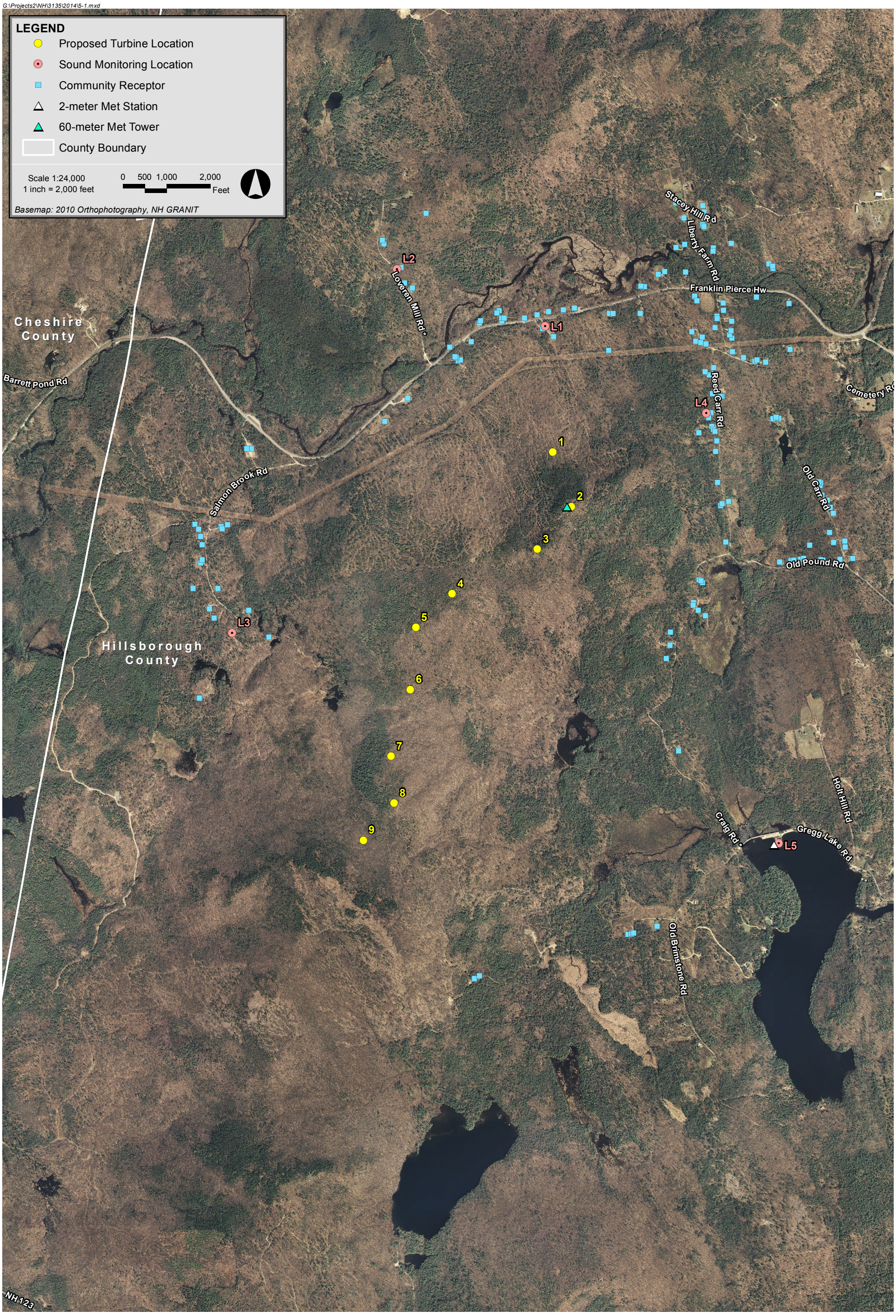

Antrim Wind **Antrim, New Hampshire**

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Figure 5-1
Aerial Locus

6.0 EXISTING WIND SPEEDS

6.1 Wind Speed Measurement Equipment

Wind speed can have a strong influence on ambient sound levels. In order to understand how the existing sound levels are influenced by wind speed, continuous wind speed and direction data were recorded at two locations. A NovaLynx Model 110-WS-16 modular weather station with tripod and data logger was used to continuously measure the wind speed and wind direction. The wind sensors were mounted at a height of 2 meters above ground level, and data were logged every 10 minutes. Figure 6-1 shows the wind speed equipment setup at Location L5 (Antrim Town Beach). This wind instrument has a measurement range of 0 to 57 m/s (125 mph) and an accuracy of +/- 0.5 m/s (1.0 mph). The starting threshold is 0.4 m/s (0.8 mph). The wind direction measurement range is 0 to 360 degrees, with an accuracy of +/- 3%. In addition to the portable weather station, an on-site meteorological tower measured and logged wind speeds at a height of 57 meters above ground level every 10 minutes. The location of the 57-meter tower is approximately 50 feet west of proposed wind turbine #2.

6.2 Measured Wind Speeds

The wind speeds measured from September 16, 2011 to October 4, 2011 during the ambient program at one sound level measurement location and the 57-meter on-site met tower are presented in Figure 6-2. Overall, ground-level winds were generally light (below 3 m/s); however there were 60 to 80 dry periods (depending on location) during which elevated wind speeds correlated to maximum turbine sound emissions.

6.3 Existing Sound Levels under Worst-Case Wind Speeds

The wind turbines in this project will produce their highest sound levels at a wind speed of 7 m/s (~16 mph) or faster at the reference height of 10 meters above ground level (see Section 7 of this report). Therefore, to evaluate worst-case sound levels from these wind turbines, it is proper to compare future sound levels from the wind turbines under these wind speeds to existing condition sound levels at similar wind speeds. In other words, when winds are calm or very light, existing sound levels may be quite low but the wind turbines will not be operating since cut-in wind speed is a minimum of 3 m/s (~7 mph) at hub height. Therefore, it is not correct to compare worst-case project sound levels with sound levels measured under calm conditions. Rather worst-case wind turbine sound levels will occur with increased wind speeds.

International Electrotechnical Commission (IEC) standard IEC 61400-11, Wind Turbine Generator Systems-Part 11; Acoustic Noise Measurement Techniques specifies that a manufacturer provide sound level data as a function of wind speed at a standard reference height of 10 meters above ground level. Wind speeds measured at a height other than 10 meters shall be corrected to 10 meters by assuming wind profiles follow the logarithmic profile in equation (7) from the IEC standard, shown here:

$$V_s = V_z \left[\frac{\ln\left(\frac{z_{ref}}{r_{0ref}}\right)\ln\left(\frac{H}{z_0}\right)}{\ln\left(\frac{H}{z_{0ref}}\right)\ln\left(\frac{z}{z_0}\right)} \right]$$

where:

z_{0ref}	is the reference roughness length of 0.05 m;
z_0	is the roughness length;
H	is the rotor center height;
Z_{ref}	is the reference height, 10 m;
z	is the anemometer height

Worst-case reference sound data provided at a 10-meter reference height for the Antrim wind turbines indicates that 7 m/s winds (or higher) will produce the worst-case sound levels (106.0 dBA sound power level). This corresponds to hub height wind speeds of 9.9 m/s (22 mph) and above using the IEC logarithmic profile.

A wind speed of 9.9 m/s at hub height (92.5 meters AGL) using the IEC procedure described above corresponds to a wind speed at the 57-meter height AGL at the meteorological tower of 9.3 m/s. This was confirmed using a power-law wind shear profile and a client-provided site-specific wind shear coefficient of ά = 0.13. Therefore, a measured 57-meter wind speed of 9.3 m/s would be expected to produce worst-case sound levels from the Siemens wind turbines. There were 10 to 13 hours per location of 9.3 m/s (or higher) wind speeds at the 57-meter height during the background measurement program, excluding precipitation. The corresponding L_{eq} and L_{90} sound levels were then identified for each of the five sound level measurement locations during those periods when wind speed conditions would lead to worst case sound levels after the Project is constructed. The minimum, maximum, average and median background sound levels for each location under the highest wind turbine sound producing conditions without precipitation are summarized in Table 6-1 (L_{eq}) and Table 6-2 (L_{90}).

Table 6-1 Ambient Background L_{eq} Sound Levels

Location	Minimum L_{eq} (dBA)	Maximum L_{eq} (dBA)	Median L_{eq} (dBA)	Average L_{eq} (dBA)
Location L1 – Keene Road	43	61	59	58
Location L2 – Loveren Mill Road	27	54	45	45
Location L3 – Salmon Brook Road	25	51	44	43
Location L4 – Reed Carr Road	30	63	46	44
Location L5 – Gregg Lake Road	32	54	43	43

Table 6-2 Ambient Background L_{90} Sound Levels

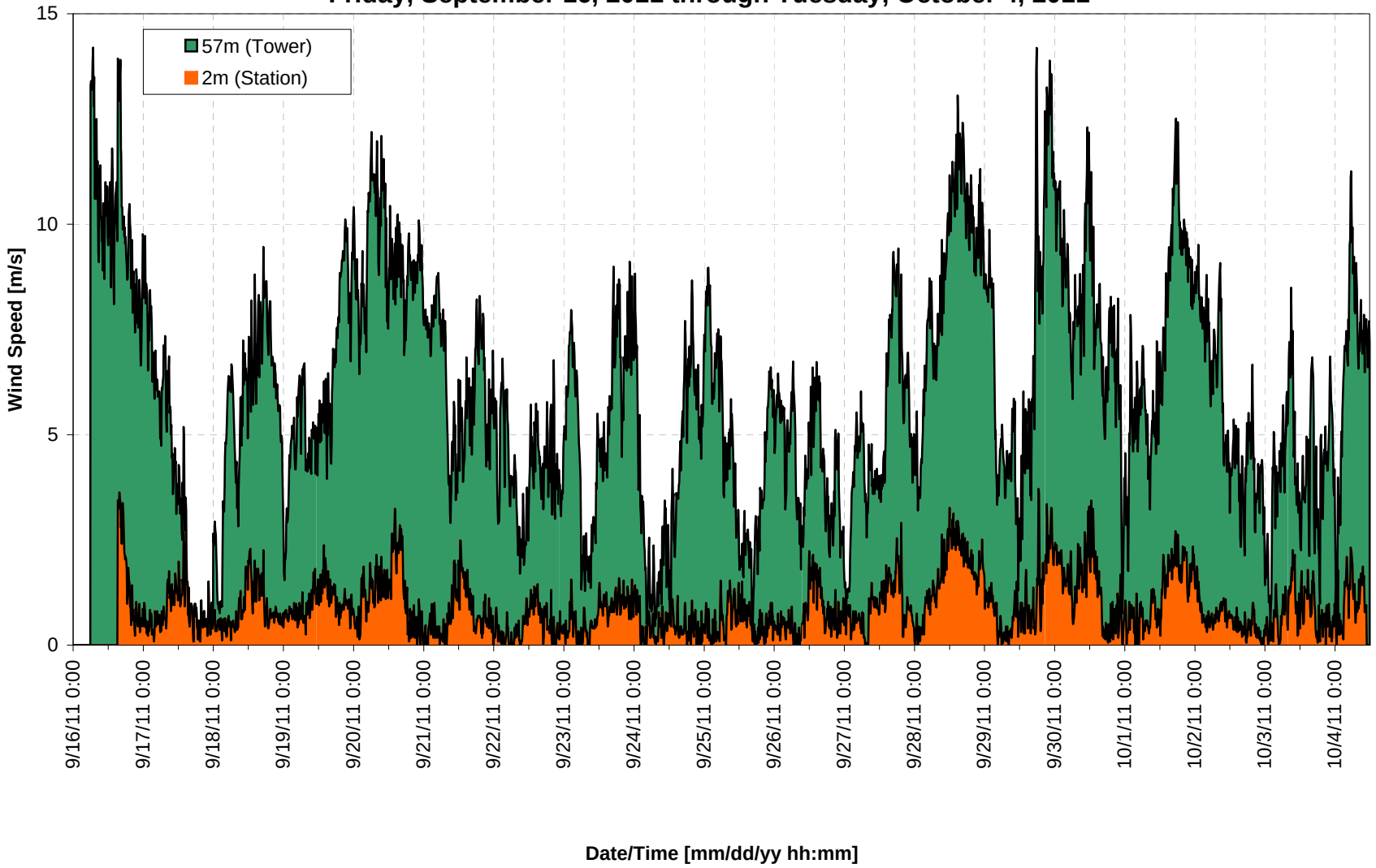
Location	Minimum L_{90} (dBA)	Maximum L_{90} (dBA)	Median L_{90} (dBA)	Average L_{90} (dBA)
Location L1 – Keene Road	27	50	44	44
Location L2 – Loveren Mill Road	24	46	39	39
Location L3 – Salmon Brook Road	24	46	38	37
Location L4 – Reed Carr Road	24	51	41	40
Location L5 – Gregg Lake Road	31	45	37	37

As these tables demonstrate, the existing background sound levels measured during conditions that would generate maximum sound levels from the wind turbines are sometimes equal to or greater than the expected sound levels generated by the turbines themselves. That is to say, when the conditions exist to create maximum sound levels from the turbines, there may be a high level of background noise already in the environment that will greatly diminish the new sound from the turbines.

Figure 6-1 Wind Measurement Equipment Setup – Location L5 Gregg Lake

Figure 6-2

Measured Wind Speed Data at 2 meters and 57 meters
Friday, September 16, 2011 through Tuesday, October 4, 2011



7.0 FUTURE CONDITIONS

7.1 Wind Turbines and Operating Conditions

The nine (9) wind turbines modeled for this project are Siemens SWT-3.2-113 wind generators. Each wind turbine will have three blades. Turbines #1 - #8 will be placed on a 92.5-meter-high tower, with a rotor diameter of 113 meters. Turbine #9 (the most southerly turbine) will have a lower hub height of 79.5 meters, and will also have a rotor diameter of 113 meters. Table 7-1 shows the manufacturer-provided broadband sound power level as a function of wind speed. Under peak noise producing operating conditions (hub height wind speed of 9.9 m/s or higher) each turbine has an A-weighted sound power level of 106.0 dBA. The sound power levels for the Siemens SWT-3.2-113 are subject to an uncertainty value (K) of 1.5 dB.

Table 7-1 Siemens SWT-3.2-113 Sound Power Levels vs. Wind Speed (dBA)

Condition	Wind speed at 10-meter reference height (m/s)						
	4	5	6	7	8	9	10
Wind speed at 92.5-m hub height (m/s)*	5.7	7.1	8.5	9.9	11.4	12.8	14.2
Sound Power Level at 92.5 m hub height (dBA re 1 pW)**	95.3	99.9	104.7	106.0	106.0	106.0	106.0
Wind speed at 79.5-m hub height (m/s)*	5.6	7.0	8.3	9.7	11.1	12.5	13.9
Sound Power Level at 79.5 m hub height (dBA re 1 pW)**	94.8	99.4	104.2	106.0	106.0	106.0	106.0

*Calculated from standardized wind speed at 10m using IEC 61400-11 logarithmic profile
**Does not include 1.5 dBA uncertainty.

Octave-band sound power levels were provided by Siemens for 8 m/s winds at a 10-meter reference height. This represents worst-case sound levels with either 79.5m hub heights or 92.5m hub heights. These octave band values are presented in Table 7-2 below.

Table 7-2 Siemens SWT-3.2-113 Octave Band Sound Power Levels (dBA)

	Octave Band Center Frequency (Hertz)								
	31.5	63	125	250	500	1000	2000	4000	8000
Sound Power Level at 79.5m or 92.5m hub height for 8 m/s winds (10-m reference)	78.4	91.9	94.5	97.8	98.4	100.0	99.1	95.7	86.8

*Does not include 1.5 dBA uncertainty.

7.2 Substation

In addition to the wind turbines, there will be a collector substation associated with the Antrim Wind Project. The transformer will be located on the property of Michael James Hutchins Ott south of Keene Road (Route 9) in Antrim approximately one half mile north-northeast of the nearest wind turbine.

The proposed transformer is rated at 24/32/40 megavolt-ampere (MVA). A transformer has various cooling mechanisms which have a modest impact on their sound levels. Typical transformers utilize ONAN (oil natural air natural), ONAF1 (oil natural air forced stage 1), and ONAF2 (oil natural air forced stage 2) for cooling. The worst-case for sound is the maximum MVA rating and forced air stage 2 cooling. This was the condition assumed for the sound modeling of this substation. In the absence of manufacturer-provided sound power data, Epsilon has estimated the sound emissions using the techniques in the Electric Power Plant Environmental Noise Guide (Edison Electric Institute), Table 4.5 Sound Power Levels of Transformers. Table 7-3 summarizes the sound power level data used in the modeling.

Table 7-3 Collector Substation Transformer – Sound Power Levels (dB)

Maximum Rating	dBA	Octave Band Center Frequency (Hertz)								
		31.5	63	125	250	500	1000	2000	4000	8000
40 MVA	92	89	95	97	92	92	86	81	76	69

7.3 Modeling Scenarios

The sound impacts associated with the proposed wind turbine generators and substation were predicted using the Cadna/A noise calculation software (DataKustik Corporation, 2013). This software uses the ISO 9613-2 international standard for sound propagation (Acoustics - Attenuation of sound during propagation outdoors - Part 2: General method of calculation). This software performs highly refined computations that include the effects of topography, ground attenuation, multiple building reflections, drop-off with distance, and atmospheric absorption.

Inputs and significant parameters employed in the model are described below:

- *Project Layout:* A project layout [dated 10.15.2014] for nine (9) wind turbine locations was provided by Antrim Wind along with information on the collector substation for use as input in the model.

- *Sensitive Receptors:* A shape file of 155 potentially sound-sensitive structures within a 2-kilometer radius of any wind turbine was provided by Antrim Wind and used as input to the model. All receptors were modeled with a height of 1.5 meters AGL to mimic the ears of a typical standing observer.

- *Terrain Elevation:* Elevation contours for the modeling domain were directly imported into Cadna/A which allowed for consideration of terrain shielding where appropriate. These contours were generated from elevation information derived from Geographic Information System (GIS) data sets.

- *Source Sound Levels & Controls:* Broadband and octave band sound power levels for the Siemens SWT-3.2-113 wind turbine, presented above in Tables 7-1 and 7-2, were provided by the manufacturer, and used as input in the model. These levels represent "worst-case" operational sound level emissions corresponding to wind speeds of 8 m/s referenced to 10m AGL.

- *Meteorological Conditions:* A temperature of 10ºC (50ºF) and a relative humidity of 70% was assumed in the model. These conditions are conservative in that they minimize atmospheric attenuation at the key frequencies that compose the A-weighted total sound level.

- *Ground Attenuation:* Spectral ground absorption was calculated using a G-factor of 0.5 which corresponds to "mixed ground" consisting of both hard and porous ground cover. This method yields more conservative results (i.e., higher sound levels) as the vast majority of the area is actually forested.

The highest wind turbine sound power levels of 107.5 dBA (including the 1.5 dBA uncertainty value) were input into Cadna/A to model turbine-generated sound levels at worst-case sound levels (hub height wind speed of 9.9 m/s or higher). The collector substation was modeled assuming the worst-case cooling condition (Table 7-3) and no barrier walls around the transformers.

Sound levels due to operation of all nine wind turbines and the substation were modeled at 155 of the closest community receptors. All residences are 2,600 feet or more (one-half mile) from the nearest wind turbine. In addition to these specific locations provided by the client, sound levels were also modeled throughout a large grid of receptor points, each spaced 20 meters apart. The grid covered an area approximately 8 km by 10 km for a total of over 200,000 grid points. This made it possible to create sound level "contours" for the wind farm as a whole.

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

- Modeled source sound power level inputs represent acoustic emissions from a similar unit measured in accordance with IEC 61400-11 corresponding to maximum sound power output, plus an additional manufacturer-provided uncertainty factor of 1.5 dBA.

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

- Predicted sound levels were computed with the assumption that each receptor was always located directly downwind from every turbine simultaneously. While a physical impossibility, this provides conservative results and is required by the ISO 9613-2 standard.

- As per ISO 9613-2, the model assumed favorable conditions for sound propagation, corresponding to a moderate, well-developed ground-based temperature inversion, as might occur on a calm, clear night. This is another conservative assumption seeing as strong wind conditions (and thus higher sound levels) are often found after a frontal passage when winds are strong at all levels of the atmosphere.

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

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

This conservative set of modeling assumptions has been verified multiple times through post-construction sound level measurement programs at operating wind farms. For example, post-construction sound level measurements for Groton Wind[6], a NH ridgeline site, found that the predicted sound levels from pre-construction modeling[7] were conservative (higher) than measured sound levels under worst-case operating conditions for sound. In addition, two ridgeline wind farms in Maine, Mars Hill and Stetson Mountain I, were found to be below modeled predictions even under worst-case operating conditions.[8] A recent post-construction measurement program by Epsilon in the Midwest found sound levels were 2 to 3 dBA lower than the maximum modeled sound levels under worst-case operating conditions.

7.4 Sound Level Results

Table 7-4 shows the predicted sound levels due to full wind turbine and substation operations, as modeled by the Cadna/A program. The table shows the turbine sound levels at all 155 discrete modeling receptors representing the closest noise sensitive areas under worst-case operational conditions. The results are shown with the same level of precision as provided by the Cadna/A software. Table 7-5 shows the same results as Table 7-4 except only for the 10 highest receptors sorted from high to low. Table 7-6 shows the predicted sound levels due to full wind turbine operations, as modeled by the Cadna/A program at the five monitoring locations.

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6 http://www.nhsec.nh.gov/projects/2010-01/documents/140723sound_report.pdf

7 http://www.nhsec.nh.gov/projects/2010-01/documents/100326app35.pdf

8 Wallace, Charles F. et al, *Wind turbine noise modeling and verification: two case studies – Mars Hill and Stetson Mountain I, Maine*, presented at NOISE-CON 2011, Portland, Oregon.

The turbine-only sound level modeling results are also shown as color contour lines in Figure 7-1. The contour lines shown in Figure 7-1 show the sound level contours for worst-case wind turbine and substation operational sound levels. These are "Project-only" sound levels, and do not include any contribution from existing background sounds.

Table 7-4 Cadna/A Modeling Sound Level Results

Modeling ID	Structure Type	Broadband [dBA]
1	Trailer	36.9
2	Commercial	37.0
3	House	37.3
4	House	37.4
5	Shed	37.1
6	Shed	37.0
7	House	36.8
8	House	36.6
9	Trailer	36.4
10	Trailer	36.4
11	Trailer	36.4
12	House	35.9
13	House	36.1
14	Barn	36.0
15	House	33.3
16	House	33.1
17	House	32.6
18	State Misc.	34.2
19	Shed	34.1
20	House	38.1
21	House	39.5
22	House	36.1
23	Shed	35.9
24	Hunting Camp	39.8
25	House	35.6
26	House	34.4
27	House	34.3
28	Barn	34.0
29	House	34.1
30	Barn	34.4
31	House	31.3
32	House	32.4
33	House	30.3
34	House	32.8
35	House	34.2
36	House	34.7
37	House	34.8
38	House	32.7
39	House	33.0
40	Barn	32.8
41	Shed	32.8
42	House	32.7
43	House	32.5

Modeling ID	Structure Type	Broadband [dBA]
44	House	32.0
45	House/Trailer	31.8
46	House	32.4
47	Barn	32.9
48	House	33.2
49	Barn	34.1
50	House	34.2
51	House	36.5
52	House	36.5
53	House	37.1
54	House	36.9
55	House	35.1
56	House	34.7
57	Shed	34.8
58	House	35.7
59	Shed	36.0
60	Barn	36.3
61	House	36.0
62	House	35.9
63	House	35.9
64	House	35.1
65	House	35.4
66	House	35.4
67	Shed	35.3
68	House	35.0
69	House	35.5
70	Shed	35.6
71	House	35.7
72	Shed	35.7
73	Shed	35.8
74	Trailer	35.9
75	Trailer	35.8
76	House	35.5
77	House	35.1
78	House/Trailer	34.6
79	House	37.5
80	House	38.8
81	House	34.9
82	House	35.0
83	Shed	35.1
84	Barn	32.7
85	House	32.6
86	House	32.6

Table 7-4 Cadna/A Modeling Sound Level Results (Continued)

Modeling ID	Structure Type	Broadband [dBA]
87	House	32.1
88	Trailer	36.4
89	House	36.3
90	Shed	36.3
91	House	35.9
92	Camp	36.2
93	Circ Hut, UnkUse	34.9
94	Camp	35.4
95	Camp	35.2
96	Barn	31.8
97	House	31.7
98	House	31.4
99	House	30.3
100	House	30.6
101	House	31.8
102	Shed	31.5
103	Garage	30.5
104	House	30.5
105	Garage	31.0
106	House	31.1
107	House	30.4
108	Barn	29.9
109	House	30.1
110	House	30.0
111	House	30.0
112	Shed	30.0
113	House	31.1
114	House	27.8
115	House	30.8
116	House	32.4
117	House	32.3
118	Shed	32.0
119	House	34.9
120	House	32.7

Modeling ID	Structure Type	Broadband [dBA]
121	House	32.5
122	Barn	32.6
123	House	32.3
124	Barn	32.2
125	Garage	32.3
126	House	32.4
127	House	32.2
128	House	32.2
129	House	32.1
130	House	31.7
131	House	31.7
132	House	31.4
133	House	33.4
134	House	33.0
135	Barn	32.9
136	House/Trailer	32.6
137	House	32.5
138	House	32.9
139	House	32.4
140	Garage	32.5
141	House	31.8
142	House	32.1
143	House	32.2
144	House	34.8
145	Barn	34.8
146	House	34.6
147	House	34.4
148	Shed	34.0
149	House	34.2
150	House	35.8
151	House	36.0
152	Barn	32.5
153	House	37.6
154	House	36.0
155	House	35.9

Table 7-5 Cadna/A Modeling Sound Level Results – 10 highest receptors

Modeling ID	Structure Type	Broadband [dBA]
24	Hunting Camp	39.8
21	House	39.5
80	House	38.8
20	House	38.1
153	House	37.6
79	House	37.5
4	House	37.4
3	House	37.3
5	Shed	37.1
53	House	37.1

Table 7-6 Cadna/A Modeling Sound Level Results – Ambient Monitoring Locations

Location	9 Wind Turbines and substation (dBA)
Location L1 – Keene Road	38.3
Location L2 – Loveren Mill Road	32.5
Location L3 – Salmon Brook Road	37.2
Location L4 – Reed Carr Road	35.9
Location L5 – Gregg Lake Road	30.5

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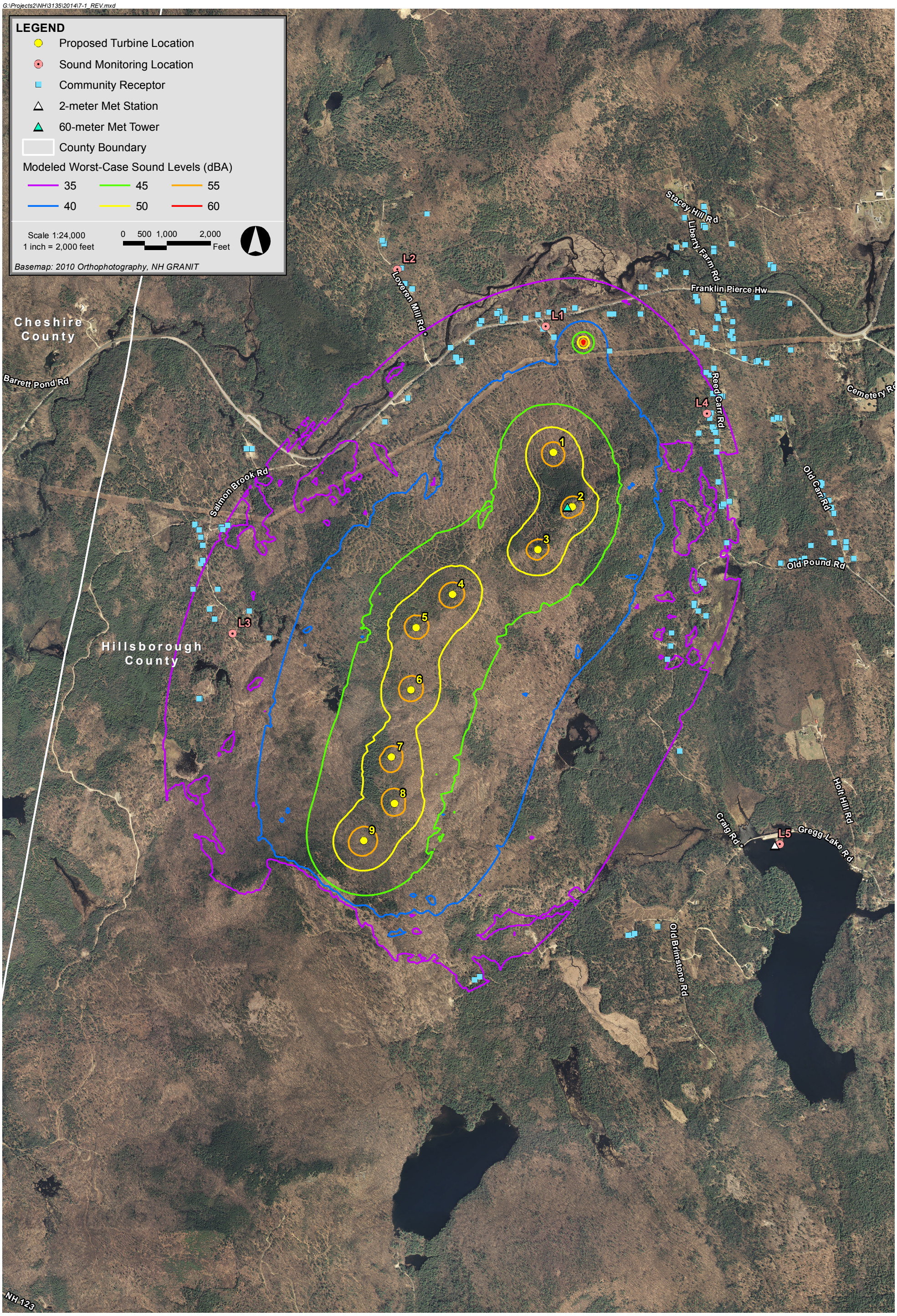


Antrim Wind **Antrim, New Hampshire**

Epsilon ASSOCIATES INC.

Figure 7-1

Modeled Worst-Case Sound Levels (dBA)

8.0 EVALUATION OF SOUND LEVELS

8.1 Previous NH SEC Criteria

As discussed in section 3, there are no State of New Hampshire community noise regulations applicable to the wind farm, but the SEC has considered sound levels when evaluating previous applications for a certificate of site and facility related to wind energy projects. The SEC implemented several noise conditions in its orders approving the Lempster and Groton Wind Farms, the most stringent of which was a limit of 45 dBA at the exterior of an inhabited residence, and 40 dBA at a campground. In its order denying AWE's previous application for a certificate of site and facility for the Antrim Wind Project, the SEC set forth noise conditions that it would impose on the Project, including a requirement that daytime sound levels at the outside façades of residences not exceed 45 dBA or 5dBA above ambient, whichever is greater, and a requirement that nighttime sound levels not exceed 40 dBA or 5 dBA above ambient, whichever is greater.

The predicted worst-case sound levels from the Antrim Wind Energy Project will be below 40 dBA at all occupied buildings. A review of Table 7-5 shows that the highest sound level will be under 40 dBA at receptor #24 (39.8 dBA), and this structure is a hunting cabin, which is not generally occupied. The next highest sound level of 39.5 dBA is at receptor #21 which is a participating residence (Michael Ott). All other residences will be below 39 dBA under worst-case operating conditions. Therefore, the Antrim Wind Energy Project will easily meet the criteria applied to the Lempster and Groton wind projects. It will also meet the proposed conditions set forth by the SEC in Docket 2012-01 concerning the prior Antrim Wind project.

8.2 World Health Organization Guidelines

As discussed in detail in section 3, a useful guideline for putting sound levels in perspective is the "Guideline for Community Noise" (World Health Organization, Geneva, 1999). Daytime and evening outdoor living area sound levels at a residence should not exceed an L_{eq} of 55 dBA to prevent serious annoyance and an L_{eq} of 50 dBA to prevent moderate annoyance from a steady, continuous noise. At night, sound levels at the outside facades of the living spaces should not exceed an L_{eq} of 45 dBA, so that people may sleep with bedroom windows open. The time base for these WHO sound levels is 16 hours for daytime and 8 hours for nighttime. The 2009 "Night Noise Guidelines for Europe" report recommends a Night noise guideline (NNG) of 40 dBA. However, this NNG level is an annual sound level over all 365 days of the year, and is not comparable to a short-term (10-minute or 1-hour) sound level. To summarize, the 1999 WHO nighttime guideline is 45 dBA (8-hour period) and the 2009 WHO nighttime guideline is 40 dBA (annual).

All participating and non-participating residences will be below 40 dBA (1-hour Leq) for exterior sound from the Antrim Wind Energy Project. Thus the Project is well below either WHO guideline values.

9.0 CONCLUSIONS

A comprehensive sound level assessment was conducted for the Antrim Wind Energy Project. Baseline sound levels were measured to characterize the existing background sound levels within the area. Turbine-only sound levels were then predicted throughout the entire wind farm, and off-site, so as to determine the future sound levels expected under worst-case operations.

Sound levels due to wind turbine operation are expected to be less than 40 dBA at all participating and non-participating residences and less than 39 dBA at all non-participating residences. These sound levels will meet all relevant and applicable guidelines including:

1. previously approved noise conditions from the NH SEC for the Lempster and Groton wind projects
2. Proposed conditions by the SEC for the previous Antrim Wind project in Docket 2012-01
3. The World Health Organization's 1999 hourly guideline and 2009 annual guideline
4. The US EPA guideline of 48.6 dBA (24-hour) which is equal to an L_{dn} of 55 dBA
5. Current draft guidelines currently under consideration by the NH SEC.

Appendix A
NWS Meteorological Data – Jaffrey Muni Airport Silver Ranch

Time (EDT)	Temp [F]	RH [%]	Precip [in]	Wind Speed [mph]	Wind Direction [°]	Gust Speed [mph]	Observations
9/16/2011 0:00	46.9	74	0	6.9	0	6.9	
9/16/2011 1:00	46	76	0	4.6	320	4.6	
9/16/2011 2:00	45	76	0	5.75	0	5.75	
9/16/2011 3:00	44.1	73	0	6.9	0	6.9	
9/16/2011 4:00	43	76	0	6.9	340	6.9	
9/16/2011 5:00	44.1	70	0	8.06	330	8.06	
9/16/2011 6:00	44.1	70	0	11.51	330	29.92	
9/16/2011 7:00	45	70	0	6.9	0	19.56	
9/16/2011 8:00	46.9	68	0	8.06	320	8.06	
9/16/2011 9:00	48.9	63	0	5.75	0	5.75	
9/16/2011 10:00	51.1	54	0	8.06	320	8.06	
9/16/2011 11:00	53.1	48	0	8.06	340	16.11	
9/16/2011 12:00	55	43	0	10.36	290	16.11	
9/16/2011 13:00	55.9	40	0	10.36	280	21.87	
9/16/2011 14:00	57	40	0	10.36	290	19.56	
9/16/2011 15:00	57	40	0	6.9	0	6.9	
9/16/2011 16:00	57.9	36	0	8.06	310	8.06	
9/16/2011 17:00	55.9	37	0	0	0	0	
9/16/2011 18:00	52	50	0	0	0	0	
9/16/2011 19:00	45	76	0	0	0	0	
9/16/2011 20:00	42.1	85	0	0	0	0	
9/16/2011 21:00	41	89	0	0	0	0	
9/16/2011 22:00	39	93	0	0	0	0	
9/16/2011 23:00	39	93	0	0	0	0	
9/17/2011 0:00	37	96	0	0	0	0	
9/17/2011 1:00	37	96	0	0	0	0	
9/17/2011 2:00	36	96	0	3.45	180	3.45	
9/17/2011 3:00	36	96	0	0	0	0	
9/17/2011 4:00	35.1	96	0	0	0	0	
9/17/2011 5:00	34	100	0	0	0	0	
9/17/2011 6:00	35.1	96	0	0	0	0	
9/17/2011 7:00	37.9	97	0	0	0	0	
9/17/2011 8:00	46.9	74	0	3.45	0	3.45	
9/17/2011 9:00	52	61	0	4.6	10	4.6	
9/17/2011 10:00	53.1	54	0	3.45	0	3.45	
9/17/2011 11:00	57	49	0	0	0	0	
9/17/2011 12:00	59	44	0	6.9	0	6.9	
9/17/2011 13:00	59	42	0	3.45	340	3.45	
9/17/2011 14:00	60.1	39	0	4.6	270	4.6	
9/17/2011 15:00	60.1	39	0	3.45	0	3.45	
9/17/2011 16:00	60.1	40	0	0	0	0	
9/17/2011 17:00	57	59	0	0	0	0	
9/17/2011 18:00	54	77	0	0	0	0	
9/17/2011 19:00	50	86	0	0	0	0	
9/17/2011 20:00	46.9	90	0	0	0	0	
9/17/2011 21:00	46.9	93	0	0	0	0	
9/17/2011 22:00	46.9	93	0	0	0	0	
9/17/2011 23:00	46.9	93	0	0	0	0	
9/18/2011 0:00	46.9	93	0	0	0	0	

Time (EDT)	Temp [F]	RH [%]	Precip [in]	Wind Speed [mph]	Wind Direction [°]	Gust Speed [mph]	Observations
9/18/2011 1:00	46	96	0	0	0	0	
9/18/2011 2:00	46	93	0	0	0	0	
9/18/2011 3:00	45	97	0	0	0	0	
9/18/2011 4:00	45	93	0	0	0	0	
9/18/2011 5:00	44.1	96	0	0	0	0	
9/18/2011 6:00	44.1	96	0	0	0	0	
9/18/2011 7:00	46	96	0	0	0	0	
9/18/2011 8:00	48	89	0	0	0	0	
9/18/2011 9:00	52	74	0	4.6	30	4.6	
9/18/2011 10:00	57	62	0	4.6	0	4.6	
9/18/2011 11:00	59	47	0	6.9	0	6.9	
9/18/2011 12:00	61	42	0	5.75	0	5.75	
9/18/2011 13:00	61	44	0	3.45	0	3.45	
9/18/2011 14:00	61	48	0	6.9	0	6.9	
9/18/2011 15:00	59	53	0	0	0	0	
9/18/2011 16:00	61	48	0	3.45	0	3.45	
9/18/2011 17:00	59	51	0	3.45	0	3.45	
9/18/2011 18:00	54	61	0	0	0	0	
9/18/2011 19:00	50	74	0	0	0	0	
9/18/2011 20:00	45	90	0	0	0	0	
9/18/2011 21:00	42.1	96	0	0	0	0	
9/18/2011 22:00	41	96	0	0	0	0	
9/18/2011 23:00	39	96	0	0	0	0	
9/19/2011 0:00	37.9	97	0	0	0	0	
9/19/2011 1:00	37	96	0	0	0	0	
9/19/2011 2:00	36	96	0	0	0	0	
9/19/2011 3:00	35.1	96	0	0	0	0	
9/19/2011 4:00	35.1	96	0	0	0	0	
9/19/2011 5:00	34	96	0	0	0	0	
9/19/2011 6:00	33.1	96	0	0	0	0	
9/19/2011 7:00	37	96	0	0	0	0	
9/19/2011 8:00	46.9	83	0	0	0	0	
9/19/2011 9:00	54	66	0	0	0	0	
9/19/2011 10:00	57	53	0	3.45	30	3.45	
9/19/2011 11:00	59	44	0	3.45	0	3.45	
9/19/2011 12:00	60.1	42	0	4.6	0	4.6	
9/19/2011 13:00	62.1	41	0	5.75	0	5.75	
9/19/2011 14:00	62.1	44	0	5.75	0	5.75	
9/19/2011 15:00	63	44	0	0	0	0	
9/19/2011 16:00	62.1	46	0	8.06	200	8.06	
9/19/2011 17:00	61	56	0	4.6	170	4.6	
9/19/2011 18:00	55	74	0	0	0	0	
9/19/2011 19:00	51.1	86	0	0	0	0	
9/19/2011 20:00	48.9	93	0	0	0	0	
9/19/2011 21:00	48	96	0	0	0	0	
9/19/2011 22:00	48.9	93	0	0	0	0	
9/19/2011 23:00	48.9	93	0	3.45	210	3.45	
9/20/2011 0:00	48.9	93	0	0	0	0	
9/20/2011 1:00	51.1	89	0	4.6	210	4.6	

Time (EDT)	Temp [F]	RH [%]	Precip [in]	Wind Speed [mph]	Wind Direction [°]	Gust Speed [mph]	Observations
9/20/2011 2:00	51.1	92	0	0	0	5.75	
9/20/2011 3:00	51.1	96	0	4.6	210	4.6	
9/20/2011 4:00	51.1	96	0	4.6	200	4.6	
9/20/2011 5:00	52	97	0	6.9	210	6.9	
9/20/2011 6:00	53.1	96	0	5.75	210	5.75	
9/20/2011 7:00	54	97	0.01	6.9	210	6.9	Light Rain
9/20/2011 8:00	55	93	0.04	8.06	200	8.06	Light Rain
9/20/2011 9:00	55	96	0.06	11.51	200	17.26	Moderate Rain
9/20/2011 10:00	55.9	97	0.03	6.9	210	9.21	Light Rain
9/20/2011 11:00	57	93	0.01	9.21	230	9.21	Light Rain
9/20/2011 12:00	57	96	0	5.75	0	5.75	
9/20/2011 13:00	57.9	93	0	5.75	210	5.75	
9/20/2011 14:00	59	93	0	4.6	0	4.6	
9/20/2011 15:00	60.1	90	0	5.75	210	8.06	
9/20/2011 16:00	62.1	86	0	3.45	0	3.45	
9/20/2011 17:00	61	90	0	3.45	240	3.45	
9/20/2011 18:00							
9/20/2011 19:00	59	96	0	5.75	190	5.75	
9/20/2011 20:00							
9/20/2011 21:00							
9/20/2011 22:00	53.6	100	0	0	0	0	Mist
9/20/2011 23:00							
9/21/2011 0:00							
9/21/2011 1:00							
9/21/2011 2:00	54	100	0	0	0	0	Fog
9/21/2011 3:00							
9/21/2011 4:00							
9/21/2011 5:00	52	100	0	5.75	160	5.75	Fog
9/21/2011 6:00	52	100	0	0	0	0	Fog
9/21/2011 7:00	52	100	0	3.45	170	3.45	Fog
9/21/2011 8:00	54	100	0	3.45	170	3.45	Fog
9/21/2011 9:00	57.9	97	0	4.6	170	4.6	
9/21/2011 10:00	64	80	0	6.9	170	6.9	
9/21/2011 11:00	66	75	0	8.06	170	8.06	
9/21/2011 12:00	69.1	65	0	4.6	170	4.6	
9/21/2011 13:00	70	59	0	6.9	180	6.9	
9/21/2011 14:00	72	49	0	4.6	0	4.6	
9/21/2011 15:00	72	57	0	6.9	210	6.9	
9/21/2011 16:00	71.1	57	0	4.6	210	4.6	
9/21/2011 17:00	69.1	73	0	0	0	0	
9/21/2011 18:00	63	90	0	0	0	0	
9/21/2011 19:00	61	93	0	0	0	0	
9/21/2011 20:00	59	96	0	0	0	0	
9/21/2011 21:00	60.1	96	0	0	0	0	
9/21/2011 22:00	62.1	93	0	3.45	180	3.45	
9/21/2011 23:00	62.1	93	0	3.45	180	3.45	
9/22/2011 0:00	63	93	0	3.45	190	3.45	
9/22/2011 1:00	62.1	96	0.03	0	0	0	Light Rain
9/22/2011 2:00	62.1	100	0.15	3.45	180	3.45	Light Rain

Time (EDT)	Temp [F]	RH [%]	Precip [in]	Wind Speed [mph]	Wind Direction [°]	Gust Speed [mph]	Observations
9/22/2011 3:00	63	100	0.01	3.45	190	3.45	
9/22/2011 4:00	64	96	0	4.6	190	4.6	
9/22/2011 5:00	64	100	0	3.45	200	3.45	
9/22/2011 6:00	64	96	0.05	3.45	180	3.45	Moderate Rain
9/22/2011 7:00	64	96	0.1	0	0	0	Moderate Rain
9/22/2011 8:00	64.9	97	0.06	0	0	0	Light Rain
9/22/2011 9:00	66	96	0	4.6	170	4.6	Light Rain
9/22/2011 10:00	68	90	0.01	0	0	0	
9/22/2011 11:00	70	81	0	4.6	200	4.6	
9/22/2011 12:00	69.1	87	0.01	0	0	0	Light Rain
9/22/2011 13:00	69.1	90	0.01	0	0	0	Light Rain
9/22/2011 14:00	72	84	0	0	0	0	
9/22/2011 15:00	72	82	0	4.6	0	4.6	
9/22/2011 16:00	71.1	87	0	0	0	3.45	Light Rain
9/22/2011 17:00	69.1	93	0.01	3.45	210	3.45	
9/22/2011 18:00	68	96	0.01	0	0	0	
9/22/2011 19:00	68	96	0	0	0	0	
9/22/2011 20:00	68	96	0	0	0	4.6	
9/22/2011 21:00	68	96	0	0	0	0	
9/22/2011 22:00	68	96	0	3.45	190	3.45	
9/22/2011 23:00	68	96	0	4.6	200	4.6	
9/23/2011 0:00	68	96	0	0	0	3.45	
9/23/2011 1:00	66.9	97	0	5.75	210	5.75	Mist
9/23/2011 2:00	66	100	0	3.45	210	3.45	
9/23/2011 3:00	66	96	0	0	0	4.6	
9/23/2011 4:00	66	96	0	0	0	0	
9/23/2011 5:00	64	100	0	0	0	3.45	Mist
9/23/2011 6:00	63	100	0	0	0	0	Mist
9/23/2011 7:00	64	96	0	0	0	0	
9/23/2011 8:00	66.9	93	0	0	0	0	
9/23/2011 9:00	69.1	87	0	0	0	0	
9/23/2011 10:00	71.1	84	0	0	0	3.45	
9/23/2011 11:00	71.1	81	0	3.45	0	3.45	
9/23/2011 12:00	71.1	79	0	3.45	110	3.45	
9/23/2011 13:00	70	84	0	0	0	3.45	
9/23/2011 14:00	69.1	90	0	0	0	0	Light Rain
9/23/2011 15:00	69.8	88	0.01	0	0	3.45	Light Rain
9/23/2011 16:00	68	96	0.07	0	0	0	Moderate Rain
9/23/2011 17:00	66.9	97	0.34	0	0	0	Heavy Rain
9/23/2011 18:00	66.9	97	0.29	0	0	0	Moderate Rain
9/23/2011 19:00	66	100	0.29	0	0	0	Heavy Rain
9/23/2011 20:00	66.9	97	0.08	0	0	0	Light Rain
9/23/2011 21:00	66.9	97	0.04	0	0	3.45	Moderate Rain
9/23/2011 22:00	66.9	97	0.05	3.45	0	3.45	Light Rain
9/23/2011 23:00	66	100	0.02	0	0	0	Light Rain
9/24/2011 0:00	66	100	0.02	0	0	3.45	Light Rain
9/24/2011 1:00	66	100	0.01	0	0	0	Light Rain
9/24/2011 2:00	66	96	0.06	0	0	0	Light Rain
9/24/2011 3:00	66	96	0.02	0	0	0	Moderate Rain

Time (EDT)	Temp [F]	RH [%]	Precip [in]	Wind Speed [mph]	Wind Direction [°]	Gust Speed [mph]	Observations
9/24/2011 4:00	64.9	100	0.04	0	0	0	
9/24/2011 5:00	64.9	100	0	0	0	0	Mist
9/24/2011 6:00	64.9	100	0.01	0	0	0	Mist
9/24/2011 7:00	64.9	100	0	3.45	40	3.45	Mist
9/24/2011 8:00	66	96	0.01	0	0	0	Light Rain
9/24/2011 9:00	69.1	93	0	0	0	3.45	
9/24/2011 10:00	70	93	0	0	0	0	
9/24/2011 11:00	72	91	0	4.6	0	4.6	
9/24/2011 12:00	73	90	0.02	0	0	6.9	
9/24/2011 13:00	73.9	85	0	5.75	180	8.06	
9/24/2011 14:00	75	79	0	4.6	0	4.6	
9/24/2011 15:00	75	79	0	4.6	200	4.6	
9/24/2011 16:00	73.9	85	0	4.6	200	4.6	
9/24/2011 17:00	73	90	0	4.6	200	4.6	
9/24/2011 18:00	71.1	93	0	3.45	190	3.45	
9/24/2011 19:00	69.1	96	0	0	0	0	
9/24/2011 20:00	68	96	0	3.45	190	3.45	
9/24/2011 21:00	66.9	97	0	0	0	0	
9/24/2011 22:00	66	96	0	0	0	0	
9/24/2011 23:00	64.9	97	0	0	0	0	
9/25/2011 0:00	64.9	97	0	0	0	0	
9/25/2011 1:00	64	100	0	0	0	0	
9/25/2011 2:00	64	100	0	0	0	0	
9/25/2011 3:00	64	100	0	0	0	0	
9/25/2011 4:00	64	96	0.01	3.45	170	3.45	
9/25/2011 5:00	64	96	0	0	0	0	
9/25/2011 6:00	63	100	0	0	0	0	
9/25/2011 7:00	63	100	0	0	0	0	
9/25/2011 8:00	66	93	0	0	0	0	
9/25/2011 9:00	66.9	93	0	0	0	0	
9/25/2011 10:00	69.1	87	0	0	0	0	
9/25/2011 11:00	72	79	0	5.75	0	5.75	
9/25/2011 12:00	75	64	0	3.45	0	3.45	
9/25/2011 13:00	75.9	64	0	3.45	0	3.45	
9/25/2011 14:00	77	60	0	0	0	0	
9/25/2011 15:00	79	47	0	0	0	0	
9/25/2011 16:00	73	76	0	0	0	0	
9/25/2011 17:00	71.1	90	0	0	0	0	
9/25/2011 18:00	69.1	93	0	0	0	0	
9/25/2011 19:00	66.9	97	0	0	0	0	
9/25/2011 20:00	64.9	100	0	0	0	0	
9/25/2011 21:00	64	100	0	0	0	0	
9/25/2011 22:00	63	97	0	0	0	0	
9/25/2011 23:00	63	97	0	0	0	0	Mist
9/25/2011 23:00	62.6	100	0	0	0	0	Fog
9/26/2011 0:00	62.1	96	0	0	0	0	Mist
9/26/2011 1:00	61	100	0	0	0	0	Fog
9/26/2011 2:00	60.1	100	0	0	0	0	Mist
9/26/2011 3:00	59	100	0	0	0	0	Mist

Time (EDT)	Temp [F]	RH [%]	Precip [in]	Wind Speed [mph]	Wind Direction [°]	Gust Speed [mph]	Observations
9/26/2011 4:00	59	100	0	0	0	0	Fog
9/26/2011 5:00	57.9	100	0	0	0	0	Mist
9/26/2011 6:00	57	100	0	0	0	3.45	Mist
9/26/2011 7:00	59	100	0	0	0	0	
9/26/2011 8:00	64	90	0	0	0	0	
9/26/2011 9:00	70	78	0	0	0	0	
9/26/2011 10:00	72	71	0	3.45	180	3.45	
9/26/2011 11:00	75	62	0	5.75	280	5.75	
9/26/2011 12:00	78.1	56	0	4.6	0	4.6	
9/26/2011 13:00	79	52	0	0	0	0	
9/26/2011 14:00	80.1	47	0	0	0	0	
9/26/2011 15:00	79	47	0	0	0	0	
9/26/2011 16:00	79	50	0	0	0	0	
9/26/2011 17:00	73.9	74	0	0	0	0	
9/26/2011 18:00	68	93	0	0	0	0	
9/26/2011 19:00	66	96	0	0	0	0	
9/26/2011 20:00	64	96	0	0	0	0	
9/26/2011 21:00	64	96	0	0	0	0	
9/26/2011 22:00	63	97	0	0	0	0	
9/26/2011 23:00	62.1	96	0	0	0	0	
9/27/2011 0:00	60.1	96	0.01	0	0	0	Mist
9/27/2011 1:00	59	96	0	0	0	0	
9/27/2011 2:00	57.9	97	0	0	0	0	
9/27/2011 3:00	57.9	100	0	0	0	0	Mist
9/27/2011 4:00	59	100	0	0	0	0	Fog
9/27/2011 5:00	57	100	0	0	0	0	Mist
9/27/2011 6:00	57	100	0	0	0	0	Fog
9/27/2011 7:00	57	100	0	0	0	0	Mist
9/27/2011 8:00	60.1	96	0	0	0	0	
9/27/2011 9:00	66.9	76	0	0	0	0	
9/27/2011 10:00	70	68	0	0	0	0	
9/27/2011 11:00	73	66	0	3.45	360	3.45	
9/27/2011 12:00	77	60	0	4.6	0	4.6	
9/27/2011 13:00	75.9	62	0	3.45	80	3.45	
9/27/2011 14:00	77	60	0	4.6	0	4.6	
9/27/2011 15:00	75	66	0	0	0	0	
9/27/2011 16:00	73.9	69	0	0	0	0	
9/27/2011 17:00	70	73	0	0	0	0	
9/27/2011 18:00	66.9	81	0	0	0	0	
9/27/2011 19:00	64.9	81	0	0	0	0	
9/27/2011 20:00	64	84	0	0	0	0	
9/27/2011 21:00	64	84	0	0	0	0	
9/27/2011 22:00	63	90	0	0	0	0	
9/27/2011 23:00	62.1	93	0	0	0	0	
9/28/2011 0:00	62.1	90	0	0	0	0	
9/28/2011 1:00	61	93	0	3.45	120	3.45	
9/28/2011 2:00	61	93	0	0	0	0	
9/28/2011 3:00	61	97	0	0	0	3.45	Mist
9/28/2011 4:00	61	93	0	0	0	0	

Time (EDT)	Temp [F]	RH [%]	Precip [in]	Wind Speed [mph]	Wind Direction [°]	Gust Speed [mph]	Observations
9/28/2011 5:00	61	90	0	0	0	0	
9/28/2011 6:00	61	87	0	0	0	0	
9/28/2011 7:00	61	83	0	3.45	0	3.45	
9/28/2011 8:00	62.1	80	0	3.45	0	3.45	
9/28/2011 9:00	64.9	73	0	3.45	0	3.45	
9/28/2011 10:00	66.9	66	0	3.45	0	3.45	
9/28/2011 11:00	69.1	61	0	6.9	0	6.9	
9/28/2011 12:00	70	57	0	8.06	120	8.06	
9/28/2011 13:00	71.1	55	0	0	0	0	
9/28/2011 14:00	70	53	0	5.75	0	5.75	
9/28/2011 15:00	70	55	0	5.75	0	5.75	
9/28/2011 16:00	69.1	54	0	4.6	0	4.6	
9/28/2011 17:00	64.9	73	0	0	0	0	
9/28/2011 18:00	63	81	0	4.6	0	4.6	
9/28/2011 19:00	62.1	84	0	4.6	0	4.6	
9/28/2011 20:00	61	87	0	4.6	0	4.6	
9/28/2011 21:00	61	90	0	0	0	3.45	
9/28/2011 22:00	60.1	93	0	3.45	0	3.45	
9/28/2011 23:00	60.1	93	0	6.9	0	6.9	
9/29/2011 0:00	59	96	0.12	0	0	5.75	Light Rain
9/29/2011 1:00	59	96	0.1	4.6	90	4.6	Heavy Rain
9/29/2011 2:00	59	93	0.18	3.45	0	4.6	Light Rain
9/29/2011 3:00	59	96	0.11	0	0	0	Light Rain
9/29/2011 4:00	59	96	0.15	3.45	20	3.45	Heavy Rain
9/29/2011 5:00	59	96	0.05	0	0	0	Light Rain
9/29/2011 6:00	59	96	0.03	0	0	0	Light Rain
9/29/2011 7:00	59	100	0	0	0	0	Mist
9/29/2011 8:00	60.1	96	0.02	0	0	0	Mist
9/29/2011 9:00	61	97	0	0	0	3.45	Mist
9/29/2011 10:00	63	97	0	0	0	3.45	Mist
9/29/2011 11:00	63	97	0	0	0	0	Light Rain
9/29/2011 12:00	62.1	100	0.11	0	0	4.6	Light Rain
9/29/2011 13:00	62.1	100	0.03	0	0	6.9	Light Rain
9/29/2011 14:00	63	97	0.05	3.45	0	3.45	Light Rain
9/29/2011 15:00	63	100	0.07	0	0	0	Light Rain
9/29/2011 16:00	64	100	0.06	0	0	3.45	Moderate Rain
9/29/2011 17:00	66	96	0.01	6.9	0	6.9	Light Rain
9/29/2011 18:00	64.9	87	0.01	13.81	210	23.02	Light Rain
9/29/2011 19:00	61	93	0	6.9	220	6.9	Light Rain
9/29/2011 20:00	60.1	93	0.01	5.75	0	5.75	
9/29/2011 21:00	59	96	0.12	5.75	0	6.9	Heavy Rain
9/29/2011 22:00	57	93	0.01	3.45	240	6.9	
9/29/2011 23:00	55.9	97	0	6.9	210	6.9	
9/30/2011 0:00	55.9	97	0	9.21	200	9.21	
9/30/2011 1:00	55.9	97	0	6.9	210	6.9	
9/30/2011 2:00	55	96	0	8.06	210	8.06	
9/30/2011 3:00	55	96	0	6.9	200	6.9	
9/30/2011 4:00	54	100	0	6.9	200	6.9	
9/30/2011 5:00	54	97	0	4.6	210	5.75	

Time (EDT)	Temp [F]	RH [%]	Precip [in]	Wind Speed [mph]	Wind Direction [°]	Gust Speed [mph]	Observations
9/30/2011 6:00	54	93	0	0	0	0	
9/30/2011 7:00	54	97	0	0	0	3.45	
9/30/2011 8:00	55	93	0	9.21	190	9.21	
9/30/2011 9:00	59	81	0	8.06	200	8.06	
9/30/2011 10:00	63	70	0	14.96	200	19.56	
9/30/2011 11:00	63	70	0	8.06	200	8.06	
9/30/2011 12:00	66	65	0	10.36	200	10.36	
9/30/2011 13:00	68	63	0	9.21	220	16.11	
9/30/2011 14:00	69.1	63	0	6.9	200	16.11	
9/30/2011 15:00	70	61	0	5.75	200	5.75	
9/30/2011 16:00	70	61	0	4.6	190	4.6	
9/30/2011 17:00	66.9	73	0	5.75	170	5.75	
9/30/2011 18:00	62.1	90	0	0	0	0	
9/30/2011 19:00	63	84	0	4.6	0	4.6	
9/30/2011 20:00	64	84	0	4.6	160	4.6	
9/30/2011 21:00	64	84	0	0	0	0	
9/30/2011 22:00	60.1	90	0.01	0	0	4.6	Light Rain
9/30/2011 23:00	59	93	0.03	3.45	180	3.45	
10/1/2011 0:00	57.9	97	0	0	0	0	Mist
10/1/2011 1:00	57.9	100	0	0	0	0	Mist
10/1/2011 2:00	57.9	97	0	0	0	0	
10/1/2011 3:00	57	96	0	0	0	0	
10/1/2011 4:00	55.9	100	0	0	0	0	Mist
10/1/2011 5:00	57	96	0	0	0	0	Mist
10/1/2011 6:00	57	100	0	0	0	0	Mist
10/1/2011 7:00	57.9	100	0	0	0	4.6	Mist
10/1/2011 8:00	59	100	0.02	3.45	0	3.45	Light Rain
10/1/2011 9:00	60.1	96	0.1	0	0	0	Moderate Rain
10/1/2011 10:00	60.1	100	0.03	4.6	0	4.6	Light Rain
10/1/2011 11:00	61	97	0	3.45	0	4.6	Light Rain
10/1/2011 12:00	61	97	0.02	4.6	0	5.75	
10/1/2011 13:00	61	97	0	3.45	0	4.6	Light Rain
10/1/2011 14:00	60.1	96	0.02	0	0	0	Light Rain
10/1/2011 15:00	57.9	97	0.03	4.6	0	4.6	Light Rain
10/1/2011 16:00	55.9	97	0.01	4.6	0	4.6	
10/1/2011 17:00	53.1	96	0	3.45	350	3.45	
10/1/2011 18:00	50	96	0	6.9	0	6.9	
10/1/2011 19:00	48	96	0	0	0	0	
10/1/2011 20:00	48	96	0	3.45	0	3.45	Light Rain
10/1/2011 21:00	46.9	100	0	4.6	360	4.6	Mist
10/1/2011 22:00	46.9	100	0	3.45	0	3.45	Mist
10/1/2011 23:00	48	100	0.01	3.45	20	3.45	Mist
10/2/2011 0:00	48	100	0	3.45	0	3.45	Mist
10/2/2011 1:00	48	100	0.01	4.6	0	4.6	Mist
10/2/2011 2:00	48.9	97	0	0	0	3.45	Mist
10/2/2011 3:00	48.9	100	0.01	3.45	0	3.45	Mist
10/2/2011 4:00	50	100	0	3.45	0	4.6	Mist
10/2/2011 5:00	51.1	100	0	3.45	0	3.45	Mist
10/2/2011 6:00	51.1	100	0.01	0	0	0	Mist

Time (EDT)	Temp [F]	RH [%]	Precip [in]	Wind Speed [mph]	Wind Direction [°]	Gust Speed [mph]	Observations
10/2/2011 7:00	52	97	0	0	0	4.6	Mist
10/2/2011 8:00	52	100	0.01	4.6	0	4.6	Mist
10/2/2011 9:00	53.1	100	0	3.45	0	4.6	Mist
10/2/2011 10:00	53.1	100	0	3.45	0	4.6	Fog
10/2/2011 11:00	54	100	0	4.6	10	4.6	Mist
10/2/2011 12:00	54	100	0	4.6	0	4.6	Light Rain
10/2/2011 13:00	55	100	0	4.6	0	4.6	Mist
10/2/2011 14:00	55.9	97	0	0	0	6.9	Mist
10/2/2011 15:00	57	93	0	3.45	0	3.45	Mist
10/2/2011 16:00	55.9	100	0	3.45	20	3.45	Mist
10/2/2011 17:00	55.9	97	0	0	0	3.45	
10/2/2011 18:00	55.9	97	0	4.6	0	4.6	
10/2/2011 19:00	55	100	0	4.6	0	4.6	
10/2/2011 20:00	55	96	0	0	0	0	Mist
10/2/2011 21:00	55	100	0	0	0	0	Mist
10/2/2011 22:00	55	100	0.01	0	0	0	Mist
10/2/2011 23:00	55	100	0	0	0	0	Mist
10/3/2011 0:00	55	96	0	0	0	0	
10/3/2011 1:00	54	100	0	0	0	0	
10/3/2011 2:00	54	97	0	0	0	0	
10/3/2011 3:00	54	97	0	0	0	0	
10/3/2011 4:00	53.1	100	0	0	0	0	
10/3/2011 5:00	53.1	96	0	0	0	0	
10/3/2011 6:00	53.1	100	0	0	0	0	
10/3/2011 7:00	54	97	0	0	0	0	
10/3/2011 8:00	54	97	0	0	0	0	Light Rain
10/3/2011 9:00	55.9	90	0.01	5.75	190	5.75	
10/3/2011 10:00	55.9	84	0	10.36	190	10.36	
10/3/2011 11:00	57	74	0	4.6	250	5.75	
10/3/2011 12:00	59	58	0	6.9	180	6.9	
10/3/2011 13:00	59	60	0	5.75	200	5.75	
10/3/2011 14:00	57.9	67	0	5.75	0	5.75	
10/3/2011 15:00	57	72	0	4.6	220	4.6	
10/3/2011 16:00	55.9	75	0	5.75	210	5.75	
10/3/2011 17:00	53.1	86	0	0	0	0	
10/3/2011 18:00	51.1	92	0	0	0	0	
10/3/2011 19:00	48.9	97	0	0	0	0	
10/3/2011 20:00	48	96	0	0	0	0	
10/3/2011 21:00	48	96	0	0	0	0	
10/3/2011 22:00	48	100	0	0	0	0	
10/3/2011 23:00	48.9	97	0	0	0	0	
10/4/2011 0:00	48.9	97	0	0	0	0	Light Rain
10/4/2011 1:00	48.9	97	0.01	0	0	0	Light Rain
10/4/2011 2:00	48.9	97	0.09	0	0	0	Moderate Rain
10/4/2011 3:00	48.9	100	0.08	0	0	0	Light Rain
10/4/2011 4:00	48.9	100	0.01	3.45	0	3.45	Mist
10/4/2011 5:00	50	100	0.01	3.45	50	4.6	Light Rain
10/4/2011 6:00	51.1	96	0.01	0	0	3.45	Moderate Rain
10/4/2011 7:00	51.1	96	0.03	4.6	0	4.6	Light Rain

Time (EDT)	Temp [F]	RH [%]	Precip [in]	Wind Speed [mph]	Wind Direction [°]	Gust Speed [mph]	Observations
10/4/2011 8:00	50	100	0.17	3.45	0	3.45	Heavy Rain
10/4/2011 9:00	50	100	0.29	3.45	0	3.45	Heavy Rain
10/4/2011 10:00	51.1	96	0.18	4.6	0	5.75	Moderate Rain
10/4/2011 11:00	52	97	0.15	4.6	0	4.6	Light Rain

Appendix B
Continuous Sound Level Measurements

Figure B-1
A-Weighted Sound Pressure Levels & Wind Speeds - Location L1
Friday, September 16, 2011 through Tuesday, October 4, 2011

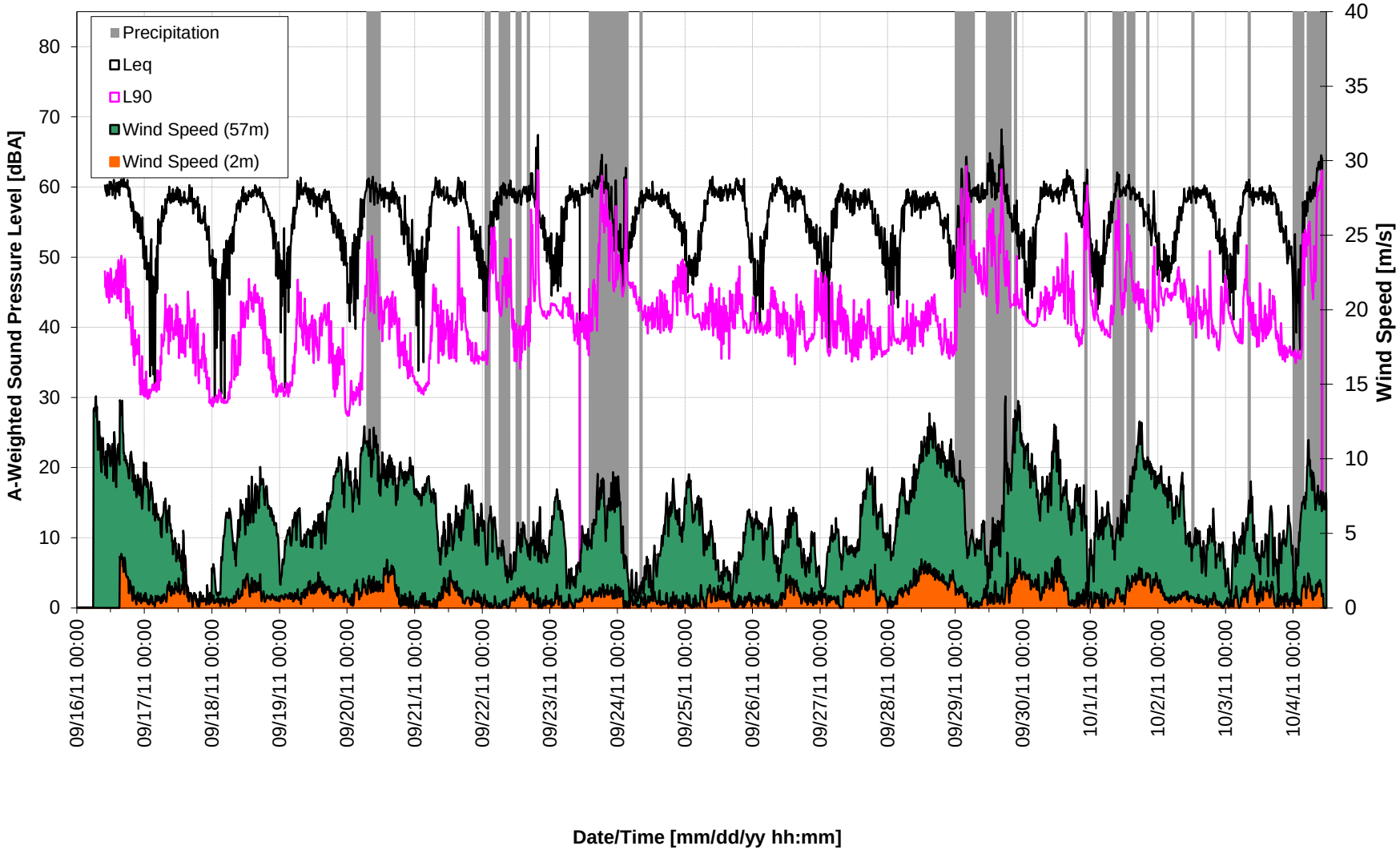


Figure B-2
A-Weighted Sound Pressure Levels & Wind Speeds - Location L2
Friday, September 16, 2011 through Tuesday, October 4, 2011

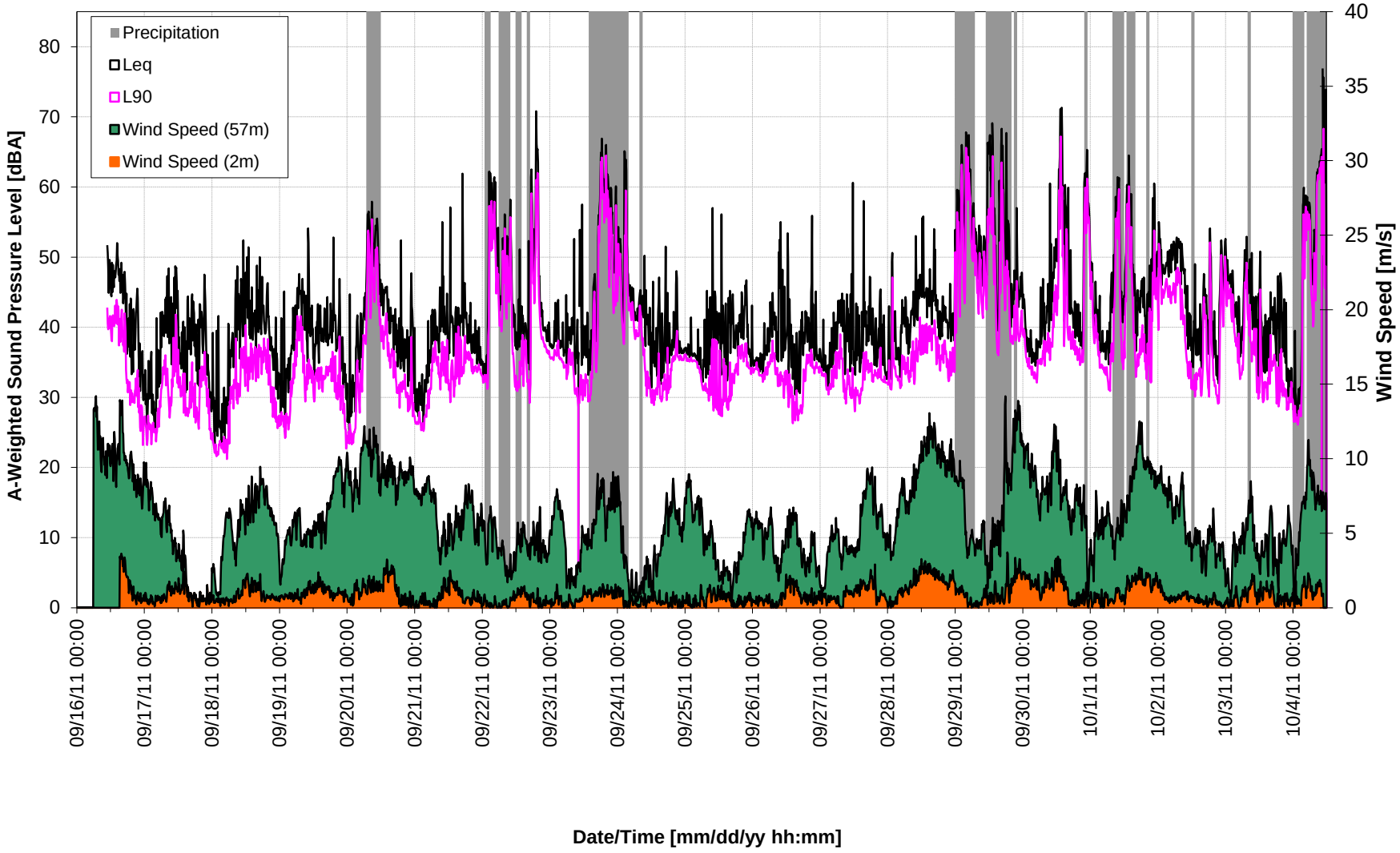


Figure B-3
A-Weighted Sound Pressure Levels & Wind Speeds - Location L3
Friday, September 16, 2011 through Tuesday, October 4, 2011

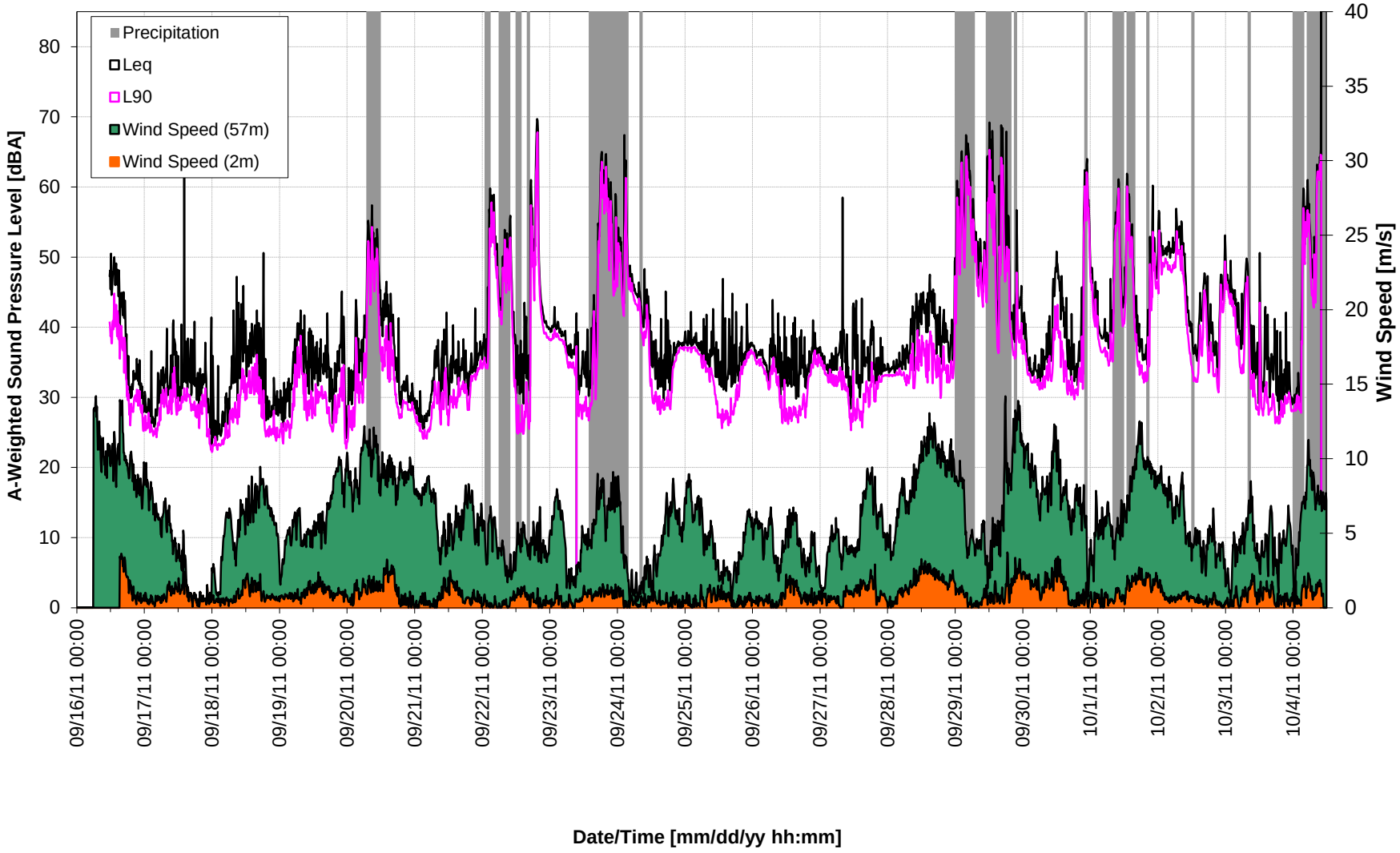


Figure B-4
A-Weighted Sound Pressure Levels & Wind Speeds - Location L4
Friday, September 16, 2011 through Tuesday, October 4, 2011

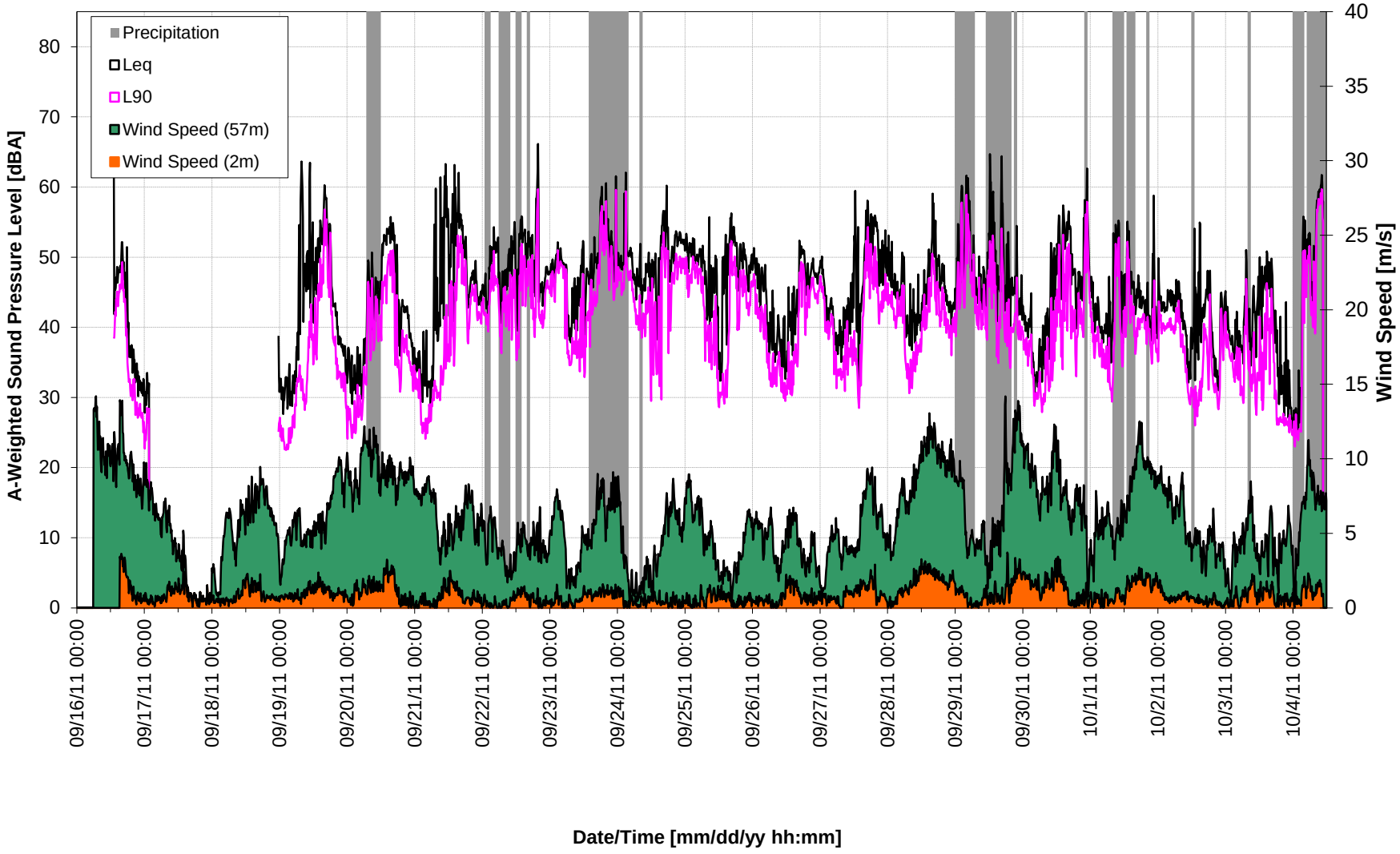
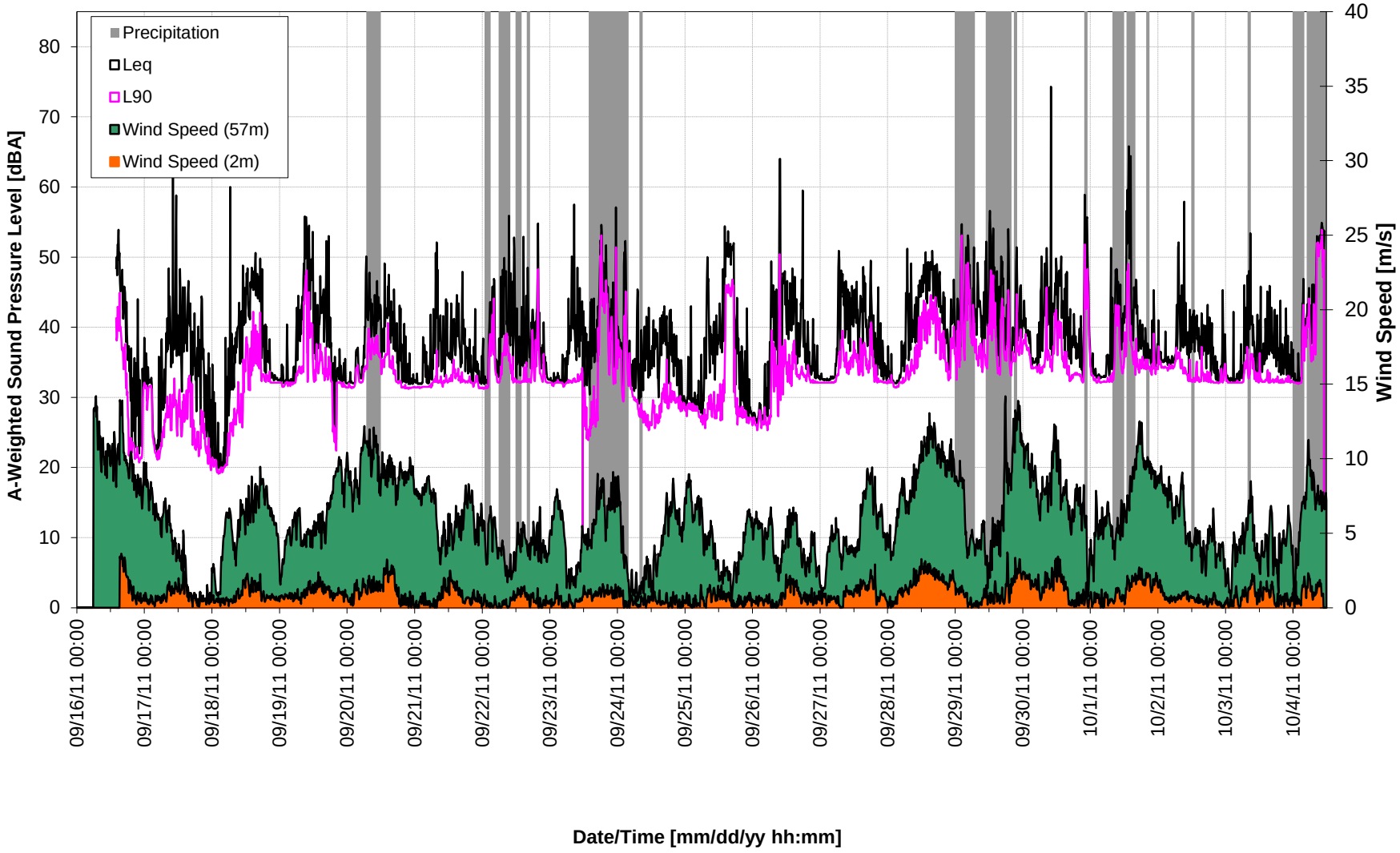


Figure B-5
A-Weighted Sound Pressure Levels & Wind Speeds - Location L5
Friday, September 16, 2011 through Tuesday, October 4, 2011



Appendix C
Modeling Receptor Locations

Receptor ID	Structure Type	Map_Lot	Name	Address	POINT_X	POINT_Y
1	Trailer	222-003	JACQUIN RICHARD	KEENE ROAD	271037.601065	63320.3351437
2	Commercial	222-002	TUTTLE MOUNTAIN LEASING LLC	408 KEENE ROAD	271199.030611	63480.5924214
3	House	211-003	DUBRINO TR BONNIE A	398 KEENE ROAD	271549.487523	63740.0401095
4	House	211-003	DUBRINO TR BONNIE A	398 KEENE ROAD	271565.957085	63747.8128026
5	Shed	211-003	DUBRINO TR BONNIE A	398 KEENE ROAD	271538.092918	63766.0098061
6	Shed	211-003	DUBRINO TR BONNIE A	398 KEENE ROAD	271527.522516	63771.8504217
7	House	211-002	VAYENS SUSAN M	372 KEENE ROAD	271642.211737	63874.2835253
8	House	211-034	FEDERAL NATIONAL MTGE ASSOC	367 KEENE ROAD	271854.778608	64020.1860692
9	Trailer	211-034	FEDERAL NATIONAL MTGE ASSOC	367 KEENE ROAD	271859.643533	64044.5704233
10	Trailer	211-034	FEDERAL NATIONAL MTGE ASSOC	367 KEENE ROAD	271853.234675	64040.8113767
11	Trailer	211-034	FEDERAL NATIONAL MTGE ASSOC	367 KEENE ROAD	271872.095135	64042.1090794
12	House	211-033	HUTCHINSON TED & CAMPBELL DIANA L	363 KEENE ROAD	271837.470623	64092.0746229
13	House	211-032	BAKER-SALMON CHRIS	375 KEENE ROAD	271697.837295	64003.9683451
14	Barn	211-032	BAKER-SALMON CHRIS	375 KEENE ROAD	271707.183814	64020.3058814
15	House	211-028	LEARN, DANA R & CHRISTY L	LOVEREN MILL ROAD	271230.208686	64248.0734678
16	House	211-027	WALSH DAVID P	45 LOVEREN MILL ROAD	271176.998574	64284.8824049
17	House	211-026	SCHAEFER JAMES B & BEVERLY	47 LOVEREN MILL ROAD	271150.823629	64390.8856025
18	State Misc.	222-010	STATE OF NEW HAMPSHIRE	KEENE ROAD	270108.133304	63128.7746520
19	Shed	222-010	STATE OF NEW HAMPSHIRE	KEENE ROAD	270074.873646	63129.1132327
20	House	212-032	ROWLAND DOUGLAS & LISA	362 KEENE ROAD	272139.472394	63965.9785129
21	House	212-027	OTT MICHAEL JAMES HUTCHINS	354 KEENE ROAD	272217.257115	63910.1414205
22	House	212-026	COUTURIER MARCEL J	344 KEENE ROAD	272603.899156	64071.8153898
23	Shed	212-026	COUTURIER MARCEL J	344 KEENE ROAD	272631.354948	64072.2248294
24	Hunting Camp	212-026	COUTURIER MARCEL J	344 KEENE ROAD	272600.408928	63813.9552223
25	House	212-024	HOLMES ROBERT & DENISE	340 KEENE ROAD	272820.859383	64071.7672225
26	House	212-016	COLE JAMES A & MICHELLE L	7 BRACKETT RD	273208.470717	63877.6674294
27	House	212-016	COLE JAMES A & MICHELLE L	7 BRACKETT RD	273243.711104	63869.4273804
28	Barn	212-016	COLE JAMES A & MICHELLE L	7 BRACKETT RD	273252.166468	63908.3249041
29	House	212-016	COLE JAMES A & MICHELLE L	7 BRACKETT RD	273278.862385	63857.9212641
30	Barn	212-016	COLE JAMES A & MICHELLE L	7 BRACKETT RD	273179.222488	63943.5082735
31	House	212-019	COLE JAMES A SR & JAMES A JR	130 REED CARR ROAD	273341.877168	63972.6501302
32	House	212-020	COLE JAMES & KATHRYN E	134 REED CARR ROAD	273353.917629	64054.1334075
33	House	212-020	COLE JAMES & KATHRYN E	134 REED CARR ROAD	273355.987827	64038.2024537
34	House	212-022	STONE DOUGLAS S & ZALUKI AMY	334 KEENE ROAD	273199.769838	64192.7927498
35	House	212-010	R J C REALTY TRUST	95 REED CARR ROAD	273332.514597	63694.1563624
36	House	212-012	CONSTANTINE JAMES I	90 REED CARR ROAD	273302.317716	63643.9675495
37	House	212-013	MORRISON ROBERT A & CHARLENE	92 REED CARR ROAD	273273.490159	63664.8361629
38	House	212-008	COLE BRIAN A	5 BRACKETT ROAD	273541.150889	63762.1897638
39	House	212-007	NH HOUSING FINANCE AUTHORITY	121 REED CARR RD	273463.522101	63806.2591058
40	Barn	212-006	CLINGENPEEL JAMES & TINA	123 REED CARR ROAD	273460.441940	63901.1013051
41	Shed	212-006	CLINGENPEEL JAMES & TINA	123 REED CARR ROAD	273443.271801	63923.1069926
42	House	212-005	CASTELLANO SYLVIA & MARK	127 REED CARR ROAD	273453.754606	63950.3411658
43	House	212-004	COLE JAMES A JR & MICHELLE L	131 REED CARR ROAD	273458.152824	64018.3295536
44	House	212-003	DUMONT GERARD R	135 REED CARR RD	273401.908229	64093.4096764
45	House/Trailer	212-002	NH HOUSING FINANCE AUTHORITY	139 REED CARR ROAD	273398.745319	64144.2130453
46	House	212-052	SNOW ALEXANDER & CAROL J	331 KEENE ROAD	273136.532339	64359.8744954
47	Barn	212-051	THE SISSEL I. PERRY REVOCABLE TRUST	335 KEENE RD	272991.033320	64362.9777756
48	House	212-051	THE SISSEL I. PERRY REVOCABLE TRUST	335 KEENE RD	272945.732445	64345.7918755
49	Barn	212-050	BUXTON PHILIP L & LORRIE A	339 KEENE ROAD	272849.181971	64259.5072244
50	House	212-050	BUXTON PHILIP L & LORRIE A	339 KEENE ROAD	272824.950908	64260.5487469
51	House	212-044	VOYDATCH STEVEN & MAHALA	345 KEENE ROAD	272361.485135	64109.7970735
52	House	212-040	BARRY ROBERT W	351 KEENE RD	272179.115547	64085.0859139
53	House	212-039	MOOTE WAYNE A	355 KEENE ROAD	272100.696511	64063.0840528
54	House	212-038	RAIMONDI DAVID C & ELIZABETH	359 KEENE ROAD	272014.075086	64041.4028769
55	House	221-010	COLANGELO DANIEL P & PATRICIA	80 REED CARR ROAD	273324.864018	63513.0099519
56	House	221-011	CLARK, BRUCE	REED CARR ROAD #21	273391.082386	63494.1150595
57	Shed	221-011	CLARK, BRUCE	REED CARR ROAD #21	273379.345289	63493.5396839
58	House	221-009	BERWICK BRUCE E & BARBARA I	REED CARR ROAD 72	273313.642587	63381.7301677
59	Shed	221-009	BERWICK BRUCE E & BARBARA I	REED CARR ROAD 72	273296.808468	63344.2445619
60	Barn	221-008	JACQUIN RICHARD	66 REED CARR ROAD	273227.798654	63238.3623698
61	House	221-008	JACQUIN RICHARD	66 REED CARR ROAD	273319.688616	63284.0128537
62	House	221-008	JACQUIN RICHARD	66 REED CARR ROAD	273330.440908	63262.5472104
63	House	221-008	JACQUIN RICHARD	66 REED CARR ROAD	273342.615938	63248.3383393
64	House	221-006	TAYLOR SCOTT R & DANIELLE M	58 REED CARR ROAD	273347.276779	63110.3874537
65	House	221-004	GARRETT C SPENCER & JOANN H	38 REED CARR ROAD	273360.408422	62895.1572701
66	House	221-003	IVEY III TRUSTEE SHELLEY	20 REED CARR ROAD	273380.766462	62733.3210812
67	Shed	221-003	IVEY III TRUSTEE SHELLEY	20 REED CARR ROAD	273391.925503	62742.5474428
68	House	221-002	SKRABLE KENNETH	6 REED CARR RD	273417.136135	62477.4835207
69	House	226-010	CRAIG CLARK A JR	224 CRAIG RD	273192.253330	62054.8200224
70	Shed	226-010	CRAIG CLARK A JR	224 CRAIG RD	273189.778968	62036.1601611
71	House	226-002	CRAIG MARY A	235 CRAIG RD	273255.345795	62195.5825180
72	Shed	226-002	CRAIG MARY A	235 CRAIG RD	273276.219436	61962.4849612
73	Shed	226-002	CRAIG MARY A	235 CRAIG RD	273223.455544	62001.6896408
74	Trailer	226-002	CRAIG MARY A	235 CRAIG RD	273231.521922	62213.7406012
75	Trailer	226-002	CRAIG MARY A	235 CRAIG RD	273244.109239	62209.5037393
76	House	226-008	TURCOTTE WILLIAM R	118 CRAIG ROAD	273027.426239	61757.6171141
77	House	226-007	BACHILAS LEO F & ANNA	112 CRAIG RD	273003.689489	61664.4102996
78	House/Trailer	235-016	CRAIG STEVEN M & JAMES P	CRAIG ROAD	273088.373321	61021.2006496

Receptor ID	Structure Type	Map_Lot	Name	Address	POINT_X	POINT_Y
79	House	224-002	LONGGOOD JANICE	156 SALMON BROOK ROAD	270088.734345	62000.8913221
80	House	224-003	MICHELI LYLE J & ANNE J	SALMON BROOK ROAD	270229.116968	61814.3711925
81	House	223-001	CARTER RICHARD & TERESSA	68 SALMON BROOK ROAD	269895.159800	62587.5125554
82	House	223-001	CARTER RICHARD & TERESSA	68 SALMON BROOK ROAD	269903.872782	62570.2263776
83	Shed	223-001	CARTER RICHARD & TERESSA	68 SALMON BROOK ROAD	269941.359397	62598.8002210
84	Barn	240-014	LYNCH THOMAS F. MARY L.	53 BRIMSTONE CORNER RD	272733.777952	59740.2813655
85	House	240-014	LYNCH THOMAS F. MARY L.	53 BRIMSTONE CORNER RD	272759.083887	59743.1366694
86	House	240-014	LYNCH THOMAS F. MARY L.	53 BRIMSTONE CORNER RD	272772.698159	59752.7060692
87	House	240-013	SHARBY NEIL P & MARGARET	55 BRIMSTONE CORNER ROAD	272938.574250	59798.5556262
88	Trailer	211-030	CORNERSTONE OUTREACH MINISTRIES	KEENE ROAD	271491.326726	63836.8973794
89	House	224-005	MICHELI LYLE J	200 SALMON BROOK ROAD	269749.542814	61392.4564399
90	Shed	224-005	MICHELI LYLE J	200 SALMON BROOK ROAD	269742.582687	61387.3251506
91	House	224-008	CHATMAN JOHN L, TRUSTEE ET AL	SALMON BROOK ROAD #157	269814.824949	62012.3505812
92	Camp	224-008	CHATMAN JOHN L, TRUSTEE ET AL	SALMON BROOK ROAD #157	269847.866821	61946.2254560
93	Circ Hut, UnkUse	224-009	IMPERATO EVAN M	127 SALMON BROOK RD	269700.629813	62152.8386971
94	Camp	239-001	WHITTEMORE ETAL ARTHUR F	103 CAMP ROAD - PVT RD 38	271664.483314	59431.9365873
95	Camp	239-001	WHITTEMORE ETAL ARTHUR F	103 CAMP ROAD - PVT RD 38	271698.238782	59452.3587272
96	Barn	211-010	BLOCK RICHARD & LORANNE	BLUEBERRY BUSH DRIVE	271032.129156	64557.9906980
97	House	211-010	BLOCK RICHARD & LORANNE	BLUEBERRY BUSH DRIVE	271021.233941	64581.5162891
98	House	211-009	DURLING REV TR MARION E	71 LOVEREN MILL ROAD	271327.381217	64768.1561147
99	House	208-001	Avery, David & Irene Blinn	50 Liberty Farm Road	273068.343193	64843.5724900
100	House	208-002	BURDETTE CLIFTON R & LYNN H	LIBERTY FARM ROAD #48	273124.204072	64739.3152387
101	House	212-053	MANGIERI JEANNETTE G	14 LIBERTY FARM RD	273070.583896	64532.5678907
102	Shed	212-053	MANGIERI JEANNETTE G	14 LIBERTY FARM RD	273131.164733	64554.4591553
103	Garage	212-059	GIAMMARINO BRIAN	11 STACY HILL ROAD	273254.384944	64689.8510881
104	House	212-059	GIAMMARINO BRIAN	11 STACY HILL ROAD	273265.923216	64677.2374732
105	Garage	212-060	FEIGE FRANZ & DIANA	15 LIBERTY FARM ROAD	273329.577631	64530.2298721
106	House	212-060	FEIGE FRANZ & DIANA	15 LIBERTY FARM ROAD	273328.894283	64506.2676631
107	House	212-058	MARTIN CHARLES & MARTHA	17 STACY HILL RD	273456.493626	64561.2240214
108	Barn	212-054	DUNLAP DEBORAH E	8 STACY HILL ROAD	273256.577737	64823.9391796
109	House	212-054	DUNLAP DEBORAH E	8 STACY HILL ROAD	273264.738417	64779.6627539
110	House	213-011	DUNN WALTER K & BINDA HILARY J	STACY HILL ROAD #33	273746.974893	64387.7497906
111	House	213-011	DUNN WALTER K & BINDA HILARY J	STACY HILL ROAD #33	273718.635756	64416.8264908
112	Shed	213-011	DUNN WALTER K & BINDA HILARY J	STACY HILL ROAD #33	273744.845222	64400.9854765
113	House	212-001	FOSTER SUSAN A	151 REED CARR ROAD	273630.418122	64185.3608502
114	House	213-009	GALE JR MARSHALL W	286 KEENE ROAD	273858.948061	64141.6424011
115	House	212-009	COLE ELIZABETH J & GEORGE E	119 REED CARR ROAD	273866.776214	63820.1288778
116	House	212-009	COLE ELIZABETH J & GEORGE E	119 REED CARR ROAD	273621.461995	63739.4284546
117	House	212-009	COLE ELIZABETH J & GEORGE E	119 REED CARR ROAD	273634.486790	63747.1821173
118	Shed	212-009	COLE ELIZABETH J & GEORGE E	119 REED CARR ROAD	273694.979219	63730.7574750
119	House	221-014	IVEY III REVOCABLE TRUST SHELLY	15 REED CARR ROAD	273438.576412	62762.0818550
120	House	220-012	MCKINLAY SONJA M	50 OLD CARR ROAD	273746.570563	63338.0032102
121	House	220-012	MCKINLAY SONJA M	50 OLD CARR ROAD	273787.699518	63341.6496087
122	Barn	220-012	MCKINLAY SONJA M	50 OLD CARR ROAD	273769.001417	63348.8489499
123	House	220-015	GREGSAK ANNE	43 OLD CARR ROAD	274076.435027	62871.2964260
124	Barn	220-015	GREGSAK ANNE	43 OLD CARR ROAD	274079.647523	62890.4561492
125	Garage	220-015	GREGSAK ANNE	43 OLD CARR ROAD	274068.679767	62897.8271954
126	House	220-016	DREW BENJAMIN T & HALLEN JOCELYNN	39 OLD CARR ROAD	274088.303750	62806.3222149
127	House	220-017	PITCHARD ANDREW S	35 OLD CARR ROAD	274127.154455	62771.6779154
128	House	220-018	TITCOMB GLEN R & JEANNE	31 OLD CARR ROAD	274146.752087	62717.7424900
129	House	220-019	GROSS SUSAN C	27 OLD CARR RD	274166.370824	62677.4758988
130	House	220-021	WHITTEMORE JR BARRY & MELINDA	15 OLD CARR ROAD	274248.664596	62483.1157195
131	House	220-022	SHOFIELD III EARL C	9 OLD CARR RD	274250.274122	62443.5682459
132	House	220-023	MCLAY TODD W & VIRGINA E	5 OLD CARR RD	274303.011453	62365.0795741
133	House	220-002	BOULE PAUL L	117 OLD POUND RD	273793.828962	62336.1183831
134	House	220-003	STANLEY TRUSTEE EDWARD A	115 OLD POUND ROAD	273873.055679	62348.6221923
135	Barn	220-003	STANLEY TRUSTEE EDWARD A	115 OLD POUND ROAD	273891.630701	62350.1828339
136	House/Trailer	220-004	SOLOD VICTOR S	113 OLD POUND RD	273937.363645	62356.0908823
137	House	220-004	SOLOD VICTOR S	113 OLD POUND RD	273959.236529	62364.9310359
138	House	220-005	WARDMAN MARY E	111 OLD POUND RD	274003.319075	62457.1458989
139	House	220-006	MARTEL DONNA & LAWRENCE J	109 OLD POUND RD	274093.759407	62351.2514339
140	Garage	220-006	MARTEL DONNA & LAWRENCE J	109 OLD POUND RD	274079.869849	62353.2104785
141	House	220-008	KIRWIN CONSTANCE F	103 OLD POUND RD	274213.474720	62357.0778404
142	House	220-009	TROW ERIC	12 OLD CARR ROAD	274169.662868	62475.3850304
143	House	220-010	HILL BRIANNE L	16 OLD CARR ROAD	274141.730646	62546.1457679
144	House	223-003	CORAZZINI RICHARD R & KATHLEEN L	117 SALMON BROOK ROAD	269753.555420	62331.4362502
145	Barn	223-003	CORAZZINI RICHARD R & KATHLEEN L	117 SALMON BROOK ROAD	269764.148896	62355.4915192
146	House	223-004	PATTEN RAYMOND E.	107 SALMON BROOK ROAD	269764.057420	62459.2338632
147	House	223-005	SMITH HOWARD L	103 SALMON BROOK ROAD	269754.107086	62517.0982678
148	Shed	223-006	HENNINGER KENNETH	99 SALMON BROOK ROAD	269712.134374	62603.1956487
149	House	223-006	HENNINGER KENNETH	99 SALMON BROOK ROAD	269738.999972	62566.5018759
150	House	236-010	CRAIG CLARK A JR	224 CRAIG ROAD	273031.280128	61847.9884337
151	House	221-007	PHILLIPS TENA MARIE	62 REED CARR ROAD	273353.682967	63183.4916792
152	Barn	212-022	STONE DOUGLAS S & ZALUKI AMY	324 KEENE ROAD	273217.011752	64159.2165906
153	House	UNKNOWN	UNKNOWN	LOCATED WITHIN PRIVATE ROAD 73	272283.746596	64096.2376150
154	House	211-033	HUTCHINOSN TED & CAMPBELL DIANA L	363 KEENE ROAD	271819.356830	64075.5500377
155	HOUSE	224-001	SCHAEFER MARK J	128 SALMON BROOK ROAD	269873.536680	62153.0844445