Appendix A
Environmental Sound Study

Asphalt Drum Mixer

Seekonk, Massachusetts

January 24, 2022

Prepared For:

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Appendix A
Environmental Sound Assessment
Seekonk Paving Corp.

Background

Seekonk Paving Co. proposes to install and operate an asphalt drum mixer on an industrial parcel in an Industrial Park (AP 1, Lot 157) in Seekonk, Massachusetts. There are several equipment processes that will generate sound. This analysis evaluates the existing sound in the area and potential sounds generated by the proposed equipment. The study is based on the equipment configuration provided by the project engineer and potential equipment manufacturers. The assessment is based on the criteria provided by the Seekonk Town By-Laws and Massachusetts Department of Environmental Protection (MassDEP).

Ambient sound levels in the area were established by direct measurements with standardized and calibrated equipment. Sound Level Meters were installed at each cardinal direction of the site for a period of over 10 days duration. The baseline sound level was established as the lowest measured hourly sound level during equipment operating hours. Sound levels from the proposed equipment were estimated based on vendor design and measured levels at a facility of similar equipment configuration. Sound level modeling techniques were used to estimate the potential impacts at property line and additional sensitive receiving locations. Neighbors to the northeast through southwest are within the Industrial Zone. Most of the parcels in the industrial park are associated with trucking, so will not be affected by the modest sound levels from the proposed equipment. Neighbors to the north along US Rte 6 are zoned mixed use and most include commercial activities. Neighbors to the west are single family residential.

Overview of Project and Site Vicinity

The Project site is located in Seekonk, MA within an existing Industrial Park. The site was most recently used as an automotive repair & collision center. The north and west perimeter of the site is forested with drain easement and is not planned for any development. Existing sources of intrusive sound in the area include aircraft over-flights (T.F. Green) and activities in the industrial park. The park includes several shipping companies, recycling, refuse truck garage and a heavy equipment company. However, the dominant source of background sound in the area during the daytime and at night is sound from US Rte 6 and more distant Interstate 195. Like many other industrial uses in the park, the proposed equipment will be limited to weekday daytime conditions with a half-day on Saturday.

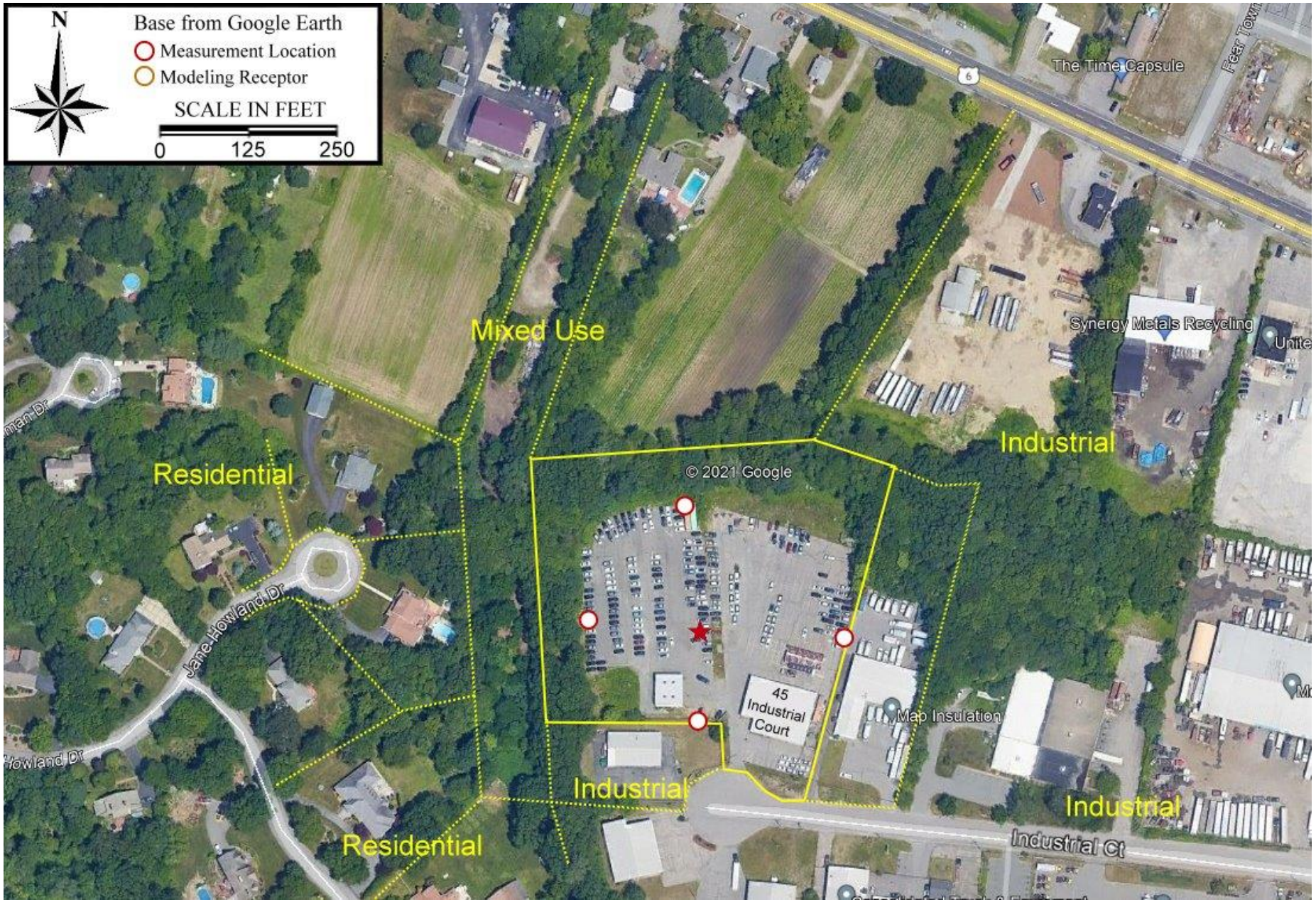

Figure 1: Project Area based on 2018 Land Use Showing Approx. Property Lines and Measurement Locations

Sound Level Analysis: Discussion of Analysis Methods

There are a number of ways in which sound (noise) levels are measured and quantified. All of them use the logarithmic decibel (dB) scale. Following is a brief introduction to the sound measurement terminology used in this assessment.

Acoustic Metrics

The Sound Level Meter used to measure sound 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 of these is the *A-weighting* network. A-weighted sound levels emphasize the middle frequency sounds and de-emphasize lower and higher frequency sounds; they are reported in decibels designated as "dBA." Figure 2 illustrates typical sound levels produced by sources that are familiar from everyday experience.

The sounds in our environment usually vary with time so they cannot simply be described with a single number. Two methods are used for describing variable sounds. These are *exceedance levels* and *equivalent levels.* Both are derived from a large number of moment-to-moment A-weighted sound level measurements. Exceedance levels are designated L_n, where "n" can have any value from 0 to 100 percent. For example:

- 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 loud, transient sounds.
- L_{50} is the median sound level; in dBA, that is exceeded 50 percent of the time during the measurement period.
- L_{10} is the sound level in dBA exceeded only 10 percent of the time. It is close to the maximum level observed during the measurement period. The L_{10} is sometimes called the *intrusive* sound level because it is caused by occasional louder sounds like those from passing motor vehicles. By using exceedance levels, it is possible to separate prevailing, steady sounds (L_{90}) from occasional, louder sounds (L_{10}) in the environment.
- The *equivalent level* is the level of a hypothetical steady sound that has the same energy as the actual fluctuating sound observed. The equivalent level is designated L_{eq}, and is also A-weighted. The equivalent level is strongly influenced by occasional loud, intrusive sounds.

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[1] *American National Standard Specification for Sound Level Meters*, ANSI S1.4-1983, published by the Standards Secretariat of the Acoustical Society of America, Melville, NY.

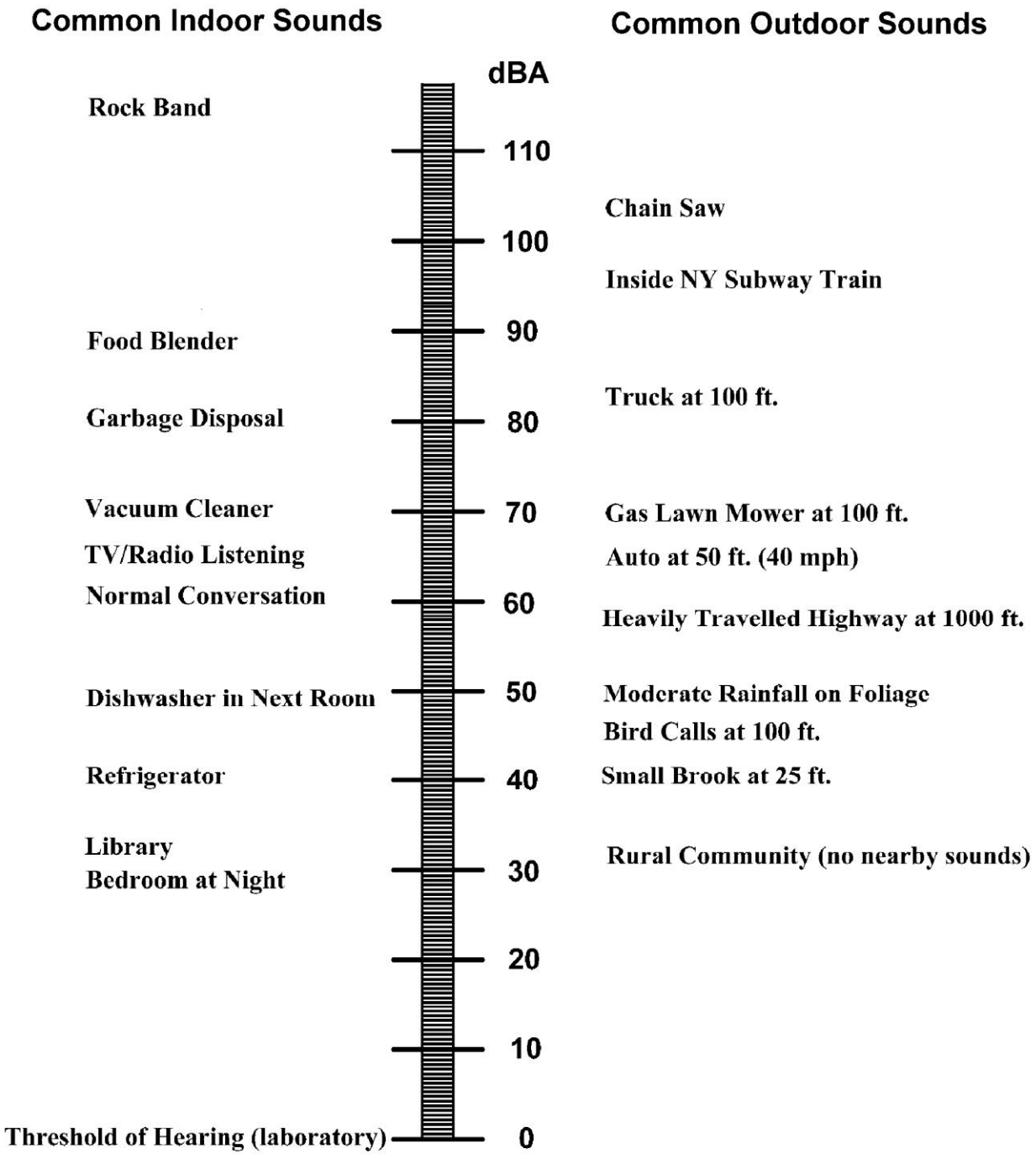

Figure 2: Typical Sound Levels from Everyday Experience

When a steady sound is observed, all of the L_n and L_{eq} are equal. Both the L_{90} and L_{eq} are provided, but the compliance evaluation is based on the L_{90} metric. All broadband levels represented in this study are weighted using the A-weighting scale.

In the design of noise control treatments, it is essential to know something about the frequency spectrum of the sound of interest. Noise control treatments do not function like the human ear, so simple A-weighted levels are not useful for noise-control design or the identification of tones. The frequency spectra of sounds are usually stated in terms of *octave band sound pressure levels*, in dB, with the octave frequency bands being those established by standard.[2] The sound survey included measurements in 1/3 octave bands. The sounds expected as a result of this project were evaluated with respect to the full octave band levels as well as the A-weighted equivalent sound level. For simplicity they are summarized in this report in terms of the combined A-weighted level.

Noise Regulations and Criteria

Sound compliance is judged on two bases: the extent to which governmental regulations or guidelines are met, and the extent to which it is estimated that the community is protected from excessive sound levels. The governmental regulations that may be applicable to sound produced by activities at the Site are summarized below.

Federal

- Occupational noise exposure standards: 29 CFR 1910.95. This regulation restricts the noise exposure of employees at the workplace as referred to in OSHA requirements. There will be various parts of the facility where hearing protection will be required and will be appropriately posted. Additional Department of Transportation criteria regulate sound level from vehicles used in interstate transportation. Since the industrial park is designed around support to trucking activities, trucking activities can be conducted on this parcel by right. This study will address the facility sound levels expected from site equipment and unrelated to the trucking.

State

- 310 CMR §7.10 U qualitatively prohibits "unnecessary emissions from [a] source of sound that may cause noise". This is interpreted quantitatively by MassDEP's Form BWP AQ SFP3 and their DAQC Policy 90-001.

  In Massachusetts, noise is regulated as an air pollutant. The MassDEP's Noise Policy states that a new sound intrusion may not increase the broadband sound level by more than 10 dBA over the pre-existing L_{90} ambient level. Tonal sounds, defined as any octave band level that exceeds the levels in adjacent octave bands by 3 dB or more, are also prohibited. This policy addresses the sound levels, both at the property lines and at the nearest residences. The

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[2] *American National Standard Specification for Octave, Half-octave and Third-octave Band Filter Sets*, ANSI S1.11-1966 (R1975).

MassDEP will review the sound character of this facility as part of the Air Plans Review.

Local

- The MassDEP usually acknowledges applicable quantitative local ordinances when available. The Town of Seekonk has its own Noise Standards at ***Category 29 Anti-Noise By-Law***. The Seekonk standards that apply to the facility equipment are excerpted in the following table.

Maximum Allowable Noise Sound Pressure Levels for Specific Premises

Type of Premises	Location Where Noise is Measured	Time Period	Maximum Allowable Sound Pressure Level
Residential Premises	Property Line	7:00 a.m. to 10:00 p.m.	55 decibels
Residential Premises	Property Line	10:00 p.m. to 7:00 a.m.	50 decibels
Commercial Premises	Property Line	7:00 a.m. to 10:00 p.m.	65 decibels
Commercial Premises	Property Line	10:00 p.m. to 7:00 a.m.	60 decibels
Industrial Premises	Property Line	7:00 a.m. to 10:00 p.m.	80 decibels
Industrial Premises	Property Line	10:00 p.m. to 7:00 a.m.	75 decibels
Public Premises	Property line or anywhere on public premises	8:00 a.m. to 10:00 p.m.	75 decibels
Public Premises	Property line or anywhere on public premises	10:00 p.m. to 8:00 a.m.	70 decibels

Since the Seekonk sound performance standards are based on land use, the Seekonk Zoning Map is also excerpted, shown in Figure 3. It shows the site in the large industrial area surrounding Industrial Way and Industrial Court. Current listings and recent sales along US Rte 6 reflect "Commercial" zoning, but the zoning map shows them to be "Mixed Use". Properties to the west beyond a 50-foot mixed use strip are zoned and used as Residential.

Existing Community Sound Levels

Detailed site area survey and sound level measurement studies were conducted between November 6 and November 18, 2021. The sound levels were established by monitored measurements under carefully screened weather conditions. For these reasons, the levels measured in this survey are considered to represent the quietest community that would support paving activities. The measurements were delayed for several months to avoid the influence of seasonal insects that dominate the sound levels in the late summer evenings and night times. Traffic volumes are expected to be lower-than-typical due to the winter conditions and the COVID-19 Pandemic with Work-at-Home recommendations, making corresponding ambient sound levels lower than would be expected to be "normal" conditions with warmer temperatures. Even so, ambient background sound levels fluctuated widely based on the ambient events that occur during each hour. The MassDEP methodology was used for the survey where background (L90) ambient sound levels exclude short-term intrusions to identify the continuous baseline of area sounds. The surveyed locations represent the cardinal directions of the site; North, East, South and West. The results of the survey are presented graphically in Figures 4 through 7.

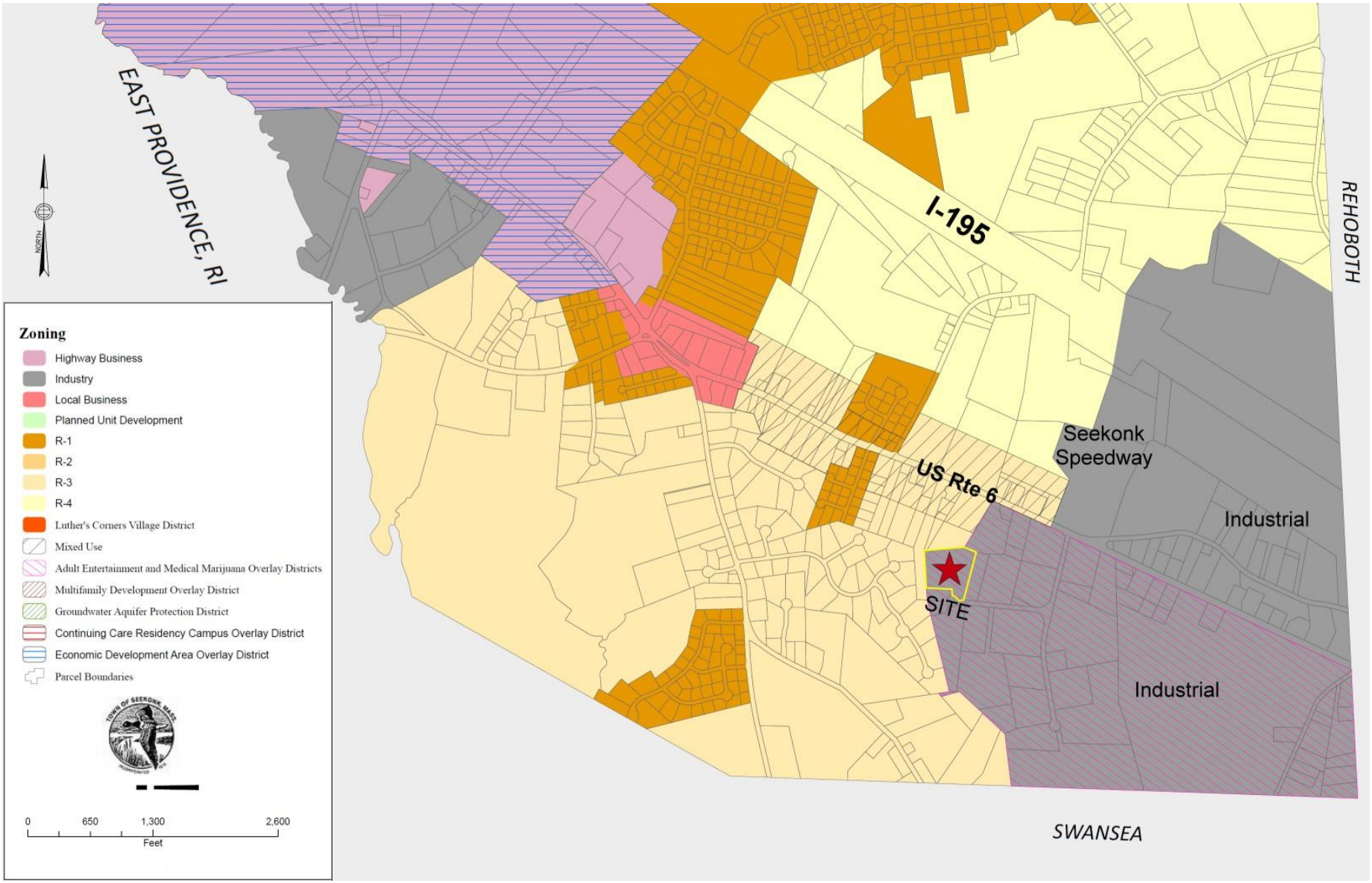


Figure 3: Excerpt of the Seekonk Zoning Map in the Project Area with Site Highlighted

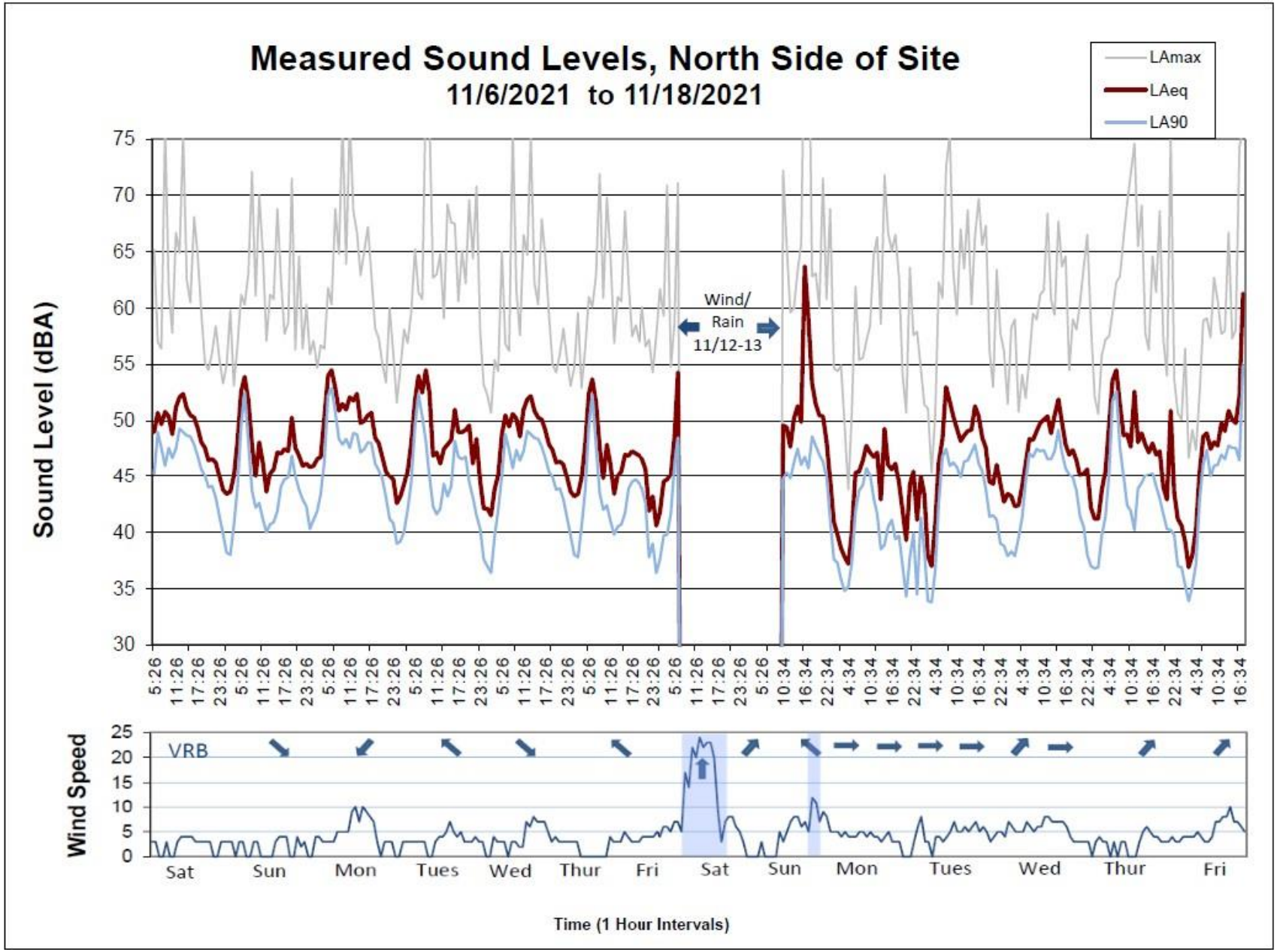


Figure 4: Graphical Summary of the Sound Levels Measured at the North Edge of the Site

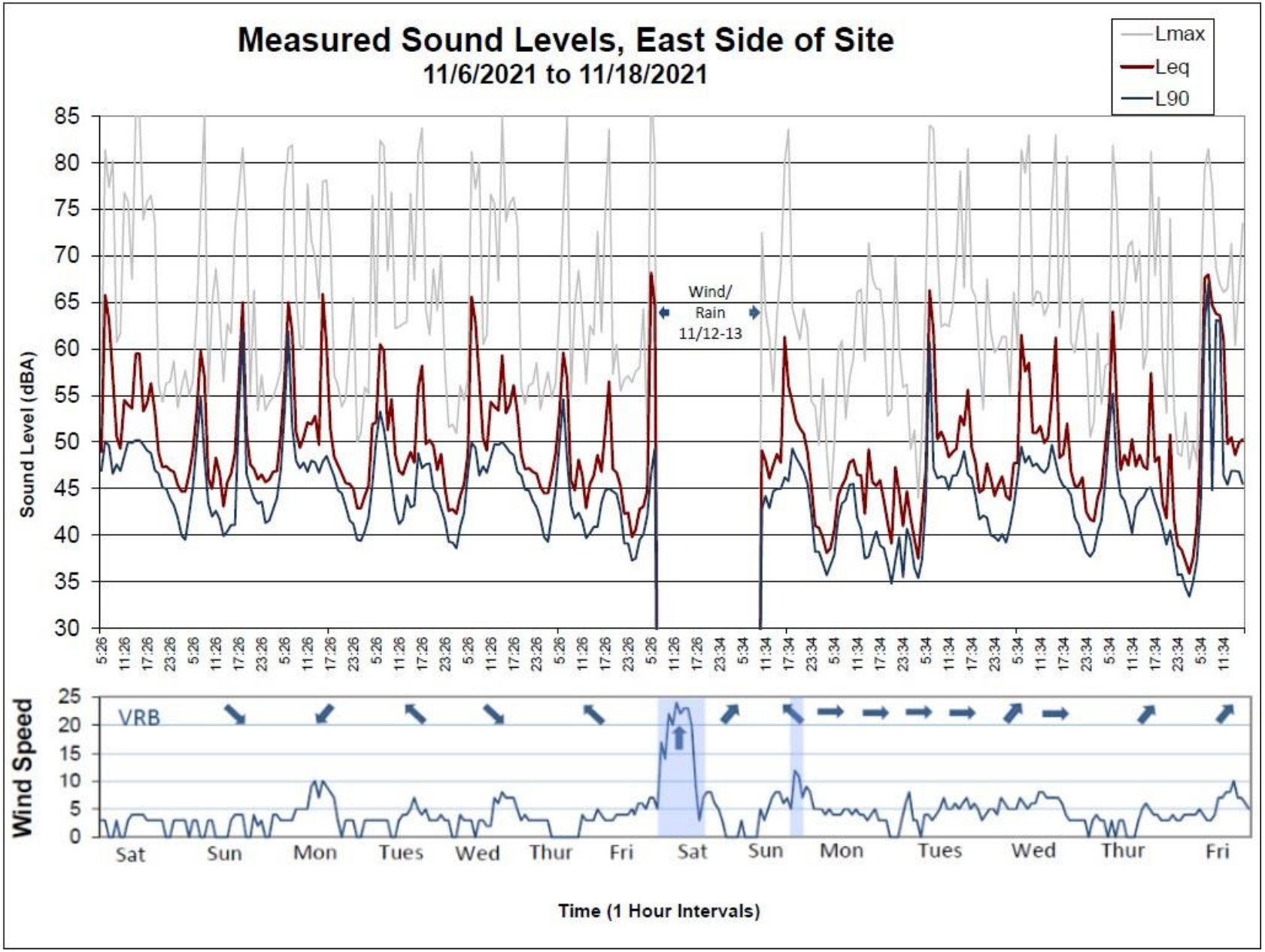


Figure 5: Graphical Summary of the Sound Levels Measured at the East Edge of the Site

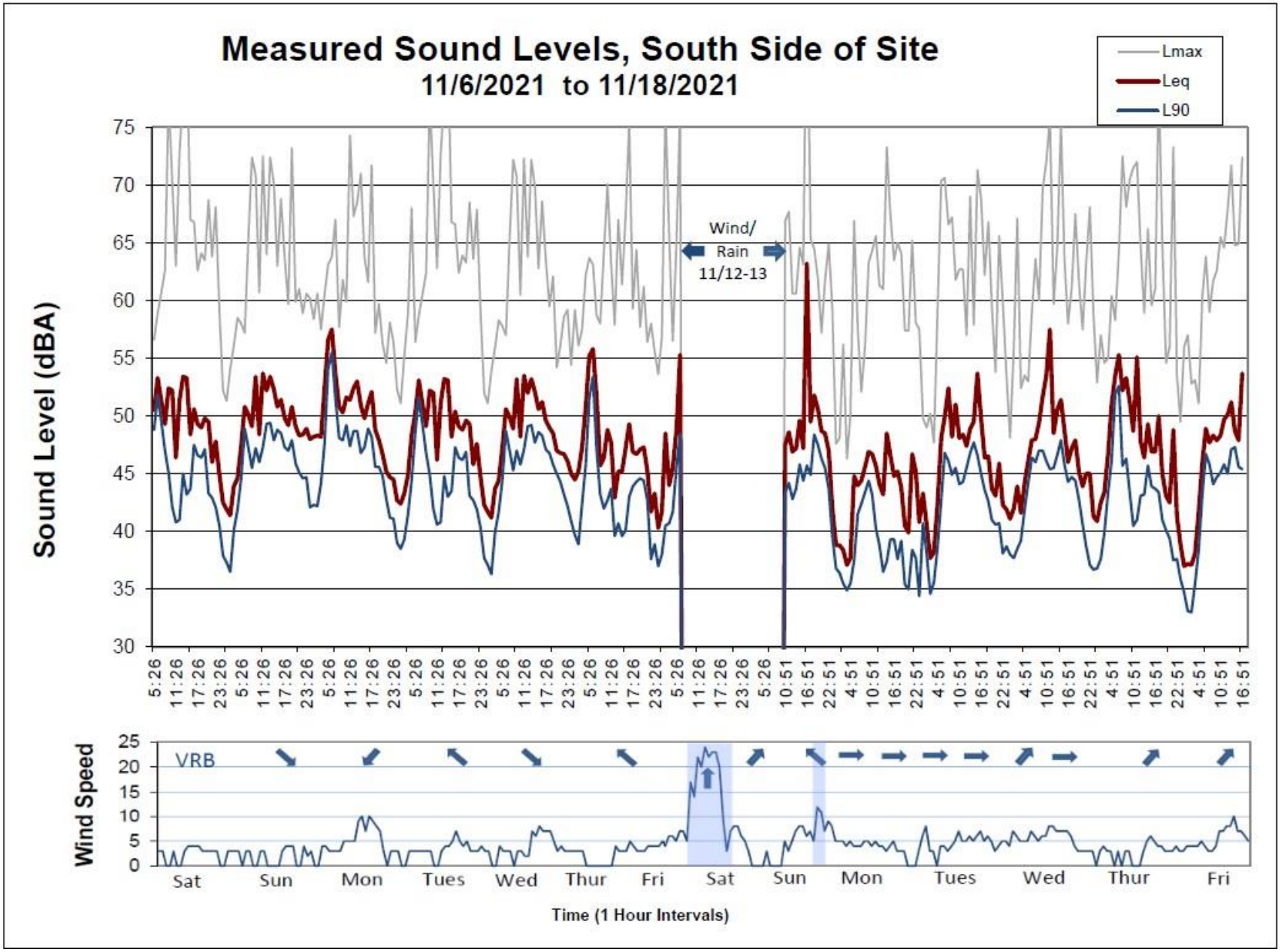


Figure 6: Graphical Summary of the Sound Levels Measured at the South Edge of the Site

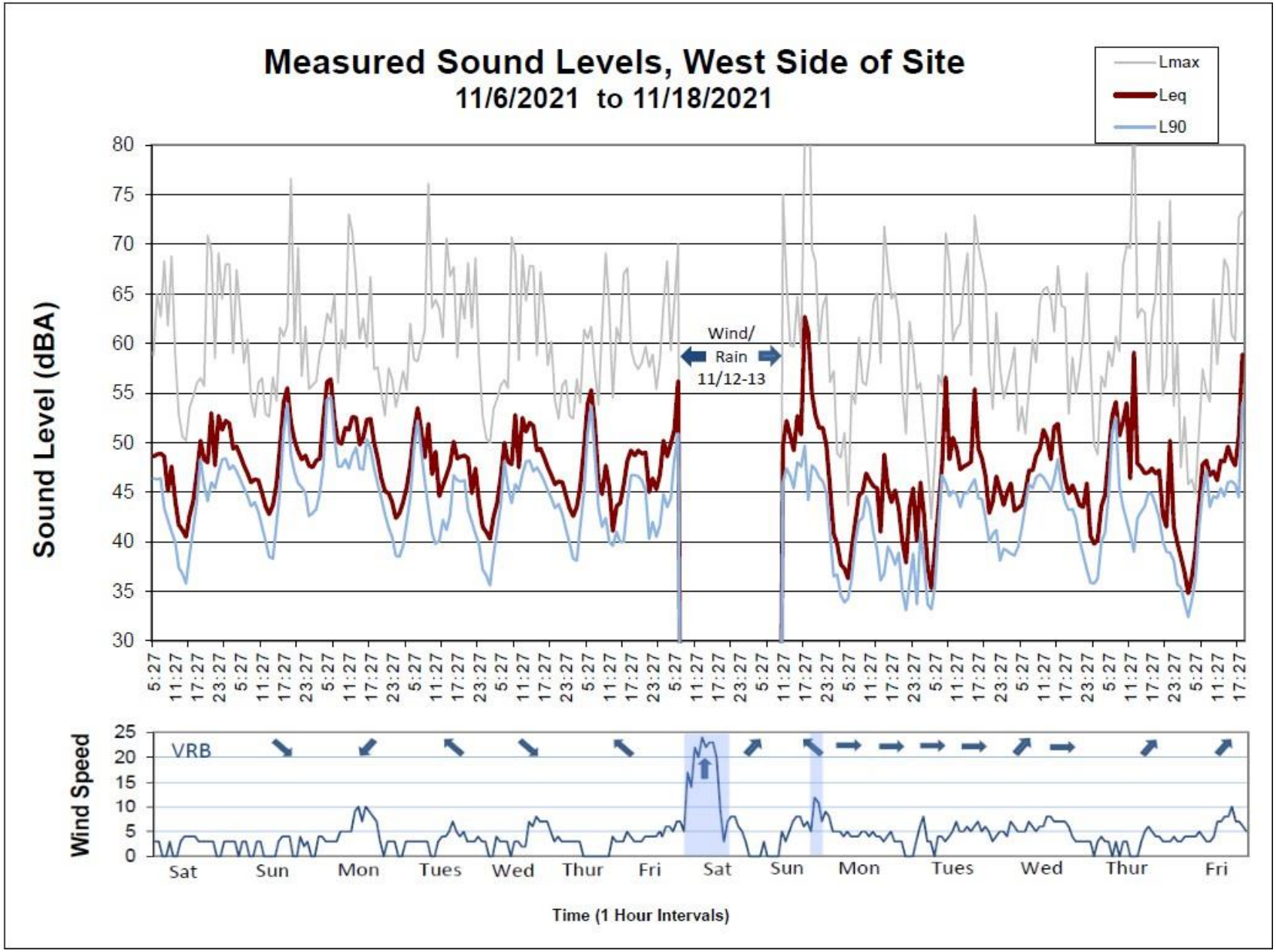


Figure 7: Graphical Summary of the Sound Levels Measured at the West Edge of the Site

Under each sound curve is a summary of the weather conditions that occurred during the measurements including the wind direction, wind speed and precipitation. The hours with rain or high wind were excluded from the study in establishing the baseline sound level. The goal was to measure the sound levels for one week. A rain/wind event over the weekend (Nov. 12-13) interrupted the survey because of a forecasted risk of damaging winds. The equipment was removed from the site and re-installed when the risk of rain and strong winds subsided. The survey was then continued to assure a wide range of community conditions were captured.

As noted, the L90 metric was used to establish the baseline levels. In this area dominated by the sound from two major roadways and the balance of the existing industrial park, most of the observed sound is from transient events that are captured by other metrics. There were widespread intrusions like air traffic and vehicle pass-byes and industrial activities that caused the levels to momentarily be raised substantially higher than the background level. The background level itself fluctuated from 40 dBA to over 50 dBA during individual work-day hours. The Leq and Lmax are also shown in the graphical summaries to illustrate the levels of intrusive sound to the baseline L90 curve. Measured levels vary widely depending on the sound source's direction and distance from the affected monitoring locations. Each hour's baseline level for each monitoring location are provided in Tables 1 through 4. The lowest level for each hour's Weekday Daytime (WDD) and Saturday work hour are summarized in the column on the right.

Table 1: Tabular Summary of Measured Sound Levels at North P/L

	6-Nov	7-Nov	8-Nov	9-Nov	10-Nov	11-Nov	12-Nov	13-Nov	14-Nov	15-Nov	16-Nov	17-Nov	18-Nov	Min	Min
24-Hr	Sat	Sun	Mon	Tues	Wed	Thur	Fri	Sat	Sun	Mon	Tues	Wed	Thur	WDD	Sat
0		40	40	39	38	40	36	0	41	35	39	37	37		
1		38	41	39	37	38	38	0	38	41	38	37	37	Off	
2		38	42	40	36	38	40	0	37	38	38	37	35	Hours	
3		41	43	42	40	40	40	0	36	34	38	40	34		
4		44	46	45	42	44	42	0	35	34	40	41	35		
5	45	50	52	50	45	49	46	0	35	37	41	45	37		
6	49	53	53	52	49	52	49	0	37	43	45	52	43		
7	48	48	51	50	47	48	0	0	42	47	47	53	46	46	48
8	46	44	48	48	46	44	0	0	44	48	47	48	47	44	46
9	48	42	48	45	47	42	0	0	44	46	48	45	45	42	48
10	47	43	48	42	47	42	0	0	46	46	47	42	46	42	47
11	48	41	48	42	47	41	0	45	45	46	47	42	46	41	45
12	49	40	49	42	49	40	0	45	43	45	47	40	47	40	45
13	49	41	49	44	49	41	0	45	42	46	47	44	47	41	
14	49	41	47	43	49	41	0	46	39	47	47	44	48	41	
15	49	42	48	44	48	42	0	48	39	47	49	45	48	42	
16	48	44	48	48	48	44	0	46	41	48	47	45	48	44	
17	47	45	48	47	47	45	0	47	41	46	46	45	47	45	
18	46	45	46	47	46	45	0	46	39	46	45	44	55	44	
19	45	47	46	47	45	44	0	49	40	44	45	43	0		
20	44	45	45	45	44	44	0	48	37	41	44	42	0		
21	44	44	43	43	44	43	0	47	34	42	41	40	0	Off	
22	43	43	41	42	43	38	0	46	38	41	41	40	0	Hours	
23	42	42	41	40	41	39	0	45	40	39	38	40	0		

Wx Hours

Table 2: Tabular Summary of Measured Sound Levels at East P/L

	6-Nov	7-Nov	8-Nov	9-Nov	10-Nov	11-Nov	12-Nov		13-Nov	14-Nov	15-Nov	16-Nov	17-Nov	18-Nov	Min	Min
24-Hr	Sat	Sun	Mon	Tues	Wed	Thur	Fri		Sat	Sun	Mon	Tues	Wed	Thur	WDD	Sat
0		43	41	40	39	42	37		0	38	41	39	38	36		
1		42	42	39	39	40	38		0	38	39	40	38	34		
2		40	43	40	39	39	40		0	37	37	39	40	33	Off	
3		40	44	42	41	42	40		0	36	35	41	42	35	Hours	
4		42	47	46	42	45	42		0	37	37	43	46	37		
5	47	45	53	50	47	50	47		0	38	44	46	51	44		
6	50	50	62	53	50	55	49		0	42	61	50	55	63		
7	50	55	52	51	49	48	0		0	43	47	48	47	67	47	50
8	47	48	48	49	46	43	0		0	44	46	49	44	45	43	47
9	48	43	47	46	47	42	0		0	45	46	47	44	63	42	48
10	47	42	48	43	47	42	0		43	46	46	48	42	63	42	43
11	49	43	47	41	48	42	0		44	42	45	47	40	46	40	44
12	50	42	48	42	50	40	0		43	41	46	47	43	45	40	43
13	50	40	48	44	50	40	0		45	38	46	47	44	47	40	
14	50	40	47	43	50	41	0		45	38	47	50	44	47	41	
15	50	41	48	43	50	41	0		45	39	49	48	45	47	41	
16	50	41	49	49	49	44	0		46	40	47	46	45	46	44	
17	49	53	47	47	49	45	0		46	39	46	45	44	58	44	
18	49	62	46	48	47	45	0		49	39	44	45	42	55	42	
19	47	47	45	48	46	45	0		48	37	42	44	41	53		
20	47	45	45	45	45	44	0		48	35	42	42	39	54		
21	45	44	43	44	45	43	0		47	37	42	41	41	53	Off	
22	45	43	42	43	44	39	0		46	40	40	40	38	52	Hours	
23	44	44	41	42	43	39	0		42	36	40	38	36	55		

Wx Hours

Table 3: Tabular Summary of Measured Sound Levels at South P/L

	6-Nov	7-Nov	8-Nov	9-Nov	10-Nov	11-Nov	12-Nov		13-Nov	14-Nov	15-Nov	16-Nov	17-Nov	18-Nov	Min	Min
24-Hr	Sat	Sun	Mon	Tues	Wed	Thur	Fri		Sat	Sun	Mon	Tues	Wed	Thur	WDD	Sat
0		38	42	39	38	41	36		0	40	34	39	37	36		
1		37	42	39	37	40	37		0	37	41	38	37	35		
2		37	42	39	36	39	40		0	36	38	38	38	33	Off	
3		40	44	42	40	42	40		0	36	35	39	40	33	Hours	
4		42	48	44	42	46	41		0	35	36	39	43	36		
5	49	45	54	49	44	52	45		0	36	39	42	46	38		
6	52	49	56	52	49	53	48		0	38	43	44	52	43		
7	50	47	52	49	47	47	0		0	42	47	46	53	47	46	50
8	47	46	48	47	45	43	0		0	42	46	46	46	46	43	47
9	45	47	48	45	47	42	0		0	43	45	47	46	44	42	45
10	42	46	49	42	46	43	0		0	44	46	47	43	45	42	42
11	41	47	47	41	47	44	0		43	43	44	46	41	45	41	41
12	41	49	49	41	49	40	0		44	40	44	45	41	46	40	41
13	45	49	49	45	49	41	0		43	39	46	46	43	45	41	
14	43	48	47	43	48	40	0		44	37	47	47	43	47	40	
15	44	49	47	44	49	40	0		46	37	48	48	46	47	40	
16	48	49	49	47	48	43	0		44	39	47	46	44	46	43	
17	47	47	48	46	47	44	0		46	39	45	44	44	45	44	
18	46	47	46	46	47	44	0		45	38	44	45	43	0	43	
19	47	48	46	47	46	45	0		48	39	43	44	41	0		
20	43	46	45	43	45	44	0		48	35	41	43	40	0		
21	43	45	43	43	44	43	0		46	35	41	41	39	0	Off	
22	42	45	41	42	43	38	0		46	38	41	39	38	0	Hours	
23	41	45	41	40	42	39	0		44	38	38	37	38	0		

Wx Hours

Table 4: Tabular Summary of Measured Sound Levels at West P/L

	6-Nov	7-Nov	8-Nov	9-Nov	10-Nov	11-Nov	12-Nov	13-Nov	14-Nov	15-Nov	16-Nov	17-Nov	18-Nov	Min	Min
24-Hr	Sat	Sun	Mon	Tues	Wed	Thur	Fri	Sat	Sun	Mon	Tues	Wed	Thur	WDD	Sat
0		48	43	39	37	40	40	0	41	34	39	36	36		
1		48	43	39	37	38	41	0	37	41	39	36	35		
2		47	43	40	36	38	44	0	37	38	39	36	34	Off	
3		48	45	42	39	42	43	0	35	34	39	40	32	Hours	
4		47	48	45	41	45	44	0	34	33	40	41	34		
5	46	46	54	49	44	51	48	0	34	36	41	45	36		
6	46	45	55	52	48	54	50	0	36	41	44	51	41		
7	46	45	51	49	46	49	0	0	40	47	46	53	45	45	46
8	43	44	48	46	44	44	0	0	42	46	45	46	47	44	43
9	42	44	48	43	46	42	0	0	42	45	47	44	44	42	42
10	41	43	48	41	45	42	0	0	45	45	47	42	45	41	41
11	40	42	47	40	47	40	0	46	44	45	47	41	44	40	40
12	40	40	49	40	48	40	0	47	41	44	46	40	45	40	40
13	37	39	50	42	48	41	0	47	39	45	45	42	45	41	
14	36	38	47	41	47	40	0	45	36	45	46	43	46	40	
15	39	42	47	43	48	40	0	48	37	46	48	44	46	40	
16	41	45	50	47	47	44	0	48	40	46	46	45	46	44	
17	44	51	49	46	46	47	0	50	39	44	44	45	45	44	
18	48	54	47	46	45	47	0	44	38	44	43	44	54	43	
19	46	49	46	46	44	47	0	48	39	42	43	42			
20	44	47	44	43	43	46	0	47	35	40	42	40			
21	46	46	43	42	44	45	0	47	33	41	40	39		Off	
22	45	46	41	41	43	40	0	46	36	41	39	39		Hours	
23	47	45	41	40	41	42	0	45	39	38	37	38			

WX Hours

The baseline sound levels for the project are the lowest of the hourly levels observed at each property line. During the quietest hours, the levels included much less sound from nearby intrusive sources and were dominated by only more distant sources like roadways. The baseline levels of 40 dBA are the same for all monitoring locations as shown in Figure 5.

Table 5: Baseline Sound Levels in Each Cardinal Direction

Direction	Adjacent Land Use	Property line Baseline (dBA)
North Property Line	Mixed Use (Comm)	40
East Property Line	Industrial Park	40
South Property Line	Industrial Park	40
West Property Line	Mixed Use (Res Beyond)	40

Monitoring measurements were made using a Rion NA-28, Rion NL-32 and two Rion NL-52 sound level meters. The meters measured the sound continuously and analyzed samples of 1-hour duration. The meters were mounted on tripods approximately 5 feet above the ground. The microphones were fitted with factory recommended environmental foam windscreens. The meters meet the requirements of ANSI S1.4 Type 1 – Precision specification for sound level meters. They were calibrated in the field using a Larson Davis Cal 200 acoustical calibrator before and after each measurement session. The NA-28 meter was also equipped with a real time third-octave band filter set. The filter complies with the requirements of the ANSI S1-11 for octave band filter sets. Factory calibration data are provided in Appendix C.

The sound from a new source is noticed more when the ambient level is low, so the surveys were designed to capture low ambient sound conditions for the area. Meteorological conditions

included no precipitation and no standing water on roadways. Winds were light and temperatures were modest for the season. Relative humidity was generally 80% or less. These conditions are recommended in ANSI Standards for Environmental Sound Measurements.

Analysis of Sounds from the Proposed Drum Mixer

The operation of the facility is seasonal. The temperatures needed for paving limits the process to about three of the four seasons. Even during the height of production, the facility will not operate all day. It operates to produce the product needed for the day, then remains off as the stored product is dispensed from the silos. The limited periods of operation, usually the first half of each day, are the basis of this analysis. Nevertheless, mixer operating hours extend from 7:00 am to 6:00 pm and half-day on Saturday to cover any need for addition mixing.

Sound Control Technology

The proposed installation has been designed with significant attention to controlling its sound. The focus of this study is on the highest sound emitters, which dominate the sound field at receptors. As the primary sources are treated, other sources emerge and represent new opportunities for treatment. The significant plant sources are quantified and are included in the sound modeling study. Other stationary equipment planned for the installation will produce insignificant levels of sound (contributing sound that is well below the ambient at receptors). The utilities and much of the equipment structures are acoustically inert. An air compressor is needed but will be installed inside the garage to control its sound. The heaters for the silos (to keep the product hot) and the elevated drag conveyors that move the product to the silos are not significant sources of environmental sound. Such sources are not included in the study.

The MassDEP also requires a review of the Best Available Noise Control Technology for projects. Based on the sound modeling and a review of other recent projects, the following controls are presented as best available control of project sounds. The plant components are shown in their layout in Figure 8 and manufacturer data provided in Appdx B. The sound data are presented in three configurations, standard, next level and the proposed configuration with these sources:

1. The Asphalt Drum Mixer is insulated, which reduces its heat loss and sound signature.
2. The gas-fired burner emits sound, but is fully enclosed, so most of its sound is not exposed to the environment.
3. The baghouse has a powered exhaust blower and works together with the burner blower to move air through the covered conveyors and processes, all reducing the system sound exposed to the environment.
4. The combustion blower gathers air from conveyors and processes and atmosphere, providing air to the burner and baghouse. Its sound is mitigated by the covered conveyors and baghouse emitting much less environmental sound.
5. Conveyors are slow moving, so are fundamentally quiet. They are also fully covered.
6. A blue smoke recovery system is included that has its own blower.

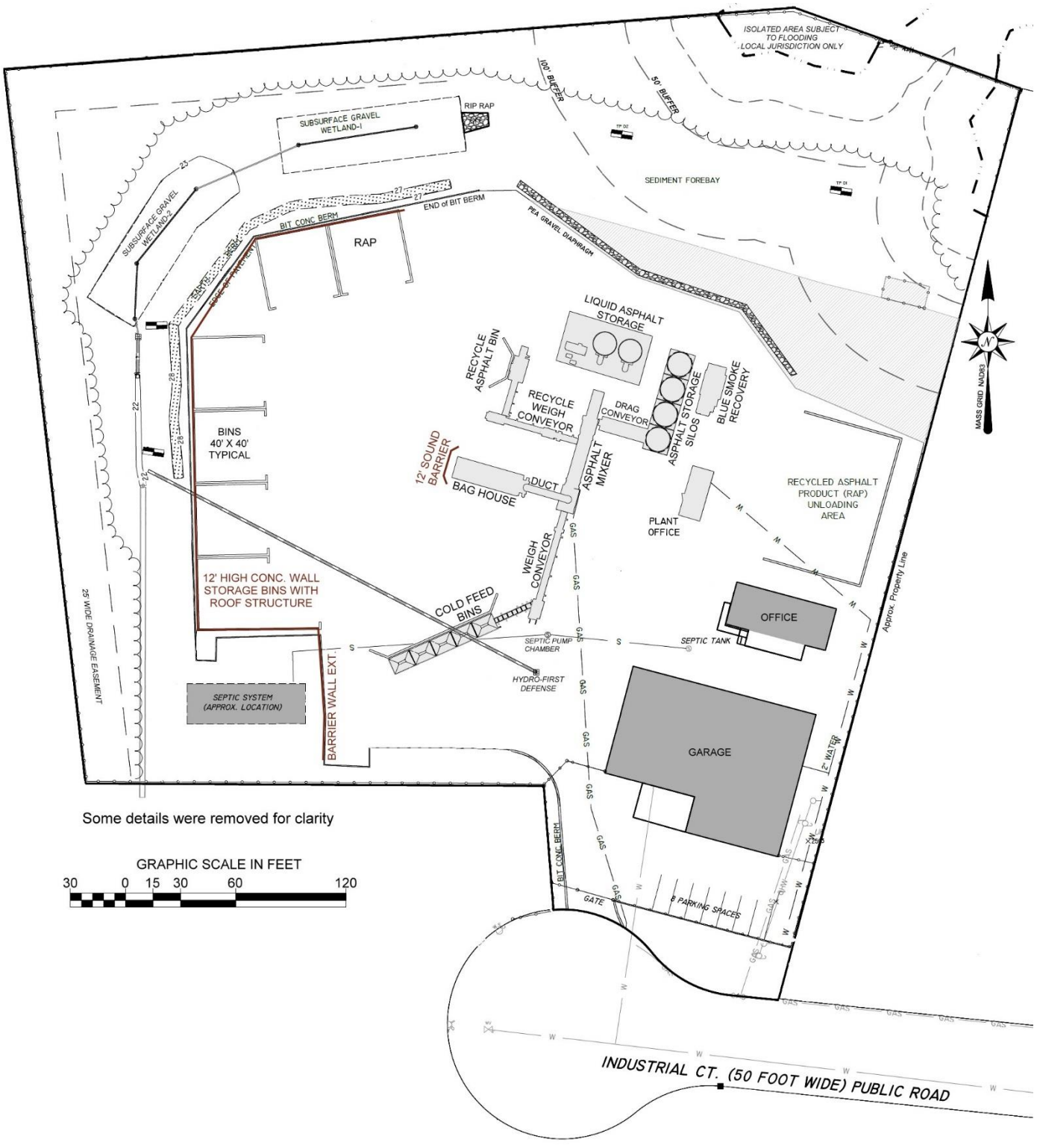


Figure 8: Site Layout Showing the Plant Components within the Area of the Site

Modeled Project Sound Sources

Equipment sounds from this equipment will occur only during its daytime operation with no significant sounds expected during off hours. Most sources of mixer sound are associated with the drum, burner and its air pollution control systems, which will operate only when the mixer is operated. According to the manufacturer, a "typical" installation's burner and its exhaust stack would have a sound emission specification of 85 dBA at 50 ft. (The burner is the combustion source that dries and heats the aggregate materials for mixing.) This configuration represents a typical installation.

This facility is designed around a Nova Star burner with a Variable Frequency Drive. This combustion unit not only improves the efficiency of combustion but reduces the expected sound to 80 dBA at a distance of 30 feet. This would be a significant step toward a quieter facility.

The equipment manufacturer, ADM (Asphalt Drum Mixers), installs facilities in many different configurations. Many innovative features are installed to meet the needs of specific projects. In the course of identifying the expected sound from this facility, ADM described another project in the area that included the features expected at this facility and recommended its sound emissions be used to represent this specific installation. The reference plant is based on an ADM EX Series Drum Mixer with a Nova Star natural gas burner. The reference facility was also fitted with a long-nosed combustor with an attenuator. This configuration further reduces the sound by placing the combustion well into the drum where its sound is not exposed to the environment. The sound levels from these sources at the reference facility is 74 dBA at 30 feet and represents the proposed configuration. There are two significant differences between the reference facility and proposed equipment. The proposed facility will have only about half the capacity of the reference facility. While the proposed facility is expected to make less sound because of its lower capacity, the reference sound emissions were used directly, for conservatism. The proposed facility will also have a blue smoke system described below.

While some sound sources are treated as a result of the air quality control system, others are introduced by it. Handling of the aggregate streams produces particulate matter that is captured by covering the conveyors. The gathered dust (particulate matter) is separated by the cyclone system and further by the bag house. The collected particulates are delivered directly back into the drum using a rotary conveyor which is essentially silent. The proposed facility will also have a blue smoke recovery system that is not at the reference facility. It was included in the modeling of the proposed facility. The vendor sound power levels are provided in Appendix C, but are higher than modeled. The data is for the fully exposed blower and has been installed at many facilities. Its sound was described by the vendor to be a secondary contributor at the plants which is the basis for the modeled sound power. Silencers and/or enclosures are available for this equipment, but are not expected to be needed. The covering of the bins and conveyors will have little effect on the analysis of sound since the covering is acoustically thin and conveyors are a minor source of sound.

The primary sources of mixer sound are quantified and are included in the sound modeling study. These values were estimated by the manufacturer for a previous project of a similar design and were confirmed at an operating facility. The state-attended results for the reference facility were measured at three directions from the acoustic center of the facility. The resulting levels were used to represent the proposed facility sources. Table 6 provides the sound power levels used in the modeling.

Table 6: Summary of Equipment Sound Power used in Modeling Facility Sounds

Source Name	Octave Band Center Frequency									
	A Wtd	31.5	63	125	250	500	1000	2000	4000	8000
Burner 75M	**103**	90	89	88	81	80	78	76	74	67
Baghouse Blwr	**100**	114	114	111	105	91	89	85	81	74
Inlet Blower	**95**	109	109	106	101	100	98	96	94	67
Blue Smoke Blwr	**92**	95	95	95	96	90	84	79	74	69
Drum Mixer	**84**	95	90	84	81	78	76	76	77	76
Exhaust Stack	**84**	92	90	87	82	81	79	75	71	64
Screen Section	**82**	93	88	82	79	76	74	74	75	74

The sound modeling incorporates several additional mitigation measures proposed by the project. A concrete barrier wall will be installed at the western perimeter of the industrial area. The barrier will be located along the west side of the developed site area forming the back wall of the 40' x 40' storage bins. It will stand 12 feet above the proposed site surface. A rain cover will also be provided for the bins that will be much higher. It will serve as a supplemental visual screen, but will not be of a density that will block significant sound. The rain cover is not included in the sound modeling.

Based on the sound modeling, the project is engineered to limit sound at inhabited buildings to 42 dBA or 2 dB higher than the ambient baseline. That baseline represents the lowest hourly level observed in a survey lasting almost two weeks. According to the Zoning By-Laws of the Town of Seekonk (at 4.1.2.4 Industrial Districts) "*the Industry Districts are intended to encourage and permit industrial uses that are compatible with the community*". Approved industrial uses (at 4.2.5 Industrial Uses) include "*Administration, Research, Manufacturing, Processing, Fabrication, Assembly, Storage, Mini-storage and Freight Handling*". Such activities are widespread in the existing Industrial Park. As illustrated by the ambient sound level summaries in Figures 4-7, the existing sound at the west side of the site is frequently more than 55 dBA. The facility will have no significant impact on the residential except at the lowest ambient levels. Because the site and industrial park is large, the four sides of the site often vary significantly. The study modeling indicate that the facility sound will be 42 dBA or less at the inhabited buildings. When added to the baseline level, this corresponds to an increase of 4 dB.

Sound Level Modeling

The acoustical modeling for this project was conducted with CADNA, a computer software program from DataKustik GmbH. The outdoor sound propagation model is based on ISO 9613, Part 1: Calculation of the absorption of sound by the atmosphere, (1993) and Part 2: General method of calculation, (1996). Each sound emission source was modeled based on its emission pattern. Sources are expressed in sound power level (Lw). Sound prediction modeling was performed under downwind weather conditions as assumed in the standard ISO 9613-2. The modeling assumes sound propagation in a stable atmospheric condition which can also enhance the propagation. Table 7 summarizes the modeling input parameters. Figure 9 shows the equipment layout in the context of the modeled receptors.

Table 7: CADNA Modeling Input Parameters

Item	Modeling Input and Description
Terrain	Flat Terrain assumed
Temperature	10°C
Relative Humidity	70%
Weather Condition	6.5 mph, directly from facility to receptor*
Ground Attenuation	0.2, hard surface (0.5 = soft ground, 0.0 = pure reflection)
Atmospheric Inversion	CONCAWE – Category F**
# of Sound Reflections	2
Receptor Height	1.5 meter above ground level

** Propagation calculations incorporate the adverse effects of certain atmospheric and meteorological conditions on sound propagation, such as gentle breeze of 1 to 5 m/s (ISO 1996-2: 1987) from source to receiver.*
*** Category F represents a stable atmosphere that promotes noise propagation.*

The modeling analysis is based on the contributions of individual sources and propagation losses from each source to its corresponding analyzed receptor. The burner is essentially the acoustic center of the plant with the blue smoke blower to the east and bag house to the west. While the receptor distances correspond to the distance to the burner, actual modeling is based on varied distances from the receptor to each individual source. Source values were developed with the support of the equipment manufacturer, ADM. They recommended using a facility in the area as a reference that has a very similar configuration to the proposed installation. The octave band spectra for secondary sources and minor sources were developed from measurements at that reference plant. While the reference plant has similar equipment and mitigation features, it is twice the capacity as the proposed mixer. A blue smoke extraction system was also added to the proposed configuration.

Site property line receptors were placed where the highest sound level is expected in each cardinal direction. This study is intended to address both the MassDEP criteria and the Seekonk standards. Since the performance standards are quite different, they are handled separately. The results of the compliance evaluation for the Seekonk standards are provided in Table 8. The results of the compliance evaluation for the MassDEP standards are shown in Table 9. A graphical summary of the numerical modeling results is provided in Figure 10.

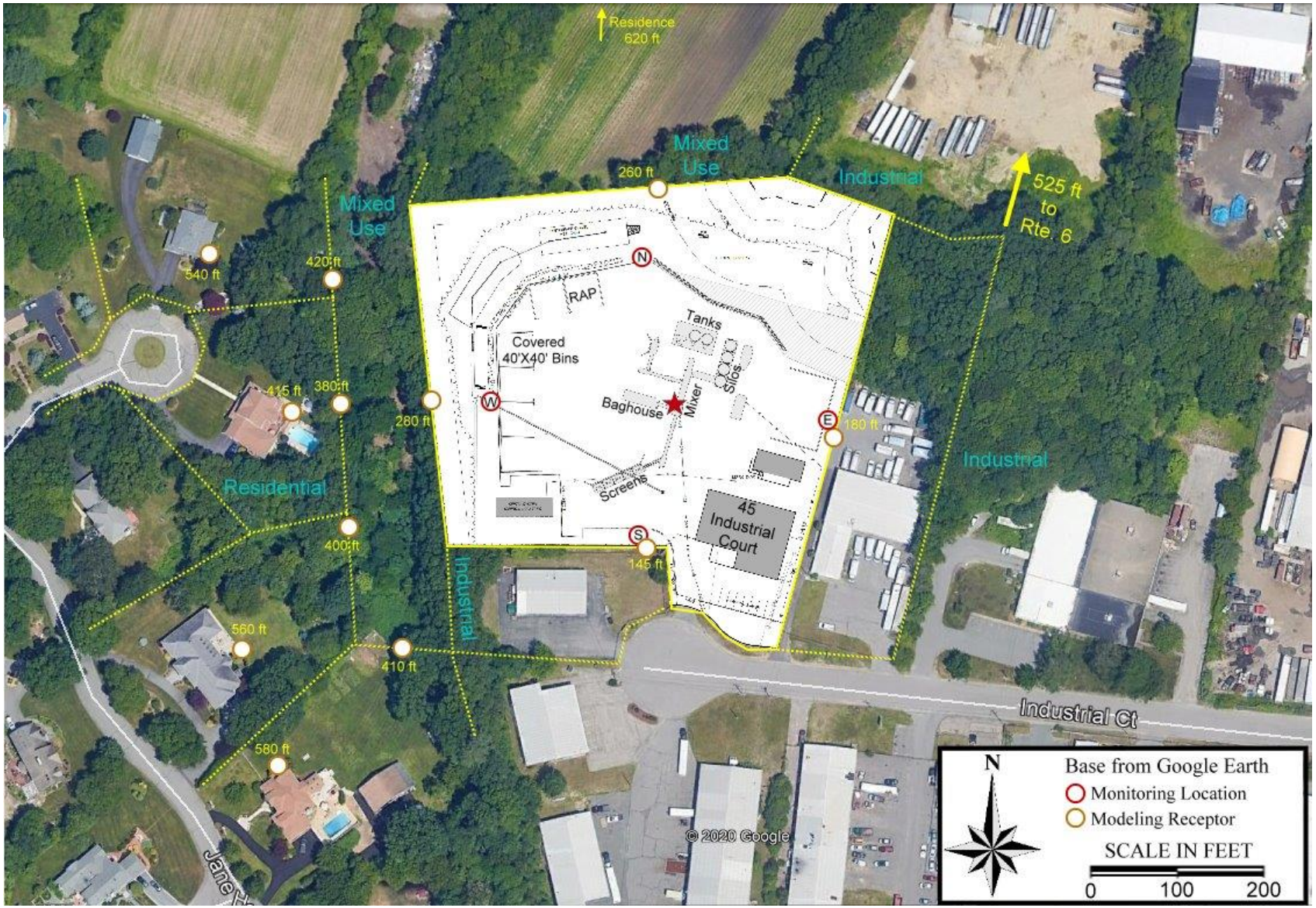


Figure 9: Aerial Overview of the Facility in the Proposed Configuration Showing Modeling Receptors
The Receptors Include Site Property Lines, Residential Property Lines and Residences

Table 8: Summary of Sound Compliance Evaluation for Seekonk Standards

Receptor	Dist. (ft)	Project (dBA)	Criterion (dBA)	Seekonk Comply?
Com. Prop. Line, N	260	49	65	Yes
Ind. Prop. Line, E	180	57	80	Yes
Ind. Prop. Line, S	145	58	80	Yes
Com. Prop. Line, W	280	45	65	Yes
Res. P/L, NW	420	45	55	Yes
Res. P/L, West	380	43	55	Yes
Res. P/L, WSW	400	45	55	Yes
Res. P/L, SW	410	45	55	Yes

Table 9: Summary of Sound Compliance Evaluation for the MassDEP Standards

Receptor	Dist. (ft)	Ambient (dBA)	Project (dBA)	Combined (dBA)	Criterion (dBA)	Comply?
Com. Prop. Line, N	260	40	49	50	50	Yes
Ind. Prop. Line, E	180	40	57	57	50	No*
Ind. Prop. Line, S	145	40	58	58	50	No*
Com. Prop. Line, W	280	40	45	46	50	Yes
Inhabited bldg, NW	540	40	42	44	50	Yes
Inhabited bldg, W	415	40	42	44	50	Yes
Inhabited bldg, SW1	560	40	42	44	50	Yes
Inhabited bldg, SW2	580	40	42	44	50	Yes
Inhabited bldg, N	620	40	39	43	50	Yes
*There are no inhabited buildings in the east or south directions from the mixer This area has been set aside by Seekonk for Industrial uses.						

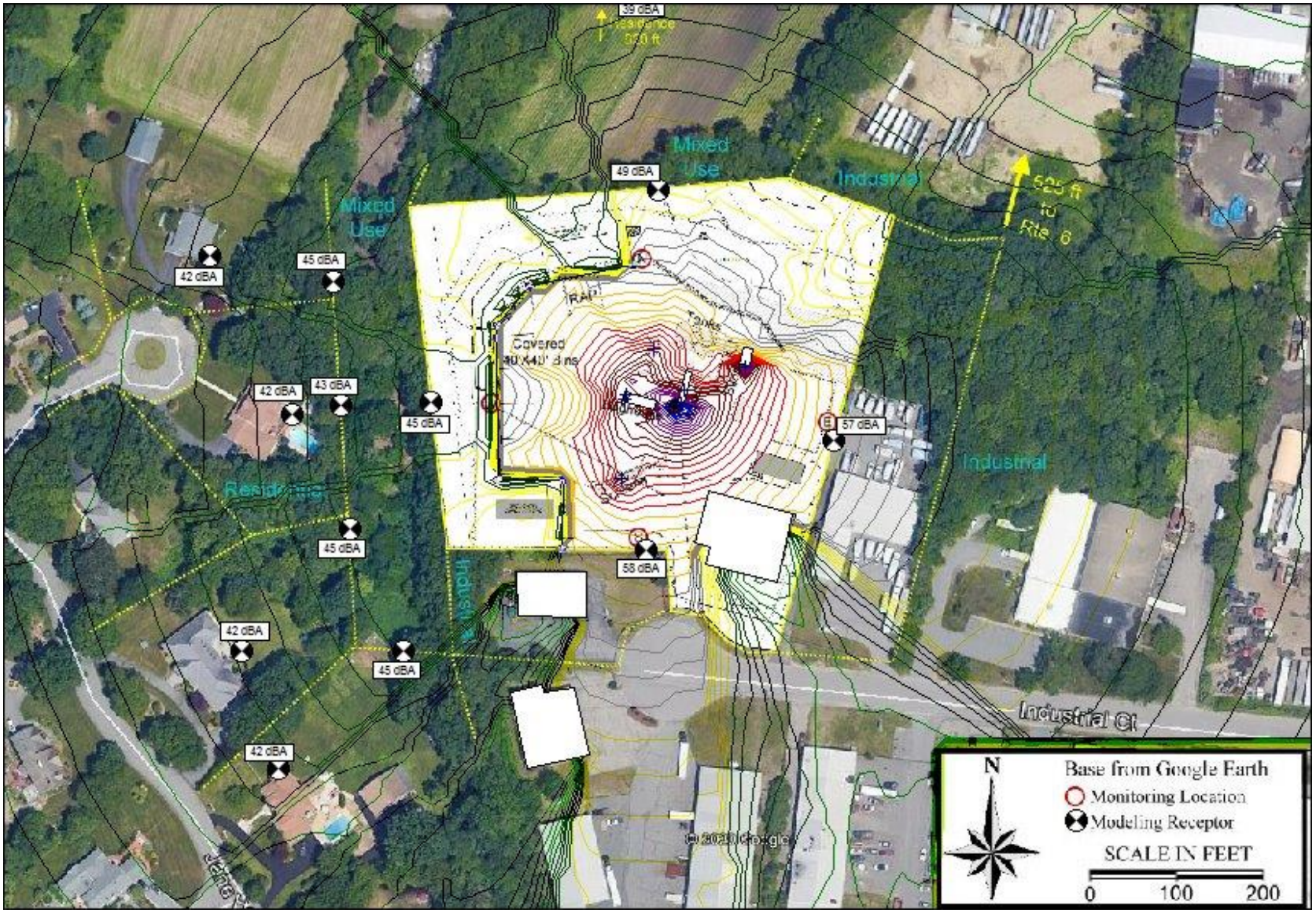


Figure 10: Graphical Summary of the Predicted Equipment Sound Levels

Conclusions

The proposed facility will include several sources of Industrial sound such as the mixing drum, burner, conveyors, screens and blowers on the baghouse and blue smoke system. Facility sounds will occur only during daytime mixer operation hours (7:00 am to 6:00 pm) with dispensing until 7:00 pm. Weekend work is sometimes needed. The mixer will operate only in the morning (7:00 am to noon) with dispensing until 5:00 pm. Facility sounds will be mitigated as noted in the study to reduce the sound emissions of individual processes and equipment items. Facility sound levels at industrial neighbors will be modest for an industrial setting, so are not expected to be noticed. The expected sound levels at the nearest residences will be near existing ambient levels and well below the Seekonk standards.

The existing sound baseline was established by direct measurements at the site under conditions that represent quiet periods during hours that the facility might operate. While it is unlikely that the facility will ever be in full operation at 7:00 am or the end of the day, this is the period used in this conservative evaluation. The potential sources of sound from the facility were identified and quantified. Sound level modeling techniques were employed to estimate the sound levels at the property lines and nearby receptor locations. The MassDEP evaluation was applied at the site property line location where the expected sound from the facility is greatest. The results of the modeling indicate that the facility levels will meet the MassDEP sound performance criteria at sensitive property lines, residential property lines and at all inhabited buildings. As shown in Figure 3 on page 7, the site is in an industrial zone which includes manufacturing and several high-volume trucking facilities. These land uses represent significant sources of daytime environmental sound in the existing area. This study estimates the sound expected at the nearest receptors of every category; residential, commercial and industrial. Since sound decreases with distance, the sound will be even less at more distant locations than were analyzed.

The Best Available Noise Control Technology was evaluated based on the treatment of all primary mixer sources. As shown in Figures 4-7, the existing ambient level in the area fluctuates from the baseline levels of 40 dBA to mid-50's dBA through the daytime with occasional excursions into the 60's dBA. These levels were caused by roadway sources plus sounds from the industrial park in general. As part of the sound control for this facility, the project will install a 12-foot barrier wall along the west side of the site's developed area. This is provided to introduce an additional buffer between the industrial park and adjacent land uses. The wall will not only reduce the levels from this parcel, but is expected to provide some shielding from existing sound from roadways and other industrial uses.

The modeling analysis shows that with the proposed noise abatement, the ambient sound levels at the nearest inhabited buildings will not increased by 10 dBA or more. The ambient survey indicates that the existing ambient levels at inhabited levels are currently raised by 10 dBA from existing sources. The project includes a substantial wall that will provide a buffer to reduce the existing sound intrusion. The modeled facility sound exceeds an increase of 10 dBA only for properties in the industrial park which have been set aside by Seekonk for industrial uses. They are not only tolerant of higher sound levels but are collectively sources of existing sound from the park.

Appendix B

Proposed Config, Equipment Sound Levels

As part of the Best Available Noise Control Technology discussion, several configurations of vendor data are provided. The primary sound source at the facility will be the burner unit at the south end of the mixing drum. The equipment manufacturer, ADM (Asphalt Drum Mixers) provided a "typical" configuration provided sheets labeled Config B-1. A mitigated Nova Star configuration is provided on sheets labeled Config B-2.

ADM states that they install facilities in many different configurations. While they are able to provide engineering estimates at the final design of a project, they don't have standardized emissions data for every combination of features. Many innovative features are installed to meet the needs of individual projects. In the course of identifying the expected sound from the proposed facility, ADM described another project in the area that included many of the features expected at the proposed facility and suggested its sound emissions might be the best estimate of sound from the proposed mixer. Like the proposed facility, the reference plant is based on an ADM EX Series Drum Mixer with a Nova Star natural gas burner. The reference facility was also fitted with a long-nosed combustor and an attenuator. This configuration further reduces the sound by placing the combustion well inside the drum where the sound is not exposed to the environment. Detailed sound level measurements were made at the reference mixer documented at the time it was commissioned. Those measurements were conducted under a protocol reviewed by MDEP. The measurements were also witnessed by department staff. The measured level at the reference plant that represent the expected sound from the proposed configuration are provided on Sheets Config B-3.

One of the difficulties in establishing Sound Power in the field is that no item of equipment operates under load in isolation. The loaded operation includes the combined sound of all plant components. The focus of the measurements was the combined facility, not on individual sources. Some of the plant components are not significant contributors of sound (contributing sound that is well below the level of dominant sources). The utilities and much of the equipment infrastructure are acoustically inert. An air compressor at the reference plant was mitigated with an enclosure. The air compressor at the proposed facility will be located inside the garage to control its sound. The heaters for the silos (to keep the product hot) and the elevated drag conveyors that move the product to the silos are not significant sources of environmental sound. Such sources are not included in the study.

Sound levels were documented in three directions from the reference plant. They are labeled North, South and West. Third-octave spectra were measured and plotted for each location. Each data point includes the distance from the acoustic center of the plant (approximately at the burner). The source data were updated to match the combined energy measured at these distances. The corresponding source data were used in modeling the proposed plant. It is noted that the blue smoke system is proposed but not a part of the reference plant. It was added separately to the model.

ADM ASPHALT DRUM MIXERS, INC.

SOUND LEVELS/dba

ITEM	50ft.	100ft.	300ft.	500ft.
Burner 41m	85	79	69	65
Exhaust Stack	85	79	69	65
Drum (approx)	50	44	34	30
Turbo-Blower	68	62	52	48
Air Compressor	58	52	42	38
Resulting noise level of all equipment running simultaneously.	87.5	81.5	71.5	67.5

Permissible noise exposure in accordance with OSHA regulations:

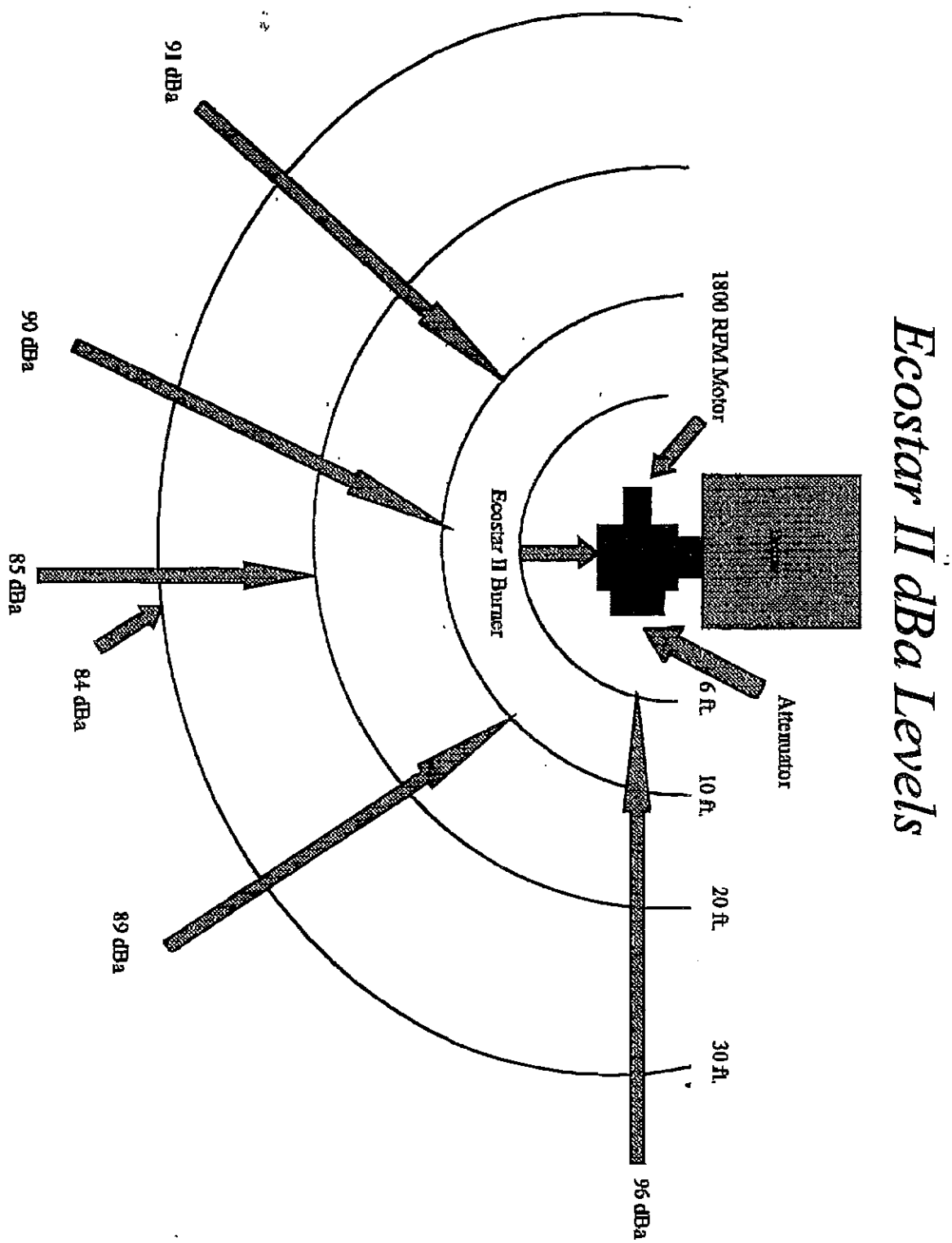
Duration per day, hours	Sound level, dba
8	90
6	92
4	95
3	97
2	100
1	102

Representative noise levels that you are accustomed to hearing are as follows:

Sound Studio	20db
Quiet Office	40db
Conversation (3ft.0)	60db
Noisy Restaurant	80db
Printing Press	100db
50 H.P. Siren	120db
Jet Plane	140db

1 ADM PARKWAY — HUNTERTOWN, INDIANA 46748 — PH. 219-637-5729 — FAX 219-637-3164

Config B-1, Baseline ADM Installation

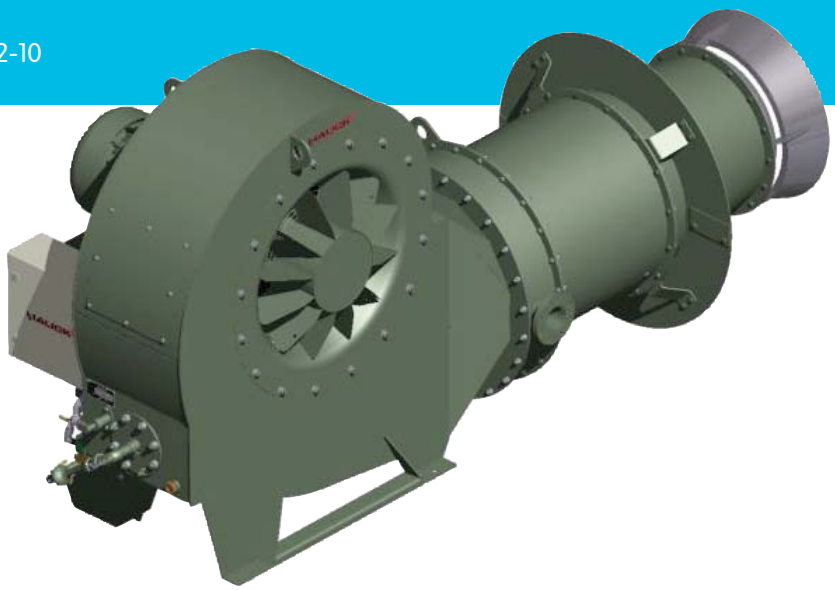


Config B-1, Baseline ADM Installation

NovaStar

Ultra Low NOx Burner for Aggregate Drying

NS-1
Edition 12-10



- Ultra low NOx emissions of < 15 ppm without FGR on natural gas and vaporized propane*
- Precise air flow control via VFD and low horsepower design offers significant energy savings with no inlet or outlet damper required
- Compact modular design suitable for stationary or portable plants
- Easily adaptable to long-nose variations
- Easy to install, low maintenance construction
- Sealed-in construction for ultra quiet operation

* *For California Markets*

Emissions less than 4.3 ppm NOx and 42 ppm CO (19% O2), compliant with Rule 4309, San Joaquin Air Quality District

Emissions less than 36 ppm NOx and 400 ppm CO (3% O2) compliant with South Coast Air Quality District

www.hauckburner.com

Config B-2 Next Level Feature for the Burner

Hauck's ultra low NOx NovaStar burner continues the company's high quality commitment to state of the art advancements for the aggregate drying industry.

Utilizing the latest lean burn premix technologies (patent pending), the NovaStar offers design and performance advantages with service accessibility and ease of installation.

Available in various sizes the NovaStar is ready to meet your production needs and even the most stringent air quality standards with ultra low nitrogen oxide (NOx) emissions on gaseous fuels - less than 15 ppm - without the added expense of flue gas recirculation (FGR) technology. (For California markets, see notation on page 1.) The burner is capable of supporting a variety of gaseous fuels offering you ultimate flexibility in managing today's highly volatile fuel pricing.

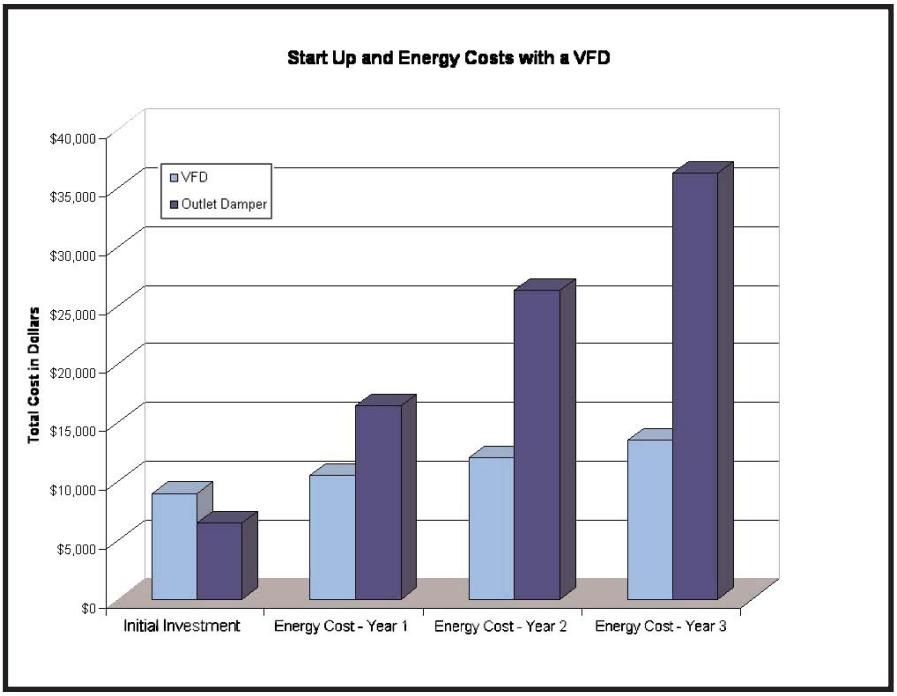
The NovaStar employs variable frequency drive (VFD) technology for precise air flow control over its entire operating range eliminating the need for inlet or outlet dampers. In addition to fuel savings, the NovaStar offers energy savings via reduced electricity consumption through the use of this VFD technology - as illustrated in the adjoining chart.

The burner can be easily operated and effectively managed with PLC-based control provided by Hauck's BCS products.

The burner produces a compact flame, eliminating the need for flame adjustment. All combustion is completed within the recommended combustion zone, further reducing emissions by eliminating flame quenching from process materials.

The NovaStar's sealed-in construction, coupled with its high efficiency aerodynamic design, significantly reduces operational noise.

The NovaStar is backed by our well respected service department and our more than 50 years of experience as a leader and partner to the aggregate drying industry.



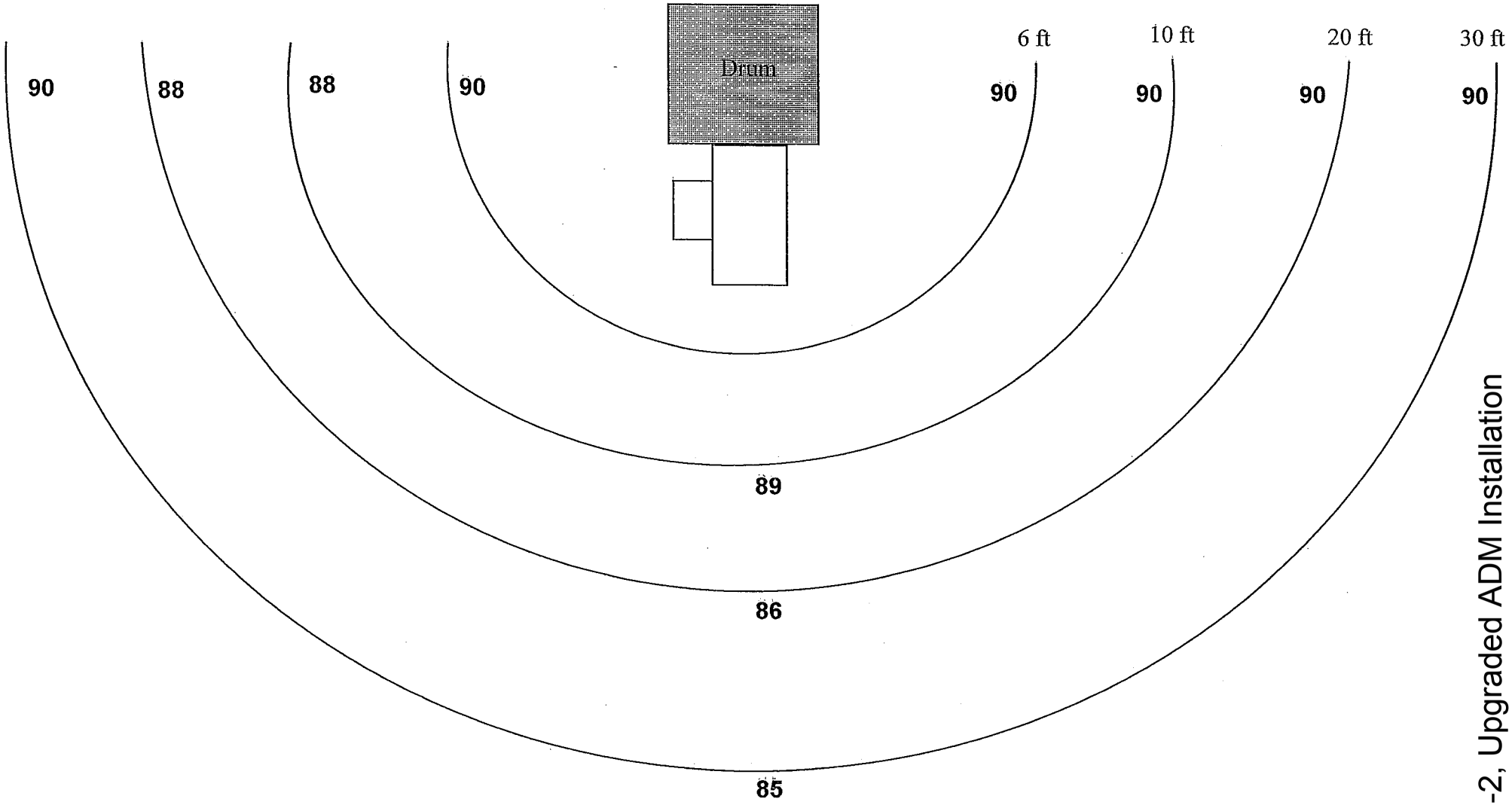
Savings based on 2000 hour season at 14 cents per kWh with variable duty cycle times.

For additional information on this product, visit our website at:

www.hauckburner.com

Hauck Manufacturing Company
POB 90
Lebanon, PA 17042

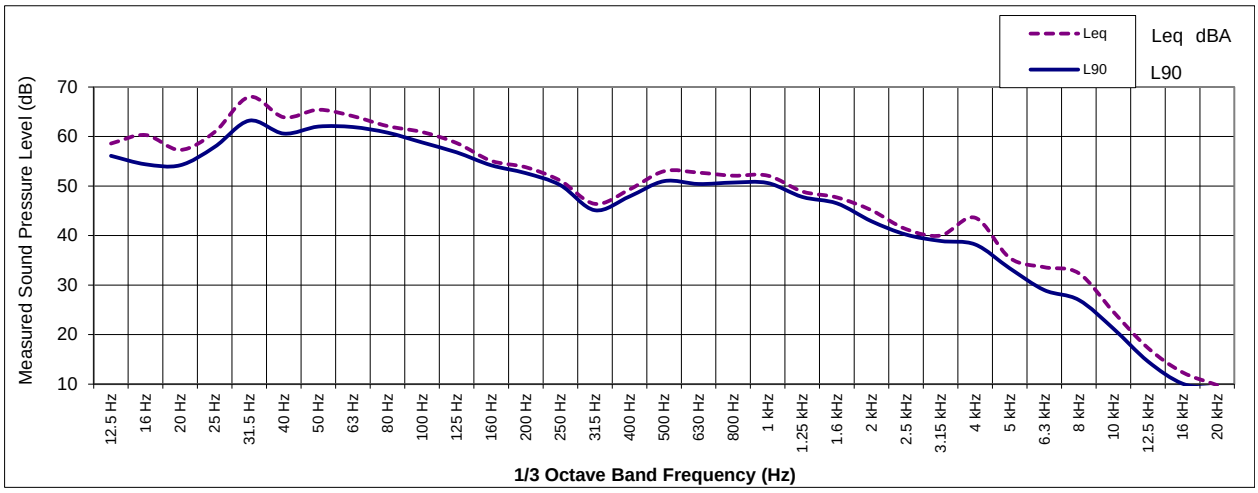
T +1 717-272-3051
F +1 717-273-9882
info@hauckburner.com



Config B-2, Upgraded ADM Installation

NovaStar

dBA at High Fire Output



CSV	North Property Line
Store Mode	Manual
Store Name	MAN_0403
Address	328
Date	10/25/2013 9:18
Start Time	9:18:32
End Time	9:19:02
Measurement Time	00d 00:01:20
Lp	0
Over	-----
Under	-----
Pause	-----
Marker	-
Model	NA-28
Version	1.8
Index	1
SLM/RTA	1/3oct
Frequency Weighting(Main) Lp	Z
Frequency Weighting(Main)	Z
Frequency Weighting(Sub) Lp	A
Frequency Weighting(Sub)	A
Time Weighting(Main) Lp	S
Time Weighting(Main)	S
Time Weighting(Sub) Lp	S
Time Weighting(Sub)	S
Level Range(dB) Lp	80
Level Range(dB)	80
Time Setting(Num)	20
Time Setting(Unit)	m
Back Erase	OFF
Delay Time(s)	0
Lmax Type	AP
LN	Leq_1s
Wind Screen Lp	OFF
Wind Screen	OFF
Diffuse Field Lp	OFF
Diffuse Field	OFF
Sub LP	ON
Sub	ON
Leq	ON
LE	OFF
Lmax	ON
Lmin	ON
LN1	ON 5
LN2	ON 10
LN3	ON 50
LN4	ON 90
LN5	ON 95

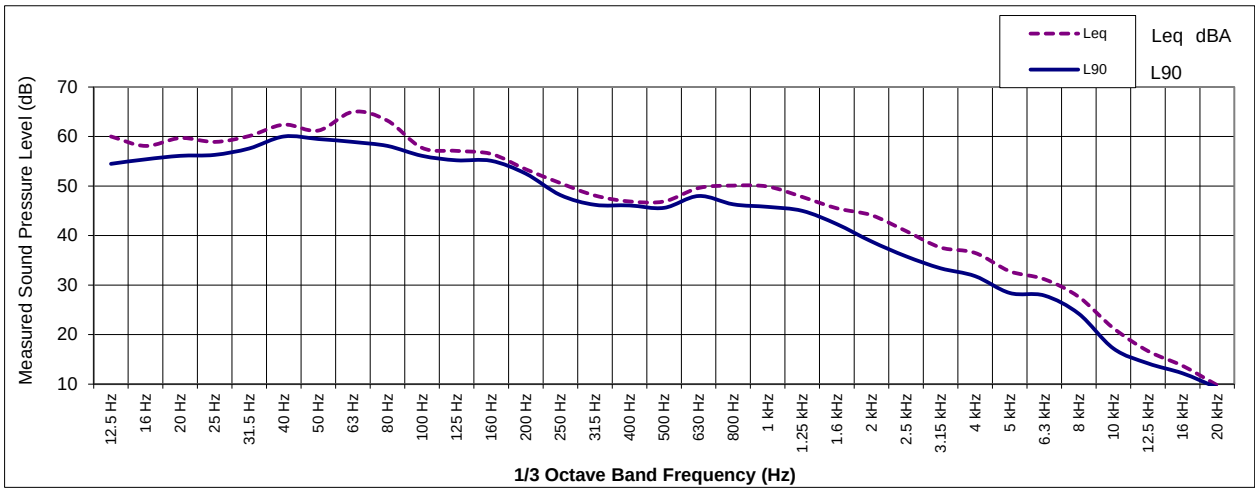
Third Octave Results

	Leq	L90
A Wtd	59.6	58.5
Flat	73.9	72.6
12.5 Hz	58.6	56.1
16 Hz	60.3	54.4
20 Hz	57.3	54.2
25 Hz	60.9	57.9
31.5 Hz	68	63.2
40 Hz	63.9	60.6
50 Hz	65.4	62
63 Hz	64.1	61.9
80 Hz	62.1	60.8
100 Hz	60.9	58.8
125 Hz	58.7	56.8
160 Hz	55.1	54.2
200 Hz	53.8	52.6
250 Hz	51.1	50.2
315 Hz	46.4	45.1
400 Hz	49.3	47.9
500 Hz	53	51
630 Hz	52.7	50.4
800 Hz	52.1	50.7
1 kHz	52.1	50.6
1.25 kHz	48.9	47.8
1.6 kHz	47.7	46.5
2 kHz	45.1	42.9
2.5 kHz	41.3	40.2
3.15 kHz	40	38.9
4 kHz	43.6	38.2
5 kHz	35.5	33.4
6.3 kHz	33.6	29
8 kHz	32.4	27
10 kHz	24.6	21.2
12.5 kHz	17.3	14.6
16 kHz	12.4	10.1
20 kHz	9.8	9.1

Full Octave Results

	Leq	L90
31.5 Hz	70	66
63 Hz	69	66
125 Hz	64	62
250 Hz	56	55
500 Hz	57	55
1000 Hz	56	55
2000 Hz	50	49
4000 Hz	46	42
8000 Hz	36	32

Config B-3 Reference Plant Levels at North Receptor (140 feet)



CSV	South Property Line
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Store Name	MAN_0403
Address	326
Date	10/25/2013 9:04
Start Time	9:04:02
End Time	9:05:43
Measurement Time	00d 00:01:20
Lp	0
Over	-----
Under	-----
Pause	-----
Marker	-
Model	NA-28
Version	1.8
Index	1
SLM/RTA	1/3oct
Frequency Weighting(Main) Lp	Z
Frequency Weighting(Main)	Z
Frequency Weighting(Sub) Lp	A
Frequency Weighting(Sub)	A
Time Weighting(Main) Lp	S
Time Weighting(Main)	S
Time Weighting(Sub) Lp	S
Time Weighting(Sub)	S
Level Range(dB) Lp	80
Level Range(dB)	80
Time Setting(Num)	20
Time Setting(Unit)	m
Back Erase	OFF
Delay Time(s)	0
Lmax Type	AP
LN	Leq_1s
Wind Screen Lp	OFF
Wind Screen	OFF
Diffuse Field Lp	OFF
Diffuse Field	OFF
Sub LP	ON
Sub	ON
Leq	ON
LE	OFF
Lmax	ON
Lmin	ON
LN1	ON 5
LN2	ON 10
LN3	ON 50
LN4	ON 90
LN5	ON 95

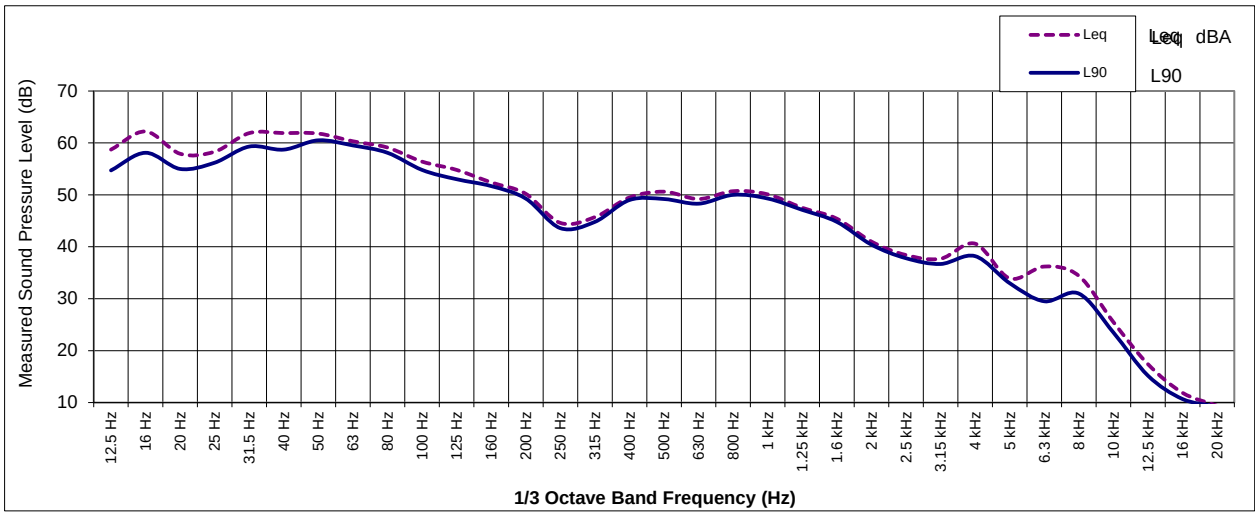
Third Octave Results

	Leq	L90
A Wtd	57.5	55.1
Flat	74.4	71.4
12.5 Hz	60	54.5
16 Hz	58.1	55.4
20 Hz	59.7	56.1
25 Hz	58.9	56.3
31.5 Hz	60.1	57.6
40 Hz	62.4	60
50 Hz	61.2	59.5
63 Hz	65	58.9
80 Hz	63.2	58.1
100 Hz	57.7	56.1
125 Hz	57.1	55.2
160 Hz	56.5	55.1
200 Hz	53.4	52.5
250 Hz	50.6	48.2
315 Hz	48.1	46.2
400 Hz	46.9	46.1
500 Hz	46.9	45.6
630 Hz	49.6	48
800 Hz	50.1	46.3
1 kHz	49.9	45.8
1.25 kHz	47.8	45
1.6 kHz	45.5	42.3
2 kHz	44.1	38.8
2.5 kHz	40.9	35.8
3.15 kHz	37.6	33.4
4 kHz	36.5	31.8
5 kHz	32.8	28.4
6.3 kHz	31.2	27.9
8 kHz	27.6	24.2
10 kHz	21.3	17.2
12.5 kHz	16.7	14.2
16 kHz	13.7	12.2
20 kHz	9.8	9.3

Full Octave Results

	Leq	L90
31.5 Hz	65	63
63 Hz	68	64
125 Hz	62	60
250 Hz	56	55
500 Hz	53	51
1000 Hz	54	51
2000 Hz	49	45
4000 Hz	41	36
8000 Hz	33	30

Config B-3 Reference Plant Levels at South Receptor (220 feet)



CSV	West Property Line
Store Mode	Manual
Store Name	MAN_0403
Address	329
Date	10/25/2013 9:27
Start Time	9:27:58
End Time	9:28:20
Measurement Time	00d 00:01:20
Lp	0
Over	-----
Under	-----
Pause	-----
Marker	-
Model	NA-28
Version	1.8
Index	1
SLM/RTA	1/3oct
Frequency Weighting(Main) Lp	Z
Frequency Weighting(Main)	Z
Frequency Weighting(Sub) Lp	A
Frequency Weighting(Sub)	A
Time Weighting(Main) Lp	S
Time Weighting(Main)	S
Time Weighting(Sub) Lp	S
Time Weighting(Sub)	S
Level Range(dB) Lp	80
Level Range(dB)	80
Time Setting(Num)	20
Time Setting(Unit)	m
Back Erase	OFF
Delay Time(s)	0
Lmax Type	AP
LN	Leq_1s
Wind Screen Lp	OFF
Wind Screen	OFF
Diffuse Field Lp	OFF
Diffuse Field	OFF
Sub LP	ON
Sub	ON
Leq	ON
LE	OFF
Lmax	ON
Lmin	ON
LN1	ON 5
LN2	ON 10
LN3	ON 50
LN4	ON 90
LN5	ON 95

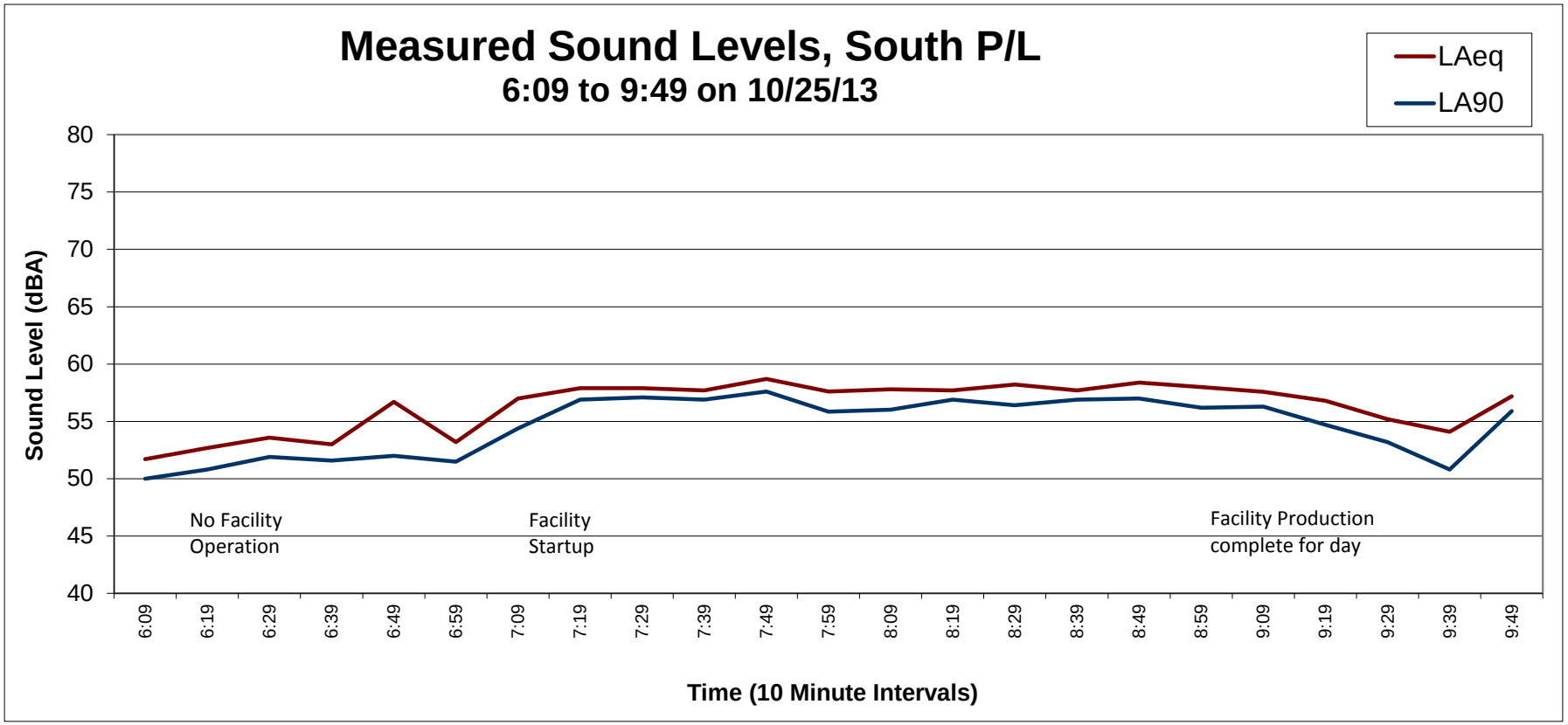
Third Octave Results

	Leq	L90
A Wtd	57.4	57.0
Flat	72.6	70.6
12.5 Hz	58.7	54.7
16 Hz	62.2	58.1
20 Hz	57.9	55
25 Hz	58.3	56.2
31.5 Hz	61.9	59.3
40 Hz	61.9	58.7
50 Hz	61.8	60.5
63 Hz	60.3	59.5
80 Hz	59.1	58.1
100 Hz	56.4	54.8
125 Hz	54.8	53
160 Hz	52.4	51.7
200 Hz	50.2	49.3
250 Hz	44.6	43.6
315 Hz	45.7	44.8
400 Hz	49.5	49
500 Hz	50.6	49.2
630 Hz	49.2	48.3
800 Hz	50.7	50
1 kHz	50.1	49.3
1.25 kHz	47.5	47.1
1.6 kHz	45.4	44.8
2 kHz	41	40.4
2.5 kHz	38.4	37.8
3.15 kHz	37.7	36.7
4 kHz	40.6	38.2
5 kHz	33.9	33
6.3 kHz	36.2	29.5
8 kHz	34.4	31
10 kHz	25.5	23.5
12.5 kHz	17.4	15.2
16 kHz	11.9	10.7
20 kHz	9.4	9.2

Full Octave Results

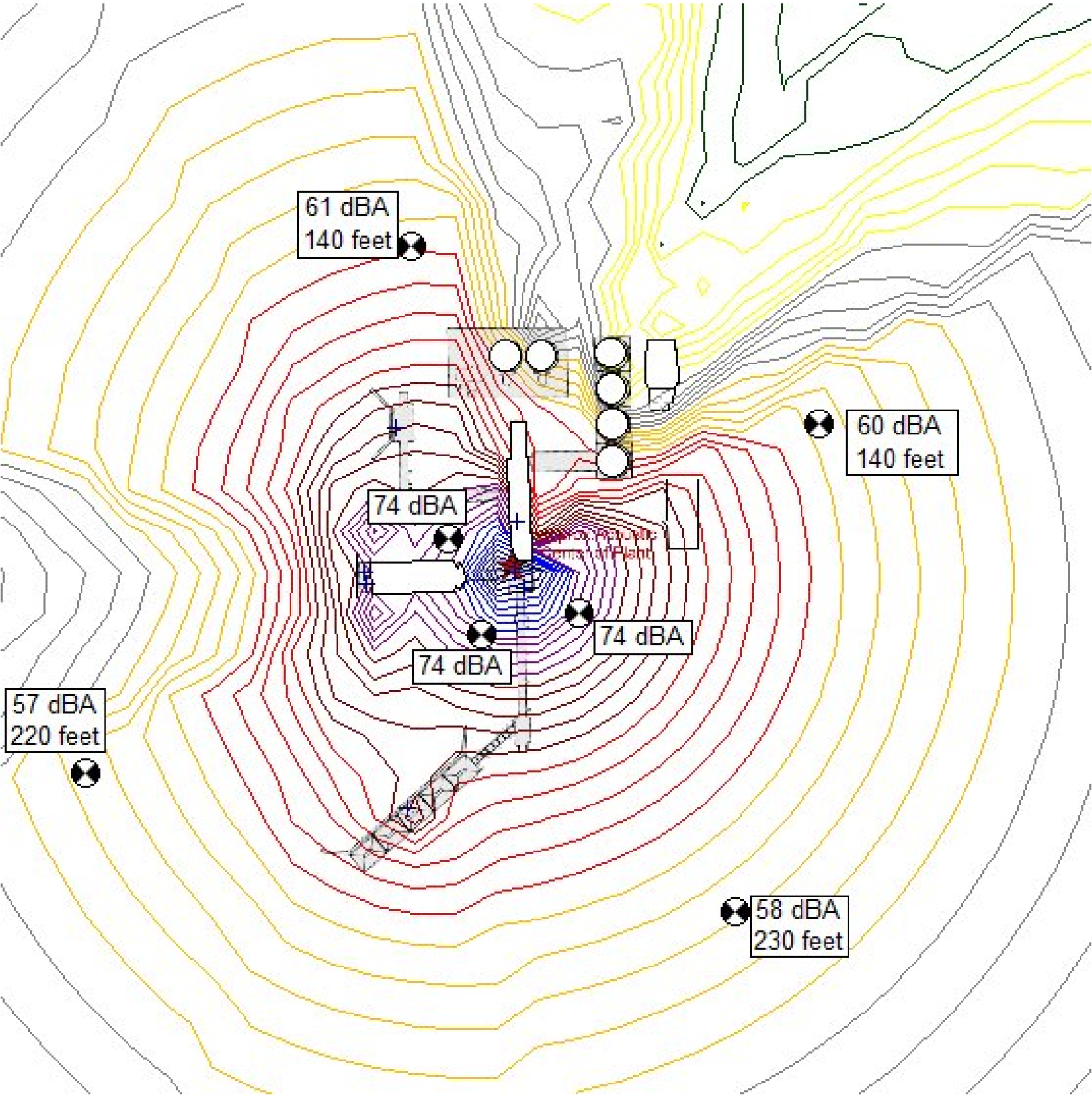
	Leq	L90
31.5 Hz	66	63
63 Hz	65	64
125 Hz	60	58
250 Hz	52	51
500 Hz	55	54
1000 Hz	54	54
2000 Hz	47	47
4000 Hz	43	41
8000 Hz	39	34

Config B-3 Reference Plant Levels at West Receptor (230 feet)



Continuous measurements were made at the South Receptor during the Plant Test.
Results indicated that the plant operating levels were in the high 50's dBA.
They also show that the corresponding early morning ambient levels were low 50's dBA.
The proposed plant baseline (lowest) sound levels are 40 dBA but are routinely in the
50's dBA making the two sites largely similar.

Config B-3 Reference Plant Test Monitored Sound Levels



Config B-3, Reference Plant Levels Adapted to the Proposed Equipment Layout

Proprietary Filters are A Vital Part of the System

Original Blue Smoke Control Filters provide efficiencies that have allowed our collector to be recognized as "BACT" - Best Available Control Technology - in the Asphalt Industry.

- **Our final filter is a 95% DOP filter that provides 95% control at .3 microns.**
- **Our 6th stage cartridge is rated 98% efficien-tient at 1.8 microns.**

What All The Buzz is About

"We found the Blue Smoke Control System gives us the emissions control we need at a reasonable cost. The Blue Smoke Control guys know their stuff."

"We changed to the Blue Smoke Control System to achieve better compliance with regulatory requirements. The results are amazing!"

Blue Smoke Control
a Division of Butler-Justice, Inc.
5594 East LaPalma
Anaheim, CA 92807

(714) 696-7599
email: mikeb@butlerjustice.com

When you want the Highest Standard of Emission Control for Your Hot Mix Asphalt Plant

Blue Smoke Control®

A Division of Butler-Justice, Inc.

Read About . . .

- **Blue Smoke Control - the Company and Technology**
- **Seven Steps to Better Emissions Control**
- **How the System "Eats" Blue Smoke**
- **Typical Applications**
- **The Proprietary Filters**
- **What All The Buzz is About**

FOR MORE INFORMATION:
Contact us at (714) 696-7599
www.bluesmokecontrol.com
www.butlerjustice.com

You Can't Beat the System . . . (Blue Smoke Control, that is!)

Mike Butler, CEO
Blue Smoke Control
A Division of Butler-Justice, Inc.

"We are proud that during the past decade, our Blue Smoke Control group has become a leading provider of blue smoke control systems for the hot mix asphalt industry throughout California, the United States and Mexico.

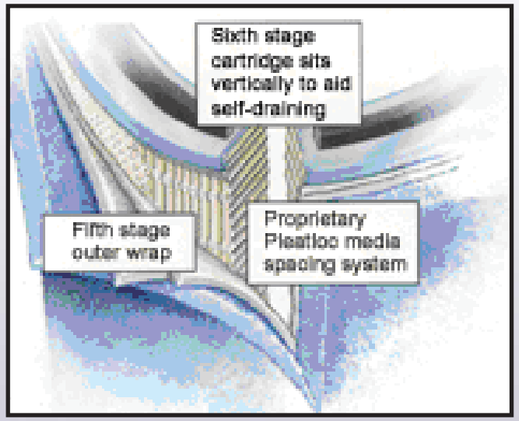
"At our Anaheim, California headquarters and in the field, we have worked extremely hard on technological breakthroughs that bring the highest standards of asphalt pollution control while achieving reasonble initial investment costs and economical ongoing operational and maintenance expenses.

"A significant part of our emissions control strategy has been the development of a system to capture blue smoke from numerous points in the asphalt process. The result is an innovative, efficient and cost effective system that provides state-of-the-art solutions to blue smoke control issues at the (1) Top of Silos, (2) Conveyor Transfer Points and (3) Truck Loadout Areas.

"Since introducing our patented system in 2002, hundreds are operating, with superb results."

"What a Sweet System!"

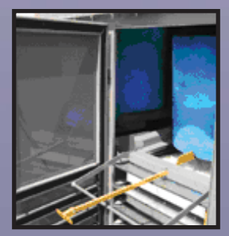
Seven Key Steps to Achieving Clean Emissions in Your Plant



The Blue Smoke Control filter cartridge is made from a proprietary filter media developed exclusively for collecting oil mist. Blue Smoke Control filter cartridges sit vertically inside the collector, allowing gravity to aid the drainage process.

All Stages of filters are readily accessible through the filter access doors. Filters or stages are installed two deep behind each door.

Each of the first four (4) stages are readily accessible. The filter removal handle, illustrated here with the first stage partially removed, enables access to the back filter without reaching deep into the collector.

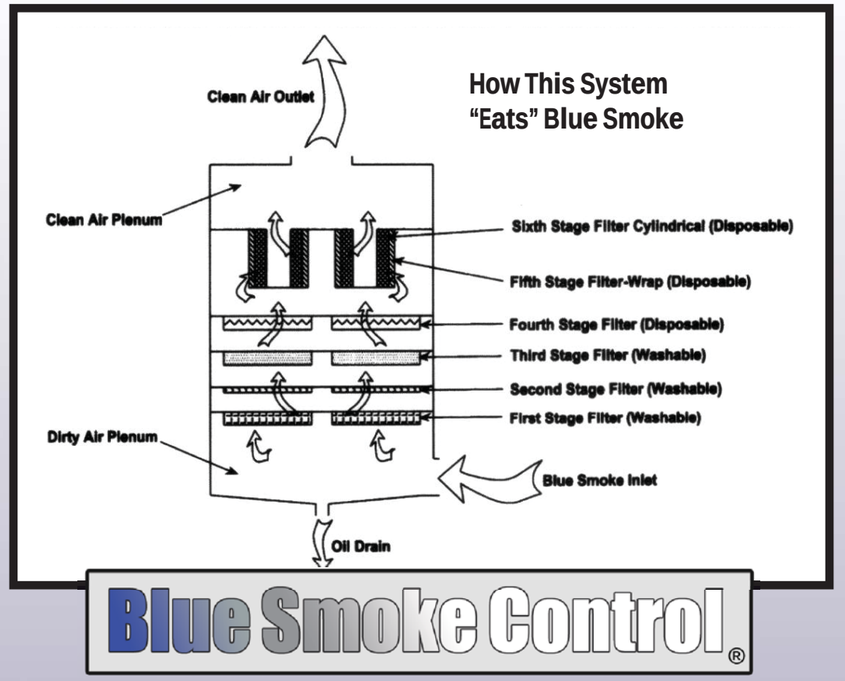


The fifth and sixth stage filters ar, sixth and seventh stage filters are also accessible without reaching deep inside the collector. The filter removal handle enables the rear filter to be pulled out to the access opening for service.

The Blue Smoke Control Filter System Collects Blue Smoke Like No Other

Blue smoke is actually tiny oil droplets that make up the blue haze typically associated with paving and hot mix asphalt production. Blue haze carries much of the characteristic asphalt odor.

Air pollution control agencies are becoming more concerned with blue smoke; especially as RAP: rubberized asphalt and polymer blends are more routinely specified. These specialty mixes are often known to produce an increased amount of blue smoke. More blue smoke means a greater number of neighborhood complaints for visible emissions and odor - AND more visits from the regulatory agencies.



The Blue Smoke Control collector utilizes the principal of vertical air flow or "up flow" to process the polluted air stream. Up flow enables the collected oil to drip down into the dirty air plenum, thus preventing the collected liquid from entering the clean air stream.

This also allows gravity to aid the drainage process, resulting in more efficient collection, longer filter life and easier maintenance!

Typical Applications:

Top of Silo Loading

Drag Slat Conveyor Transfer Points

Truck Loadout Areas

As noted below, these data do not represent a test as it is planned for the Seekonk Blue Smoke System.

Sound Evaluation

Fan Equipment Co., Inc.

Model : 7 BCS
Wheel Dia. : 44.5 inches
Casing : 1/4" PL Carbon Steel
Shaft Seal : Simple

Volume : 40000 CFM
Pressure : 8 In. W.G.S.P.
Speed : 1149 RPM
Distance : 5 Feet

Sound Power Levels (PWL) in dB RE 1.0E-12 watts

Octave Center Frequency (Hz)	63	125	250	500	1000	2000	4000	8000
PWL Fan	110	110	111	105	99	94	89	84

Sound Pressure Levels (SPL) in dB RE 0.0002 microbar

Octave Center Frequency (Hz)	63	125	250	500	1000	2000	4000	8000	Overall Level
SPL Fan Inlet (dBA) @ 5ft, Directivity factor of 8	76	86	94	94	90	87	82	75	99
SPL Fan Outlet (dBA) @ 5ft, Directivity factor of 8	76	86	94	94	90	87	82	75	99
SPL Fan Thru Casing (dBA) @ 5ft, Directivity factor of 2	45	56	63	63	60	56	51	44	68

Inlet & outlet sound power levels are calculated based on tests performed on an open inlet fan. It is not necessary to apply end reflection correction factors.
Casing values are based on 1/4" PL Carbon Steel materials with a simple shaft seal and assume the inlet & outlet noise is ducted away.
Fan Equipment Co. can not guarantee installed noise levels as we do not have control over environmental factors which determine these levels.
Casing values may be too low by up to 15 db because of differences in flanking paths and shaft seal leakage.

Fan Equipment's Sound Evaluation Program (FE_SOUND.EXE Version 2.6 7-29-05)

Due to the newness of the Blue Smoke control technology, the treatment has not been used in the project area (Northeast). No "As Installed" sound data are available from the system manufacturer Butler-Justice. After about 200 installations, their system has never been identified as an offending source of plant sound despite the high estimates by the fan vendor. For that reason, the FE (Fan Equipment Inc) spectrum is used but scaled to be a middle energy source at the proposed installation. A reduction of 15 dB in sound power represents the loss of most breach sound, essentially all inlet sound and an elevated release as shown in the product images above.

West Caldwell Calibration Laboratories Inc.

Certificate of Calibration

for

SLM 1/3 OCTAVE BAND ANALYZER

Manufactured by:	**RION**
Model No:	**NA-28**
Serial No:	**00380783**
Calibration Recall No:	**32457**

Submitted By:

Customer:	**DOUG SHEADEL**
Company:	**MODELING SPECIALTIES**
Address:	**30 MAPLE ROAD**
	WESTFORD MA 01886

The subject instrument was calibrated to the indicated specification using standards traceable to the SI through the National Institute of Standards and Technology or to accepted values of natural physical constants. This document certifies that the instrument met the following specification upon its return to the submitter.

West Caldwell Calibration Laboratories Procedure No. **NA-28** **RION**

Upon receipt for Calibration, the instrument was found to be:

Within (X)

tolerance of the indicated specification. See attached Report of Calibration.
The information supplied relates to the calibrated item listed above and statement of conformance for ALL given specifications and standards fall under the decision rule: A= (L-(U95)*M), where A is acceptance limit, L is manufacturer specifications, U95 is confidence level of 95% at k=2, and M is managed guard-band mulitiplier. The guard-band multiplier increases false-accept risk in favor of decreasing false-reject risk. Although the false accept risk increases, it is still below the Z540.3 2% risk requirement. The decision rule has been communicated and approved by customer during contract review.

West Caldwell Calibration Laboratories' calibration control system meets the following requirements: ANSI/NCSL Z540-1, ISO 9001, and ISO 17025.

Note: With this Certificate, Report of Calibration is included.

Approved by:

James Zhu

Quality Manager

ISO/IEC 17025:2017

Calibration Date: **25-Oct-21**

Certificate No: **32457 - 1**

West Caldwell Calibration Laboratories, Inc.
uncompromised calibration
1575 State Route 96, Victor, NY 14564, U.S.A.

ACCREDITED

Calibration Lab. Cert. # 1533.01

West Caldwell Calibration Laboratories Inc.

Certificate of Calibration

for

SOUND LEVEL METER

Manufactured by:	**RION**
Model No:	**NL-32**
Serial No:	**00661760**
Calibration Recall No:	**32457**

Submitted By:

Customer:	**DOUG SHEADEL**
Company:	**MODELING SPECIALTIES**
Address:	**30 MAPLE ROAD**
	WESTFORD MA 01886

The subject instrument was calibrated to the indicated specification using standards traceable to the SI through the National Institute of Standards and Technology or to accepted values of natural physical constants. This document certifies that the instrument met the following specification upon its return to the submitter.

West Caldwell Calibration Laboratories Procedure No. **NL-32** **RION**

Upon receipt for Calibration, the instrument was found to be:

Within **(X)**

tolerance of the indicated specification. See attached Report of Calibration.
The information supplied relates to the calibrated item listed above and statement of conformance for ALL given specifications and standards fall under the decision rule: A= (L-(U95)*M), where A is acceptance limit, L is manufacturer specifications, U95 is confidence level of 95% at k=2, and M is managed guard-band mulitiplier. The guard-band multiplier increases false-accept risk in favor of decreasing false-reject risk. Although the false accept risk increases, it is still below the Z540.3 2% risk requirement. The decision rule has been communicated and approved by customer during contract review.

West Caldwell Calibration Laboratories' calibration control system meets the following requirements: ANSI/NCSL Z540-1, ISO 9001, and ISO 17025.

Note: With this Certificate, Report of Calibration is included.

Approved by:

James Zhu

Quality Manager

ISO/IEC 17025:2017

Calibration Date: **25-Oct-21**

Certificate No: **32457 - 2**

West Caldwell Calibration Laboratories, Inc.
uncompromised calibration
1575 State Route 96, Victor, NY 14564, U.S.A.

ACCREDITED

Calibration Lab. Cert. # 1533.01

Scantek, Inc.
CALIBRATION LABORATORY

ISO 17025: 2017, ANSI/NCSL Z540:1994 Part 1
ACCREDITED by NVLAP (an ILAC MRA signatory)

NVLAP®
CALIBRATION
NVLAP Lab Code: 200625-0

Calibration Certificate No.46544

Instrument: **Sound Level Meter**
Model: **NL52**
Manufacturer: **Rion**
Serial number: **01021297**
Tested with: **Microphone UC-59 s/n 04427**
Preamplifier NH25 s/n 21339
Type (class): **1**
Customer: **Scantek, Inc.**
Tel/Fax: **410-290-7726 / 410-290-9167**

Date Calibrated: **6/1/2021** *Cal Due:* **6/1/2022**

Status:	Received	Sent
In tolerance:	X	X
Out of tolerance:		
See comments:		

Contains non-accredited tests: __Yes _X_ No
Calibration service: __ Basic _X_ Standard
Address: **6430 Dobbin Road, Suite C, Columbia, MD 21045**

Tested in accordance with the following procedures and standards:
Calibration of Sound Level Meters, Scantek Inc., Rev. 6/26/2015
SLM & Dosimeters – Acoustical Tests, Scantek Inc., Rev. 7/6/2011

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
483B-Norsonic	SME Cal Unit	31061	Jul 31, 2020	Scantek, Inc./ NVLAP	Jul 31, 2021
DS-360-SRS	Function Generator	61646	Dec 3, 2020	ACR Env./ A2LA	Dec 3, 2022
34401A-Agilent Technologies	Digital Voltmeter	MY41022043	Dec 04, 2020	ACR Env./ A2LA	Dec 04, 2021
HM30-Thommen	Meteo Station	1040170/39633	Dec 7, 2020	ACR Env./ A2LA	Dec 7, 2021
PC Program 1019 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1251-Norsonic	Calibrator	30878	Oct 26, 2020	Scantek, Inc./ NVLAP	Oct 26, 2021

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK).

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
22.4	100.78	41.6

Calibrated by:	Ronnie Buchanan	**Authorized signatory:**	Steven E. Marshall
Signature	Ronnie Buchanan	Signature	Steven E. Marshall
Date	6/1/2021	Date	6/1/2021

Scantek, Inc.
CALIBRATION LABORATORY

ISO 17025: 2017, ANSI/NCSL Z540:1994 Part 1
ACCREDITED by NVLAP (an ILAC MRA signatory)

NVLAP®
CALIBRATION
NVLAP Lab Code: 200625-0

Calibration Certificate No.45954

Instrument: **Sound Level Meter**
Model: **NL52**
Manufacturer: **Rion**
Serial number: **00331834**
Tested with: **Microphone UC-59 s/n 05046**
Preamplifier NH25 s/n 21785
Type (class): **1**
Customer: **Scantek, Inc.**
Tel/Fax: **410-290-7726 / 410-290-9167**

Date Calibrated: **2/10/2021** *Cal Due:* **2/10/2022**

Status:	Received	Sent
In tolerance:	X	X
Out of tolerance:		
See comments:		

Contains non-accredited tests: __Yes X No
Calibration service: __ Basic X Standard
Address: **6430 Dobbin Road, Suite C, Columbia, MD 21045**

Tested in accordance with the following procedures and standards:
Calibration of Sound Level Meters, Scantek Inc., Rev. 6/26/2015
SLM & Dosimeters – Acoustical Tests, Scantek Inc., Rev. 7/6/2011

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
483B-Norsonic	SME Cal Unit	31061	Jul 31, 2020	Scantek, Inc./ NVLAP	Jul 31, 2021
DS-360-SRS	Function Generator	61646	Dec 3, 2020	ACR Env./ A2LA	Dec 3, 2022
34401A-Agilent Technologies	Digital Voltmeter	MY41022043	Dec 04, 2020	ACR Env./ A2LA	Dec 04, 2021
HM30-Thommen	Meteo Station	1040170/39633	Dec 7, 2021	ACR Env./ A2LA	Dec 7, 2022
PC Program 1019 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1251-Norsonic	Calibrator	30878	Oct 26, 2020	Scantek, Inc./ NVLAP	Oct 26, 2021

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK).

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
21.3	101.14	40.1

Calibrated by:	Ronnie Buchanan	**Authorized signatory:**	William D. Gallagher
Signature	Ronnie Buchanan	Signature	William D Gallagher
Date	2/10/2021	Date	2/11/2021

West Caldwell Calibration Laboratories Inc.

Certificate of Calibration

for

PRECISION ACOUSTIC CALIBRATOR

Manufactured by:	**LARSON DAVIS**
Model No:	**CAL200**
Serial No:	**2097**
Calibration Recall No:	**31778**

Submitted By:

Customer:	**DOUG SHEADEL**
Company:	**MODELING SPECIALTIES**
Address:	**30 MAPLE ROAD**
	WESTFORD MA 01886

The subject instrument was calibrated to the indicated specification using standards traceable to the SI through the National Institute of Standards and Technology or to accepted values of natural physical constants. This document certifies that the instrument met the following specification upon its return to the submitter.

West Caldwell Calibration Laboratories Procedure No. **CAL200 LARS**

Upon receipt for Calibration, the instrument was found to be:

Within (X)

tolerance of the indicated specification. See attached Report of Calibration.
The information supplied relates to the calibrated item listed above and statement of conformance for ALL given specifications and standards fall under the decision rule: A= (L-(U95)*M), where A is acceptance limit, L is manufacturer specifications, U95 is confidence level of 95% at k=2, and M is managed guard-band mulitiplier. The guard-band multiplier increases false-accept risk in favor of decreasing false-reject risk. Although the false accept risk increases, it is still below the Z540.3 2% risk requirement. The decision rule has been communicated and approved by customer during contract review.

West Caldwell Calibration Laboratories' calibration control system meets the following requirements, ISO 10012-1 MIL STD 45662A, ANSI/NCSL Z540-1, IEC Guide 25, ISO 9001:2015, and ISO 17025

Note: With this Certificate, Report of Calibration is included.

Approved by:

James Zhu

Quality Manager
ISO/IEC 17025:2017

Calibration Date: **19-Mar-21**

Certificate No: **31778 - 4**

uncompromised calibration **West Caldwell Calibration Laboratories, Inc.**
1575 State Route 96, Victor, NY 14564, U.S.A.

ACCREDITED
Calibration Lab. Cert. # 1533.01

Appendix D

Cited Regulations

As part of the Project Sound Analysis, there are various regulations cited. The Commonwealth of Massachusetts regulates noise at 310 CMR.7.10 but provides several additional resources to support their interpretation of the regulation. These are attached in order. Also provided are the local regulations for the control of sound in Seekonk, MA. Also useful are excerpts of the Seekonk Zoning Regulations that define the appropriate uses within the Site's Industrial neighborhood.

310 CMR: DEPARTMENT OF ENVIRONMENTAL PROTECTION

7.10: U Noise

(1) No person owning, leasing, or controlling a source of sound shall willfully, negligently, or through failure to provide necessary equipment, service, or maintenance or to take necessary precautions cause, suffer, allow, or permit unnecessary emissions from said source of sound that may cause noise.

(2) 310 CMR 7.10(1) shall pertain to, but shall not be limited to, prolonged unattended sounding of burglar alarms, construction and demolition equipment which characteristically emit sound but which may be fitted and accommodated with equipment such as enclosures to suppress sound or may be operated in a manner so as to suppress sound, suppressible and preventable industrial and commercial sources of sound, and other man-made sounds that cause noise.

(3) 310 CMR 7.10(1) shall not apply to sounds emitted during and associated with:

(a) parades, public gatherings, or sporting events, for which permits have been issued provided that said parades, public gatherings, or sporting events in one city or town do not cause noise in another city or town;

(b) emergency police, fire, and ambulance vehicles;

(c) police, fire, and civil and national defense activities;

(d) domestic equipment such as lawn mowers and power saws between the hours of 7:00 A.M. and 9:00 P.M.

(4) 310 CMR 7.10(1) is subject to the enforcement provisions specified in 310 CMR 7.52.

The Commonwealth of Massachusetts
Executive Office of Environmental Affairs
Department of Environmental Quality Engineering
Division of Air Quality Control
One Winter Street, Boston 02108

February 1, 1990

DAQC Policy 90-001

DIVISION OF AIR QUALITY CONTROL POLICY

This policy is adopted by the Division of Air Quality Control. The Department's existing guideline for enforcing its noise regulation (310 CMR 7.10) is being reaffirmed.

P O L I C Y

A source of sound will be considered to be violating the Department's noise regulation (310 CMR 7.10) if the source:

1. Increases the broadband sound level by more than 10 dB(A) above ambient, or

2. Produces a "pure tone" condition - when any octave band center frequency sound pressure level exceeds the two adjacent center frequency sound pressure levels by 3 decibels or more.

These criteria are measured both at the property line and at the nearest inhabited residence. Ambient is defined as the background A-weighted sound level that is exceeded 90% of the time measured during equipment operating hours. The ambient may also be established by other means with the consent of the Department.

Approved: February 1, 1990 Effective: Immediately

Barbara A. Kwetz
Acting Director
Division of Air Quality Control

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs
Department of Environmental Protection
One Winter Street Boston, MA 02108 • 617-292-5500

Noise Pollution Policy Interpretation

Noise is a public health concern that falls within the scope of Massachusetts Department of Environmental Protection (MassDEP) authority as a form of regulated air pollution. See the related law, regulations, and policy: M.G.L. Chapter 111, Sections 142A-M, 310 CMR 7.00: Air Pollution Control, and MassDEP Noise Policy

Definitions (310 CMR 7.00)

- *Noise* is defined as "sound of sufficient intensity and/or duration as to cause a condition of air pollution."

- *Air pollution* means "the presence in the ambient air space of one or more air contaminants or combinations thereof in such concentrations and of such duration as to: (a) cause a nuisance; (b) be injurious, or be on the basis of current information, potentially injurious to human health or animal life, to vegetation, or to property; or (c) unreasonably interfere with the comfortable enjoyment of life and property or the conduct of business."

When Does MassDEP Evaluate Noise Impacts?

MassDEP evaluates how noise may affect people when 1) the agency reviews applications for approval under its air pollution regulations (310 CMR 7.02) for construction of facilities that will generate more than threshold amounts of pollutants such as nitrogen dioxide, sulfur dioxide, carbon monoxide, volatile organic compounds, particulate matter, and substances that are toxic in air; and 2) the agency responds to complaints from the public about noise generated by an existing source:

- When reviewing applications for pre-construction approval of new sources of air pollution, MassDEP examines the potential increase in sound levels over ambient conditions and the impacts of noise at both the source's property line and at the nearest residence or other sensitive receptor (e.g., schools, hospitals) located in the area surrounding the facility and occupied at the time of the permit review. Please note: *MassDEP requires that an air approval be obtained when a proposed facility is expected to emit more than threshold amounts of specific pollutants. If noise is the only air pollutant expected to be emitted by a facility, a pre-construction air approval is not required.*

- When MassDEP responds to a complaint about an existing source of noise, it focuses on protecting affected people at their residences and in other buildings that are occupied by sensitive receptors from nuisances and the public health effects of the noise. *Please note: An existing source of sound may or may not have needed a MassDEP air approval before it was built.*

Where Are MassDEP's Noise Criteria Applied?

The MassDEP noise pollution policy describes criteria that MassDEP uses to evaluate noise impacts at both the property line and the nearest occupied residence or other sensitive receptor. When noise is found to be a nuisance or a threat to health, MassDEP requires the source to mitigate its noise.

Noise levels that exceed the criteria at the source's property line by themselves do not necessarily result in a violation or a condition of air pollution under MassDEP regulations (see 310 CMR 7.10 U). The agency also considers the effect of noise on the nearest occupied residence and/or building housing sensitive receptors:

- In responding to complaints, MassDEP measures noise levels at the complainant's location and at other nearby locations that may be affected (e.g., residences and/or buildings with other sensitive receptors). If the noise level at a sensitive receptor's location is more than 10 dB(A) above ambient, MassDEP requires the noise source to mitigate its impact.

- A new noise source will be required to mitigate its sound emissions if they are projected to cause the broadband sound level at a residence or building housing sensitive receptors to exceed ambient background by more than 10 dB(A).

- A new noise source that would be located in an area that is not likely to be developed for residential use in the future (e.g., due to abutting wetlands or similarly undevelopable areas), or in a commercial or industrial area with no sensitive receptors may not be required to mitigate its noise impact on those areas, even if projected to cause noise levels at the facility's property line to exceed ambient background by more than 10 dB(A). However, a new noise source that would be located in an area in which housing or buildings containing other sensitive receptors could be developed in the future may be required to mitigate its noise impact in these areas.

This policy has been designed to protect affected residents and other sensitive occupants of nearby property, but not necessarily uninhabited areas in and around the source's property. Sources of noise may need to implement mitigation if residences or buildings occupied by sensitive receptors are developed where they may be affected by the source's noise.

SEEKONK | Massachusetts

Town By-Laws

adopted at November 18, 2019 Fall Town Meeting effective March 5, 2020

May 13, 2019

Section 5 – Duration of Permit/Time Limitations
A permit issued pursuant to this by-law shall be valid only for the date and hours specified on the application, which shall not be before 8:00 a.m. or after 11:00 p.m.

Section 6 – Cleanup Required
The applicant shall be responsible for the removal of litter, debris, and other materials from the street or portion thereof used for the event which is attributable to, or caused by, the event.

Section 7 – Blocking of Roads
Prior to the commencement of the time for which the road is to be blocked, the superintendent of public works shall cause the street or portion thereof to be blocked by devices of his choice to motor vehicles except authorized emergency or hazard vehicles, and to provide detour signs for vehicular traffic. No other person shall, in any manner, block or place barricades in the road. Traffic-blocking devices shall be delivered to the designated address one or two days prior to the event, and retrieved on the next working day for town. Once delivered, the applicant shall be held financially responsible for traffic-blocking devices that are lost, stolen, and/or damaged until retrieved by public works personnel.

A street, or portion thereof, blocked off for an event, shall not be obstructed by picnic tables and shall not be obstructed by other obstacles which cannot be readily moved to allow emergency or hazard vehicles to enter in response to an emergency. The superintendent of public works shall notify the police department and the fire department of the date and time of the road blocking.

Section 8 – Limitations on Number of Permits Issued (Optional)
No more than two (2) permits shall be granted by the town in any calendar year for the same neighborhood or event.

CATEGORY 29 – Anti-Noise By-law

Section 1 – Unlawful Noise Prohibited
It shall be unlawful for any person or persons to create, assist in creating, continue or allow to continue, any excessive, unnecessary, or unusually loud noise which either annoys, disturbs, injures, or endangers the reasonable quiet, comfort, repose, or the health or safety of others within the Town of Seekonk. The following acts are declared to be loud, disturbing, injurious, unnecessary and unlawful noises in violation of this section, but this enumeration shall not be exclusive, namely:

1. Radio, Phonograph, Musical Instruments and Television. The playing of any radio, phonograph, television set, amplified or musical instruments, loudspeakers, tape recorder, or other electronic sound producing devices, in such a manner or with volume at any time or place so as to annoy or disturb the reasonable quiet, comfort or repose of persons in any dwelling or other type of residence, or in any office or of any persons in the vicinity.
2. Noises on Public Streets. The making of any loud noises on the public streets, between the hours of 10:00 p.m. and 8:00 a.m., or the making of any such noise at any time or place so as to annoy or disturb the reasonable quiet, comfort or repose of persons in any dwelling, or other type of residence, or in any office or of any persons in the vicinity.
3. Animal Noises: The keeping of any animal or bird which, by causing frequent or long continued noise, shall disturb the reasonable comfort or repose of any person.
4. Construction Noises. The creation of any construction noise audible within any dwelling or other type of residence other than the residence from which the noise emanates before 7 a.m. on weekdays and 8 a.m. on weekends and legal holidays and after 10 p.m. on any day; or the making of such noise at any time or place so as to annoy or disturb the reasonable quiet, comfort or repose of any persons in any dwelling or other type of residence.
5. The police department, and any other town enforcement agency, shall utilize a certified sound-measuring device to investigate noise complaints. Such sound-measuring devices shall be maintained and periodically certified per manufacturer recommendations. The following tables shall serve as a guide to enforcement officials for investigating complaints.

Maximum Allowable Noise Sound Pressure Levels for Specific Premises

Type of Premises	Location Where Noise is Measured	Time Period	Maximum Allowable Sound Pressure Level
Residential Premises	Property Line	7:00 a.m. to 10:00 p.m.	55 decibels
Residential Premises	Property Line	10:00 p.m. to 7:00 a.m.	50 decibels
Commercial Premises	Property Line	7:00 a.m. to 10:00 p.m.	65 decibels

Commercial Premises	Property Line	10:00 p.m. to 7:00 a.m.	60 decibels
Industrial Premises	Property Line	7:00 a.m. to 10:00 p.m.	80 decibels
Industrial Premises	Property Line	10:00 p.m. to 7:00 a.m.	75 decibels
Public Premises	Property line or anywhere on public premises	8:00 a.m. to 10:00 p.m.	75 decibels
Public Premises	Property line or anywhere on public premises	10:00 p.m. to 8:00 a.m.	70 decibels

Maximum Allowable Noise Sound Pressure Levels for Motor Vehicles

Type of Vehicle	Time Period	Maximum Allowable Sound Pressure Level	Measurement Distance from Motor Vehicle
Motor vehicle weighing less than 10,000 pounds, Manufacturer's Gross Vehicle Weight	At any time	80 decibels	25 feet
Motor vehicle weighing more than 10,000 pounds, Manufacturer's Gross Vehicle Weight	7:00 a.m. to 10:00 p.m.	88 decibels	25 feet
Motor vehicle weighing more than 10,000 pounds, Manufacturer's Gross Vehicle Weight	10:00 p.m. to 7:00 a.m.	80 decibels	25 feet

Section 2 – Exemptions

None of the terms or prohibitions of the previous section shall apply or be enforced against:

1. Emergency Vehicles. Any police or fire vehicle or any ambulance while engaged in necessary emergency business.
2. Highway and Utility Maintenance and Construction. Necessary excavation in or repairs of bridges, streets, or highways, or any public utility installation by or on behalf of the Town, or any public utility or any agency of the State of Massachusetts.
3. Public Address. The reasonable use of amplifiers or loud speakers for public addresses which are non-commercial in nature.

Section 3 – Penalties

Any individual who violates this By-law shall be subject to fines in accordance with Category 39 of the By-law and the fine schedule established in Attachment A.

Section 4 – Other Remedies

1. If the person or persons responsible for an activity which violates Section 1 cannot be determined, the person in lawful custody and/or control of the premises, including but not limited to the owner, lessee or occupant of the property on which the activity is located, shall be deemed responsible for the violation.

Section 5 – Severability

If any provision of this by-law is held to be unconstitutional or otherwise invalid by any court of competent jurisdiction, the remaining provisions of the by-law shall not be invalidated.

Maximum Allowable Noise Sound Pressure Levels for Specific Premises

Type of Premises	Location Where Noise is Measured	Time Period	Maximum Allowable Sound Pressure Level
Residential Premises	Property Line	7:00 a.m. to 10:00 p.m.	55 decibels
Residential Premises	Property Line	10:00 p.m. to 7:00 a.m.	50 decibels
Commercial Premises	Property Line	7:00 a.m. to 10:00 p.m.	65 decibels
Commercial Premises	Property Line	10:00 p.m. to 7:00 a.m.	60 decibels
Industrial Premises	Property Line	7:00 a.m. to 10:00 p.m.	80 decibels
Industrial Premises	Property Line	10:00 p.m. to 7:00 a.m.	75 decibels
Public Premises	Property line or anywhere on public premises	7:00 a.m. to 10:00 p.m.	75 decibels
Public Premises	Property line or anywhere on public premises	10:00 p.m. to 7:00 a.m.	70 decibels

Maximum Allowable Noise Sound Pressure Levels for Motor Vehicles

Type of Vehicle	Time Period	Maximum Allowable Sound Pressure Level	Measurement Distance from Motor Vehicle
Motor vehicle weighing less than 10,000 pounds, Manufacturer's Gross Vehicle Weight	At any time	80 decibels	25 feet
Motor vehicle weighing more than 10,000 pounds, Manufacturer's Gross Vehicle Weight	7:00 a.m. to 10:00 p.m.	88 decibels	25 feet
Motor vehicle weighing more than 10,000 pounds, Manufacturer's Gross Vehicle Weight	10:00 p.m. to 7:00 a.m.	80 decibels	25 feet

Source of sound pressure levels – Cranston, RI

CATEGORY 30 – Building Numbers

The Board of Selectmen shall require that every building used for a dwelling house or a place of business in the Town of Seekonk bear, in a conspicuous place, a clear and legible building number. This number must be a minimum of 4" in height and contrast with its background in order to be visible from the street. For building with considerable setbacks or situated in a way which the number is not clearly visible from the street, the building number shall be located in a manner in which it can be seen clearly from the street (on a mailbox, post, etc.).

No person shall, for longer than ten (10) days after notification from the Board of Selectmen, Fire Chief, Police Chief or Building Inspector neglect or refuse to affix to, or suffer to remain on, any property owned or leased by him, a street number other than the one designated for such property by either the Building Department or the Board of Assessors. Failure to meet the terms of the notification or any individual who violates this By-law shall be subject to fines in accordance with Category 39 of the By-law and the fine schedule established in Attachment A.

ZONING BY-LAWS
OF THE
TOWN OF SEEKONK
MASSACHUSETTS

APPROVED OCTOBER 2, 1958

INCORPORATING SUBSEQUENT REVISIONS THROUGH TOWN MEETING

CONCLUDED February 27, 2017

Reprinted July 24, 2017

The following By-laws, having been adopted by the Town on April 28, 1958, and approved by the Attorney General of the Commonwealth of Massachusetts on October 2, 1958, supersede the original Zoning Laws approved November 14, 1942 and the amendments thereto.

SEEKONK PLANNING BOARD

(Section 4.2.4 footnotes - continued from page 29)

[1]The principal activities of which shall be the conduct of governmental, professional, management, or financial activities.

[2]Shall be consistent with the intent of an industry district as outlined in Section 4.1.2.4.

[3]Retail stores and service establishments, other than restaurants and mini-storage facilities, the principal activities of which shall be the selling of merchandise at retail; the merchandise and services of which are sold for use or consumption either within the building or principally off of the premises; and the customers of which are provided with goods and services principally within a building.

[4]Retail stores and service establishments, excluding mini-storage facilities – the principal activities of which are the selling of services or merchandise at retail and the operations of which may be carried on outside a building as customarily as within.

[5]The principal activities of which are the sale of merchandise to individuals and corporations for resale to the public.

[6]The principal products from which are customarily delivered to individuals or retail outlets, as for example, bakeries, cleaning and dying plants, carpet cleaning plants, ice plants, soft drink bottling plants, printers, provided such establishments comply with industrial district construction and operation standards and limitations.

[7]Provided that any building or facility within a service station site shall be at least 50 feet away from any residential district boundary and be at least 200 feet away from any entrance or exit to or from a school, playground, public library, church, hospital, or children's home, and provided further that any lubricating, washing, or repairing not conducted within a building shall be permitted only if a wall of solid appearance or a tight evergreen hedge not less than six (6) feet in height is erected and maintained between such uses and any adjoining residence district. That the minimum frontage measured at the street line shall be 150 feet and if a corner lot, it shall be 150 feet on both streets. That the minimum lot area shall be 15,000 square feet or if a corner lot, 22,500 square feet.

[8]See Section 8.2 for performance standards related to drive-through facilities.

4.2.5 Industrial Uses

Principal Uses (unless specified otherwise)	**Business Districts**			**Industrial District**	**Residence Districts**			
	LBD	**HBD**	**LCVD**	**I**	**R-1**	**R-2**	**R-3**	**R-4**
H. Industrial Uses[1]								
1. Administration	N	N	N	Y	N	N	N	N
2. Research	N	N	N	Y	N	N	N	N
3. Manufacturing	N	N	N	Y	N	N	N	N
4. Processing	N	N	N	Y	N	N	N	N
5. Fabrication	N	N	N	Y	N	N	N	N
6. Assembly	N	N	N	Y	N	N	N	N
7. Storage	N	N	N	Y	N	N	N	N
8. Mini-storage	N	N	N	Y	N	N	N	N
9. Freight handling	N	N	N	Y	N	N	N	N

[1]Excluding junk and used material storage or salvage operations, which are not pertinent to a manufacturing or fabrication use on the premises.

4.2.5 Accessory Uses

Accessory Uses	**Residence Districts**				**Business Districts**			**Industrial District**
	R-1	**R-2**	**R-3**	**R-4**	**LBD**	**HBD**	**LCVD**	**I**
1. Accessory buildings and uses	Y	Y	Y	Y	Y	Y	Y	Y[1]

[1]Within any industry district, buildings, accessory buildings and uses of the land consistent with the principal land use are permitted. Accessory buildings shall not be located in any required front, side, or rear yard. Accessory buildings and uses in the industrial district include but shall not be limited to:

a. Garage for storage or repairs of appurtenant motor vehicles;
b. Offices pertaining to the industrial operation;
c. Employee restaurant and athletic facilities;
d. Laboratories;
e. Retail sales when such sales comprise a minor part (less than 10%) of the industrial operation and/or gross floor area, and sale of any of these items to be directly manufactured by that particular firm and/or corporation on that particular lot. No lot shall be further subdivided in order to meet the intent of this section. The gross floor area of the anticipated retail sales shall have parking, in addition to that required for the industrial use, in conformance with Section 8.1 of these By-laws, and as part of a parking plan approved by the Planning Board.