Noise Impact Analysis

For
Moreno Valley Farm Bureau Project

Located in
Moreno Valley, California

Prepared for:

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I. Executive Summary

A. Construction Noise

Construction noise levels during the loudest phase of construction (paving) are expected to range between 67.8 and 73.5 dBA Leq at nearby receptors north, northwest, east, west, and south of the project site and will not exceed the 80 dBA Leq (eight-hour) daytime noise standard at residential land uses between the hours of 7:00 AM and 10:00 PM or the 85 dBA Leq (eight-hour) daytime noise standard at commercial land uses between the hours of 7:00 AM and 10:00 PM. Demolition, site preparation, grading and paving activities may, however, exceed the nighttime (10:00 PM to 7:00 AM) noise standards of 70 dBA Leq (8-hr).

In order to avoid exceeding the nighttime standard, grading and paving activities should be limited to the between 7:00 AM and 7:00 PM Monday through Friday, or outside of the hours between 8:00 AM and 4:00 PM on a Saturday, on a Sunday or on a Holiday, as outlined in City of Moreno Valley Municipal Code Section 8.14.040[E]). The code does allow for exceptions for emergency work conducted by a public service utility or for otherwise approved by the city manager or designee. The following best management practices are recommended to minimize construction noise impacts.

Recommended Best Management Practices

Although not required, the following Best Management Practices (BMPs) can be implemented to further reduce noise at sensitive receptors.

1. Equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturer standards.
2. Place all stationary construction equipment so that emitted noise is directed away from the noise sensitive receptors nearest the project site.
3. As applicable, shut off all equipment when not in use.
4. Locate equipment staging in areas that create the greatest distance between construction-related noise/vibration sources and sensitive receptors.
5. Block and/or direct portable stationary noise sources away from sensitive receptors. Either one-inch plywood or sound blankets can be utilized for this purpose. They should reach up from the ground and block the line of sight between the equipment and the sensitive receptor. The shielding should be without holes and cracks.
6. Prohibit amplified music and/or voice on the project site.
7. Limit haul truck deliveries to daytime hours between 7:00 AM and 10:00 PM.

B. Project Operation (On-Site)

On-site noise sources associated with the proposed townhomes will include slow moving vehicles, recreation, and heating and ventilation (HVAC) noise. Operational noise levels were modeled using the SoundPLAN noise model. They are expected to range between 48.0 and 52.2 dBA Ldn/CNEL and will not exceed the City's noise threshold of 60 dBA Ldn[1] at any nearby sensitive land uses. Project operation would not result in substantial increases in ambient noise levels. No mitigation is required.

C. Project Operation (Off-Site)

The proposed project will add an additional 944 average daily trips (ADTs) to existing traffic volumes. Existing traffic noise levels range between 70.6 and 74.3 dBA CNEL and existing plus project traffic noise will range between 70.8 and 74.3 dBA CNEL. The project would contribute less than a one-decibel increase in ambient noise levels along affected road segments. Therefore, the project will not exceed applicable standards and will not result in substantial increases in ambient noise levels. No mitigation is required.

D. Buildout Traffic Noise Levels at the Project Site (Noise/Land Use Compatibility)

Traffic noise levels associated with Box Springs Road and State Route 60 are expected to range between 45 (or ambient) and 75 dBA CNEL at proposed residential buildings adjacent to Box Springs Road (first row homes) and will exceed the normally acceptable level criteria of 65 dBA CNEL for multiple family residential land uses and the conditionally acceptable noise level standard of 70 dBA CNEL at first row homes. Noise levels exceeding 70 dBA CNEL are considered normally unacceptable and require a detailed analysis in order to identify measures that will make sure interior noise levels do not exceed the state interior noise standard of 45 dBA CNEL. As long as adequate outdoor recreational square footage (as determined by the City) will not be exposed to noise levels that exceed 65 dBA CNEL and as long as the following mitigation measures are implemented to ensure that interior noise levels do not exceed the State's interior noise requirement of 45 dBA CNEL, impacts would be less than significant.

Mitigation Measure 1

To satisfy the State of California's 45 dBA CNEL noise insulation standards, the proposed "first row" residential buildings will require a windows-closed condition and a means of mechanical ventilation (e.g. air conditioning). Additionally, All windows and sliding glass doors shall have well-fitted, well-weather-stripped assemblies and meet the required STC levels as shown in Figure 7 and detailed in Table 14.

Mitigation Measure 2

In addition to upgraded windows and sliding glass doors, the following measures shall also be taken to ensure interior noise levels do not exceed 45 dBA CNEL.

- Exterior Walls: At any penetrations of exterior walls by pipes, ducts, or conduits, the space between the wall and pipes, ducts, or conduits shall be caulked or filled with mortar to form an airtight seal.
- Roof: Roof sheathing of wood construction shall be per manufacturer's specification or caulked plywood of at least one-half inch thick. Ceilings shall be per manufacturer's specification or well-

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[1] Section 9.03.040 (D8) of the City of Moreno Valley Municipal Code.

sealed gypsum board of at least one-half inch thick. Insulation with at least a rating of R-19 shall be used in the attic space.

- Ventilation:

  Exterior vents installed on first-row residential buildings shall be oriented away from roadway. If such an orientation cannot be avoided, then an acoustical baffle shall be placed in the attic space behind the vents.

E. Airport Noise

The closest airport to the project site is the Riverside Municipal Airport which is located approximately 4.8 miles north of the project site. The project site is not located within an airport land use compatibility plan area or within a 65 dBA CNEL airport noise contour. The project would not expose people residing or working in the area to excessive noise levels. No mitigation is required.

F. Groundborne Vibration Impacts

Based on the provided site plan and aerial photographs, the nearest off-site structure is a multiple family residential building located approximately 25 feet west of the project site. At 25 feet, vibration levels produced by a vibratory roller would attenuate to a PPV of approximately 0.21 in/sec; and vibration levels produced by a large bulldozer would attenuate to a PPV of approximately 0.089 in/sec. Therefore, use of vibratory equipment during project construction would not cause groundborne vibration that is likely to result in structural damage. This impact is less than significant. No mitigation is required.

II. Introduction and Setting

A. Purpose and Objectives

The purpose of this report is to provide an assessment of the noise and vibration impacts that may occur with the development of the proposed West Coast Storage Project and to identify mitigation measures that may be necessary to reduce those impacts. The objectives of the study include:

- documentation of existing noise conditions
- discussion of noise modeling methodology and procedures
- analysis of noise and vibration generated by the construction of the project
- analysis and discussion of potential traffic noise impacts from the proposed project
- analysis and discussion of noise impacts associated with on-site operation
- recommendations for mitigation measures

B. Project Location

The proposed project is located in western Moreno Valley at 21150 Box Springs Road, approximately 550 north of the Interstate 215/ State Route 60 freeway interchange. Figure 1 and Figure 2 provide a regional and local context of the project location, respectively.

C. Proposed Project

The project site is the current location of the Moreno Valley County Farm Bureau. The proposed Project includes demolition of the existing structures on-site in order to develop a 140-unit, market-rate multifamily (low-rise) residential development. The proposed site plan is shown in Figure 3.

Figure 1

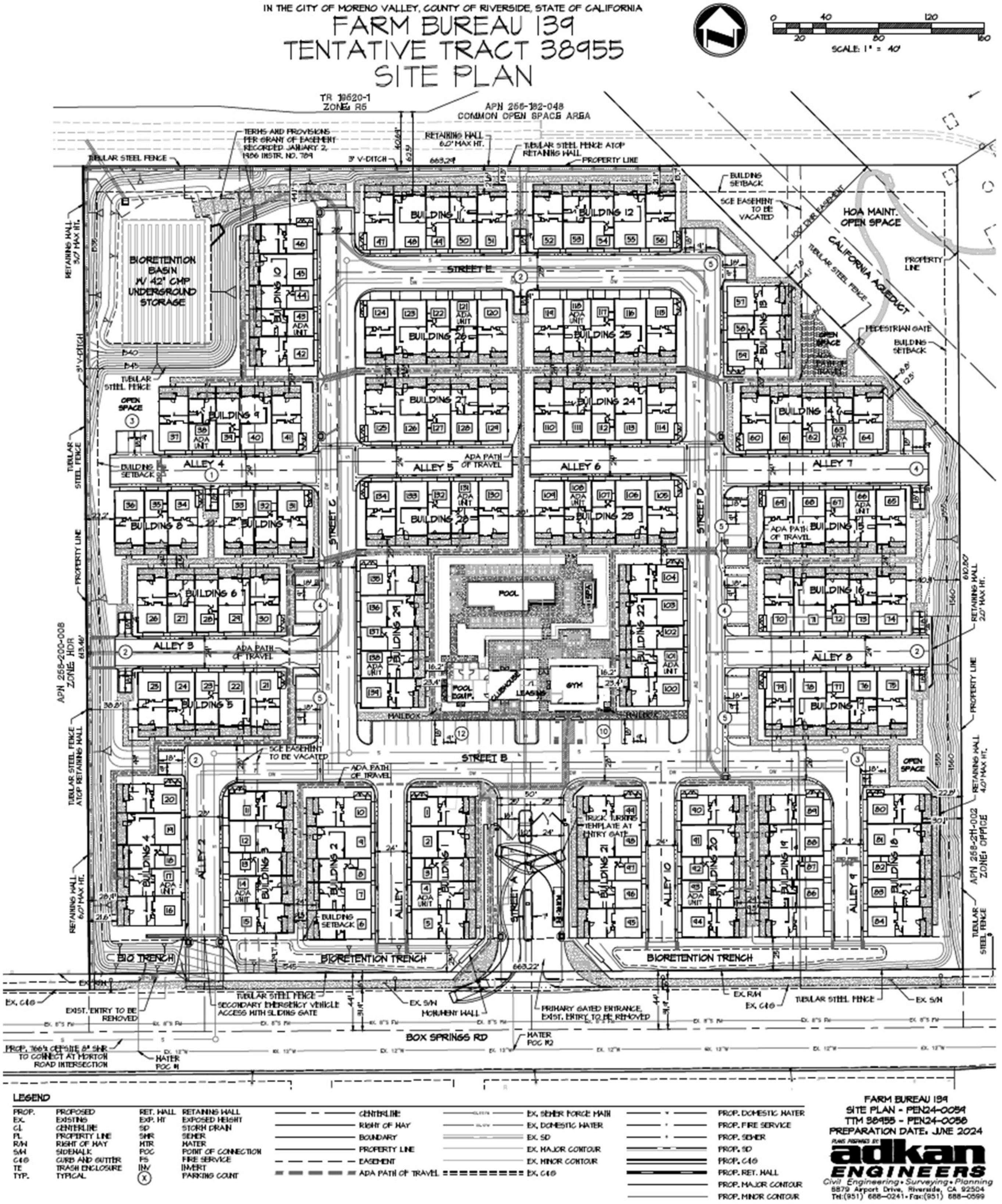
Regional Location

Figure 2

Site Vicinity

Figure 3

Proposed Site Plan



III. Noise and Vibration Fundamentals

A. Basics of Sound and Noise

Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air) to a hearing organ, such as a human ear. Noise is defined as loud, unexpected, or annoying sound. Typical noise levels are shown in Table 1.

In the science of acoustics, the fundamental model consists of a sound (or noise) source, a receiver, and the propagation path between the two. The loudness of the noise source and the obstructions or atmospheric factors affecting the propagation path to the receiver determines the sound level and characteristics of the noise perceived by the receiver.

Table 1. Typical Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110	Rock Band
Jet fly-over at 1,000 feet		
	100	
Gas lawn mower at 3 feet		
	90	
Diesel truck at 50 feet at 50 mph*		Food blender at 3 feet
	80	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawn mower at 100 feet	70	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	60	
		Large business office
Quiet urban daytime	50	Dishwasher in next room
Quiet urban nighttime	40	Theater, large conference room (background)
Quiet suburban nighttime		
	30	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	20	
		Broadcast/recording studio
	10	
	0	

Source: California Department of Transportation, 2013.

Since the range of intensities that the human ear can detect is so large, the scale frequently used to measure intensity is a scale based on multiples of 10, the logarithmic scale. The scale for measuring intensity is the decibel scale. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud (EPA 1974). The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at three feet is roughly at 60-65 dBA, while loud jet engine noises equate to 110 dBA at approximately 1,000 feet, which can cause serious discomfort (FTA 2011).

Loudness and Frequency

The amplitude of pressure waves generated by a sound source determines the loudness of that source. Sound pressure amplitude is measured in micro-Pascals (mPa), with one mPa representing approximately one hundred billionth of normal atmospheric pressure. Sound pressure amplitudes for different kinds of noise environments can range from less than 100 to 100,000,000 mPa. Because of this huge range of values, sound is rarely expressed in terms of mPa. Instead, a logarithmic scale is used to describe sound pressure level (SPL) in terms of decibels (dB). The threshold of audible sound is about 0 dB for a healthy human ear, which corresponds to 20 mPa.

The decibel scale alone does not adequately characterize how humans perceive noise, as the dominant frequencies of a sound have a substantial effect on the human response to that sound. Although the intensity (energy per unit area) of the sound is a purely physical quantity, the loudness or human response is determined by the characteristics of the human ear. Human hearing is limited in the range of audible frequencies, as well as in the way it perceives the SPL within that range. In general, people are most sensitive to the frequency range of 1,000 to 8,000 Hz and perceive sounds within that range better than sounds of the same amplitude in higher or lower frequencies. To approximate the response of the human ear, sound levels of individual frequency bands are weighted, depending on the human sensitivity to those frequencies. An “A-weighted” sound level (expressed in units of dBA) can then be calculated from this information. Noise levels are typically reported in terms of A-weighted decibels or dBA.

Sound Propagation

When sound propagates over a distance, it changes in level and frequency content. Sound from a localized source (i.e., a point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of six dB for each doubling of distance from a point source. Sound levels from a line source (i.e., vehicle traffic) attenuate at a rate of three dB for each doubling of distance.

The propagation path of noise of common noise sources is usually very close to the ground. Noise attenuation from ground absorption adds to the attenuation associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually sufficiently accurate for distances of less than 200 feet. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receiver such as soft dirt, grass, or scattered bushes and trees), an excess ground attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance from a line source (FHWA 2001).

Receivers located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can be increased at large distances (e.g., more than 500 feet) due to atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also have significant effects (EPA 1974).

Noise Barriers

A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. However, the amount of attenuation provided by shielding depends on the size and density of the object and the frequency content of the noise source. Natural terrain features (e.g., hills and dense/deep woods) and human-made features (e.g., buildings and walls) can substantially reduce noise levels. Walls are often constructed between a source and a receiver specifically to reduce noise. A barrier that breaks the line of sight between a source and a receiver will typically result in at least five dB of noise reduction, with taller barriers providing increased noise reduction. Shielding by trees and other such vegetation typically only has an “out of sight, out of mind” effect. That is, only the perception of noise impact tends to decrease when vegetation blocks the line-of-sight to nearby residents and unless it is very thick and dense (vegetation more than 100 feet deep may provide a 5 dB reduction), it is unlikely to provide any measurable decrease in noise levels. The Federal Highway Administration (FHWA) does not consider the planting of vegetation to be a noise abatement measure (FHWA 2000).

B. Noise Descriptors

Another important aspect of noise is the duration of the sound and the way it is described and distributed in time. Noise in the daily human environment fluctuates over time; these changes can be minor or substantial, depending on individual factors. Specifically, noise fluctuations can be influenced by conditions such as: (1) whether noise levels occur in regular or random patterns; (2) if noise level fluctuations are rapid or slow; and (3) if noise levels vary widely or are relatively constant. Various noise descriptors have been developed to describe time-varying noise levels, with the following noise descriptors most commonly used in transportation noise analysis.

Equivalent Sound Level (L_{eq})

L_{eq} represents an average of the sound energy occurring over a specified period. In effect, L_{eq} is the steady-state sound level containing the same acoustical energy as the time-varying sound that actually occurs during the same period. The one-hour A-weighted equivalent sound level (L_{eq}[h]), for example, is the energy average of A-weighted sound levels occurring during a one-hour period. One hour is the normal (default) assumed time period for L_{eq} unless stated otherwise.

Percentile-Exceeded Sound Level (L_n)

Ln represents the sound level exceeded for a given percentage of a specified period. For example, L_{10} is the sound level exceeded 10 percent of the time, and L_{90} is the sound level exceeded 90 percent of the time.

Maximum Sound Level (L_{max})

L_{max} is the maximum sound level measured during a specified time period with "slow/1-second" time-averaging.

Day-Night Level (Ldn)

Ldn is the energy average of A-weighted sound levels occurring over a 24-hour period, with a 10-dB penalty applied to A-weighted sound levels occurring during nighttime hours between 10:00 PM and 7:00 AM

Community Noise Equivalent Level (CNEL)

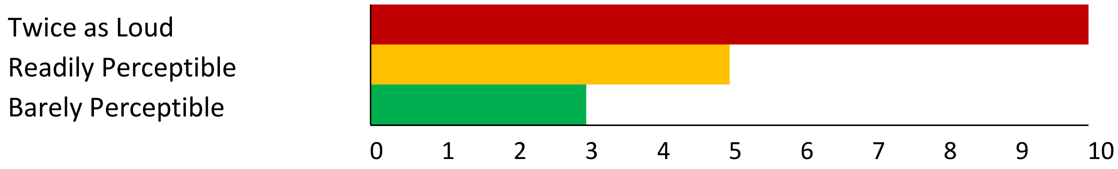
Similar to Ldn, CNEL is the energy average of the A-weighted sound levels occurring over a 24-hour period, with a 10-dB penalty applied to A-weighted sound levels occurring during the nighttime hours between 10:00 PM and 7:00 AM, and a 5-dB penalty applied to the A-weighted sound levels occurring during evening hours between 7:00 PM and 10:00 PM.

C. Human Perception of Noise

Since the range of intensities that the human ear can detect is so large, the scale frequently used to measure intensity is a scale based on multiples of 10, the logarithmic scale. The scale for measuring intensity is the decibel scale. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud. (EPA 1974) The most common sounds vary between 40 dBA (very quiet) and 100 dBA (very loud). Normal conversation at a distance of three feet is roughly at 60 dBA, while loud jet engine noises equate to 110 dBA.

According to research originally published in the Noise Effects Handbook (FTA 2018), the percentage of persons who are highly annoyed by noise levels is approximately 0 percent at less than 45 dBA, 10 percent around 60 dBA, and increases rapidly to approximately 70 percent at greater than 85 dBA. Despite this variability in behavior on an individual level, the population can be expected to exhibit the following responses to changes in noise levels as shown in Table 2.

Table 2. Noise Level Increase Perception



Source: California Department of Transportation, 2013.

D. Noise Control

Noise control is the process of obtaining an acceptable noise environment for an observation point or receiver by controlling the noise source, transmission path, and/or receiver. This concept is known as the source-path-receiver concept. In general, noise control measures can be applied to these three elements. Source control could involve the use of quieter equipment, lower traffic volumes, or relocation of the source. Transmission path control involves the placement of a solid barrier, earthen berm, or other solid structure between the noise source and the noise receiver in a manner that blocks the direct line of sight between the two. Effective noise barriers can reduce noise levels by 10 to 15 dBA, cutting the loudness of the noise source in half. A noise barrier is most effective when placed close to the noise source or receiver. Noise barriers do have limitations, however. For a noise barrier to be effective, it must block the path of sound from the noise source, also called “line-of-sight”. Installation of architectural upgrades to reduce the amount of exterior noise that is transmitted to interior spaces is also an effective measure to control interior noise levels.

E. Vibration Fundamentals

The way in which vibration is transmitted through the earth is called propagation. Propagation of earthborn vibration is complicated and difficult to predict because of the endless variations in the soil through which the waves travel. There are three main types of vibration propagation: surface, compression, and shear waves. Surface or “Raleigh” waves travel along the ground’s surface. These waves carry most of their energy along an expanding circular wave front, similar to ripples produced by throwing a rock into a pool of water. Compression waves, or “P-waves”, are body waves that carry their energy along an expanding spherical wave front. The particle motion in these waves is longitudinal (i.e., in a “push-pull” fashion). P-waves are analogous to airborne sound waves. Shear waves, or “S-waves”, are also body waves that carry energy along an expanding spherical wave front. However, unlike P-waves, the particle motion is transverse, or side-to-side and perpendicular to the direction of propagation.

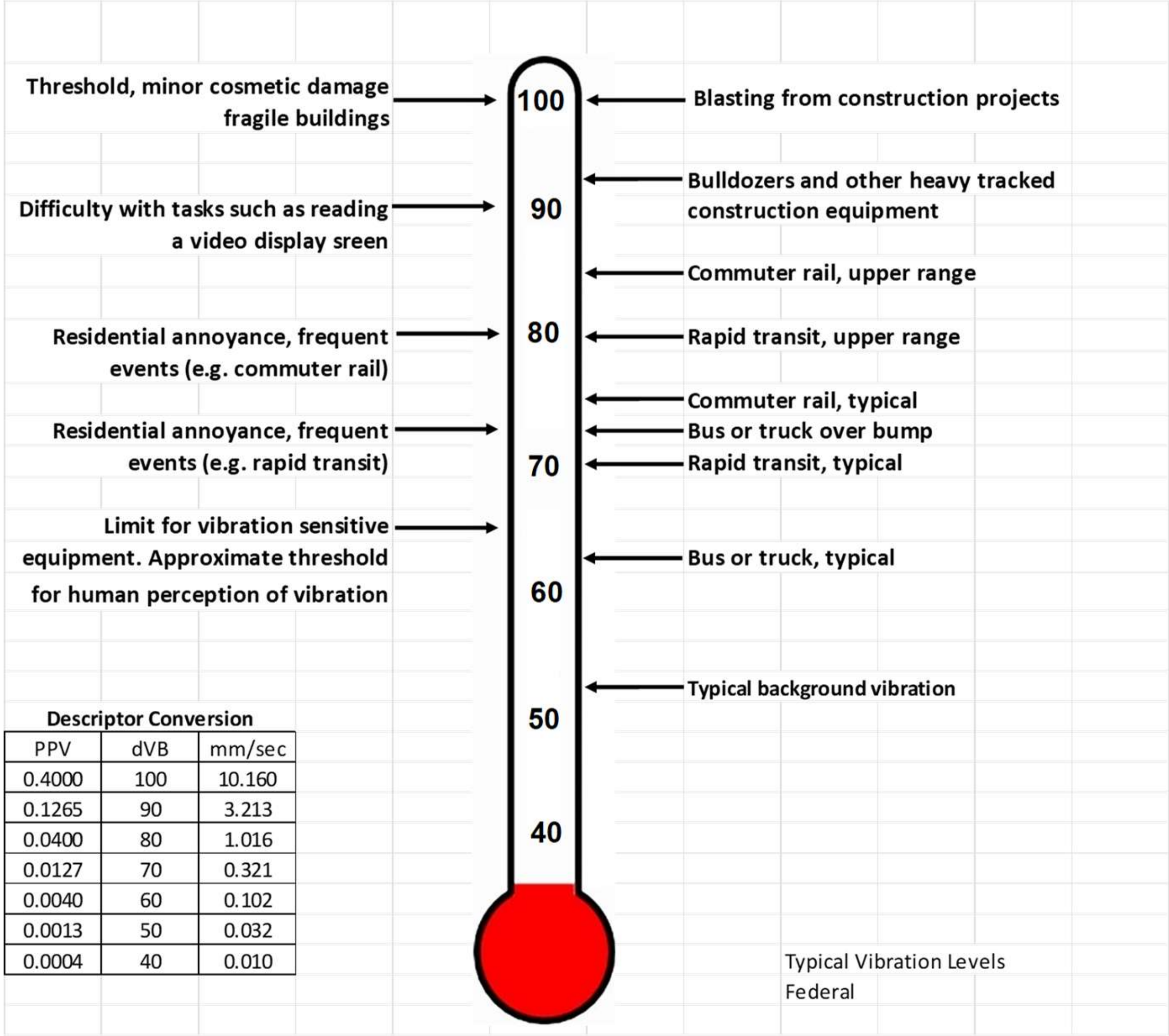
As vibration waves propagate from a source, the energy is spread over an ever-increasing area such that the energy level striking a given point is reduced with the distance from the energy source. This geometric spreading loss is inversely proportional to the square of the distance. Wave energy is also reduced with distance as a result of material damping in the form of internal friction, soil layering, and void spaces. The amount of attenuation provided by material damping varies with soil type and condition as well as the frequency of the wave. Vibration amplitudes are usually expressed with either their peak particle velocity (PPV) or root mean square (RMS) velocity. The PPV is defined as the maximum instantaneous peak of the vibration signal in inches per second. The RMS of a signal is the average of the squared amplitude of the signal in vibration decibels (VdB), with a reference of one micro-inch per second. The Federal Railroad Administration (FRA) uses the abbreviation “VdB” for vibration decibels to reduce the potential for confusion with sound decibel.

Sensitive receivers for vibration include structures (especially older masonry structures), people (especially residents, the elderly, and sick), and vibration-sensitive equipment and/or activities.

Typical Levels of Ground-Borne Vibration are provided in Figure 4.

Figure 4

Typical Levels of Groundborne Vibration



Descriptor Conversion

PPV	dVB	mm/sec
0.4000	100	10.160
0.1265	90	3.213
0.0400	80	1.016
0.0127	70	0.321
0.0040	60	0.102
0.0013	50	0.032
0.0004	40	0.010

Source: Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual.

IV. Existing Noise Environment

A. Existing Land Uses and Sensitive Receptors

The State of California defines sensitive receptors as those land uses that require serenity or are otherwise adversely affected by noise events or conditions. Schools, libraries, churches, hospitals, and single and multiple family residential, including transient lodging, motels, and hotel uses, make up the majority of these areas.

Existing sensitive receptors that may be affected by project noise include multiple family residential land uses immediately west of the project site and single-family residential land uses north and northwest of the project site. While not normally considered to be "noise sensitive" standards have been established to control noise impacts to commercial land uses. For this reason, construction and operational noise impacts are also evaluated at existing nearby commercial land uses located east and south of the project as well.

B. Ambient Noise Measurements

An American National Standards Institute (ANSI Section SI4 1979, Type 1) Larson Davis model LxT sound level meter was used to document existing ambient noise levels at five locations in the project vicinity (see Figure 5). As shown in Table 3, measured short-term (15-minute) noise levels in the project vicinity ranged between 47.6 and 70.2 dBA L_{eq} and measured long-term (24-hour) noise levels ranged between 57.1 and 65.5 dBA L_{eq} (see Table 4). Noise measurement field sheets and data are provided in Appendix A.

Noise emanating from vehicles traveling on nearby roadways were the dominant noise source. Other noise sources included occasional overhead aircraft and residential ambiance.

Table 3. Short-Term Noise Measurement Summary

Site Location	Time Started	L_{eq}	L_{max}	L(2)	L(8)	L(25)	L(50)
STNM1	1:02 PM	70.2	82.1	77.1	74.6	71.2	67.9
STNM2	1:40 PM	54.2	62.9	59.5	56.2	54.4	53.5
STNM3	2:20 PM	47.6	55.3	51.4	49.6	48.5	47.5
STNM4	2:50 PM	52.8	61.9	57.9	55.9	53.9	51.7
STNM5	3:32 PM	69.3	90.6	73.6	71.7	69.1	66.5

Notes:

(1) See Figure 5 for noise measurement locations. Each noise measurement was performed over a 15-minute duration.

(2) Noise measurements were performed on January 13, 2025.

Table 4. Long-Term Noise Measurement Summary

24-Hour Ambient Noise[1,2]							
Hour	**Time Started**	**L_{eq}**	**L_{max}**	**L(2)**	**L(8)**	**L(25)**	**L(50)**
1	5:00 PM	58.4	74.4	63.9	61.1	59.2	57.2
2	6:00 PM	61.7	82.6	65.2	63.8	62.3	60.6
3	7:00 PM	60.1	70.1	64.1	62.4	61.0	59.6
4	8:00 PM	63.9	77.9	67.1	66.0	64.7	63.5
5	9:00 PM	61.8	71.9	66.1	64.6	63.2	60.8
6	10:00 PM	62.0	71.3	65.1	64.1	63.0	61.6
7	11:00 PM	61.4	79.3	65.1	63.7	61.8	60.4
8	12:00 AM	60.4	70.9	66.4	64.4	61.1	58.8
9	1:00 AM	61.3	74.2	65.5	64.0	62.5	60.6
10	2:00 AM	60.2	66.7	64.1	63.0	61.0	59.5
11	3:00 AM	65.1	70.5	68.0	67.0	65.9	64.9
12	4:00 AM	64.2	73.5	67.0	66.0	64.9	63.9
13	5:00 AM	64.7	75.1	67.5	66.3	65.2	64.4
14	6:00 AM	65.5	73.1	68.3	67.1	66.1	65.2
15	7:00 AM	62.7	71.4	65.6	64.7	63.6	62.4
16	8:00 AM	58.8	79.9	62.0	60.2	58.8	57.7
17	9:00 AM	61.0	85.3	66.6	62.4	60.1	58.6
18	10:00 AM	59.1	72.4	63.2	61.3	59.7	58.4
19	11:00 AM	58.4	74.4	63.2	60.6	58.7	57.3
20	12:00 PM	57.1	70.6	62.0	60.0	58.1	56.0
21	1:00 PM	57.6	71.3	62.2	60.3	58.4	56.9
22	2:00 PM	58.2	73.8	62.8	61.2	59.2	57.2
23	3:00 PM	58.8	70.6	63.5	61.5	59.8	58.1
24	4:00 PM	57.2	74.6	62.5	60.1	57.9	55.7
Overall Daily		61.5	85.3	66.7	65.2	62.9	59.8
CNEL	69.2						

Notes:

(1) See Figure 5 for noise measurement locations. Noise measurement was performed over a 24-hour duration.

(2) Noise measurement performed from January 13-January 14, 2025.

Figure 5

Noise Measurement Locations

STNM = Short-term Noise Measurement LTNM = Long-term Noise Measurement

N

V. Regulatory Setting

A. Federal Regulation

Federal Noise Control Act of 1972

The U.S. Environmental Protection Agency (EPA) Office of Noise Abatement and Control was originally established to coordinate federal noise control activities. After its inception, EPA's Office of Noise Abatement and Control issued the Federal Noise Control Act of 1972, establishing programs and guidelines to identify and address the effects of noise on public health, welfare, and the environment. In response, the EPA published Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (Levels of Environmental Noise). The Levels of Environmental Noise recommended that the Ldn should not exceed 55 dBA outdoors or 45 dBA indoors to prevent significant activity interference and annoyance in noise-sensitive areas.

In 1981, EPA administrators determined that subjective issues such as noise would be better addressed at lower levels of government. Consequently, in 1982 responsibilities for regulating noise control policies were transferred to State and local governments. However, noise control guidelines and regulations contained in EPA rulings in prior years remain in place by designated Federal agencies, allowing more individualized control for specific issues by designated Federal, State, and local government agencies.

Federal Interagency Committee on Noise – Increases in Ambient Noise Levels

The Federal Interagency Committee on Noise (FICON) developed guidance (1992) to be used for the assessment of project-generated increases in noise levels that consider the ambient noise level. The FICON recommendations are based on studies that relate aircraft noise levels to the percentage of persons highly annoyed by aircraft noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, these recommendations are often used in environmental noise impact assessments involving the use of cumulative noise exposure metrics, such as the average-daily noise level (CNEL) and equivalent continuous noise level (L_{eq}).

As previously stated, the approach used in this noise study recognizes that there is no single noise increase that renders a noise impact significant, based on a 2008 California Court of Appeal ruling on Gray v. County of Madera (2008). If the existing ambient noise environment is below 60 dBA, a 5 dBA or greater project-related noise level increase is considered to be a substantial increase in ambient noise levels. If the existing ambient noise environment consists of noise levels that range between 60 and 65 dBA, a 3 dBA, or a noise level increase would result in a substantial increase in noise levels; and if existing ambient noise levels exceed 65 dBA, an increase of 1.5 dBA or greater would result in a substantial increase in noise levels.

Federal Transit Administration – Construction Noise and Groundborne Vibration

Construction Noise

According to the Federal Transit Administration (FTA), local noise ordinances are typically not very useful in evaluating construction noise. They often define nuisances and hours of allowed activity and sometimes specify limits in terms of maximum levels but are generally not practical for assessing the impact of a construction project. Project construction noise criteria should account for the existing noise environment, the absolute noise levels produced during construction activities, the duration of the construction, and the adjacent land uses. Due to the lack of standardized construction noise thresholds, the FTA provides guidelines that can be considered reasonable criteria for construction noise assessment (Table 5).

Table 5. FTA Construction Noise Criteria

Land Use	**$L_{eq,(8\ hr)}$, dBA**	
	Day	**Night**
Residential	80	70
Commercial	85	85
Industrial	90	90

Source: Federal Transit Administration (FTA), 2018.

Groundborne Vibration

The Federal Transit Administration (FTA) provides reasonable criteria for addressing potential impacts related to groundborne vibration. As shown in Table 6, the peak particle velocity (PPV) threshold for risk of “architectural” damage is 0.5 in/sec for reinforced-concrete, steel or timber (no plaster) buildings, 0.3 in/sec for engineered concrete and masonry (no plaster) buildings, 0.2 in/sec for non-engineered timber and masonry buildings, and 0.1 in/sec for buildings extremely susceptible to vibration damage.

Table 6. FTA Construction Vibration Damage Criteria

Building/Structural Category	**PPV, in/sec**	**Approximate Lv***
I. Reinforced-concrete, steel or timber (no plaster)	0.5	102
II. Engineered concrete and masonry (no plaster)	0.3	98
III. Non-engineered timber and masonry buildings	0.2	94
IV. Buildings extremely susceptible to vibration damage	0.1	90

Source: Federal Transit Administration (FTA), 2018.

B. State Regulations

State of California General Plan Guidelines 2017

Though not adopted by law, the State of California General Plan Guidelines 2017, published by the California Governor’s Office of Planning and Research (OPR) (OPR Guidelines), provides guidance for the compatibility of projects within areas of specific noise exposure. The OPR Guidelines identify the suitability of various types of construction relative to a range of outdoor noise levels and provide each local community some flexibility in setting local noise standards that allow for the variability in community preferences. Findings presented in the Levels of Environmental Noise Document (EPA 1974) influenced the recommendations of the OPR Guidelines, most importantly in the choice of noise exposure metrics (i.e., Ldn or CNEL) and in the upper limits for the normally acceptable outdoor exposure of noise-sensitive uses.

The OPR Guidelines include a Noise and Land Use Compatibility Matrix which identifies acceptable and unacceptable community noise exposure limits for various land use categories. Where the “normally acceptable” range is used, it is defined as the highest noise level that should be considered for the construction of buildings which do not incorporate any special acoustical treatment or noise mitigation.

The “conditionally acceptable” or “normally unacceptable” ranges include conditions calling for detailed acoustical study prior to the construction or operation of the proposed project. When future noise levels are expected to fall into the conditionally acceptable category, new construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is completed and the needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.

State of California Code Building Standards

The State of California’s noise insulation standards for all residential units are codified in the California Code of Regulations (CCR), Title 24, Building Standards Administrative Code, Chapter 12, Section 1206. These noise standards are applied to new construction that contains dwelling units or sleeping units, such as residential and hotel or motel uses, in California for controlling interior noise levels resulting from exterior noise sources. For new buildings, the acceptable interior noise limit is 45 dBA CNEL in habitable rooms.

C. City of Moreno Valley General Plan

On June 15, 2021, the City of Moreno Valley City Council approved and adopted the City of Moreno Valley General Plan 2040 Update (referred to herein as the “2040 General Plan”), a Change of Zone and Municipal Code Update, and a Climate Action Plan (CAP), and certified an EIR (State Clearinghouse [SCH] No. 2020039022), as having been prepared in compliance with the California Environmental Quality Act (CEQA) in connection with the approvals. A lawsuit entitled Sierra Club v. The City of Moreno Valley, Riverside Superior Court Case No. CVRI2103300, challenged the validity of the 2040 General Plan, the CAP, and the EIR. In June 2024, the City Council set aside the 2021 approvals and certification, based on a May 2024 ruling and judgment of the court. The City is in the process of readopting the 2040 General Plan, Municipal Code, Zoning, and CAP consistent with the court’s decision and issued a Notice of Preparation of a Revised Environmental Impact Report for MoVal 2040: The Moreno Valley Comprehensive General Plan Update, Municipal Code and Zoning (including Zoning Atlas) Amendments, and Climate Action Plan on July 30, 2024.

2006 General Plan Safety Element

General Plan policies applicable to the proposed project from both the 2006 General Plan and the 2021 General Plan are presented below.

Policy 6.3.1	The following uses shall require mitigation to reduce noise exposure where current or future exterior noise levels exceed 20 CNEL above the desired interior noise level: a. Single and multiple family residential buildings shall achieve an interior noise level of 45 CNEL or less. Such buildings shall include sound insulating windows, walls, roofs and ventilation systems. Sound barriers shall also be installed (e.g. masonry walls or walls with berms) between single-family residences and major roadways.
Policy 6.3.2	Discourage residential uses where current or projected exterior noise due to aircraft over flights will exceed 65 CNEL.
Policy 6.3.3	Where the future noise environment is likely to exceed 70 CNEL due to overflights from the joint-use airport at March, new buildings containing uses that are not addressed

under Policy 6.3.1 shall require insulation to achieve interior noise levels recommended in the March Air Reserve Base Air Installation Compatible Use Zone Report.

Policy 6.3.4 Encourage residential development heavily impacted by aircraft over flight noise, to transition to uses that are more noise compatible. 6.3.5 Enforce the California Administrative Code, Title 24 noise insulation standards for new multi-family housing developments, motels and hotels.

Policy 6.4.1 Site, landscape and architectural design features shall be encouraged to mitigate noise impacts for new developments, with a preference for noise barriers that avoid freeway sound barrier walls.

Policy 6.5.2 Construction activities shall be operated in a manner that limits noise impacts on surrounding uses.

2040 General Plan Noise Element

The following policies found in the City of Moreno Valley General Plan (2021) are applicable to the proposed project.

Polic N.1-1: *Protect occupants of existing and new buildings from exposure to excessive noise, particularly adjacent to freeways, major roadways, the railroad, and within areas of aircraft overflight.*

Policy N.1-3: *Apply the community noise compatibility standards (*Table 7[1]*) to all new development and major redevelopment projects outside the noise and safety compatibility zones established in the March Air Reserve Base/ Inland Port Airport Land Use Compatibility (ALUC) Plan in order to protect against the adverse effects of noise exposure. Projects within the noise and safety compatibility zones are subject to the standards contained in the ALUC Plan.*

Policy N.1-4: *Require a noise study and/or mitigation measures if applicable for all projects that would expose people to noise levels greater than the "normally acceptable" standard and for any other projects that are likely to generate noise in excess of these standards.*

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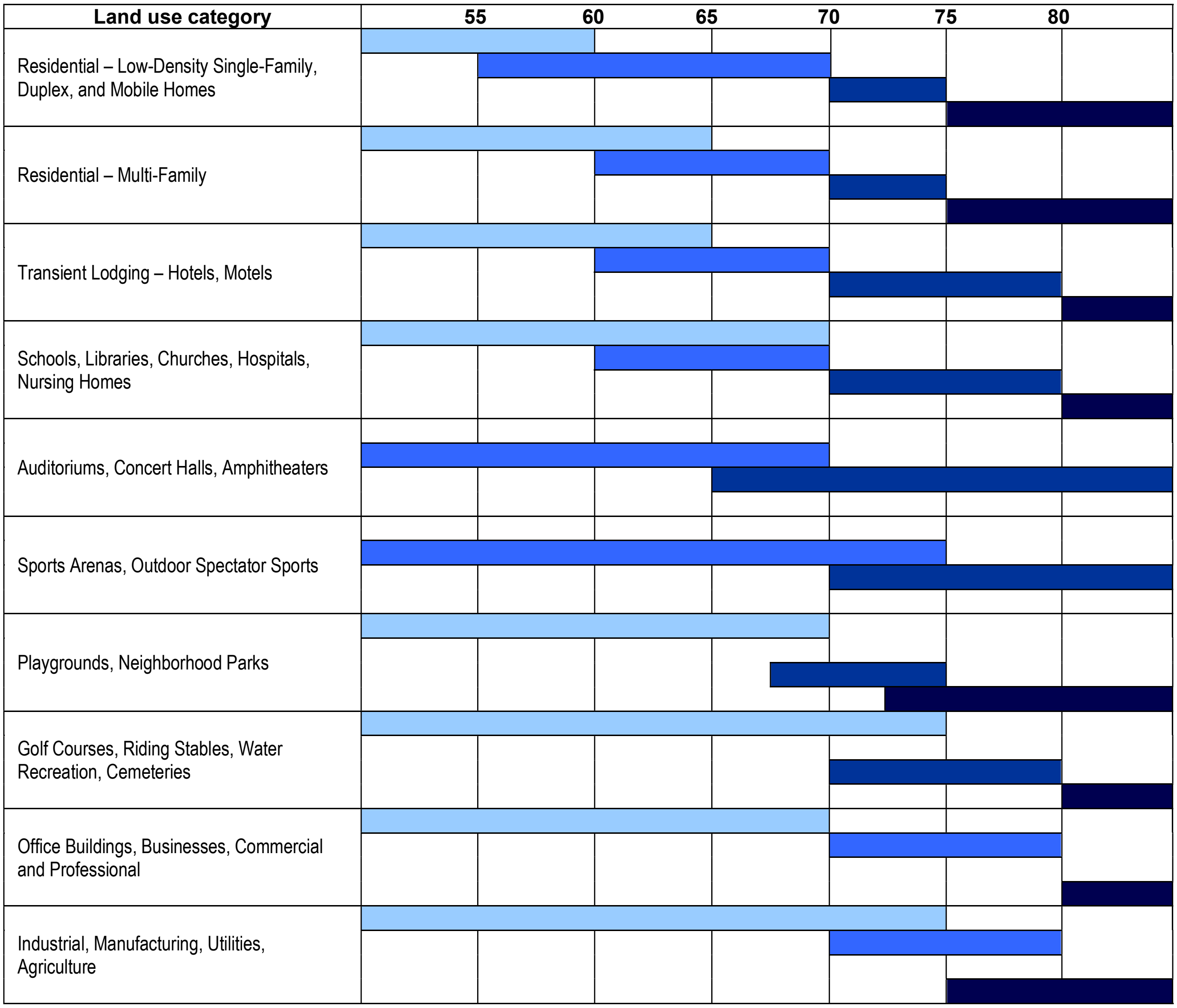
[1] The State of California Office of Planning Land Use State of California Land Use Compatibility for Community Exposure Table (State of California 2018) is substituted here until such time the updated City of Moreno Valley General Plan is adopted.

Table 7

Land Use and Noise Compatibility (dBA CNEL or L_{dn})



Source: Governor's Office of Planning and Research, State of California General Plan Guidelines, Appendix D, Guidelines for the Preparation and Content of the Noise Element of the General Plan. October 2017.

Key:

🟦 Normally Acceptable: Specified land use is satisfactory based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

🟦 Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice. Outdoor environment will seem noisy.

🟦 Normally Unacceptable: New construction and development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made with needed noise insulation features included in the design. Outdoor areas must be shielded.

⬛ Clearly Unacceptable: New construction or development should generally not be undertaken. Construction costs to make the indoor environment acceptable would be prohibitive and the outdoor environment would not be usable.

Policy N.1-7: *Developers shall reduce the noise impacts on new development through appropriate means (e.g., double-paned or soundproof windows, setbacks, berming, and screening). Noise attenuation methods should avoid the use of visible sound walls where possible.*

Policy N.2-3: *Limit the potential noise impacts of construction activities on surrounding land uses through noise regulations in the Municipal Code that address allowed days and hours of construction, types of work, construction equipment, and sound attenuation devices.*

Policy N.2-4: *Collaborate with the March Joint Powers Authority, March Inland Port Airport Authority, Riverside County Airport Land Use Commission, and other responsible agencies to formulate and apply strategies to address noise and safety compatibility protection from airport operations.*

D. City of Moreno Municipal Code

Section 8.14.040(E)

Hours of Construction. Any construction within the city shall only be completed between the hours of seven a.m. to seven p.m. Monday through Friday, excluding holidays and from eight a.m. to four p.m. on Saturday, unless written approval is obtained from the city building official or city engineer.

Section 11.80.030 (D,7)

Construction and Demolition. No person shall operate or cause the operation of any tools or equipment used in construction, drilling, repair, alteration or demolition work between the hours of eight p.m. and seven a.m. the following day such that the sound there from creates a noise disturbance, except for emergency work by public service utilities or for other work approved by the city manager or designee.

Section 9.03.040 (D8) Residential site development standards.

In all residential districts, air conditioners, heating, cooling and ventilating equipment and all other mechanical, lighting or electrical devices shall be operated so that noise levels do not exceed 60 dBA (Ldn) at the property line. Additionally, such equipment, including roof-mounted installation, shall be screened from surrounding properties and streets and shall not be located in the required front yard or street side yard. All equipment shall be installed and operated in accordance with other applicable city ordinances.

It is acknowledged that the City of Moreno Valley Municipal Code contains several other ordinances that pertain to the emission of noise. Some are quantitative and some are qualitative. However, most are either very land use specific or have limited usefulness for assessment of impacts in light of CEQA. For example, Section 11.80.030 (C), Non-Impulsive Sound Decibel Limits, establishes stationary noise standards that are to be enforced as measured at a distance of 200 feet from the source. This ordinance was clearly intended for field enforcement of individual noise sources and not to be used for analysis of the cumulative effect of several stationary noise sources associated with a proposed project. Furthermore, Section 11.80.030B are clearly for the prevention of hearing loss and construction noise levels of up to 90 decibels should not be considered to be acceptable at any noise sensitive land uses. Most of the other noise related ordinances apply to specific land uses including but not limited to loudspeakers, bells, gongs or other attracting devices, recycling facilities, motion picture film studios, vehicle repair facilities, outdoor dining, wind systems, auto dealerships and temporary use permits for events.

VI. Methodology

This section discusses the analysis methodologies used to assess noise impacts.

A. Construction Noise Modeling

Construction noise associated with the proposed project was calculated at sensitive receptor locations utilizing methodology found in the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (2018) together with several key construction parameters, including: distance to the property line of each receptor, equipment, percent usage factor, and baseline parameters for the project site. The equipment used to calculate the construction noise levels for each phase were based on the assumptions provided in the CalEEMod construction emission modeling provided in the Air Quality, Global Greenhouse Gas, Health Risk Assessment, and Energy Impact Analysis prepared for the proposed project (Roma Environmental 2025). It is important to understand that for construction, per FTA methodology, noise levels are being calculated from the center of the site in order to represent an average as the equipment moves around the site over an eight-hour period. Furthermore, noise levels are calculated at the property line of each sensitive receptor and not to the actual structure. Therefore, distances to sensitive receptors may differ from those described in other technical documents prepared for this project.

Construction noise will vary depending on the construction process, type of equipment involved, location of the construction site with respect to sensitive receptors, the schedule proposed to carry out each task (e.g., hours and days of the week) and the duration of the construction work. Sound emission levels associated with typical construction equipment as well as typical usage factors are provided in Table 8. Construction noise worksheets are provided in Appendix B.

Table 8. Equipment Noise Emissions and Acoustical Usage Factors

Equipment Description	Impact Device?	Acoustical Use Factor (%)	Spec. Lmax @ 50ft (dBA, slow)	Actual Measured Lmax @ 50ft (dBA, slow)	No. of Actual Data Samples (Count)
Backhoe	No	40	80	78	372
Cement Mortar Mixers	No	15	83	-N/A-	0
Compactor (ground)	No	20	80	83	57
Compressor (air)	No	40	80	78	18
Crane	No	16	85	81	405
Dozer	No	40	85	82	55
Dump Truck	No	40	84	76	31
Excavator	No	40	85	81	170
Flat Bed Truck	No	40	84	74	4
Forklift	No	50	n/a	61	n/a
Front End Loader	No	40	80	79	96
Generator	No	50	82	81	19

Equipment Description	Impact Device?	Acoustical Use Factor (%)	Spec. Lmax @ 50ft (dBA, slow)	Actual Measured Lmax @ 50ft (dBA, slow)	No. of Actual Data Samples (Count)
Grader	No	40	85	-N/A-	0
Man Lift	No	20	85	75	23
Roller	No	20	85	80	16
Tractor	No	40	84	-N/A-	0
Welder	No	40	73	74	5

Source: FHWA, 2006.

B. Mobile Source Noise Modeling

Traffic noise levels at the project site and increases in noise levels in the project vicinity due to project generated vehicle trips were both modeled using FHWA Traffic Noise Prediction Model (FHWA-RD-77-108) methodology and worksheets (Appendix C) and the SoundPLAN noise model (Appendix D) . Traffic noise spreadsheets arrive at the predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). Key model parameters and REMEL adjustments are presented below:

- Roadway classification (e.g., freeway, major arterial, arterial, secondary, collector, etc.),
- Roadway active width (distance between the center of the outermost travel lanes on each side of the roadway),
- Average Daily Traffic (ADT) Volumes, Travel Speeds, Percentages of automobiles, medium trucks and heavy trucks,
- Roadway grade and angle of view,
- Site conditions (e.g., soft vs. hard), and
- Percentage of total ADT which flows each hour throughout a 24-hour period.

Future Traffic

Traffic noise associated with SR-60 and Box Springs Road are and will be the main sources of noise affecting the project site. Traffic volumes and vehicle mixes provided by Caltrans[2] and the City of Moreno Valley[3] and posted speeds were used for modeling purposes as shown below in Table 9. A Level of Service (LOS) C traffic volume was used for Box Springs Road as it represents volume and speed conditions that are considered to create the most noise along surface streets. As a four-lane divided arterial (Minor Arterial[4]), LOS C conditions are expected to occur when the ADT reaches 30,000. The first row of proposed

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[2] https://dot.ca.gov/programs/traffic-operations

[3] City of Moreno Valley General Plan 2040 Environmental Impact Report Final Appendix D and https://www.morenovalleybusiness.com/wp-content/uploads/2020/09/Traffic-Counts-4-20.pdf

[4] City of Moreno Vally 2040 General Plan Circulation Element, 2021.

homes are approximately 734 feet from the acoustical center of the SR-60/Interstate 15 (I-15) intersection and approximately 69 feet from the centerline (CL) of Box Springs Road.

Table 9. Future Traffic Modeling Assumptions

Roadway	Volume (ADTs)	Vehicle Mix Auto/Medium Truck/Heavy Truck	Distance from CL to 1st Row of Residences	Speed
SR-60	145,000	94.02/0.63/5.36	734	65
Box Springs Road	30,000[1]	96.8/1.45/0.75	69	45

Source: Caltrans Operations https://dot.ca.gov/programs/traffic-operations, City of Moreno Valley General Plan 2040 Environmental Impact Report Final Appendix D and https://www.morenovalleybusiness.com/wp-content/uploads/2020/09/Traffic-Counts-4-20.pdf
1. LOS C Roadway Capacity.

Existing and Existing Plus Project Traffic

The project site will be accessed via SR-60, Day Street and Box Springs Road. Existing and Existing Plus Project traffic noise was modeled in order to estimate the project's contribution to existing vehicle noise along these roadways. Existing and Existing Plus Project modeling assumptions are provided in Table 10. The modeling is theoretical and does not take into account any existing barriers, structures, and/or topographical features that may further reduce noise levels. Therefore, the modeled noise levels are shown for comparative purposes only to show the difference between with and without project conditions.

Table 10. Existing and Existing Plus Project Traffic Modeling Assumptions

Roadway	Existing ADTs	Existing Plus Project (ADTs)	Vehicle Mix Auto/Medium Truck/Heavy Truck	Speed
SR-60	145,000	145,944	94.02/0.63/5.36	65
Day Street	18,647	19,591	97.3/1.6/1.1	40
Box Springs Road	8,437	9,381	96.59/1.62/1.79	45

Source: Caltrans Operations https://dot.ca.gov/programs/traffic-operations, City of Moreno Valley General Plan 2040 Environmental Impact Report Final Appendix D and https://www.morenovalleybusiness.com/wp-content/uploads/2020/09/Traffic-Counts-4-20.pdf

C. Groundborne Vibration Modeling

Groundborne vibration modeling was performed using vibration propagation equations and construction equipment source levels obtained from the FTA Transit Noise and Vibration Impact Assessment Manual (2018). Table 11 shows typical vibration levels associated with commonly used construction equipment based on data from the FTA.

There are several types of construction equipment that can cause vibration levels high enough to annoy people in the vicinity and/or result in architectural or structural damage to nearby structures and improvements. For example, as shown in Table 11, a vibratory roller could generate up to a PPV of 0.21 in/sec PPV at and operation of a large bulldozer could generate a PPV of up to 0.089 in/sec at a distance of 25 feet (two of the most vibratory pieces of construction equipment). Groundborne vibration at receptors associated with this equipment would drop off as the equipment moves away. For example, as the vibratory roller moves further than 100 feet from the receptors, the associated vibration would drop below a PPV of 0.0026 in./sec. It should be noted that these vibration levels are reference levels and may vary slightly depending upon soil type and specific usage of each piece of equipment.

The fundamental equation used to calculate vibration propagation through average soil conditions and distance is as follows:

$$PPV_{equipment} = PPV_{ref} (25/D_{rec})^n$$

Where:
PPV_{ref} = *reference PPV at 25ft.*
D_{rec} = *distance from equipment to receiver in ft.*
n = 1.5 (*the value related to the attenuation rate through ground*)

Table 11. Construction Equipment Vibration Source Levels

Equipment	PPV at 25 ft, in/sec	Approximate Lv* at 25 ft
Vibratory Roller	0.210	94
Hoe Ram	0.089	87
Large Bulldozer	0.089	87
Caisson Drilling	0.089	87
Loaded Trucks	0.076	86
Jackhammer	0.035	79
Small Bulldozer	0.003	58

Source: Federal Transit Administration: Transit Noise and Vibration Impact Assessment Manual, 2018.
*RMS velocity in decibels, VdB re 1 micro-in/sec

VII. CEQA Checklist Questions and Applicable Thresholds

The purpose of this section is to identify the CEQA Appendix G Checklist Questions[5] that are applicable to this analysis and to identify how they are or are not related to City General Plan Policies and Ordinances as well as those of other agencies.

A. CEQA Checklist Question A

Would the project result in:

- Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Applicable Standards - Construction Noise

The project would result in a substantial temporary increase in ambient noise levels if:

1) Construction activities occur outside of the hours between 7:00 AM and 7:00 PM Monday through Friday, or outside of the hours between 8:00 AM and 4:00 PM on a Saturday, on a Sunday or on a Holiday (City of Moreno Valley Municipal Code Section 8.14.040[E]), unless it is emergency work conducted by a public service utility or for otherwise approved by the city manager or designee.[6]

2) Construction activities exceed an eight-hour L_{eq} of 80 dBA (80 dBA L_{eq8hr}) between the hours of 7:00 AM and 10:00 PM or exceeds 70 dBA $L_{eq8\,hr}$ between the hours of 10:00 PM and 7:00 AM at residential land uses.

3) Construction activities exceed an 85 dBA L_{eq8hr} noise level at commercial land uses at any time.

Applicable Standards - On-Site Operational Noise

The project would result in permanent substantial increases in ambient noise levels if:

1) Air conditioners, heating, cooling and ventilating equipment and all other mechanical, lighting or electrical devices exceed 60 dBA (Ldn/CNEL) at the property line.

2) Roof-mounted equipment is not screened from surrounding properties and streets.

3) Equipment is located in the required front yard or street side yard. Section 9.03.040 (D8) Residential site development standards.

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[5] California Environmental Quality Act Guidelines (Title 14, Division 6, Chapter 3 of the California Code of Regulations)

[6] City of Moreno Valley Municipal Code Section 11.080.030[D]). This is the more conservative of the two City ordinances that control construction noise.

Applicable Standards - Offsite Operational Noise (Project Generated Vehicle Noise)

In the absence of a County adopted threshold for project traffic generated increases in ambient noise levels, the FICON thresholds for determination of a substantial increase were used for the purposes of this analysis. Specifically, project generated vehicle traffic would result in a permanent substantial increase in ambient noise levels if:

1) It results in a 5 dBA increase or more at noise sensitive land uses where existing ambient noise levels are than 60 dBA;

2) It results in a 3 dBA increase at a noise sensitive land use where existing ambient noise levels range between 60 and 65 dBA; or

3) If it results in a 1.5 dBA increase at a noise sensitive land use where existing noise levels exceed 65 dBA.

Applicable Standards – Impacts To the Proposed Project

The project would be exposed to noise levels that exceed applicable thresholds if:

1) Exterior noise levels would exceed applicable normally acceptable noise levels as presented in the Table 7.

2) (65 dBA CNEL at residential land uses). Design measures can be implemented to reduce exterior noise levels in order to provide adequate outdoor activity areas to avoid this impact.

3) Interior noise levels of proposed residential units exceed 45 dBA CNEL.

B. CEQA Checklist Question B

Would the project result in:

- Generation of excessive groundborne vibration or groundborne noise levels?

The City has not adopted specific thresholds regarding groundborne vibration. Potential groundborne vibration impacts are evaluated in light of established FTA standards for the potential for damage. Specifically, the project construction would result in excessive groundborne vibration that could lead to "architectural" damage:

1) If it exceeds a peak particle velocity (PPV) (in/sec) at reinforced concrete, steel or timber (no plaster structures;

2) If it exceeds 0.3 PPV (in/sec) at engineered concrete and masonry (no plaster);

3) If it exceeds 0.2 PPV (in/sec) at non-engineered timber and masonry buildings, or

4) If it exceeds a PPV of 0.1 PPV (in/sec) at buildings extremely susceptible to vibration damage.

C. CEQA Checklist Question C

Would the project result in:

- For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the area to excessive noise levels?

The project may expose people residing or working in the area to excessive noise levels if:

1) Single or multiple-family homes are constructed within a 65 dBA CNEL noise contour or higher without utilizing architectural treatments to ensure that interior noise levels do not exceed 45 dBA CNEL.

VIII. Analysis and Findings

A. Project Construction

Construction noise associated with the proposed project will vary depending on the construction process, type of equipment involved, location of the construction site with respect to sensitive receptors, the schedule proposed to carry out each task (e.g., hours and days of the week) and the duration of the construction work. Construction phases are anticipated to include site preparation, grading, and paving. A summary of typical noise level data for a variety of construction equipment compiled by the Federal Highway Administration that will likely be used during project construction is presented in **Table 8**. Typical operating cycles for these types of construction equipment may involve one or two minutes of full power operation followed by three to four minutes at lower power settings.

Existing sensitive receptors that may be affected by project construction noise include multiple family residential land uses immediately west of the project site and single-family residential land uses north and northwest of the project site. While not normally considered to be "noise sensitive" standards have been established to control noise impacts to commercial land uses as well. For this reason, construction and operational noise impacts are also evaluated at existing nearby commercial land uses located east and south of the project site.

As shown in Table 12, construction noise levels during the loudest phase of construction (paving) are expected to range between 67.8 and 73.5 dBA L_{eq} at nearby receptors north, northwest, east, west, and south of the project site and will not exceed the 80 dBA L_{eq} (eight-hour) daytime noise standard at residential land uses between the hours of 7:00 AM and 10:00 PM or the 85 dBA L_{eq} (eight-hour) daytime noise standard at commercial land uses between the hours of 7:00 AM and 10:00 PM. Demolition, site preparation, grading and paving activities may, however, exceed the nighttime (10:00 PM to 7:00 AM) noise standards of 70 dBA $L_{eq\ (8\text{-}hr)}$.

In order to avoid exceeding the nighttime standard, grading and paving activities should be limited to the between 7:00 AM and 7:00 PM Monday through Friday, or outside of the hours between 8:00 AM and 4:00 PM on a Saturday, on a Sunday or on a Holiday, as outlined in City of Moreno Valley Municipal Code Section 8.14.040[E]). The code does allow for exceptions for emergency work conducted by a public service utility or for otherwise approved by the city manager or designee. The following best management practices are recommended to minimize construction noise impacts.

Recommended Best Management Practices

Although not required, the following Best Management Practices (BMPs) can be implemented to further reduce noise at sensitive receptors.

1. Equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturer standards.

2. Place all stationary construction equipment so that emitted noise is directed away from the noise sensitive receptors nearest the project site.

3. As applicable, shut off all equipment when not in use.

4. Locate equipment staging in areas that create the greatest distance between construction-related noise/vibration sources and sensitive receptors.

5. Block and/or direct portable stationary noise sources away from sensitive receptors. Either one-inch plywood or sound blankets can be utilized for this purpose. They should reach up from the ground and block the line of sight between the equipment and the sensitive receptor. The shielding should be without holes and cracks.

6. Prohibit amplified music and/or voice on the project site.

7. Limit haul truck deliveries to daytime hours between 7:00 AM and 7:00 PM.

Table 12. Construction Noise Levels

Construction Phase	Receptor Location	Construction Noise Levels (dBA, Leq)	Applicable FTA Threshold (dBA Leq)	Exceeds Applicable FTA Threshold?
Demolition	Multiple Family Residential to the West	73.2	80	No
	Single Family Residential to the North	72.8	80	No
	Single Family Residential to the North	67.5	80	No
	Commercial Land Uses to the East	71	85	No
	Commercial Land Uses to the South	69.6	85	No
Site Preparation	Multiple Family Residential to the West	72.5	80	No
	Single Family Residential to the North	72	80	No
	Single Family Residential to the Northwest	66.9	80	No
	Commercial Land Uses to the East	70.2	85	No
	Commercial Land Uses to the South	68.8	85	No
Grading	Multiple Family Residential to the West	72.6	80	No
	Single Family Residential to the North	72.2	80	No
	Single Family Residential to the Northwest	66.9	80	No
	Commercial Land Uses to the East	70.4	85	No
	Commercial Land Uses to the South	69	85	No
Building Construction	Multiple Family Residential to the West	68.9	80	No
	Single Family Residential to the North	68.5	80	No
	Single Family Residential to the Northwest	63.2	80	No
	Commercial Land Uses to the East	66.7	85	No
	Commercial Land Uses to the South	65.3	85	No
Paving	Multiple Family Residential to the West	73.5	80	No
	Single Family Residential to the North	73.1	80	No
	Single Family Residential to the Northwest	67.8	80	No
	Commercial Land Uses to the East	71.3	85	No
	Commercial Land Uses to the South	69.9	85	No
Architectural Coating	Multiple Family Residential to the West	58.8	80	No
	Single Family Residential to the North	58.3	80	No
	Single Family Residential to the Northwest	53	80	No
	Commercial Land Uses to the East	56.5	85	No
	Commercial Land Uses to the South	55.1	85	No

Sources: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construction Noise Model User's Guide (January 2006) and SoundPLAN GmbH, SoundPLAN Noise Model reference noise level.

B. Project Operation (Onsite)

On-site noise sources associated with the proposed townhomes will include slow moving vehicles, recreation, and heating and ventilation (HVAC) noise. Although a pool and recreational buildings are proposed, they will be located in the center of the project site and sounds associated with them will not be audible at nearby off-site land uses due to intervening structures. Further, no internal roadways border the eastern or northern project boundaries, so noise associated with those will also be shielded by the proposed townhomes. HVAC units will be similar but newer than those being used at adjacent multiple- and single-family homes. However, no HVAC units will be closer than 20 feet from the project site property line. HVAC noise levels were modeled using the SoundPLAN noise model. As shown on Figure 6, operational noise levels will range between 48.0 and 52.2 dBA Ldn/CNEL and will not exceed the City's noise threshold of 60 dBA Ldn[7] at any nearby sensitive land uses. Project operation would not result in substantial increases in ambient noise levels. No mitigation is required. SoundPLAN input and output is provided in Appendix E.

C. Project Operation (Offsite)

In order to determine if project generated vehicle trips would result in a substantial increase in ambient noise levels, they were evaluated in light of the existing noise environment, which is dominated by vehicle traffic. The proposed project will add an additional 944 average daily trips (ADTs) to existing traffic volumes. Existing and Existing Plus Project traffic noise levels were modeled using a conservative assumption that all of the project trips would travel along SR 60, Day Street and Box Spring Road to access the site. Modeling assumptions are provided in Table 10.

As discussed previously, project generated vehicle traffic would result in a substantial increase in ambient noise levels if:

1. It results in a 5 dBA increase or more at noise sensitive land uses where existing ambient noise levels are than 60 dBA;
2. It results in a 3 dBA increase at a noise sensitive land use where existing ambient noise levels range between 60 and 65 dBA; or
3. If it results in a 1.5 dBA increase at a noise sensitive land use where existing noise levels exceed 65 dBA.

As shown in Table 13, existing traffic noise levels range between 70.6 and 74.34 dBA CNEL and existing plus project traffic noise will range between 70.8 and 74.35 dBA CNEL. The project would contribute less than a one-decibel increase in ambient noise levels along affected road segments. Therefore, the project will not exceed applicable standards and will not result in substantial increases in ambient noise levels. No mitigation is required.

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[7] Section 9.03.040 (D8) of the City of Moreno Valley Municipal Code.

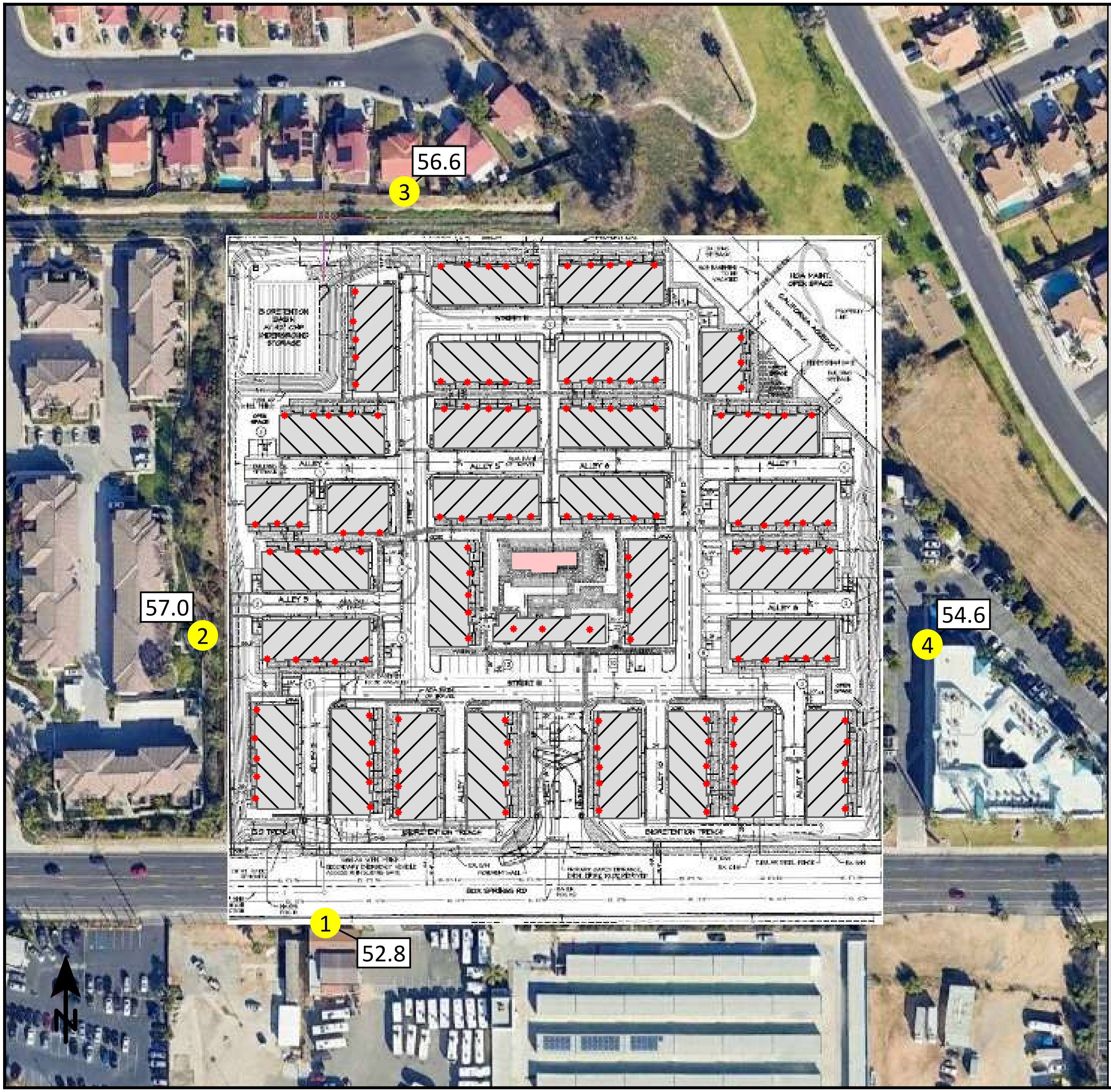


Figure 6

Operational Noise Levels
dBA, Ldn/CNEL

Signs and symbols

▨ Proposed Building

● Receiver

* Point source (HVAC)
Each point is representative of 3 HVAC Units

🟥 Area source (Pool Play and Conversation)

Noise Level Tables (dBA, Leq)

1 : 150

0 37.5 75 150 225 300 feet

Roma Environmental

Table 13. Change in Existing Noise Levels Along Roadways as a Result of Project (dBA CNEL)

	CNEL at the ROW			
Roadway	Existing Without Project	Existing Plus Project	Change in Noise Level	Potential Significant Impact (Yes/No)
SR 60	73.15	73.15	0	No
Day Street	70.60	70.80	0.2	No
Box Springs Road	74.34	74.35	0.01	No

D. Buildout Traffic Noise Levels at the Project Site (Noise/Land Use Compatibility)

The project would be exposed to noise levels that exceed applicable thresholds if:

- Exterior noise levels would exceed applicable normally acceptable noise levels as presented in the City of Moreno Valley Community Noise Compatibility Matrix (Table 7).

- Interior noise levels of proposed residential units exceed 45 dBA CNEL.

As discussed previously, traffic noise levels associated with SR 60 and Box Springs Road are and will be the main sources of noise affecting the project site. Future noise levels associated with these road segments were modeled using FHWA Traffic Noise Prediction Model (FHWA-RD-77-108) methodology and the SoundPLAN Noise Model. FHWA Worksheets are provided in Appendix C and SoundPLAN input and output is provided in Appendix D.

Traffic noise levels associated with Box Springs Road and State Route 60 are expected to range between 45 (or ambient) and 75 dBA CNEL at proposed residential buildings adjacent to Box Springs Road (first row homes) and will exceed the normally acceptable level criteria of 65 dBA CNEL for multiple family residential land uses and the conditionally acceptable noise level standard of 70 dBA CNEL at first row homes. Noise levels exceeding 70 dBA CNEL are considered normally unacceptable and require a detailed analysis in order to identify measures that will make sure interior noise levels do not exceed the state interior noise standard of 45 dBA CNEL. As long as adequate outdoor recreational square footage (as determined by the City) will not be exposed to noise levels that exceed 65 dBA CNEL and as long as the following mitigation measures are implemented to ensure that interior noise levels do not exceed the State's interior noise requirement of 45 dBA CNEL, impacts would be less than significant.

Mitigation Measure 1

To satisfy the State of California's 45 dBA CNEL noise insulation standards, the proposed "first row" residential buildings will require a windows-closed condition and a means of mechanical ventilation (e.g. air conditioning). Additionally, All windows and sliding glass doors shall have well-fitted, well-weather-stripped assemblies and meet the required STC levels as shown in Figure 7 and detailed in Table 14. Each noise contour (colored area) on Figure 7 represents a different future sound level range. For example, areas that are yellow are expected to have future traffic noise levels that range between 66 and 67 dBA CNEL. As indicated in the Legend of Figure 7, the required STC rating for all proposed windows and glass doors that are exposed to the color yellow is 25; and all windows and glass doors exposed to the lightest orange color will require an STC rating of 26, etc. Detailed requirements are provided in Table 14.

Figure 7

Future Traffic Noise Contours
(dBA, Ldn/CNEL)
and Required STC Levels
for Windows and Glass Doors

Signs and symbols

☐ Proposed Building

— Road

	Levels in dB(A)	Required STC
🟩	< 65	HVAC is sufficient
🟩	65 - 66	HVAC is sufficient
🟩	66 - 67	24
🟨	67 - 68	25
🟧	68 - 69	26
🟧	69 - 70	27
🟥	70 - 71	28
🟦	71 - 72	29
🟦	72 - 73	30
🟦	73 - 74	31
🟦	>= 74	32

1 : 150

0 37.5 75 150 225 300 feet

Roma Environmental

Table 14. Required STC Ratings

Lot Number	Direction[1]	Required STC	Lot Number	Direction[1]	Required STC	Lot Number	Direction[1]	Required STC	Lot Number	Direction[1]	Required STC
1	N	HVAC is Suffcient	80	N	HVAC is Sufficient	11	N	HVAC is Suffcient	90	N	HVAC is Sufficient
	S	n/a		S	n/a		S	n/a		S	n/a
	E	HVAC is Suffcient		E	HVAC is Sufficient		E	HVAC is Suffcient		E	HVAC is Sufficient
	W	HVAC is Suffcient		W	HVAC is Sufficient		W	HVAC is Suffcient		W	HVAC is Sufficient
2	N	n/a	81	N	n/a	12	N	n/a	91	N	n/a
	S	n/a		S	n/a		S	n/a		S	n/a
	E	24		E	24		E	HVAC is Suffcient		E	HVAC is Sufficient
	W	HVAC is Suffcient		W	HVAC is Sufficient		W	HVAC is Suffcient		W	HVAC is Sufficient
3	N	n/a	82	N	n/a	13	N	n/a	92	N	n/a
	S	n/a		S	n/a		S	n/a		S	n/a
	E	25		E	25		E	HVAC is Suffcient		E	HVAC is Sufficient
	W	HVAC is Suffcient		W	24		W	24		W	24
4	N	n/a	83	N	n/a	14	N	n/a	93	N	n/a
	S	n/a		S	n/a		S	n/a		S	n/a
	E	27		E	26		E	HVAC is Suffcient		E	25
	W	26		W	26		W	27		W	26
5	N	n/a	84	N	n/a	15	N	n/a	94	N	n/a
	S	32		S	31		S	31		S	31
	E	30		E	29		E	29		E	29
	W	30		W	29		W	29		W	29
6	N	n/a	85	N	n/a	16	N	n/a	95	N	n/a
	S	32		S	31		S	32		S	31
	E	30		E	29		E	28		E	30
	W	30		W	29		W	30		W	30
7	N	n/a	86	N	n/a	17	N	n/a	96	N	n/a
	S	n/a		S	n/a		S	n/a		S	n/a
	E	25		E	26		E	26		E	26
	W	25		W	25		W	28		W	27
8	N	n/a	87	N	n/a	18	N	n/a	97	N	n/a
	S	n/a		S	n/a		S	n/a		S	n/a
	E	HVAC is Suffcient		E	24		E	24		E	24
	W	HVAC is Suffcient		W	HVAC is Sufficient		W	27		W	26
9	N	n/a	88	N	n/a	19	N	n/a	98	N	n/a
	S	n/a		S	n/a		S	n/a		S	n/a
	E	HVAC is Suffcient		E	HVAC is Sufficient		E	HVAC is Suffcient		E	HVAC is Sufficient
	W	HVAC is Suffcient		W	HVAC is Sufficient		W	25		W	24
10	N	HVAC is Suffcient	89	N	HVAC is Sufficient	20	N	HVAC is Suffcient	99	N	HVAC is Sufficient
	S	n/a		S	n/a		S	n/a		S	n/a
	E	HVAC is Suffcient		E	HVAC is Sufficient		E	HVAC is Suffcient		E	HVAC is Sufficient
	W	HVAC is Suffcient		W	HVAC is Sufficient		W	24		W	HVAC is Sufficient

1) Direction that a window or glass door is facing (North, South, East or West)

Mitigation Measure 2

In addition to upgraded windows and sliding glass doors, the following measures shall also be taken to ensure interior noise levels do not exceed 45 dBA CNEL.

- Exterior Walls: At any penetrations of exterior walls by pipes, ducts, or conduits, the space between the wall and pipes, ducts, or conduits shall be caulked or filled with mortar to form an airtight seal.
- Roof: Roof sheathing of wood construction shall be per manufacturer's specification or caulked plywood of at least one-half inch thick. Ceilings shall be per manufacturer's specification or well-sealed gypsum board of at least one-half inch thick. Insulation with at least a rating of R-19 shall be used in the attic space.
- Ventilation:

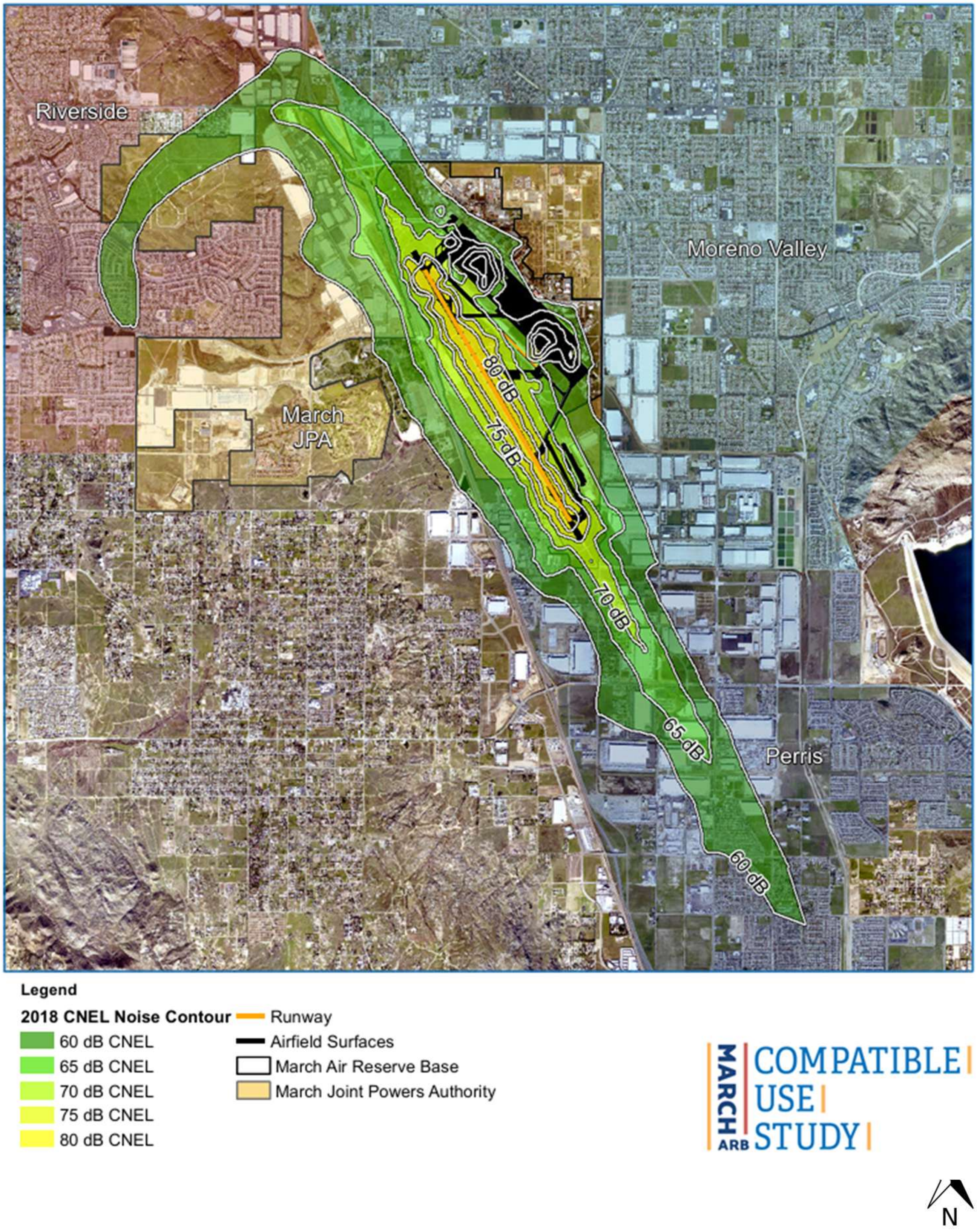
  Exterior vents installed on first-row residential buildings shall be oriented away from roadway. If such an orientation cannot be avoided, then an acoustical baffle shall be placed in the attic space behind the vents.

E. Airport Noise

The closest airport to the project site is the March Inland Port Airport which is located approximately 2.7 miles south of the project site. Although the project site is not located within a 65 dBA CNEL airport noise contour (see Figure 8) it is located within "Compatibility Zone D" as indicated in the 2018 March ARB AICUZ Study. Easement dedication and/or deed notice requirements are required for new residential development located within Zone D as a condition of approval. Avigation easements, deed notices, and disclosures as required by California law are recognized as means of providing awareness of overflight. The project would not expose people residing or working to excessive noise levels. No mitigation is required.

Figure 8

March ARB Noise Contour Map



MARCH ARB COMPATIBLE USE STUDY

F. Groundborne Vibration Impacts

Project construction would result in excessive groundborne vibration that could lead to "architectural" damage:

1. If it exceeds a peak particle velocity (PPV) (in/sec) at reinforced concrete, steel or timber (no plaster structures;
2. If it exceeds 0.3 PPV (in/sec) at engineered concrete and masonry (no plaster);
3. If it exceeds 0.2 PPV (in/sec) at non-engineered timber and masonry buildings; or
4. If it exceeds a PPV of 0.1 PPV (in/sec) at buildings extremely susceptible to vibration damage.

The greatest potential sources of groundborne vibration expected to be utilized during construction of the project include a vibratory roller and a large bulldozer. As shown in Table 15, a vibratory roller can generate a vibration level of approximately 0.21 in/sec PPV at a distance of 25 feet, while a large bulldozer can generate a vibration level of 0.089 in/sec PPV at 25 feet.

Table 15. Equipment Noise Emissions and Acoustical Usage Factors

Equipment		PPV at 25 feet, inches/second
Pile Driver (impact)	Upper range	1.518
	Typical	0.644
Pile Driver (sonic)	Upper range	0.734
	Typical	0.17
Clam Shovel (slurry wall)		0.21
Hydromill (slurry wall)	In soil	0.08
	In rock	0.017
Vibratory Roller		0.21
How Ram		0.089
Large Bulldozer		0.089
Caisson Drilling		0.089
Loaded Trucks		0.076
Jackhammer		0.035
Small Bulldozer		0.003

Source: Federal Transit Administration, transit Noise and Vibration Impact Assessment Manual. Sept. 2018.

Based on the provided site plan and aerial photographs, the nearest off-site structure is a multiple family residential building located approximately 25 feet west of the project site.

At 25 feet, vibration levels produced by a vibratory roller would attenuate to a PPV of approximately 0.21 in/sec; and vibration levels produced by a large bulldozer would attenuate to a PPV of approximately 0.089 in/sec. Therefore, use of vibratory equipment during project construction would not cause groundborne vibration that is likely to result in structural damage. This impact is less than significant. No mitigation is required.

IX. References

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1974 "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety," EPA/ONAC 550/9-74-004, March 1974.

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2021 City of Moreno Valley General Plan 2040 Environmental Impact Report Final Appendix D.
City of Moreno Valley Municipal Code, as amended through June 25, 2024.

Riverside, County of
2023 March ARB Compatible Use Study

Roma Environmental
2025 Air Quality, Greenhouse Gas, Health Risk Assessment and Energy Impact Analysis for Moreno Valley Farm Bureau Project.

Urban Crossroads
2024 Farm Bureau 140 (PEN24—0058, TTM 38955) Trip Generation (TG) Assessment

U.S. Department of Transportation Federal Highway Administration (FHWA)

2000 Highway Traffic Noise in the United States, Problem and Response. April.

2001 Federal Highway Administration (FHWA). Highway Noise Barrier Design Handbook.

2006 Federal Highway Administration (FHWA). Roadway Construction Noise Model User's Guide. January.

APPENDIX A

Larson Davis 820 Noise Measurement Data

Noise Measurement Field Data

Project Name: Moreno Valley Farm Project, Moreno Valley **Date:** January 13, 2025

Project #:

Noise Measurement #: STNM1 **Technician:** Ian Gallagher

Nearest Address or Cross Street: 21155 Box Springs Road, Moreno Valley, CA 92557

Site Description (Type of Existing Land Use and any other notable features): Measurement Site: Near sidewalk just north of RV business located at 21155 Box Springs. Adjacent: RV storage business adjacent to south and Box Springs Road (running E-W) adjacent to N of STNM1. Intersection of the 60 Fwy (running E-W) & 215 Fwy (running S only) ~750' S of STNM1.

Weather: <5% cloud, sunshine. Sunset 5:01 PM. **Settings:** [✓ SLOW] FAST

Temperature: 60 deg F **Wind:** 8 mph **Humidity:** 26% **Terrain:** Hilly

Start Time: 1:01 PM **End Time:** 1:16 PM **Run Time:** 1 x 15 minutes

Leq: 70.2 dB

Lmax 82.1 dB

L2 77.1 dB

L8 74.6 dB

L25 71.2 dB

L50 67.9 dB

Primary Noise Source: Traffic noise from the 218 vehicles passing STNM1 microphone traveling along Box Springs Road. Traffic noise from the 60 & 215 Freeways S of STNM1.

Secondary Noise Sources: Leaf rustle from 8 mph breeze. Bird song. Fluttering American flag noise from 8 mph breeze (outside entry/exit way to RV business, 21155 Box Springs Rd).

NOISE METER:	SoundTrack LXT Class 1	**CALIBRATOR:**	Larson Davis CAL 250
MAKE:	Larson Davis	**MAKE:**	Larson Davis
MODEL:	LXT1	**MODEL:**	CAL 250
SERIAL NUMBER:	3099	**SERIAL NUMBER:**	2723
FACTORY CALIBRATION DATE:	7/31/2024	**FACTORY CALIBRATION DATE:**	7/10/2024
FIELD CALIBRATION DATE:	1/13/2025		

Noise Measurement Field Data

PHOTOS:

STNM1 looking N across Box Springs Road towards commercial building, 21150 Box Sprir Road, Moreno Valley.

STNM1 looking E along Box Springs Road towards storage business, 21201 Box Springs Road, Moreno Valley.

Summary

File Name on Meter	LxT_Data.508.s
File Name on PC	LxT_0003099-20250113 130132-LxT_Data.508.ldbin
Serial Number	0003099
Model	SoundTrack LxT®
Firmware Version	2.404
User	Ian Edward Gallagher
Location	STNM1 33°56'47.15"N 117°17'37.23"W
Job Description	15 minute noise measurement
Note	Roma Environmental Moreno Valley Farm Project

Measurement

Start	2025-01-13 13:01:32
Stop	2025-01-13 13:16:32
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre-Calibration	2025-01-13 13:00:51
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting	
Peak Weight	A Weighting	
Detector	Slow	
Preamplifier	PRMLxT1L	
Microphone Correction	Off	
Integration Method	Linear	
OBA Range	Normal	
OBA Bandwidth	1/1 and 1/3	
OBA Frequency Weighting	C Weighting	
OBA Max Spectrum	At LMax	
Overload	122.0	dB

Results

LAeq	70.2			
LAE	99.8			
EA	1.057	mPa²h		
EA8	33.815	mPa²h		
EA40	169.076	mPa²h		
LApeak (max)	2025-01-13 13:02:14		95.8	dB
LASmax	2025-01-13 13:10:07		82.1	dB
LASmin	2025-01-13 13:06:29		54.2	dB

LCeq	77.5	dB
LAeq	70.2	dB
LCeq - LAeq	7.3	dB
LAIeq	71.6	dB
LAeq	70.2	dB
LAIeq - LAeq	1.3	dB
Overload Count	0	
Overload Duration	0.0	s

Statistics

LA2.00	77.1	dB
LA8.00	74.6	dB
LA25.00	71.2	dB
LA50.00	67.9	dB
LA66.60	64.6	dB
LA90.00	57.5	dB

Measurement Report

Report Summary

Meter's File Name	LxT_Data.508.s	Computer's File Name	LxT_0003099-20250113 130132-LxT_Data.508.ldbin
Meter	LxT1 0003099		
Firmware	2.404		
User	Ian Edward Gallagher	Location	STNM1 33°56'47.15"N 117°17'37.23"W
Job Description	15 minute noise measurement		
Note	Roma Environmental Moreno Valley Farm Project		

Start Time	2025-01-13 13:01:32	Duration	0:15:00.0		
End Time	2025-01-13 13:16:32	Run Time	0:15:00.0	Pause Time	0:00:00.0

Results

Overall Metrics

LA_{eq}	70.2 dB		
LAE	99.8 dB	SEA	--- dB
EA	1.1 mPa²h	LAFTM5	74.4 dB
EA8	33.8 mPa²h		
EA40	169.1 mPa²h		

LA_{peak}	95.8 dB	2025-01-13 13:02:14
LAS_{max}	82.1 dB	2025-01-13 13:10:07
LAS_{min}	54.2 dB	2025-01-13 13:06:29

LA_{eq}	70.2 dB		
LC_{eq}	77.5 dB	LC_{eq} - LA_{eq}	7.3 dB
LAI_{eq}	71.6 dB	LAI_{eq} - LA_{eq}	1.3 dB

Exceedances	Count	Duration
LAS > 65.0 dB	27	0:10:31.3
LAS > 85.0 dB	0	0:00:00.0
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight	
	--- dB	--- dB	0.0 dB	
	LDEN	LDay	LEve	LNight
	--- dB	--- dB	--- dB	--- dB

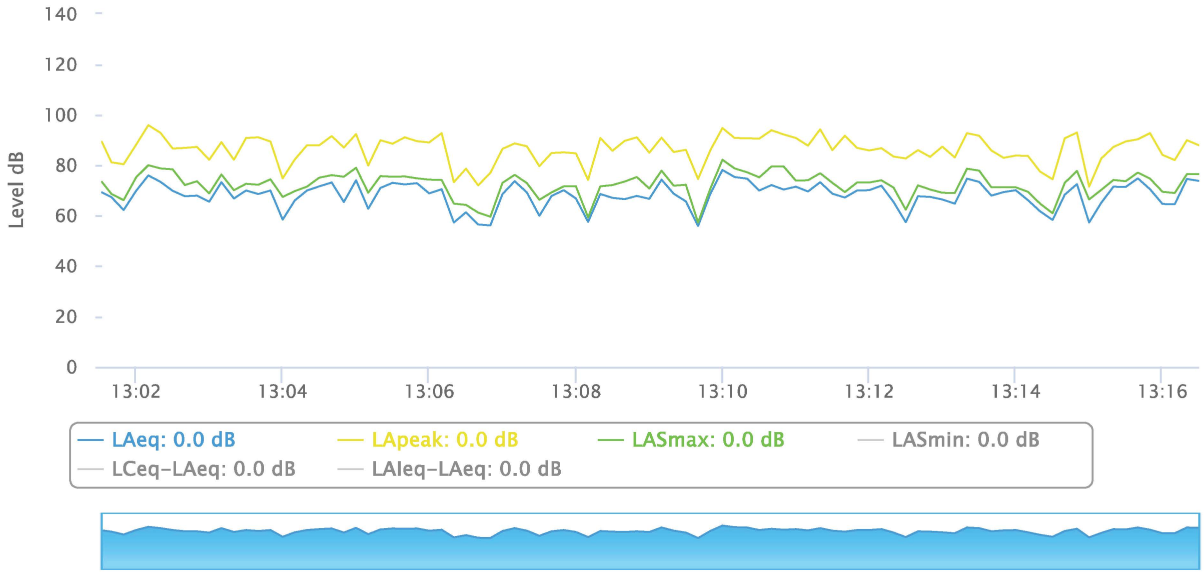
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	70.2 dB		77.5 dB		--- dB	
$Ls_{(max)}$	82.1 dB	2025-01-13 13:10:07	--- dB		--- dB	
$LS_{(min)}$	54.2 dB	2025-01-13 13:06:29	--- dB		--- dB	
$L_{Peak(max)}$	95.8 dB	2025-01-13 13:02:14	--- dB		--- dB	

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

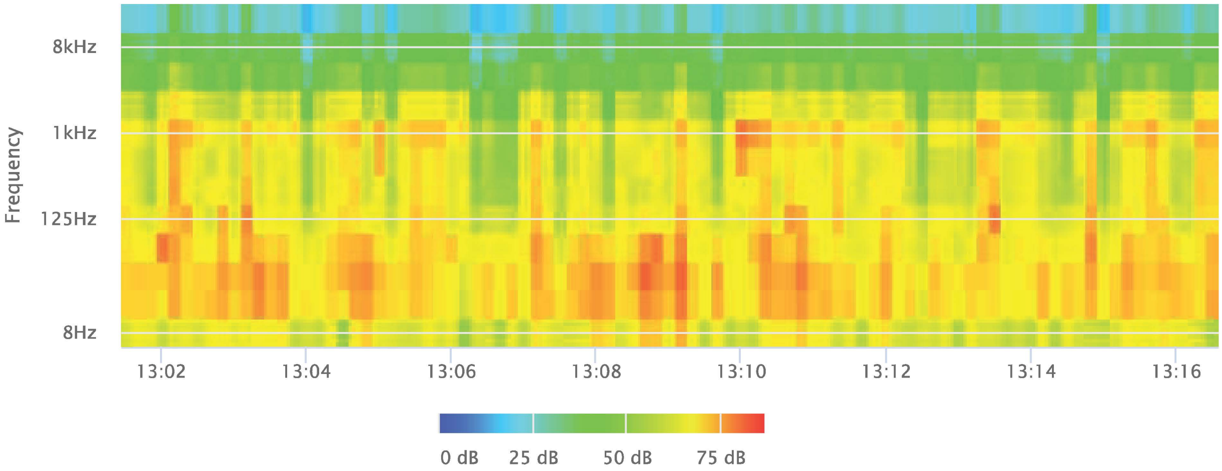
Statistics

LAS 2.0	77.1 dB
LAS 8.0	74.6 dB
LAS 25.0	71.2 dB
LAS 50.0	67.9 dB
LAS 66.6	64.6 dB
LAS 90.0	57.5 dB

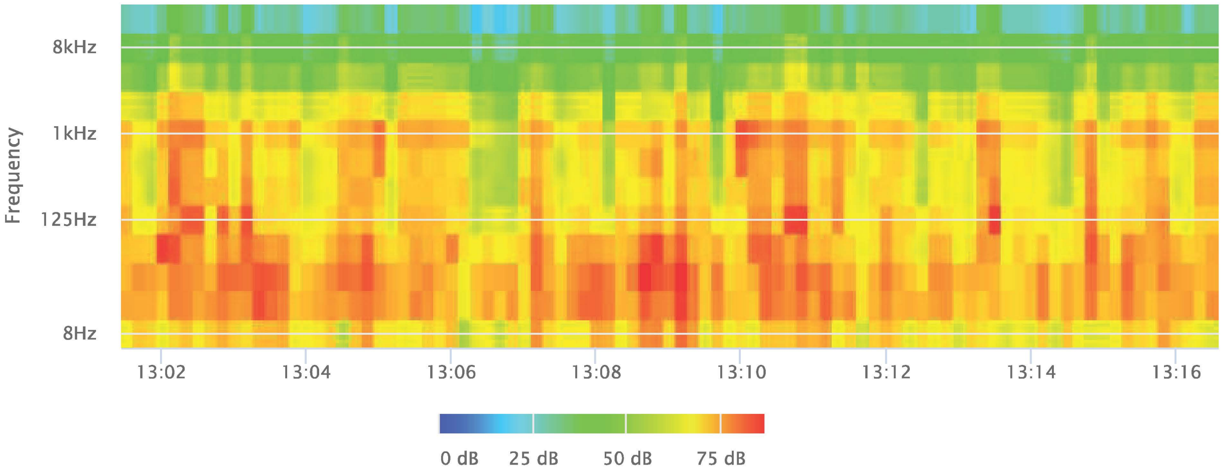
Time History



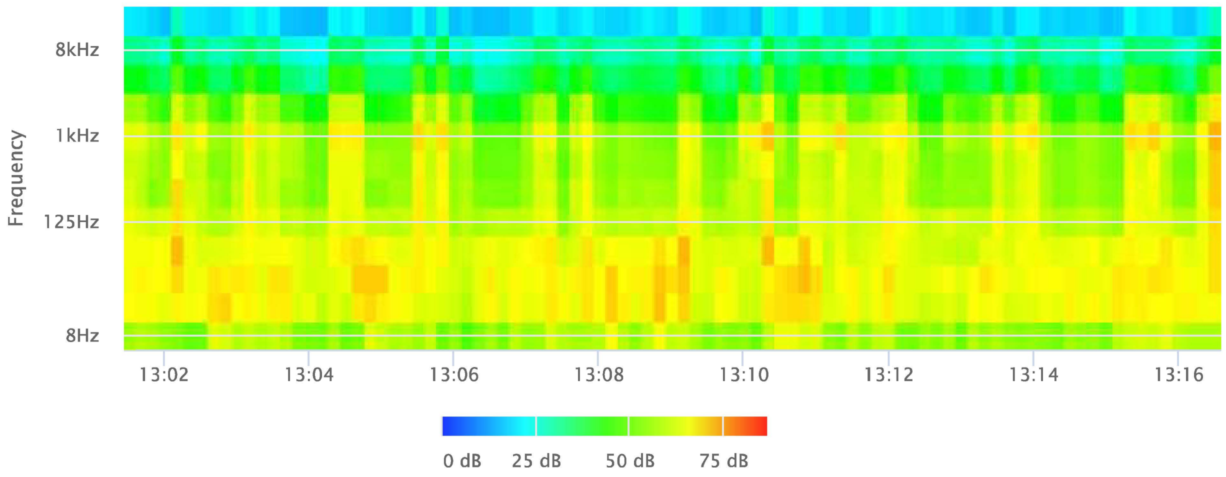
OBA 1/1 Leq



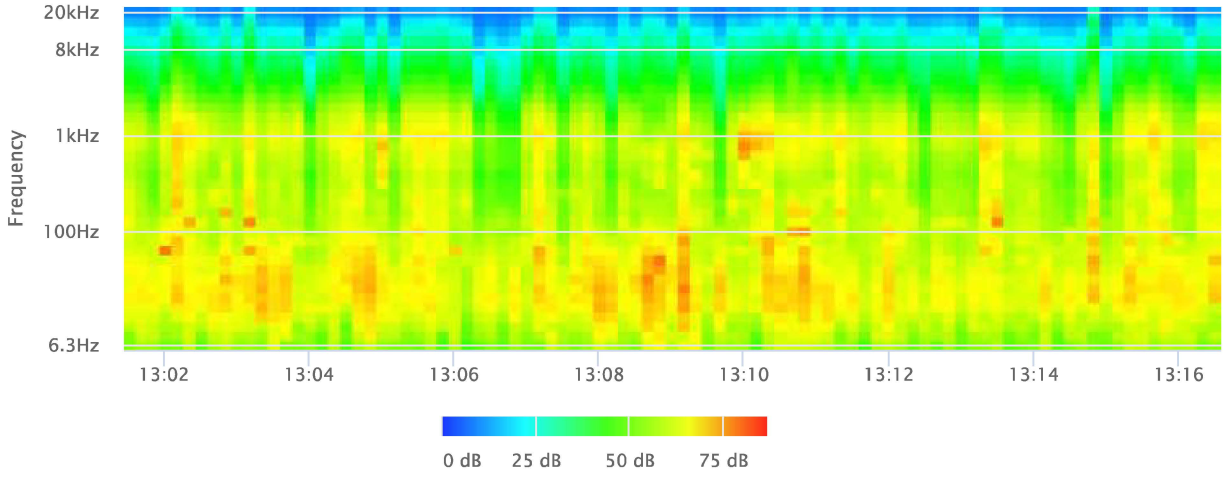
OBA 1/1 Lmax



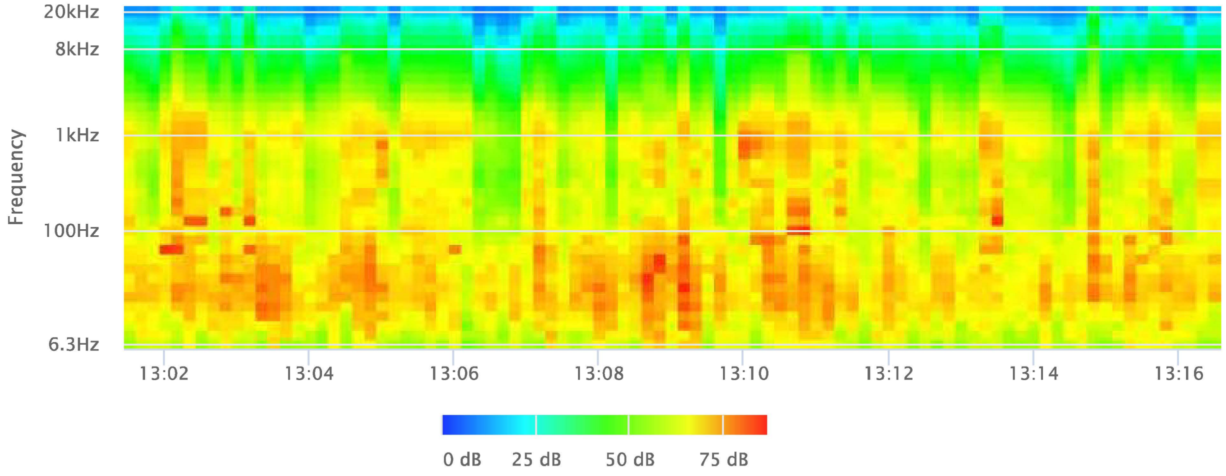
OBA 1/1 Lmin



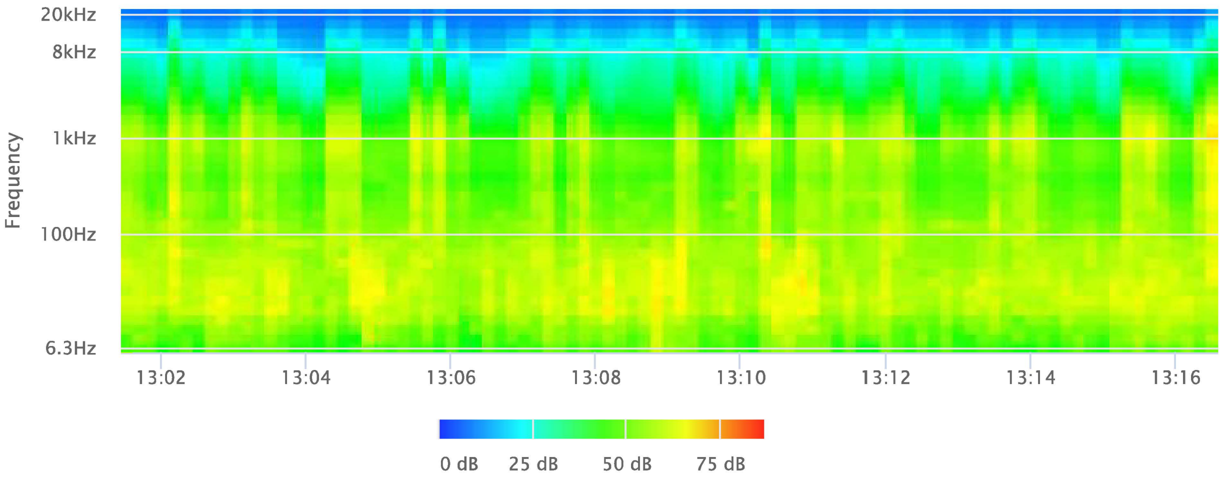
OBA 1/3 Leq



OBA 1/3 Lmax



OBA 1/3 Lmin


20kHz
8kHz
1kHz
100Hz
6.3Hz
Frequency
13:02
13:04
13:06
13:08
13:10
13:12
13:14
13:16
0 dB
25 dB
50 dB
75 dB

Noise Measurement Field Data

Project Name: Moreno Valley Farm Project, Moreno Valley **Date:** January 13, 2025

Project #:

Noise Measurement #: STNM2 **Technician:** Ian Gallagher

Nearest Address or Cross Street: 21064 Box Springs Road, Moreno Valley, CA 92557

Site Description (Type of Existing Land Use and any other notable features): Measurement Site: On grassy hill just east of multifamily residences at 21064 Box Springs Road. Adjacent: Multifamily residences to west, vacant land to east, and Box Springs Road (running E-W) ~360' S of STNM2. Intersection of the 60 Freeway & 215 Freeway~1,060' S of STNM2.

Weather: <5% cloud, sunshine. Sunset 5:01 PM. **Settings:** [✓ SLOW] FAST

Temperature: 60 deg F **Wind:** 8 mph **Humidity:** 26% **Terrain:** Hilly

Start Time: 1:40 PM **End Time:** 1:55 PM **Run Time:** 1 x 15 minutes

Primary Noise Source: Traffic ambiance from vehicles traveling along Box Springs Road, the 60 & 215 Freeways, and other surrounding roadways.

Secondary Noise Sources: Leaf rustle from 8 mph breeze. Bird song. Occasional overhead aircraft, chopper or private fixed wing propeller aircraft.

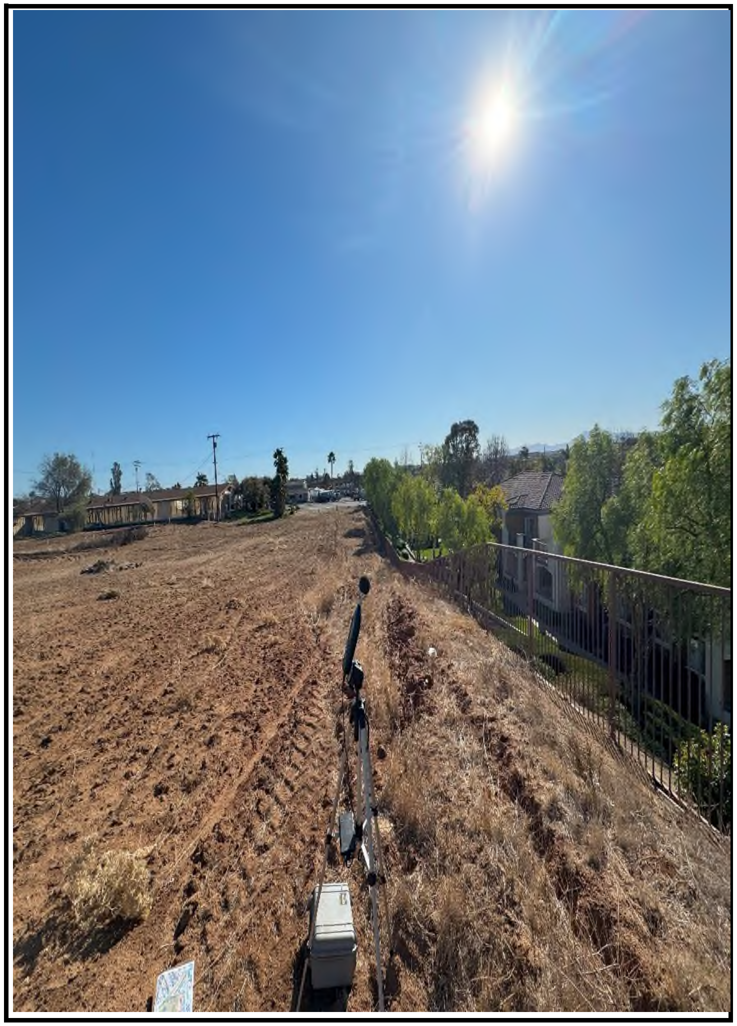
Leq:	54.2	dB
Lmax	62.9	dB
L2	59.5	dB
L8	56.2	dB
L25	54.4	dB
L50	53.5	dB

NOISE METER:	SoundTrack LXT Class 1	**CALIBRATOR:**	Larson Davis CAL 250
MAKE:	Larson Davis	**MAKE:**	Larson Davis
MODEL:	LXT1	**MODEL:**	CAL 250
SERIAL NUMBER:	3099	**SERIAL NUMBER:**	2723
FACTORY CALIBRATION DATE:	7/31/2024	**FACTORY CALIBRATION DATE:**	7/10/2024
FIELD CALIBRATION DATE:	1/13/2025		

Noise Measurement Field Data

PHOTOS:

STNM2 looking W, downhill towards closest residence, 21064 Box Springs Road, Moreno Valley.



STNM2 looking S towards Box Springs Road. Multifamily residence 21064 Box Springs Ro on righ tof image and building 21150 Box Springs Road on left of image.

Summary

File Name on Meter	LxT_Data.509.s
File Name on PC	LxT_0003099-20250113 134022-LxT_Data.509.ldbin
Serial Number	3099
Model	SoundTrack LxT®
Firmware Version	2.404
User	Ian Edward Gallagher
Location	STNM2 33°56'51.16"N 117°17'39.35"W
Job Description	15 minute noise measurement
Note	Roma Environmental Moreno Valley Farm Project

Measurement

Start	2025-01-13 13:40:22
Stop	2025-01-13 13:55:22
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre-Calibration	2025-01-13 13:39:42
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamplifier	PRMLxT1L
Microphone Correction	Off
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	C Weighting
OBA Max Spectrum	At LMax
Overload	122.1 dB

Results

LAeq	54.2	
LAE	83.8	
EA	26.50119 µPa²h	
EA8	848.0382 µPa²h	
EA40	4.240191 mPa²h	
LApeak (max)	2025-01-13 13:42:09	87.8 dB
LASmax	2025-01-13 13:53:35	62.9 dB
LASmin	2025-01-13 13:45:11	50.8 dB

		Statistics	
LCeq	76.8 dB	**LA2.00**	59.5 dB
LAeq	54.2 dB	**LA8.00**	56.2 dB
LCeq - LAeq	22.6 dB	**LA25.00**	54.4 dB
LAIeq	56.6 dB	**LA50.00**	53.5 dB
LAeq	54.2 dB	**LA66.60**	52.9 dB
LAIeq - LAeq	2.3 dB	**LA90.00**	52.0 dB
Overload Count	0		
Overload Duration	0.0 s		

Measurement Report

Report Summary

Meter's File Name	LxT_Data.509.s	Computer's File Name	LxT_0003099-20250113 134022-LxT_Data.509.ldbin
Meter	LxT1 0003099		
Firmware	2.404		
User	Ian Edward Gallagher	Location	STNM2 33°56'51.16"N 117°17'39.35"W
Job Description	15 minute noise measurement		
Note	Roma Environmental Moreno Valley Farm Project		

Start Time	2025-01-13 13:40:22	Duration	0:15:00.0		
End Time	2025-01-13 13:55:22	Run Time	0:15:00.0	Pause Time	0:00:00.0

Results

Overall Metrics

LA_{eq}	54.2 dB		
LAE	83.8 dB	SEA	--- dB
EA	26.5 μPa²h	LAFTM5	58.0 dB
EA8	848.0 μPa²h		
EA40	4.2 mPa²h		
LA_{peak}	87.8 dB	2025-01-13 13:42:09	
LAS_{max}	62.9 dB	2025-01-13 13:53:35	
LAS_{min}	50.8 dB	2025-01-13 13:45:11	
LA_{eq}	54.2 dB		
LC_{eq}	76.8 dB	LC_{eq} - LA_{eq}	22.6 dB
LAI_{eq}	56.6 dB	LAI_{eq} - LA_{eq}	2.3 dB

Exceedances	Count	Duration
LAS > 65.0 dB	0	0:00:00.0
LAS > 85.0 dB	0	0:00:00.0
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight	
	--- dB	--- dB	0.0 dB	
	LDEN	LDay	LEve	LNight
	--- dB	--- dB	--- dB	--- dB

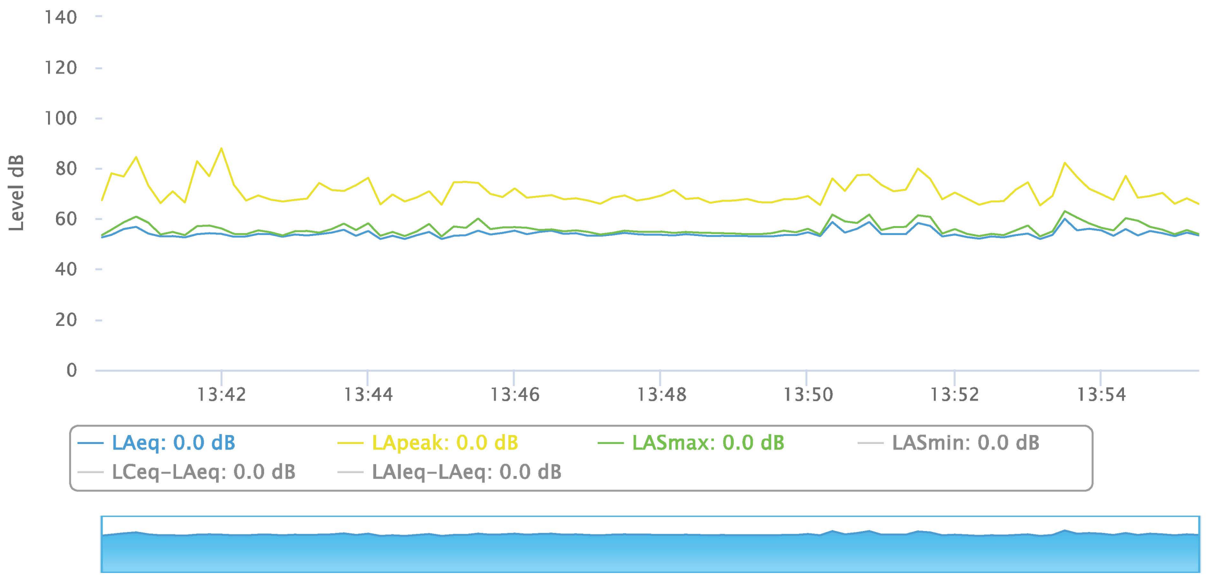
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	54.2 dB		76.8 dB		--- dB	
$Ls_{(max)}$	62.9 dB	2025-01-13 13:53:35	--- dB		--- dB	
$LS_{(min)}$	50.8 dB	2025-01-13 13:45:11	--- dB		--- dB	
$L_{Peak(max)}$	87.8 dB	2025-01-13 13:42:09	--- dB		--- dB	

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

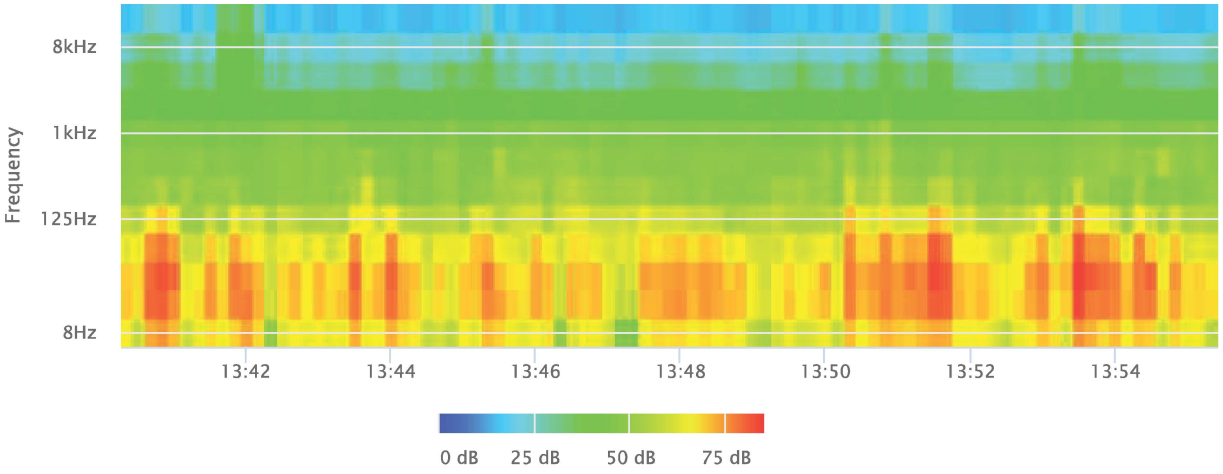
Statistics

LAS 2.0	59.5 dB
LAS 8.0	56.2 dB
LAS 25.0	54.4 dB
LAS 50.0	53.5 dB
LAS 66.6	52.9 dB
LAS 90.0	52.0 dB

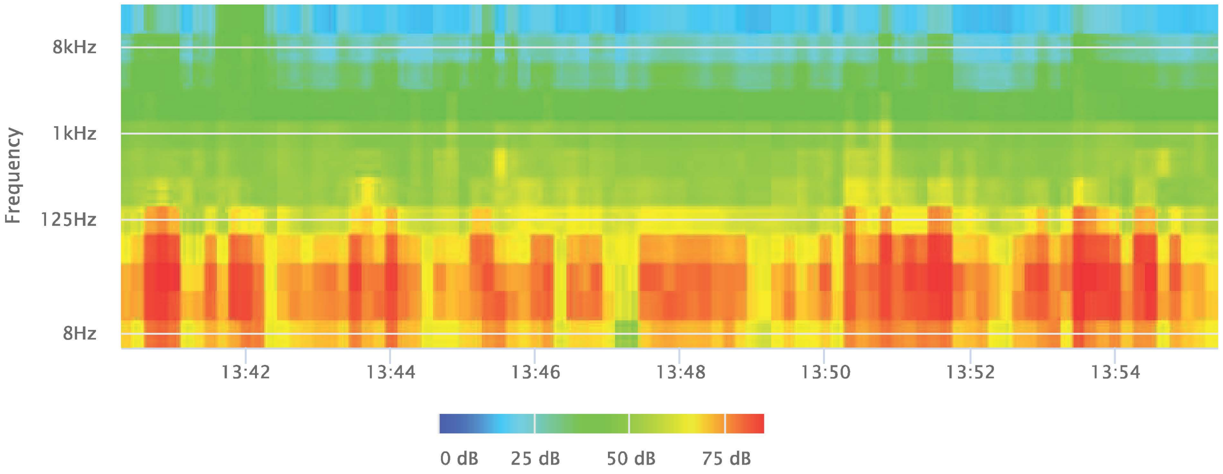
Time History



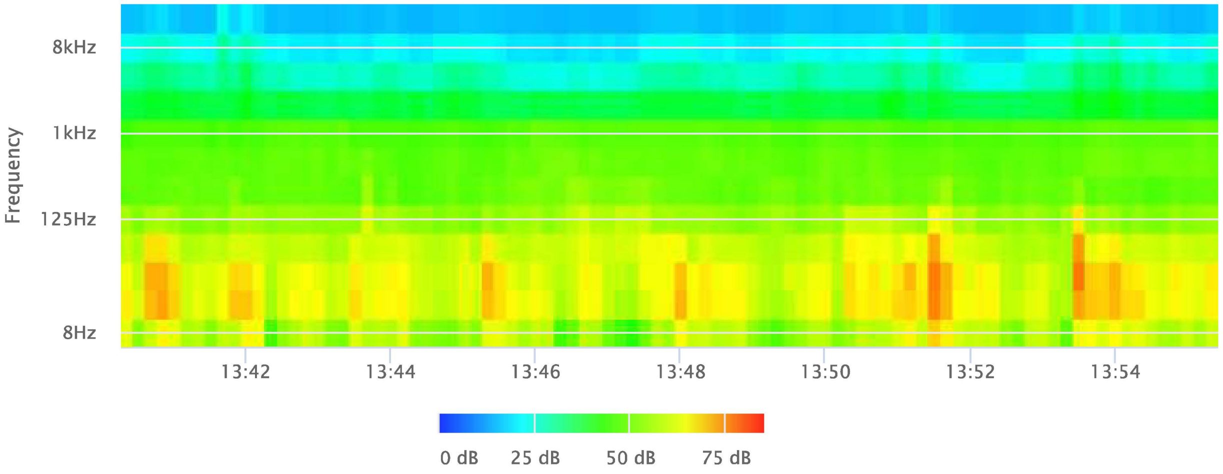
OBA 1/1 Leq



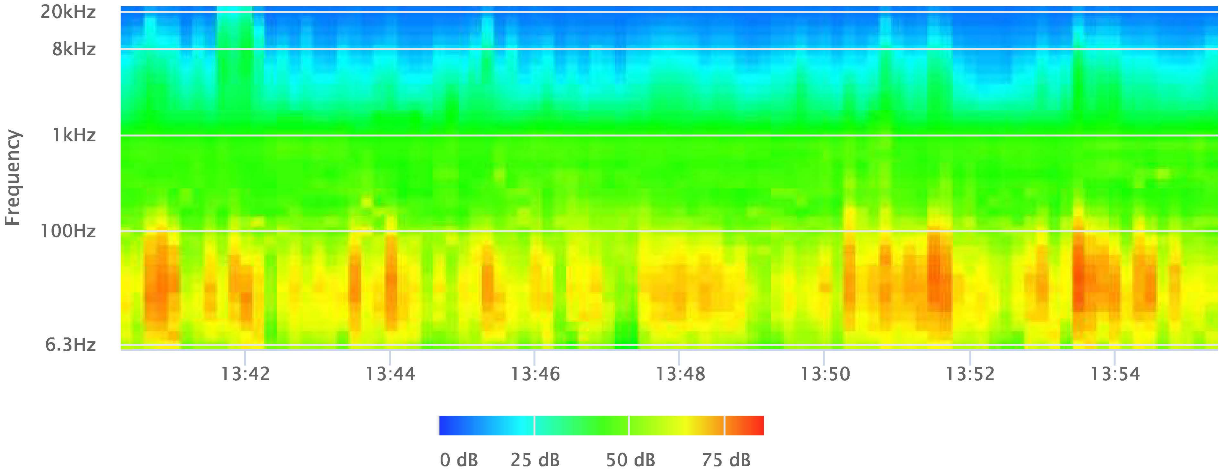
OBA 1/1 Lmax



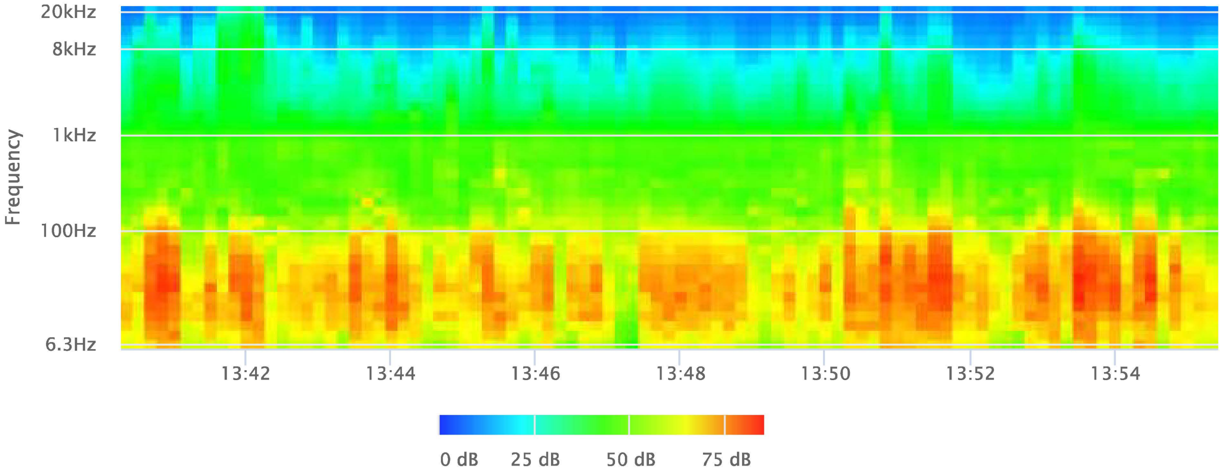
OBA 1/1 Lmin



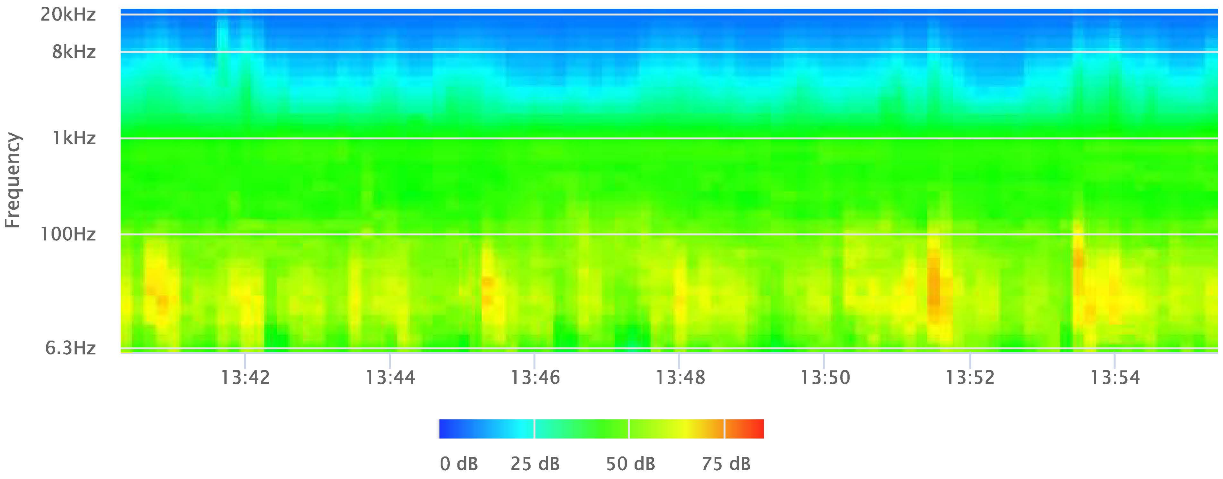
OBA 1/3 Leq



OBA 1/3 Lmax



OBA 1/3 Lmin


20kHz
8kHz
1kHz
Frequency
100Hz
6.3Hz
13:42
13:44
13:46
13:48
13:50
13:52
13:54
0 dB
25 dB
50 dB
75 dB

Noise Measurement Field Data

Project Name: Moreno Valley Farm Project, Moreno Valley

Date: January 13, 2025

Project #:

Noise Measurement #: STNM3

Technician: Ian Gallagher

Nearest Address or Cross Street: 21173 Martynia Ct, Moreno Valley, CA 92557

Site Description (Type of Existing Land Use and any other notable features): Measurement Site: Just N of pedestrian concrete walkway in the park area to the west of Lewisia Avenue, south of Pala Foxia Place, and east of Martynia Court. Adjacent: Park area surrouding measurement site (childrens play area 180' SE of STNM3) with residential further north, east, and west, Lewisia Ave to east, and Box Springs Rd ~750' S. The intersection of the 60 Fwy & 215 Fwy intersection ~1,500' S of STNM3.

Weather: <5% cloud, sunshine. Sunset 5:01 PM.

Settings: [✓ SLOW] FAST

Temperature: 60 deg F

Wind: 8 mph

Humidity: 26%

Terrain: Hilly

Start Time: 2:20 PM

End Time: 2:35 PM

Run Time: 1 x 15 minutes

Leq: 47.6 dB

Lmax 55.3 dB

L2 51.4 dB

L8 49.6 dB

L25 48.5 dB

L50 47.5 dB

Primary Noise Source: Traffic ambiance from vehicles traveling along Box Springs Road, the 60 & 215 Freeways,and other surrouding roadways.

Secondary Noise Sources: Leaf rustle from 8 mph breeze. Bird song. Occasional overhead aircraft, chopper or private fixed wing propeller aircraft. Children's play area ESE of STNM3.

NOISE METER: SoundTrack LXT Class 1

MAKE: Larson Davis

MODEL: LXT1

SERIAL NUMBER: 3099

FACTORY CALIBRATION DATE: 7/31/2024

FIELD CALIBRATION DATE: 1/13/2025

CALIBRATOR: Larson Davis CAL 250

MAKE: Larson Davis

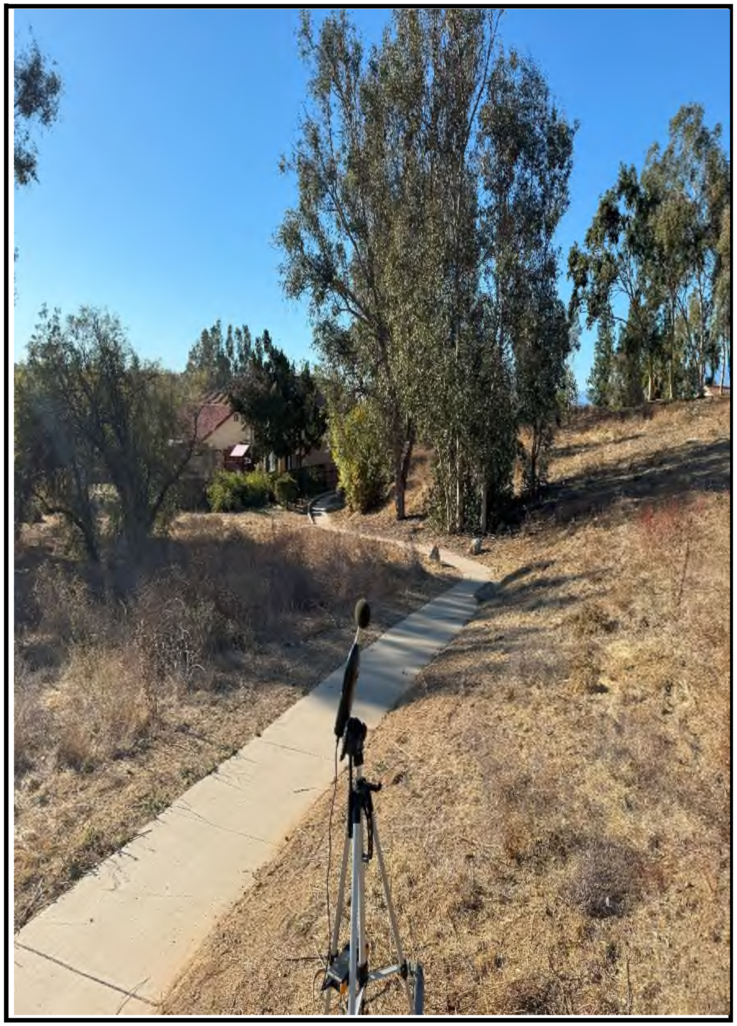
MODEL: CAL 250

SERIAL NUMBER: 2723

FACTORY CALIBRATION DATE: 7/10/2024

Noise Measurement Field Data

PHOTOS:



STNM3 looking W along concrete pedestrian foot path towards closest residence, 21173 Martynia Ct, Moreno Valley.

STNM3 looking ESE toward children's play area, climbing frames, jungle gym & participating children.

Summary

File Name on Meter	LxT_Data.510.s
File Name on PC	LxT_0003099-20250113 142007-LxT_Data.510.ldbin
Serial Number	3099
Model	SoundTrack LxT®
Firmware Version	2.404
User	Ian Edward Gallagher
Location	STNM3 33°56'55.15"N 117°17'33.29"W
Job Description	15 minute noise measurement
Note	Roma Environmental Moreno Valley Farm Project

Measurement

Start	2025-01-13 14:20:07
Stop	2025-01-13 14:35:07
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre-Calibration	2025-01-13 14:19:36
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamplifier	PRMLxT1L
Microphone Correction	Off
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	C Weighting
OBA Max Spectrum	At LMax
Overload	122.1 dB

Results

LAeq	47.6	
LAE	77.2	
EA	5.814949 µPa²h	
EA8	186.0784 µPa²h	
EA40	930.3918 µPa²h	
LApeak (max)	2025-01-13 14:22:58	84.6 dB
LASmax	2025-01-13 14:23:59	55.3 dB
LASmin	2025-01-13 14:33:44	42.4 dB

LCeq	66.3 dB
LAeq	47.6 dB
LCeq - LAeq	18.6 dB
LAIeq	49.7 dB
LAeq	47.6 dB
LAIeq - LAeq	2.0 dB
Overload Count	0
Overload Duration	0.0 s

Statistics

LA2.00	51.4 dB
LA8.00	49.6 dB
LA25.00	48.5 dB
LA50.00	47.5 dB
LA66.60	46.5 dB
LA90.00	44.3 dB

Measurement Report

Report Summary

Meter's File Name	LxT_Data.510.s	Computer's File Name	LxT_0003099-20250113 142007-LxT_Data.510.ldbin
Meter	LxT1 0003099		
Firmware	2.404		
User	Ian Edward Gallagher	Location	STNM3 33°56'55.15"N 117°17'33.29"W
Job Description	15 minute noise measurement		
Note	Roma Environmental Moreno Valley Farm Project		

Start Time	2025-01-13 14:20:07	Duration	0:15:00.0		
End Time	2025-01-13 14:35:07	Run Time	0:15:00.0	Pause Time	0:00:00.0

Results

Overall Metrics

LA_{eq}	47.6 dB		
LAE	77.2 dB	SEA	--- dB
EA	5.8 μPa²h	LAFTM5	50.6 dB
EA8	186.1 μPa²h		
EA40	930.4 μPa²h		
LA_{peak}	84.6 dB	2025-01-13 14:22:58	
LAS_{max}	55.3 dB	2025-01-13 14:23:59	
LAS_{min}	42.4 dB	2025-01-13 14:33:44	
LA_{eq}	47.6 dB		
LC_{eq}	66.3 dB	LC_{eq} - LA_{eq}	18.6 dB
LAI_{eq}	49.7 dB	LAI_{eq} - LA_{eq}	2.0 dB

Exceedances	Count	Duration
LAS > 65.0 dB	0	0:00:00.0
LAS > 85.0 dB	0	0:00:00.0
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight	
	--- dB	--- dB	0.0 dB	
	LDEN	LDay	LEve	LNight
	--- dB	--- dB	--- dB	--- dB

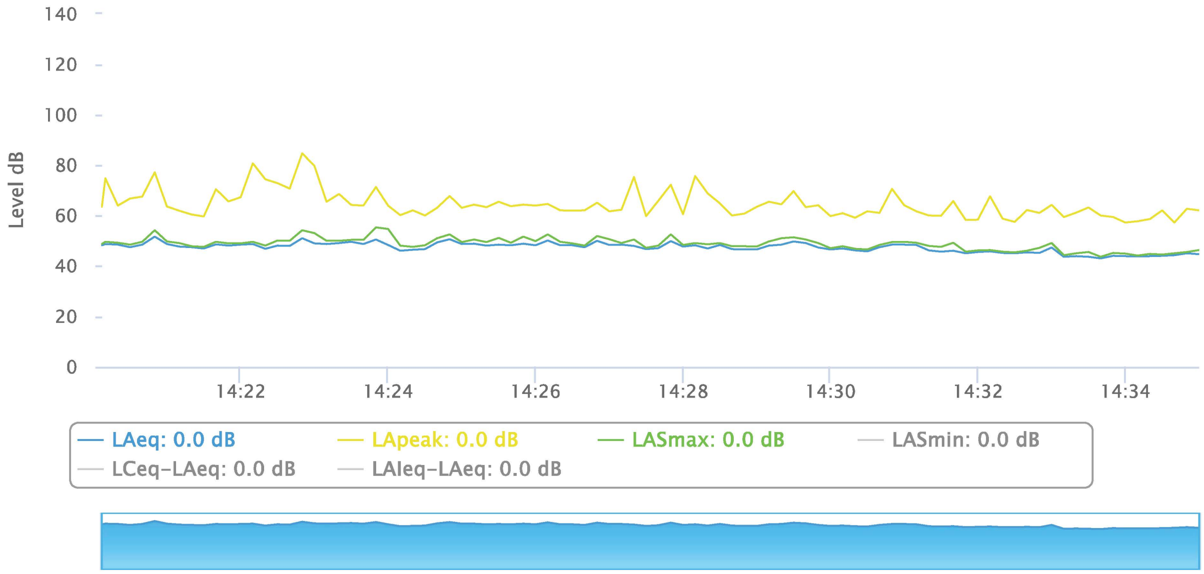
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	47.6 dB		66.3 dB		--- dB	
$Ls_{(max)}$	55.3 dB	2025-01-13 14:23:59	--- dB		--- dB	
$LS_{(min)}$	42.4 dB	2025-01-13 14:33:44	--- dB		--- dB	
$L_{Peak(max)}$	84.6 dB	2025-01-13 14:22:58	--- dB		--- dB	

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

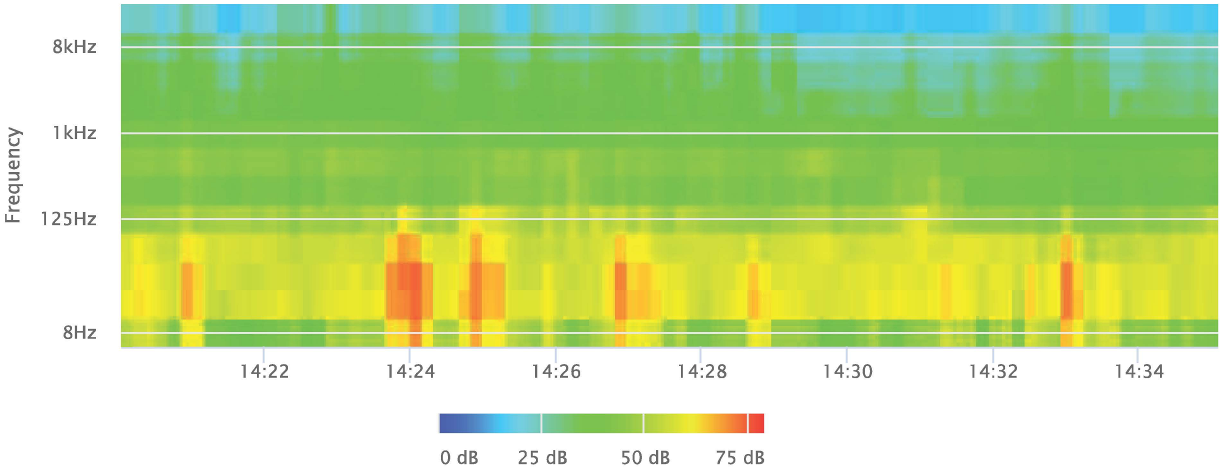
Statistics

LAS 2.0	51.4 dB
LAS 8.0	49.6 dB
LAS 25.0	48.5 dB
LAS 50.0	47.5 dB
LAS 66.6	46.5 dB
LAS 90.0	44.3 dB

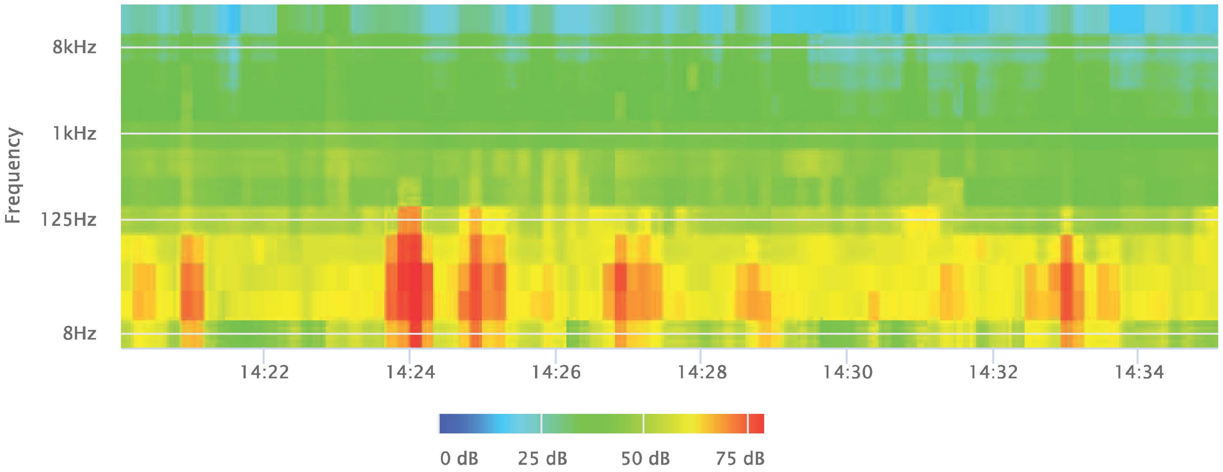
Time History



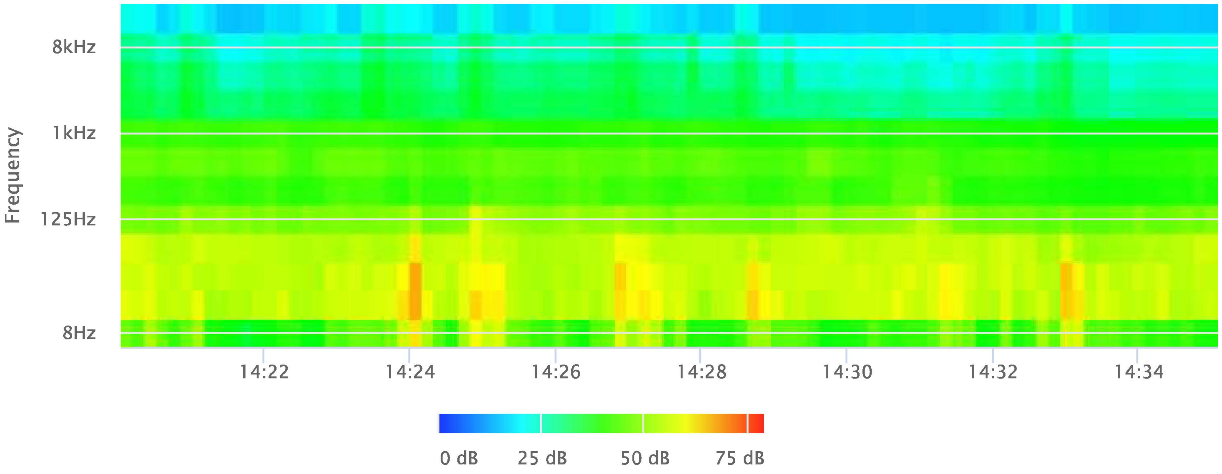
OBA 1/1 Leq



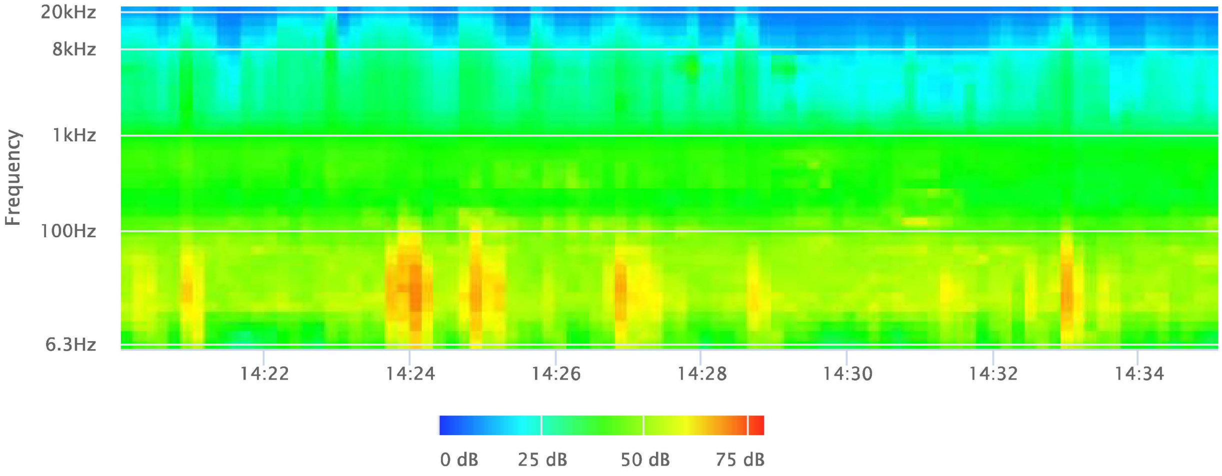
OBA 1/1 Lmax



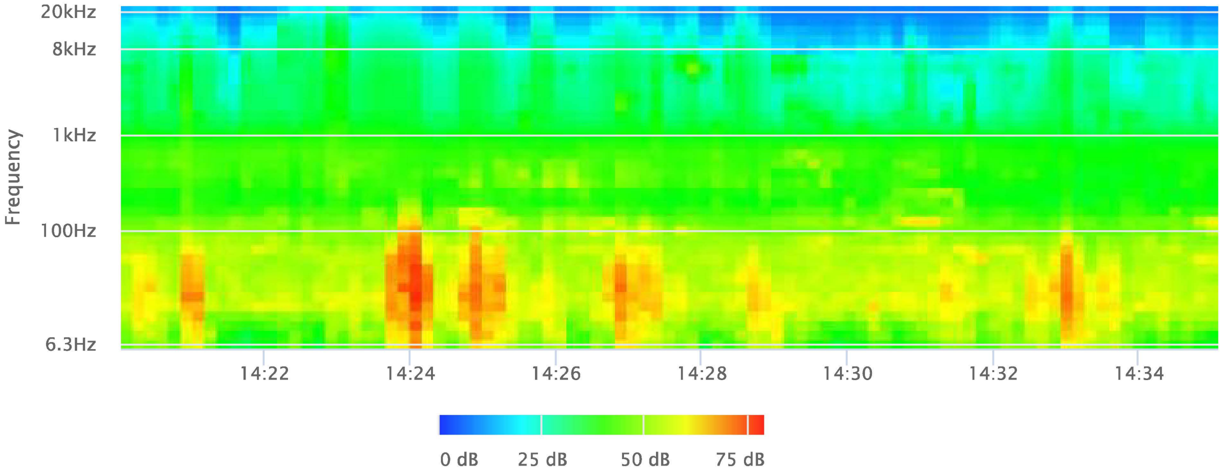
OBA 1/1 Lmin



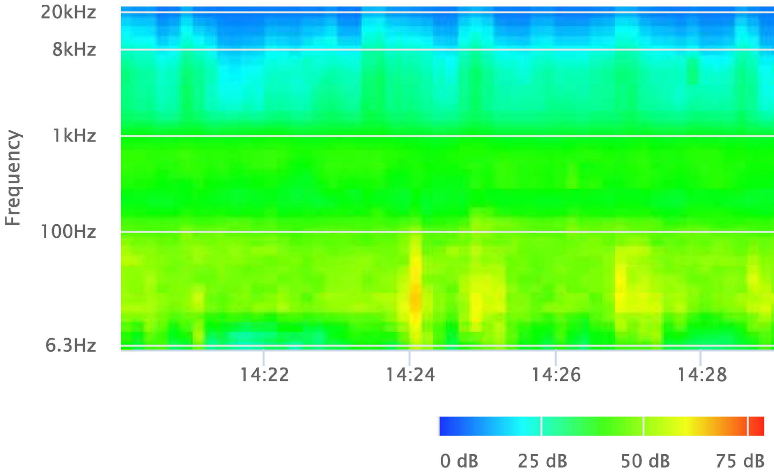
OBA 1/3 Leq



OBA 1/3 Lmax



OBA 1/3 Lmin


20kHz
8kHz
1kHz
Frequency
100Hz
6.3Hz
14:22
14:24
14:26
14:28
14:30
14:32
14:34
0 dB
25 dB
50 dB
75 dB

Noise Measurement Field Data

Project Name: Moreno Valley Farm Project, Moreno Valley **Date:** January 13, 2025

Project #:

Noise Measurement #: STNM4 **Technician:** Ian Gallagher

Nearest Address or Cross Street: 21250 Box Springs Road, Moreno Valley, CA 92557

Site Description (Type of Existing Land Use and any other notable features): Measurement Site: Western edge of the parking lot to building 21250 Box Springs Rd. parking lot E, empty cleared land W of STNM4. Adjacent: Parking lot and associated office building to east, vacant land to west with commecial uses southwest, & Box Springs Rd (running E-W) ~210' S of STNM4. The intersection of the 60 Fwy & 215 Fwy intersection ~1,000' S of STNM4.

Weather: <5% cloud, sunshine. Sunset 5:01 PM. **Settings:** [✓ SLOW] FAST

Temperature: 60 deg F **Wind:** 8 mph **Humidity:** 26% **Terrain:** Hilly

Start Time: 2:50 PM **End Time:** 3:05 PM **Run Time:** 1 x 15 minutes

Leq: 52.8 dB

Lmax 61.9 dB

L2 57.9 dB

L8 55.9 dB

L25 53.9 dB

L50 51.7 dB

Primary Noise Source: Traffic noise from the 287 vehicles passing STNM4 microphone traveling along Box Springs Rd. Traffic noise from both 60 & 215 Freeways.

Secondary Noise Sources: Leaf rustle from 8 mph breeze. Bird song. Occasional aircraft, chopper or fixed wing, private propeller plane.

NOISE METER: SoundTrack LXT Class 1

MAKE: Larson Davis

MODEL: LXT1

SERIAL NUMBER: 3099

FACTORY CALIBRATION DATE: 7/31/2024

FIELD CALIBRATION DATE: 1/13/2025

CALIBRATOR: Larson Davis CAL 250

MAKE: Larson Davis

MODEL: CAL 250

SERIAL NUMBER: 2723

FACTORY CALIBRATION DATE: 7/10/2024

PHOTOS:

STNM4 looking E across parking lot towards building, 21250 Box Springs Road, Moreno Valley.

STNM4 looking S towards Box Springs Road and 60/215 Fwy intersection beyond (on the other side of the storage facility at 21201 Box Springs Road, Moreno Valley).

Summary			
File Name on Meter	LxT_Data.511.s		
File Name on PC	LxT_0003099-20250113 145036-LxT_Data.511.ldbin		
Serial Number	3099		
Model	SoundTrack LxT®		
Firmware Version	2.404		
User	Ian Edward Gallagher		
Location	STNM4 33°56'49.72"N 117°17'31.67"W		
Job Description	15 minute noise measurement		
Note	Roma Environmental Moreno Valley Farm Project		
Measurement			
Start	2025-01-13 14:50:36		
Stop	2025-01-13 15:05:36		
Duration	00:15:00.0		
Run Time	00:15:00.0		
Pause	00:00:00.0		
Pre-Calibration	2025-01-13 14:50:14		
Post-Calibration	None		
Calibration Deviation	---		
Overall Settings			
RMS Weight	A Weighting		
Peak Weight	A Weighting		
Detector	Slow		
Preamplifier	PRMLxT1L		
Microphone Correction	Off		
Integration Method	Linear		
OBA Range	Normal		
OBA Bandwidth	1/1 and 1/3		
OBA Frequency Weighting	C Weighting		
OBA Max Spectrum	At LMax		
Overload	122.0 dB		
Results			
LAeq	52.8		
LAE	82.4		
EA	19.09043 µPa²h		
EA8	610.8936 µPa²h		
EA40	3.054468 mPa²h		
LApeak (max)	2025-01-13 15:01:31	85.4 dB	
LASmax	2025-01-13 14:53:12	61.9 dB	
LASmin	2025-01-13 15:05:16	45.1 dB	

		Statistics	
LCeq	66.6 dB	**LA2.00**	57.9 dB
LAeq	52.8 dB	**LA8.00**	55.9 dB
LCeq - LAeq	13.8 dB	**LA25.00**	53.9 dB
LAIeq	54.4 dB	**LA50.00**	51.7 dB
LAeq	52.8 dB	**LA66.60**	50.0 dB
LAIeq - LAeq	1.6 dB	**LA90.00**	47.6 dB
Overload Count	0		
Overload Duration	0.0 s		

Measurement Report

Report Summary

Meter's File Name	LxT_Data.511.s	Computer's File Name	LxT_0003099-20250113 145036-LxT_Data.511.ldbin
Meter	LxT1 0003099		
Firmware	2.404		
User	Ian Edward Gallagher	Location	STNM4 33°56'49.72"N 117°17'31.67"W
Job Description	15 minute noise measurement		
Note	Roma Environmental Moreno Valley Farm Project		

Start Time	2025-01-13 14:50:36	Duration	0:15:00.0		
End Time	2025-01-13 15:05:36	Run Time	0:15:00.0	Pause Time	0:00:00.0

Results

Overall Metrics

LA_{eq}	52.8 dB		
LAE	82.4 dB	SEA	--- dB
EA	19.1 μPa²h	LAFTM5	56.3 dB
EA8	610.9 μPa²h		
EA40	3.1 mPa²h		
LA_{peak}	85.4 dB	2025-01-13 15:01:31	
LAS_{max}	61.9 dB	2025-01-13 14:53:12	
LAS_{min}	45.1 dB	2025-01-13 15:05:16	
LA_{eq}	52.8 dB		
LC_{eq}	66.6 dB	LC_{eq} - LA_{eq}	13.8 dB
LAI_{eq}	54.4 dB	LAI_{eq} - LA_{eq}	1.6 dB

Exceedances	Count	Duration
LAS > 65.0 dB	0	0:00:00.0
LAS > 85.0 dB	0	0:00:00.0
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight
	--- dB	--- dB	0.0 dB

	LDEN	LDay	LEve	LNight
	--- dB	--- dB	--- dB	--- dB

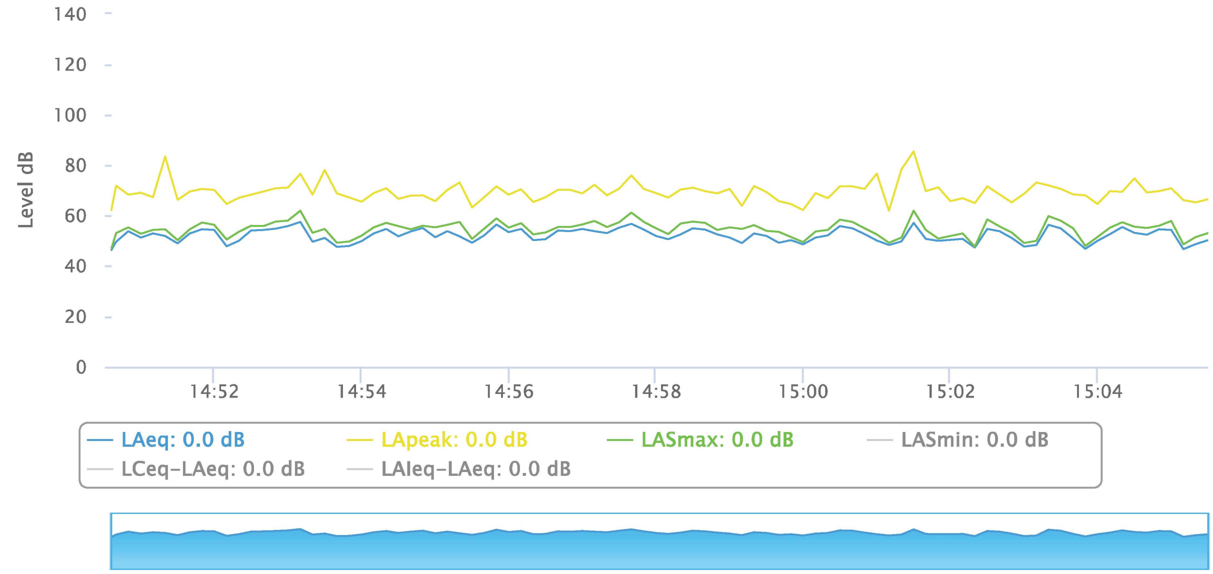
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	52.8 dB		66.6 dB		--- dB	
$Ls_{(max)}$	61.9 dB	2025-01-13 14:53:12	--- dB		--- dB	
$LS_{(min)}$	45.1 dB	2025-01-13 15:05:16	--- dB		--- dB	
$L_{Peak(max)}$	85.4 dB	2025-01-13 15:01:31	--- dB		--- dB	

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

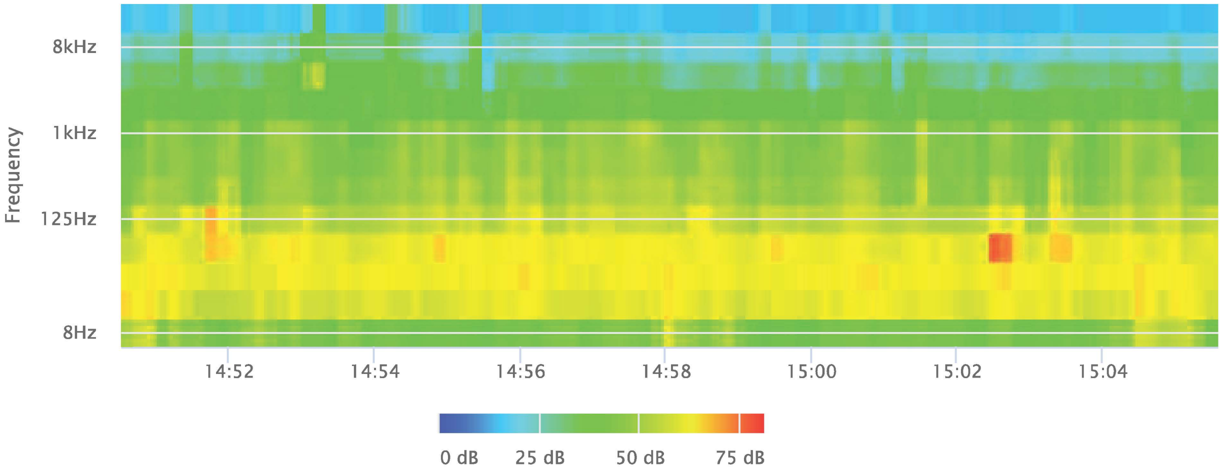
Statistics

LAS 2.0	57.9 dB
LAS 8.0	55.9 dB
LAS 25.0	53.9 dB
LAS 50.0	51.7 dB
LAS 66.6	50.0 dB
LAS 90.0	47.6 dB

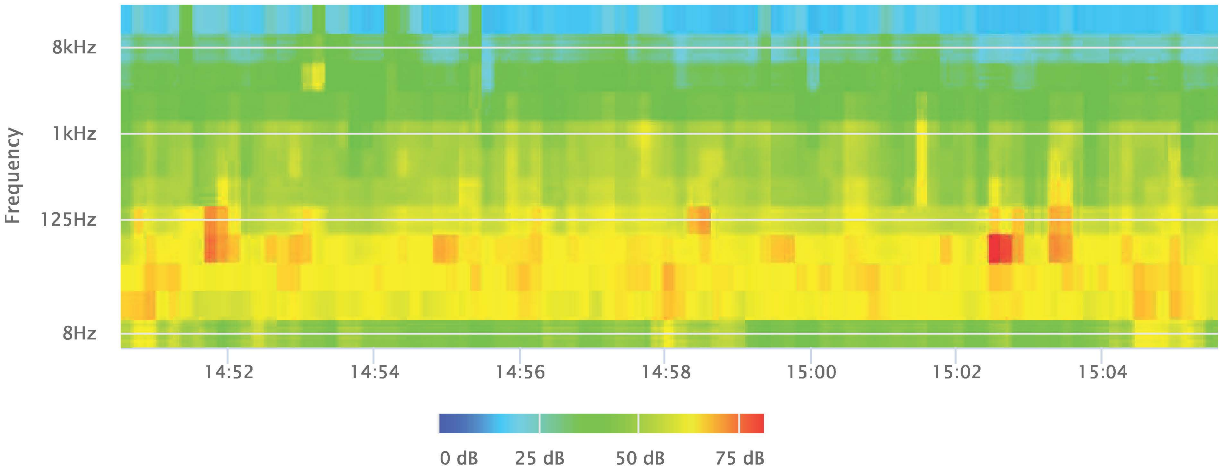
Time History



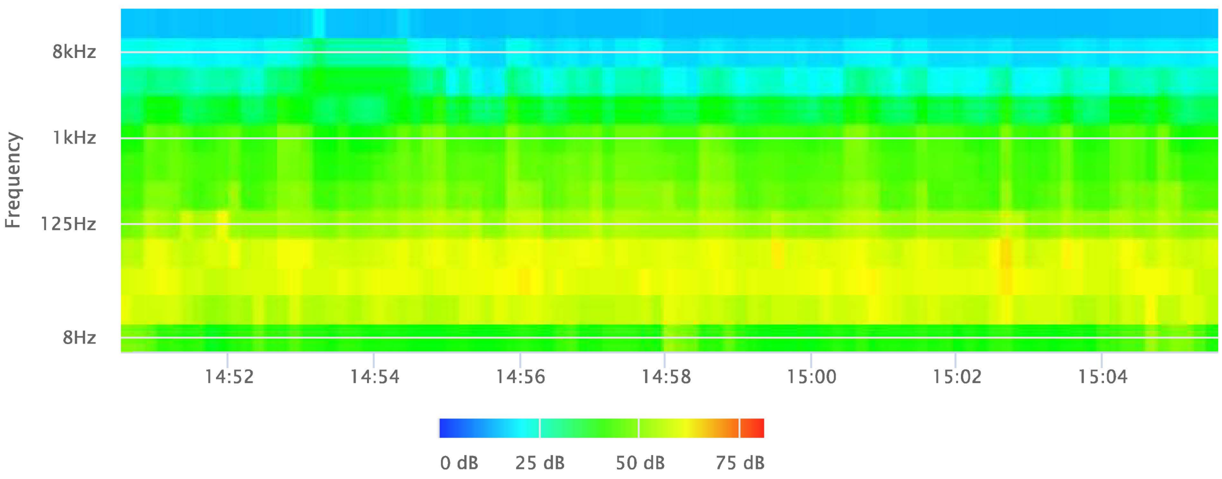
OBA 1/1 Leq



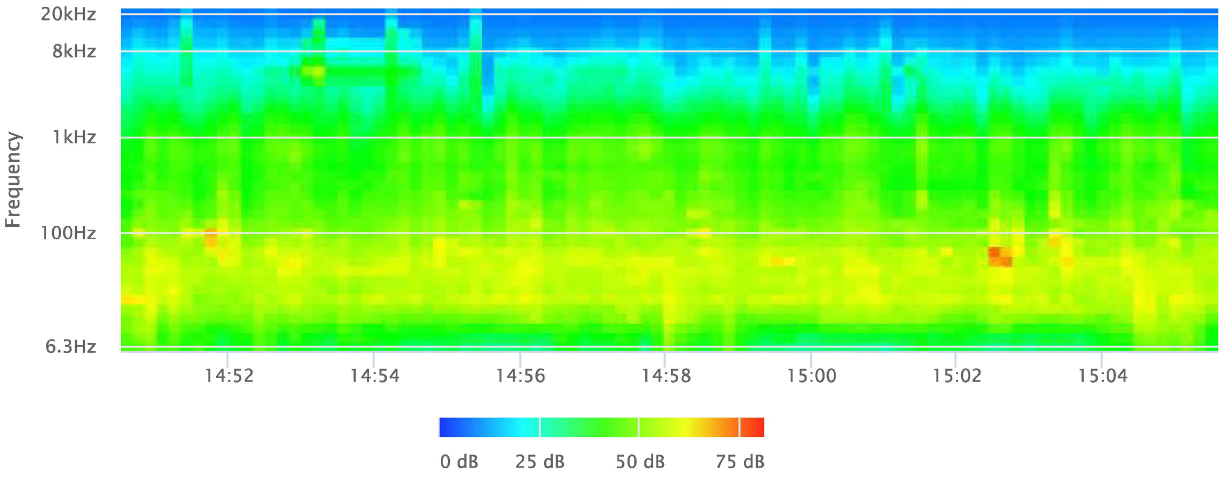
OBA 1/1 Lmax



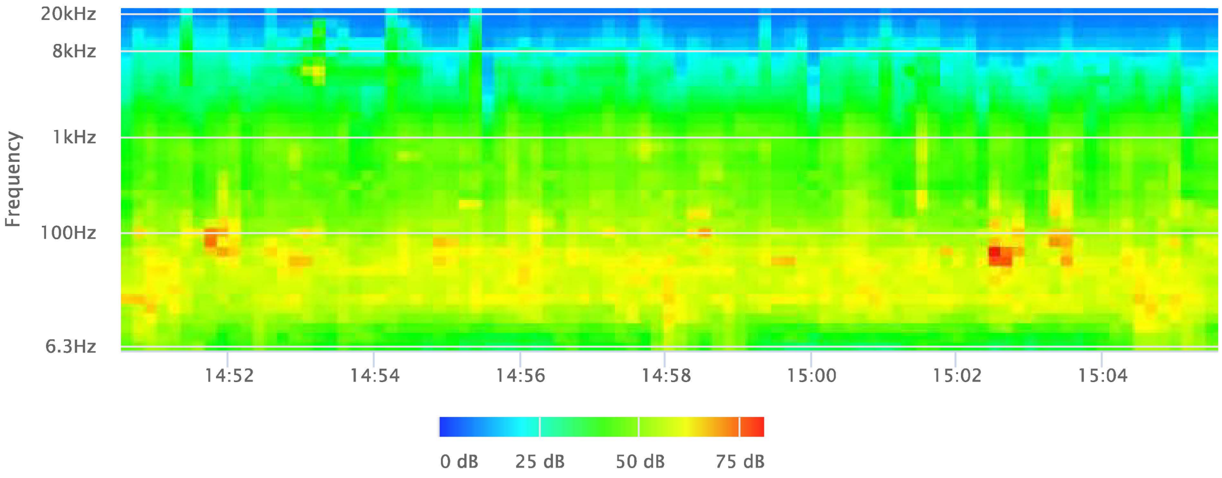
OBA 1/1 Lmin



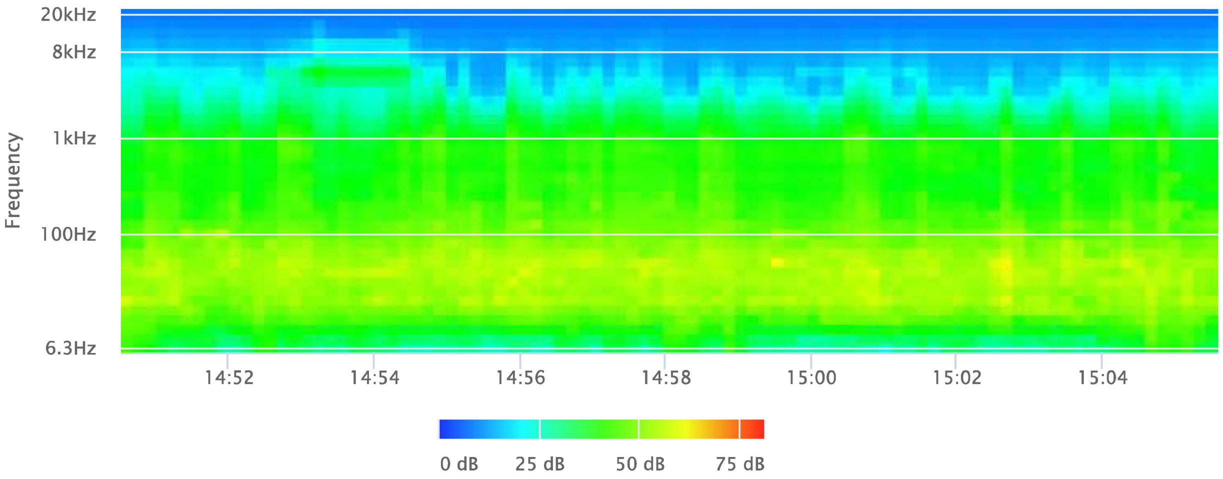
OBA 1/3 Leq



OBA 1/3 Lmax



OBA 1/3 Lmin


20kHz
8kHz
1kHz
Frequency
100Hz
6.3Hz
14:52
14:54
14:56
14:58
15:00
15:02
15:04
0 dB
25 dB
50 dB
75 dB

Noise Measurement Field Data

Project Name: Moreno Valley Farm Project, Moreno Valley **Date:** January 13, 2025

Project #:

Noise Measurement #: STNM5 **Technician:** Ian Gallagher

Nearest Address or Cross Street: 21401 Box Springs Road, Moreno Valley, CA 92557

Site Description (Type of Existing Land Use and any other notable features): Measurement Site: In sidewalk just NW of building 21401 Box Springs Rd (close to sycamore tree blowing in 8mph breeze.) Adjacent: Church use with parking lot surrounding measurement site & Box Springs Rd (running E-W) adjacent to north. The intersection of the 60 Fwy & 215 Fwy is ~750' S of STNM5.

Weather: <5% cloud, sunshine. Sunset 5:01 PM. **Settings:** [✓ SLOW] FAST

Temperature: 60 deg F **Wind:** 8 mph **Humidity:** 26% **Terrain:** Hilly

Start Time: 3:32 PM **End Time:** 3:47 PM **Run Time:** 1 x 15 minutes

Leq: 69.3 dB

Lmax 90.6 dB

L2 73.6 dB

L8 71.7 dB

L25 69.1 dB

L50 66.5 dB

Primary Noise Source: Traffic noise from the 311 vehicles passing STNM5 microphone traveling along Box Springs Rd. Traffic noise from both 60 & 215 Freeways.

Secondary Noise Sources: Leaf rustle from 8 mph breeze. Bird song. Occasional overhead aircraft, fixed wind private propeller plane or helicopter

NOISE METER: SoundTrack LXT Class 1

MAKE: Larson Davis

MODEL: LXT1

SERIAL NUMBER: 3099

FACTORY CALIBRATION DATE: 7/31/2024

FIELD CALIBRATION DATE: 1/13/2025

CALIBRATOR: Larson Davis CAL 250

MAKE: Larson Davis

MODEL: CAL 250

SERIAL NUMBER: 2723

FACTORY CALIBRATION DATE: 7/10/2024

Noise Measurement Field Data

PHOTOS:

STNM5 looking NW across Box Springs Road towards office building, 21250 Box Springs Road, Moreno Valley.

STNM5 looking SE towards church building, 21401 Box Springs Road, Moreno Valley.

Summary

File Name on Meter	LxT_Data.512.s
File Name on PC	LxT_0003099-20250113 153235-LxT_Data.512.ldbin
Serial Number	3099
Model	SoundTrack LxT®
Firmware Version	2.404
User	Ian Edward Gallagher
Location	STNM5 33°56'46.96"N 117°17'28.31"W
Job Description	15 minute noise measurement
Note	Roma Environmental Moreno Valley Farm Project

Measurement

Start	2025-01-13 15:32:35
Stop	2025-01-13 15:47:35
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre-Calibration	2025-01-13 15:32:19
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting	
Peak Weight	A Weighting	
Detector	Slow	
Preamplifier	PRMLxT1L	
Microphone Correction	Off	
Integration Method	Linear	
OBA Range	Normal	
OBA Bandwidth	1/1 and 1/3	
OBA Frequency Weighting	C Weighting	
OBA Max Spectrum	At LMax	
Overload	122.1	dB

Results

LAeq	69.3		
LAE	98.8		
EA	842.6379	µPa²h	
EA8	26.96441	mPa²h	
EA40	134.8221	mPa²h	
LApeak (max)	2025-01-13 15:44:15	103.2	dB
LASmax	2025-01-13 15:44:15	90.6	dB
LASmin	2025-01-13 15:43:33	52.3	dB

			Statistics		
LCeq	76.5	dB	**LA2.00**	73.6	dB
LAeq	69.3	dB	**LA8.00**	71.7	dB
LCeq - LAeq	7.2	dB	**LA25.00**	69.1	dB
LAIeq	71.1	dB	**LA50.00**	66.5	dB
LAeq	69.3	dB	**LA66.60**	63.6	dB
LAIeq - LAeq	1.8	dB	**LA90.00**	55.8	dB
Overload Count	0				
Overload Duration	0.0	s			

Measurement Report

Report Summary

Meter's File Name	LxT_Data.512.s	Computer's File Name	LxT_0003099-20250113 153235-LxT_Data.512.ldbin
Meter	LxT1 0003099		
Firmware	2.404		
User	Ian Edward Gallagher	Location	STNM5 33°56'46.96"N 117°17'28.31"W
Job Description	15 minute noise measurement		
Note	Roma Environmental Moreno Valley Farm Project		

Start Time	2025-01-13 15:32:35	Duration	0:15:00.0		
End Time	2025-01-13 15:47:35	Run Time	0:15:00.0	Pause Time	0:00:00.0

Results

Overall Metrics

LA_{eq}	69.3 dB		
LAE	98.8 dB	SEA	--- dB
EA	842.6 µPa²h	LAFTM5	75.1 dB
EA8	27.0 mPa²h		
EA40	134.8 mPa²h		

LA_{peak}	103.2 dB	2025-01-13 15:44:15
LAS_{max}	90.6 dB	2025-01-13 15:44:15
LAS_{min}	52.3 dB	2025-01-13 15:43:33

LA_{eq}	69.3 dB		
LC_{eq}	76.5 dB	LC_{eq} - LA_{eq}	7.2 dB
LAI_{eq}	71.1 dB	LAI_{eq} - LA_{eq}	1.8 dB

Exceedances	Count	Duration
LAS > 65.0 dB	36	0:09:59.7
LAS > 85.0 dB	1	0:00:03.2
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight	
	--- dB	--- dB	0.0 dB	
	LDEN	LDay	LEve	LNight
	--- dB	--- dB	--- dB	--- dB

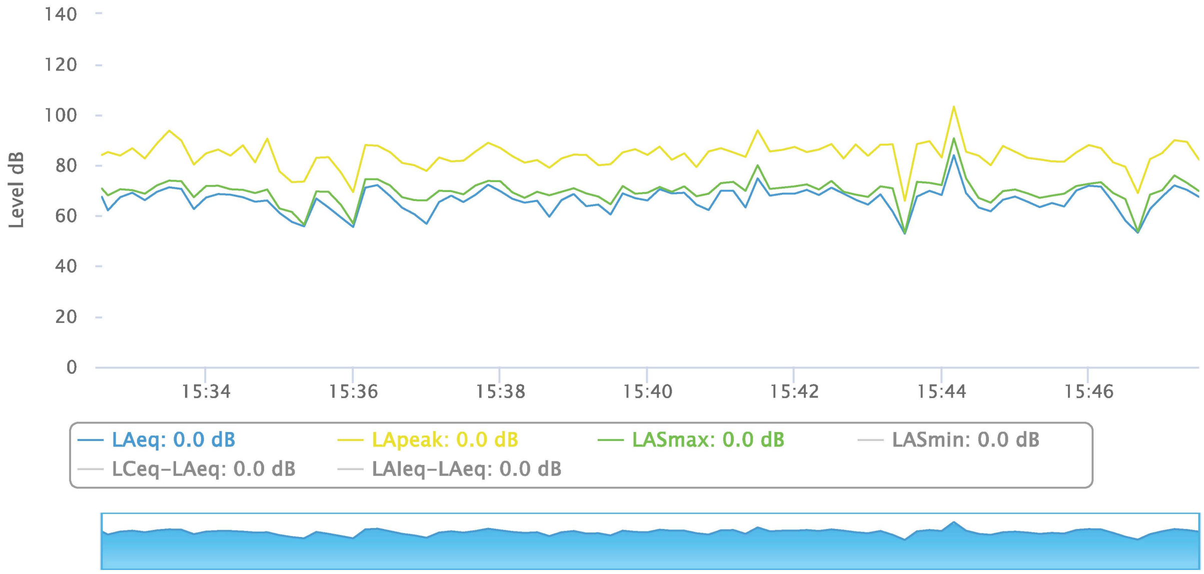
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	69.3 dB		76.5 dB		--- dB	
$LS_{(max)}$	90.6 dB	2025-01-13 15:44:15	--- dB		--- dB	
$LS_{(min)}$	52.3 dB	2025-01-13 15:43:33	--- dB		--- dB	
$L_{Peak(max)}$	103.2 dB	2025-01-13 15:44:15	--- dB		--- dB	

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

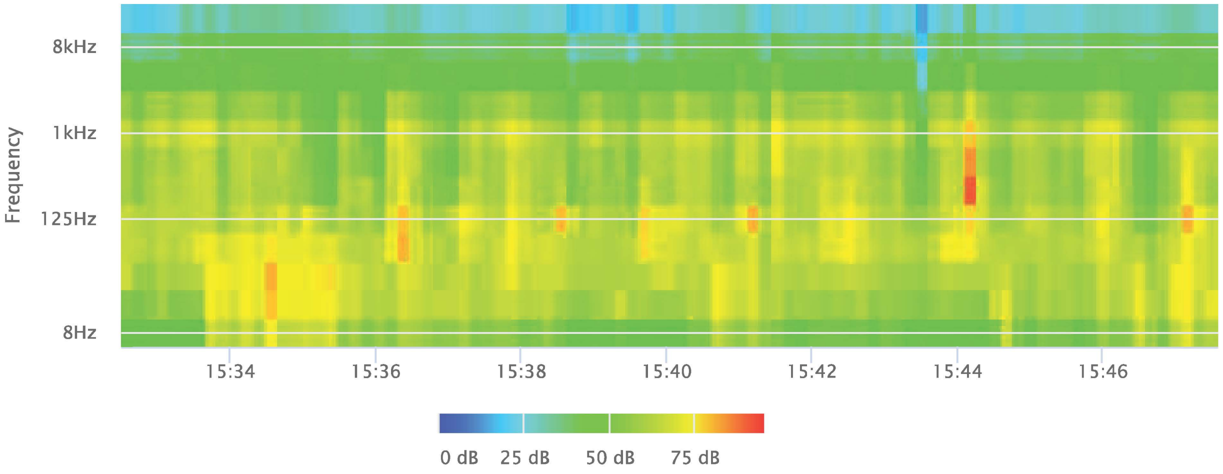
Statistics

LAS 2.0	73.6 dB
LAS 8.0	71.7 dB
LAS 25.0	69.1 dB
LAS 50.0	66.5 dB
LAS 66.6	63.6 dB
LAS 90.0	55.8 dB

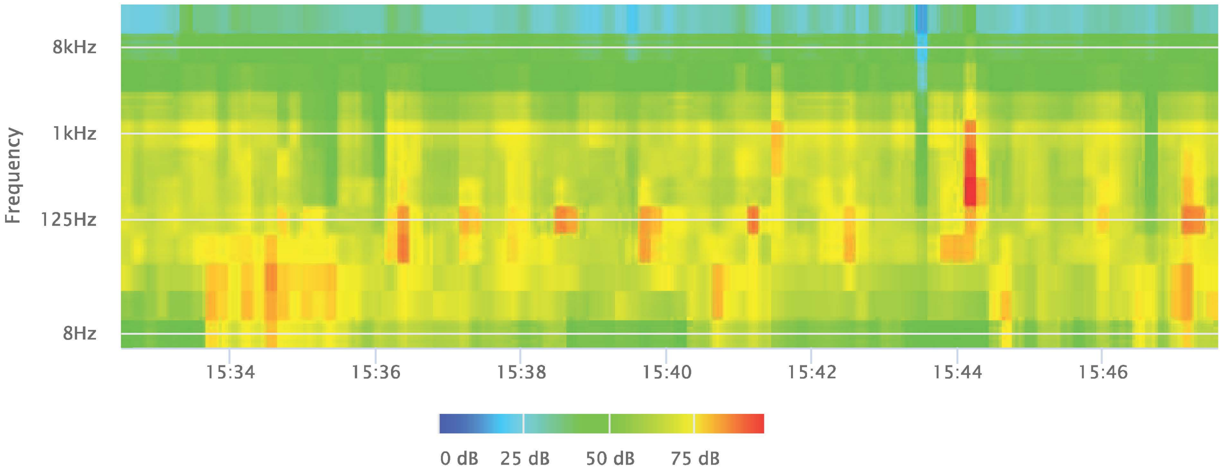
Time History



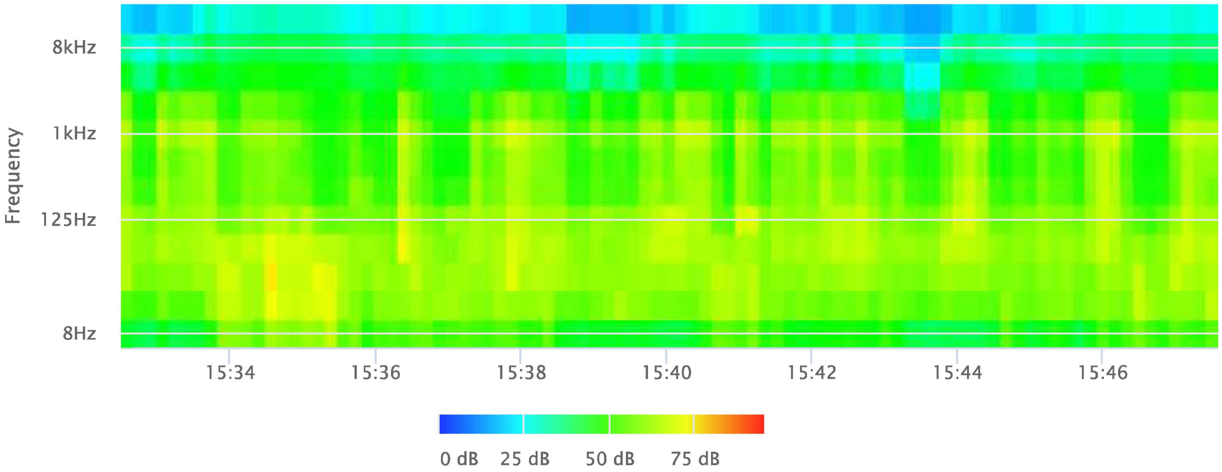
OBA 1/1 Leq



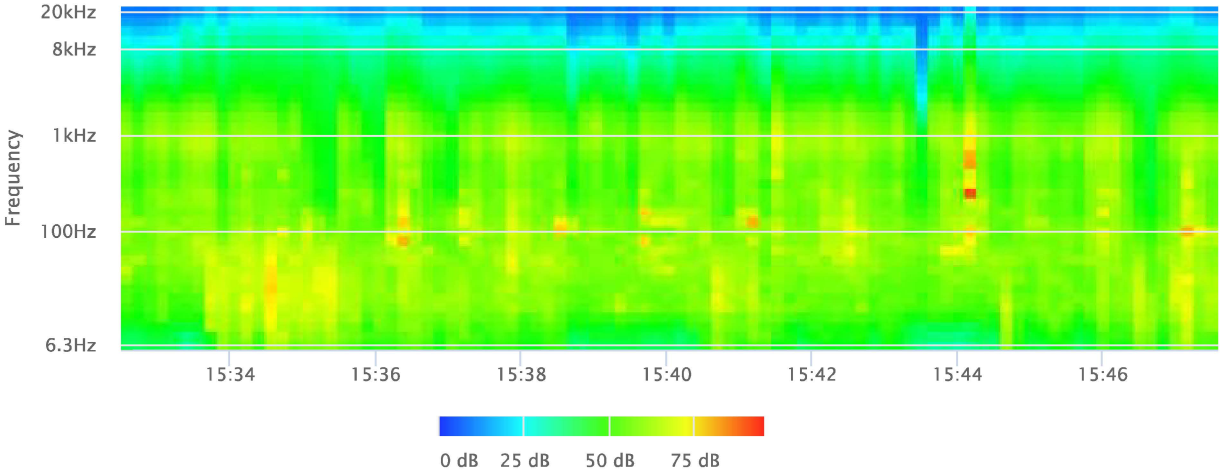
OBA 1/1 Lmax



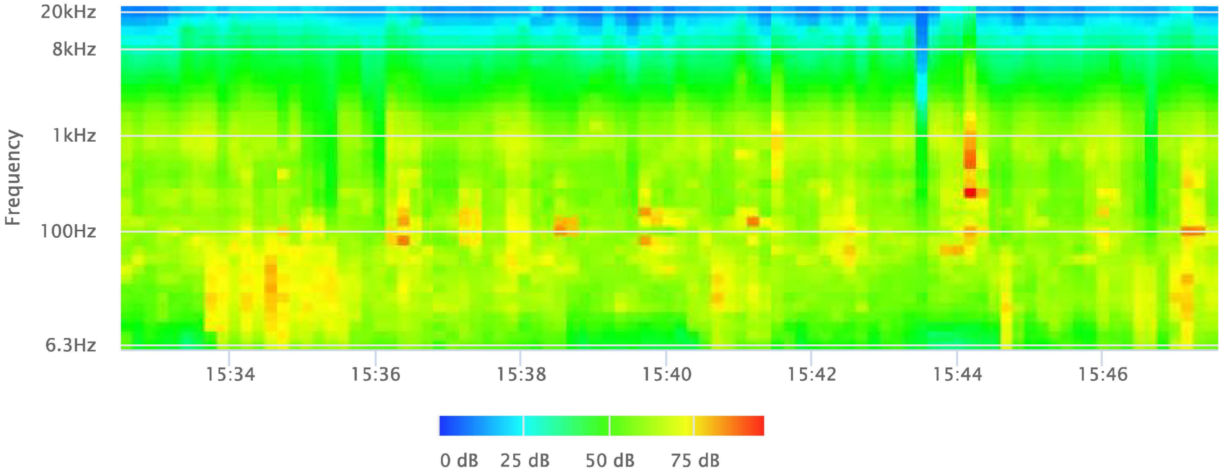
OBA 1/1 Lmin



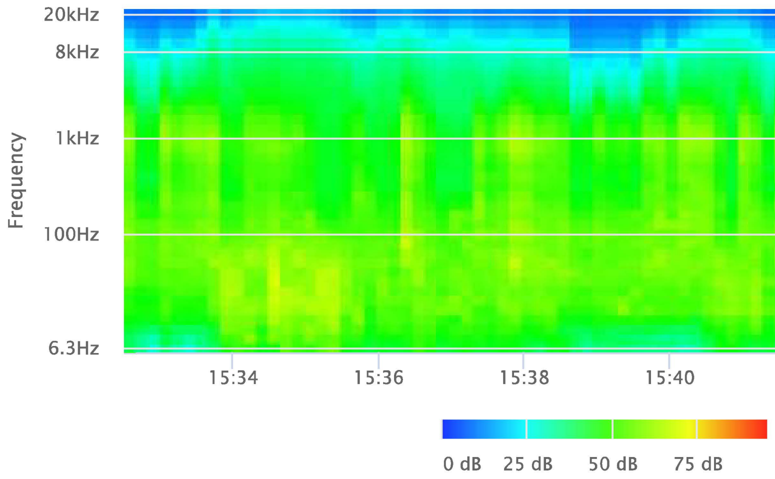
OBA 1/3 Leq



OBA 1/3 Lmax



OBA 1/3 Lmin


20kHz
8kHz
1kHz
Frequency
100Hz
6.3Hz
15:34
15:36
15:38
15:40
15:42
15:44
15:46
0 dB
25 dB
50 dB
75 dB

Noise Measurement Field Data

Project Name: Moreno Valley Farm Project, Moreno Valley **Date:** January 13-14, 2025

Project #:

Noise Measurement #: LTNM1 **Technician:** Ian Gallagher

Nearest Address or Cross Street: 21150 Box Springs Road, Moreno Valley, CA 92557

Site Description (Type of Existing Land Use and any other notable features): Meaurement Site: ~7' above ground (attached to utility pole) near the NW corner of the building located at 21150 Box Springs Rd. Adjacent: Commercial building to east with vacant land to north/northeast, apartments to west, and Box Springs Rd (running E-W) ~150' S. The intersection of 60 Fwy (running E-W) & 215 Fwy (runnimg N-S) ~840' S of LTNM1.

Weather: <5% cloud, sunshine. Sunset 5:01 PM. **Settings:** [✓ SLOW] FAST

Temperature: 60 deg F **Wind:** 8 mph **Humidity:** 26% **Terrain:** Hilly

Start Time: 5:00 PM **End Time:** 5:00 PM **Run Time:** 24 x 1 hours

Leq: 61.5 dB

Lmax 85.3 dB

L2 66.7 dB

L8 65.2 dB

L25 62.9 dB

L50 59.8 dB

Primary Noise Source: Traffic noise from vehicles passing LTNM1 microphone traveling along Box Springs Rd. Traffic noise from vehicles traveling along the 215 & 60 Freeways.

Secondary Noise Sources: Leaf rustle from breeze. Bird song by day. Occasional overhead aircraft, fixed wing propeller private plane or chopper. Some residential ambiance.

NOISE METER:	SoundTrack LXT Class 1	**CALIBRATOR:**	Larson Davis CAL 250
MAKE:	Larson Davis	**MAKE:**	Larson Davis
MODEL:	LXT1	**MODEL:**	CAL 250
SERIAL NUMBER:	3099	**SERIAL NUMBER:**	2723
FACTORY CALIBRATION DATE:	7/31/2024	**FACTORY CALIBRATION DATE:**	7/10/2024
FIELD CALIBRATION DATE:	1/13/2025		

Noise Measurement Field Data

PHOTOS:

LTNM1 looking at microphone (attached to utility pole), towards NW corner of building 21150 Box Springs Road, Moreno Valley.

LTNM1 looking SW from NW corner of building 21150 Box Springs Road towards Box Springs Road, Moreno Valley.

Summary

File Name on Meter	LxT_Data.513.s
File Name on PC	LxT_0003099-20250113 170000-LxT_Data.513.ldbin
Serial Number	3099
Model	SoundTrack LxT®
Firmware Version	2.404
User	Ian Edward Gallagher
Location	LTNM1 33°56'49.13"N 117°17'38.18"W
Job Description	24 hour noise measurement (24 x 1 hours)
Note	Roma Environmental Moreno Valley Farm Project

Measurement

Description	
Start	2025-01-13 17:00:00
Stop	2025-01-14 17:00:00
Duration	24:00:00.0
Run Time	24:00:00.0
Pause	00:00:00.0
Pre-Calibration	2025-01-13 16:25:37
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamplifier	PRMLxT1L
Microphone Correction	Off
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	A Weighting
OBA Max Spectrum	Bin Max
Overload	122.0 dB

Results

LAeq	61.5	
LAE	110.9	
EA	13.7093 mPa^{2}h	
EA8	4.569767 mPa^{2}h	
EA40	22.84884 mPa^{2}h	
LApeak (max)	2025-01-13 18:35:35	97.3 dB
LASmax	2025-01-14 09:45:23	85.3 dB
LASmin	2025-01-14 16:47:45	46.7 dB

LCeq	69.4 dB
LAeq	61.5 dB
LCeq - LAeq	7.9 dB
LAIeq	62.5 dB
LAeq	61.5 dB
LAIeq - LAeq	1.0 dB
Overload Count	0
Overload Duration	0.0 s

Statistics

LA2.00	66.7 dB
LA8.00	65.2 dB
LA25.00	62.9 dB
LA50.00	59.8 dB
LA90.00	55.1 dB
LA99.00	50.9 dB

Record #	Date	Time	Run Duration	Run Time	Pause	LAeq	LASmin	LASmin Time	LASmax	LASmax Time	LAS2.00	LAS8.00	LAS25.00	LAS50.00	LAS90.00	LAS99.00
1	2025-01-13	17:00:00	01:00:00.0	01:00:00.0	00:00:00.0	58.4	49.1	17:29:25	74.4	17:14:18	63.9	61.1	59.2	57.2	53.3	50.9
2	2025-01-13	18:00:00	01:00:00.0	01:00:00.0	00:00:00.0	61.7	54.2	18:54:18	82.6	18:35:36	65.2	63.8	62.3	60.6	56.7	55.3
3	2025-01-13	19:00:00	01:00:00.0	01:00:00.0	00:00:00.0	60.1	53.3	19:05:43	70.1	19:03:16	64.1	62.4	61.0	59.6	56.5	54.4
4	2025-01-13	20:00:00	01:00:00.0	01:00:00.0	00:00:00.0	63.9	58.2	20:28:42	77.9	20:44:27	67.1	66.0	64.7	63.5	61.1	59.5
5	2025-01-13	21:00:00	01:00:00.0	01:00:00.0	00:00:00.0	61.8	53.9	21:49:45	71.9	21:10:03	66.1	64.6	63.2	60.8	57.3	55.0
6	2025-01-13	22:00:00	01:00:00.0	01:00:00.0	00:00:00.0	62.0	53.7	22:01:22	71.3	22:43:30	65.1	64.1	63.0	61.6	58.6	56.0
7	2025-01-13	23:00:00	01:00:00.0	01:00:00.0	00:00:00.0	61.4	55.6	23:22:39	79.3	23:30:28	65.1	63.7	61.8	60.4	58.2	56.8
8	2025-01-14	00:00:00	01:00:00.0	01:00:00.0	00:00:00.0	60.4	50.7	00:32:41	70.9	00:02:20	66.4	64.4	61.1	58.8	54.3	52.4
9	2025-01-14	01:00:00	01:00:00.0	01:00:00.0	00:00:00.0	61.3	54.5	01:17:21	74.2	01:43:41	65.5	64.0	62.5	60.6	57.0	55.3
10	2025-01-14	02:00:00	01:00:00.0	01:00:00.0	00:00:00.0	60.2	53.7	02:36:25	66.7	02:23:50	64.1	63.0	61.0	59.5	56.9	55.2
11	2025-01-14	03:00:00	01:00:00.0	01:00:00.0	00:00:00.0	65.1	59.5	03:02:18	70.5	03:10:37	68.0	67.0	65.9	64.9	62.5	61.0
12	2025-01-14	04:00:00	01:00:00.0	01:00:00.0	00:00:00.0	64.2	59.8	04:49:47	73.5	04:52:48	67.0	66.0	64.9	63.9	62.2	60.9
13	2025-01-14	05:00:00	01:00:00.0	01:00:00.0	00:00:00.0	64.7	59.9	05:07:51	75.1	05:33:33	67.5	66.3	65.2	64.4	62.6	61.4
14	2025-01-14	06:00:00	01:00:00.0	01:00:00.0	00:00:00.0	65.5	59.6	06:34:39	73.1	06:38:39	68.3	67.1	66.1	65.2	63.6	62.1
15	2025-01-14	07:00:00	01:00:00.0	01:00:00.0	00:00:00.0	62.7	56.8	07:57:59	71.4	07:33:28	65.6	64.7	63.6	62.4	59.9	58.4
16	2025-01-14	08:00:00	01:00:00.0	01:00:00.0	00:00:00.0	58.8	50.6	08:48:45	79.9	08:08:02	62.0	60.2	58.8	57.7	55.5	52.3
17	2025-01-14	09:00:00	01:00:00.0	01:00:00.0	00:00:00.0	61.0	51.2	09:45:46	85.3	09:45:23	66.6	62.4	60.1	58.6	55.8	53.4
18	2025-01-14	10:00:00	01:00:00.0	01:00:00.0	00:00:00.0	59.1	51.3	10:04:58	72.4	10:01:57	63.2	61.3	59.7	58.4	55.6	53.2
19	2025-01-14	11:00:00	01:00:00.0	01:00:00.0	00:00:00.0	58.4	50.9	11:54:33	74.4	11:49:00	63.2	60.6	58.7	57.3	54.6	52.6
20	2025-01-14	12:00:00	01:00:00.0	01:00:00.0	00:00:00.0	57.1	48.8	12:18:47	70.6	12:26:24	62.0	60.0	58.1	56.0	52.1	49.9
21	2025-01-14	13:00:00	01:00:00.0	01:00:00.0	00:00:00.0	57.6	50.0	13:46:58	71.3	13:14:31	62.2	60.3	58.4	56.9	53.4	50.9
22	2025-01-14	14:00:00	01:00:00.0	01:00:00.0	00:00:00.0	58.2	48.1	14:02:33	73.8	14:32:26	62.8	61.2	59.2	57.2	52.7	50.3
23	2025-01-14	15:00:00	01:00:00.0	01:00:00.0	00:00:00.0	58.8	48.0	15:36:44	70.6	15:49:12	63.5	61.5	59.8	58.1	52.9	49.2
24	2025-01-14	16:00:00	01:00:00.0	01:00:00.0	00:00:00.0	57.2	46.7	16:47:45	74.6	16:18:36	62.5	60.1	57.9	55.7	50.7	48.6

Measurement Report

Report Summary

Meter's File Name	LxT_Data.513.s	Computer's File Name	LxT_0003099-20250113 170000-LxT_Data.513.ldbin
Meter	LxT1 0003099		
Firmware	2.404		
User	Ian Edward Gallagher	Location	LTNM1 33°56'49.13"N 117°17'38.18"W
Job Description	24 hour noise measurement (24 x 1 hours)		
Note	Roma Environmental Moreno Valley Farm Project		

Start Time	2025-01-13 17:00:00	Duration	24:00:00.0		
End Time	2025-01-14 17:00:00	Run Time	24:00:00.0	Pause Time	0:00:00.0

Results

Overall Metrics

LA_{eq}	61.5 dB		
LAE	110.9 dB	SEA	--- dB
EA	13.7 mPa²h	LAFTM5	63.7 dB
EA8	4.6 mPa²h		
EA40	22.8 mPa²h		

LA_{peak}	97.3 dB	2025-01-13 18:35:35
LAS_{max}	85.3 dB	2025-01-14 09:45:23
LAS_{min}	46.7 dB	2025-01-14 16:47:45

LA_{eq}	61.5 dB		
LC_{eq}	69.4 dB	LC_{eq} - LA_{eq}	7.9 dB
LAI_{eq}	62.5 dB	LAI_{eq} - LA_{eq}	1.0 dB

Exceedances	Count	Duration
LAS > 65.0 dB	388	4:02:48.9
LAS > 85.0 dB	1	0:00:01.4
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight	
	--- dB	--- dB	0.0 dB	
	LDEN	LDay	LEve	LNight
	--- dB	--- dB	--- dB	--- dB

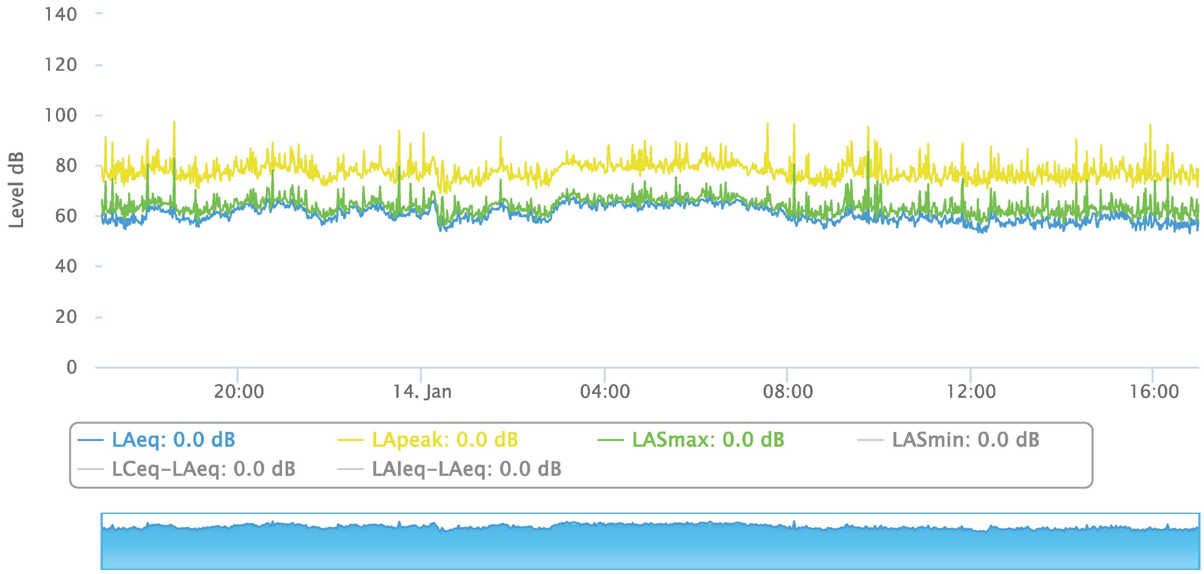
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	61.5 dB		69.4 dB		--- dB	
$Ls_{(max)}$	85.3 dB	2025-01-14 09:45:23	--- dB		--- dB	
$LS_{(min)}$	46.7 dB	2025-01-14 16:47:45	--- dB		--- dB	
$L_{Peak(max)}$	97.3 dB	2025-01-13 18:35:35	--- dB		--- dB	

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

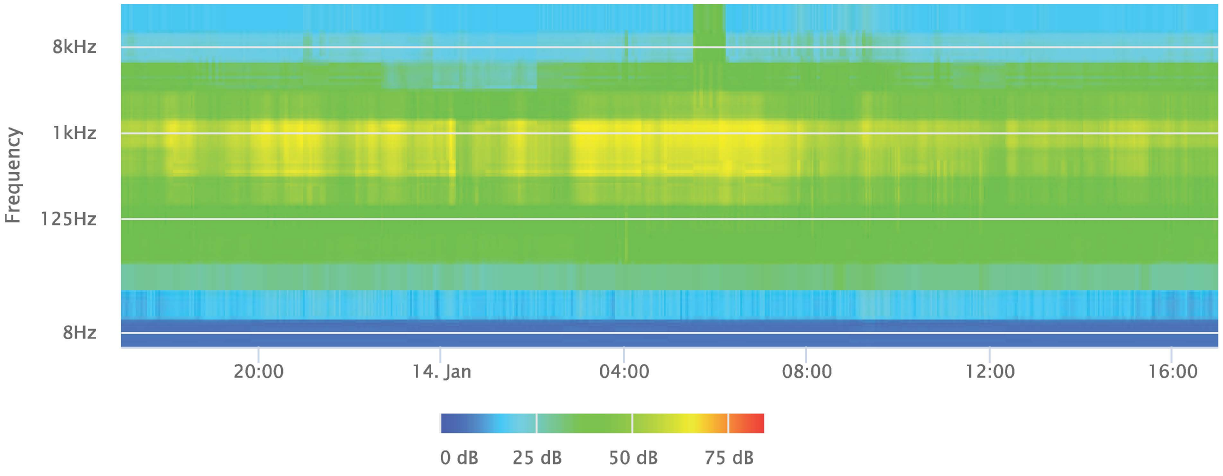
Statistics

LAS 2.0	66.7 dB
LAS 8.0	65.2 dB
LAS 25.0	62.9 dB
LAS 50.0	59.8 dB
LAS 90.0	55.1 dB
LAS 99.0	50.9 dB

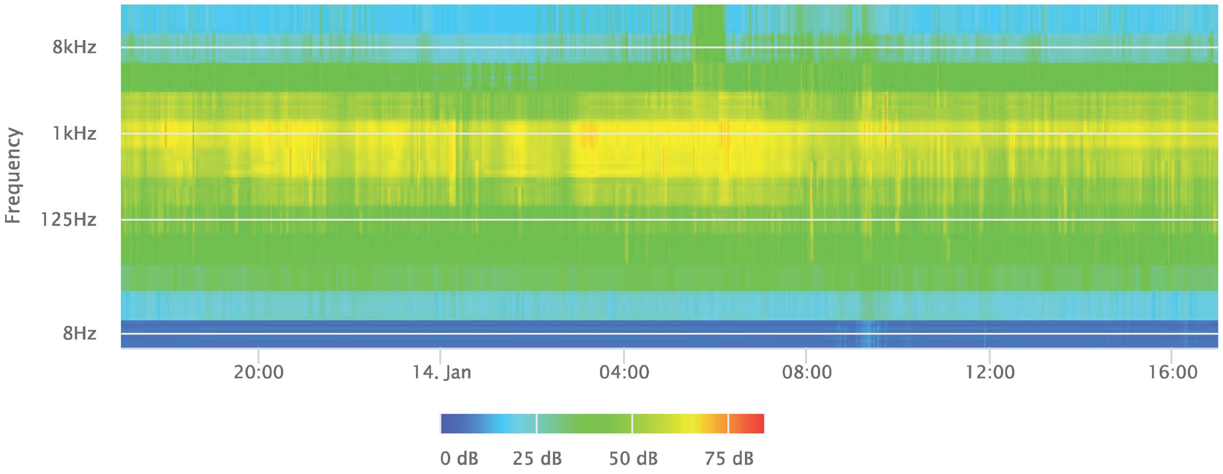
Time History



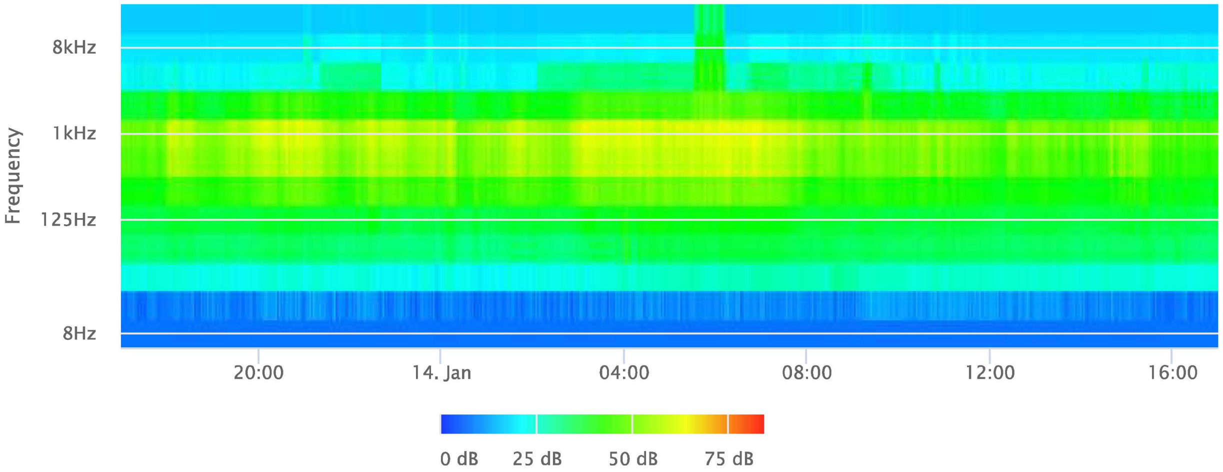
OBA 1/1 Leq



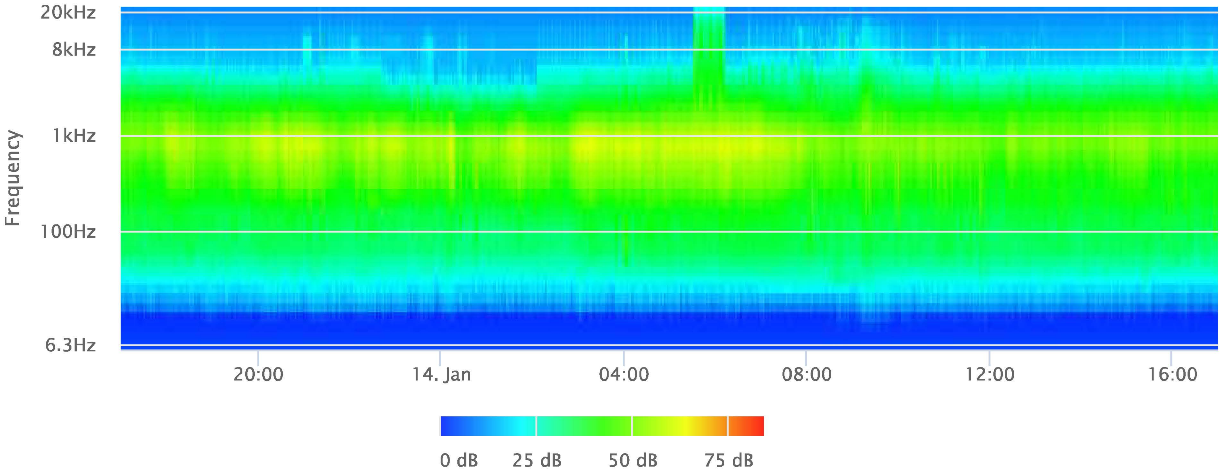
OBA 1/1 Lmax



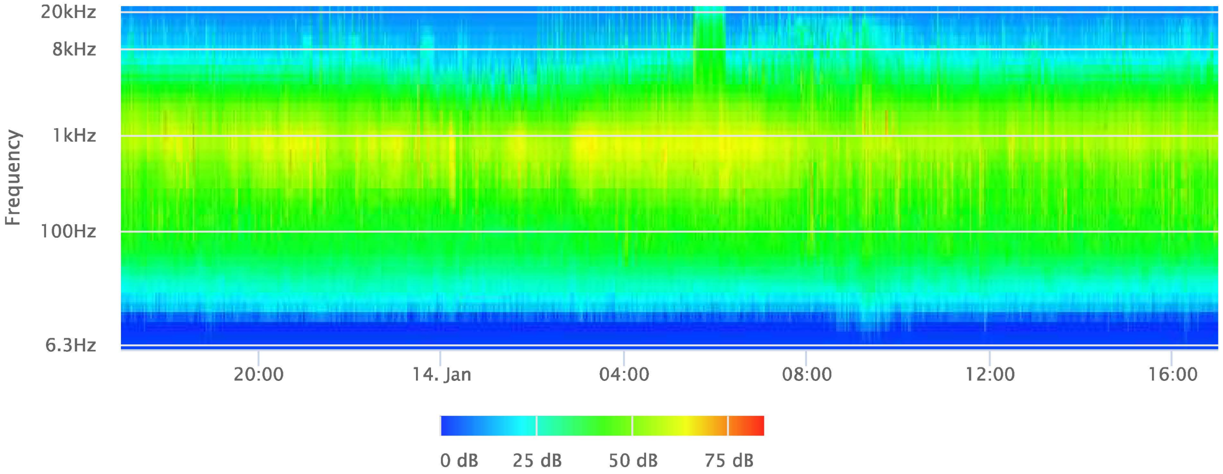
OBA 1/1 Lmin



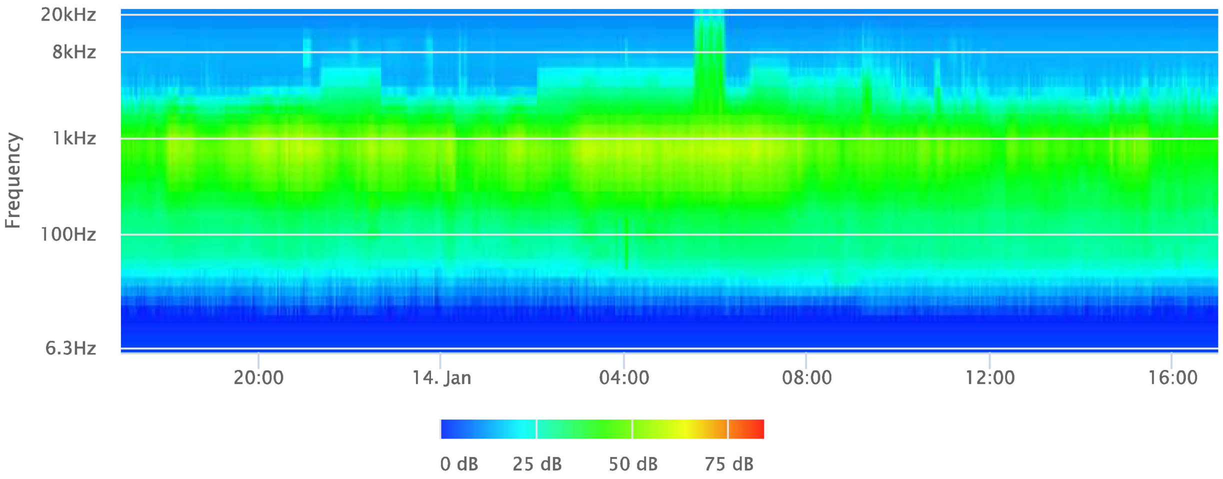
OBA 1/3 Leq



OBA 1/3 Lmax



OBA 1/3 Lmin



20kHz
8kHz
1kHz
Frequency
100Hz
6.3Hz
20:00
14. Jan
04:00
08:00
12:00
16:00
0 dB
25 dB
50 dB
75 dB

APPENDIX B

Construction Noise Calculations

Receptor - Multiple Family Residential West of the Site

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1]	Distance to Receptor[2]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Receptor Item Lmax, dBA	Receptor Item Leq, dBA
Demolition									
Concrete Industrial Saws	1	90	290	20	0.20	-15.3	-7.0	74.7	67.7
Excavators	3	85	290	40	1.20	-15.3	0.8	69.7	70.5
Rubber Tired Dozers	2	82	290	40	0.80	-15.3	-1.0	66.7	65.8
								Log Sum	73.2
Site Preparation									
Rubber Tired Dozers	3	82	290	40	1.20	-15.3	0.8	66.7	67.5
Tractors/Loaders/Backhoes	4	84	290	40	1.60	-15.3	2.0	68.7	70.8
								Log Sum	72.5
Grading									
Excavators	1	85	290	40	0.40	-15.3	-4.0	69.7	65.8
Graders	1	85	290	40	0.40	-15.3	-4.0	69.7	65.8
Rubber Tired Dozers	1	82	290	40	0.40	-15.3	-4.0	66.7	62.8
Tractors/Loaders/Backhoes	3	84	290	40	1.20	-15.3	0.8	68.7	69.5
								Log Sum	72.6
Building Construction									
Cranes	1	85	290	16	0.16	-15.3	-8.0	69.7	61.8
Forklifts[3]	3	64	290	40	1.20	-15.3	0.8	48.7	49.5
Generator Sets	1	82	290	50	0.50	-15.3	-3.0	66.7	63.7
Welders	3	74	290	40	1.20	-15.3	0.8	58.7	59.5
Tractors/Loaders/Backhoes	1	84	290	40	0.40	-15.3	-4.0	68.7	64.8
								Log Sum	68.9
Paving									
Pavers	2	85	290	50	1.00	-15.3	0.0	69.7	69.7
Paving Equipment	2	85	290	50	1.00	-15.3	0.0	69.7	69.7
Rollers	2	85	290	20	0.40	-15.3	-4.0	69.7	65.8
								Log Sum	73.5
Architectural Coating									
Air Compressors	1	78	290	40	0.40	-15.3	-4.0	62.7	58.8

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construciton Noise Model User's Guide (January 2006)

(2) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (property line).

Receptor - Single Family Residential North of the Site

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1]	Distance to Receptor[2]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Receptor Item Lmax, dBA	Receptor Item Leq, dBA
Demolition									
Concrete Industrial Saws	1	90	305	20	0.20	-15.7	-7.0	74.3	67.3
Excavators	3	85	305	40	1.20	-15.7	0.8	69.3	70.1
Rubber Tired Dozers	2	82	305	40	0.80	-15.7	-1.0	66.3	65.3
								Log Sum	72.8
Site Preparation									
Rubber Tired Dozers	3	82	305	40	1.20	-15.7	0.8	66.3	67.1
Tractors/Loaders/Backhoes	4	84	305	40	1.60	-15.7	2.0	68.3	70.3
								Log Sum	72.0
Grading									
Excavators	1	85	305	40	0.40	-15.7	-4.0	69.3	65.3
Graders	1	85	305	40	0.40	-15.7	-4.0	69.3	65.3
Rubber Tired Dozers	1	82	305	40	0.40	-15.7	-4.0	66.3	62.3
Tractors/Loaders/Backhoes	3	84	305	40	1.20	-15.7	0.8	68.3	69.1
								Log Sum	72.2
Building Construction									
Cranes	1	85	305	16	0.16	-15.7	-8.0	69.3	61.3
Forklifts[3]	3	64	305	40	1.20	-15.7	0.8	48.3	49.1
Generator Sets	1	82	305	50	0.50	-15.7	-3.0	66.3	63.3
Welders	3	74	305	40	1.20	-15.7	0.8	58.3	59.1
Tractors/Loaders/Backhoes	1	84	305	40	0.40	-15.7	-4.0	68.3	64.3
								Log Sum	68.5
Paving									
Pavers	2	85	305	50	1.00	-15.7	0.0	69.3	69.3
Paving Equipment	2	85	305	50	1.00	-15.7	0.0	69.3	69.3
Rollers	2	85	305	20	0.40	-15.7	-4.0	69.3	65.3
								Log Sum	73.1
Architectural Coating									
Air Compressors	1	78	305	40	0.40	-15.7	-4.0	62.3	58.3
			72.8						

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construciton Noise Model User's Guide (January 2006)

(2) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (property line).

Receptor - Single Family Residential Northwest of the Site

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1]	Distance to Receptor[2]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Receptor Item Lmax, dBA	Receptor Item Leq, dBA
Demolition									
Concrete Industrial Saws	1	90	560	20	0.20	-21.0	-7.0	69.0	62.0
Excavators	3	85	560	40	1.20	-21.0	0.8	64.0	64.8
Rubber Tired Dozers	2	82	560	40	0.80	-21.0	-1.0	61.0	60.0
								Log Sum	67.5
Site Preparation									
Rubber Tired Dozers	3	82	560	40	1.20	-21.0	0.8	61.0	61.8
Tractors/Loaders/Backhoes	4	84	560	40	1.60	-21.0	2.0	63.0	65.1
								Log Sum	66.7
Grading									
Excavators	1	85	560	40	0.40	-21.0	-4.0	64.0	60.0
Graders	1	85	560	40	0.40	-21.0	-4.0	64.0	60.0
Rubber Tired Dozers	1	82	560	40	0.40	-21.0	-4.0	61.0	57.0
Tractors/Loaders/Backhoes	3	84	560	40	1.20	-21.0	0.8	63.0	63.8
								Log Sum	66.9
Building Construction									
Cranes	1	85	560	16	0.16	-21.0	-8.0	64.0	56.1
Forklifts[3]	3	64	560	40	1.20	-21.0	0.8	43.0	43.8
Generator Sets	1	82	560	50	0.50	-21.0	-3.0	61.0	58.0
Welders	3	74	560	40	1.20	-21.0	0.8	53.0	53.8
Tractors/Loaders/Backhoes	1	84	560	40	0.40	-21.0	-4.0	63.0	59.0
								Log Sum	63.2
Paving									
Pavers	2	85	560	50	1.00	-21.0	0.0	64.0	64.0
Paving Equipment	2	85	560	50	1.00	-21.0	0.0	64.0	64.0
Rollers	2	85	560	20	0.40	-21.0	-4.0	64.0	60.0
								Log Sum	67.8
Architectural Coating									
Air Compressors	1	78	560	40	0.40	-21.0	-4.0	57.0	53.0

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construciton Noise Model User's Guide (January 2006)

(2) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (property line).

Receptor - Commercial East of the Site

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1]	Distance to Receptor[2]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Receptor Item Lmax, dBA	Receptor Item Leq, dBA
Demolition									
Concrete Industrial Saws	1	90	375	20	0.20	-17.5	-7.0	72.5	65.5
Excavators	3	85	375	40	1.20	-17.5	0.8	67.5	68.3
Rubber Tired Dozers	2	82	375	40	0.80	-17.5	-1.0	64.5	63.5
								Log Sum	71.0
Site Preparation									
Rubber Tired Dozers	3	82	375	40	1.20	-17.5	0.8	64.5	65.3
Tractors/Loaders/Backhoes	4	84	375	40	1.60	-17.5	2.0	66.5	68.5
								Log Sum	70.2
Grading									
Excavators	1	85	375	40	0.40	-17.5	-4.0	67.5	63.5
Graders	1	85	375	40	0.40	-17.5	-4.0	67.5	63.5
Rubber Tired Dozers	1	82	375	40	0.40	-17.5	-4.0	64.5	60.5
Tractors/Loaders/Backhoes	3	84	375	40	1.20	-17.5	0.8	66.5	67.3
								Log Sum	70.4
Building Construction									
Cranes	1	85	375	16	0.16	-17.5	-8.0	67.5	59.5
Forklifts[3]	3	64	375	40	1.20	-17.5	0.8	46.5	47.3
Generator Sets	1	82	375	50	0.50	-17.5	-3.0	64.5	61.5
Welders	3	74	375	40	1.20	-17.5	0.8	56.5	57.3
Tractors/Loaders/Backhoes	1	84	375	40	0.40	-17.5	-4.0	66.5	62.5
								Log Sum	66.7
Paving									
Pavers	2	85	375	50	1.00	-17.5	0.0	67.5	67.5
Paving Equipment	2	85	375	50	1.00	-17.5	0.0	67.5	67.5
Rollers	2	85	375	20	0.40	-17.5	-4.0	67.5	63.5
								Log Sum	71.3
Architectural Coating									
Air Compressors	1	78	375	40	0.40	-17.5	-4.0	60.5	56.5

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construciton Noise Model User's Guide (January 2006)

(2) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (property line).

Receptor - Commercial South of the Site

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1]	Distance to Receptor[2]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Receptor Item Lmax, dBA	Receptor Item Leq, dBA
Demolition									
Concrete Industrial Saws	1	90	440	20	0.20	-18.9	-7.0	71.1	64.1
Excavators	3	85	440	40	1.20	-18.9	0.8	66.1	66.9
Rubber Tired Dozers	2	82	440	40	0.80	-18.9	-1.0	63.1	62.1
								Log Sum	69.6
Site Preparation									
Rubber Tired Dozers	3	82	440	40	1.20	-18.9	0.8	63.1	63.9
Tractors/Loaders/Backhoes	4	84	440	40	1.60	-18.9	2.0	65.1	67.2
								Log Sum	68.8
Grading									
Excavators	1	85	440	40	0.40	-18.9	-4.0	66.1	62.1
Graders	1	85	440	40	0.40	-18.9	-4.0	66.1	62.1
Rubber Tired Dozers	1	82	440	40	0.40	-18.9	-4.0	63.1	59.1
Tractors/Loaders/Backhoes	3	84	440	40	1.20	-18.9	0.8	65.1	65.9
								Log Sum	69.0
Building Construction									
Cranes	1	85	440	16	0.16	-18.9	-8.0	66.1	58.2
Forklifts[3]	3	64	440	40	1.20	-18.9	0.8	45.1	45.9
Generator Sets	1	82	440	50	0.50	-18.9	-3.0	63.1	60.1
Welders	3	74	440	40	1.20	-18.9	0.8	55.1	55.9
Tractors/Loaders/Backhoes	1	84	440	40	0.40	-18.9	-4.0	65.1	61.1
								Log Sum	65.3
Paving									
Pavers	2	85	440	50	1.00	-18.9	0.0	66.1	66.1
Paving Equipment	2	85	440	50	1.00	-18.9	0.0	66.1	66.1
Rollers	2	85	440	20	0.40	-18.9	-4.0	66.1	62.1
								Log Sum	69.9
Architectural Coating									
Air Compressors	1	78	440	40	0.40	-18.9	-4.0	59.1	55.1

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construciton Noise Model User's Guide (January 2006)

(2) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (property line).

APPENDIX C

FHWA Traffic Modeling Sheets

FHWA Sound32 Spreadsheet

Existing Traffic Noise

Project: **Moreno Valley Farm Bureau**
Road: **Box Springs Road**
Segment: **Day Street to Interstate 215**

	DAYTIME			EVENING			NIGHTTIME				
										ADT	19100.00
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	SPEED	45.00
										DISTANCE	35.00
INPUT PARAMETERS											
Vehicles per hour	1191.48	21.87	24.64	793.29	5.05	3.08	196.79	3.54	4.10	% A	96.59
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	1.62
NOISE CALCULATIONS											
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14	% HT	1.79
ADJUSTMENTS											
Flow	23.92	6.56	7.08	22.16	0.20	-1.96	16.10	-1.35	-0.71		
Distance	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	CNEL	72.74
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	DAY LEQ	71.56
LEQ	69.75	60.66	65.70	67.98	54.30	56.66	61.93	52.75	57.91	Day hour	89.00
										Absorbtive?	no
	DAY LEQ	71.56		EVENING LEQ	68.46		NIGHT LEQ	63.74		Use hour?	no
										GRADE dB	0.00
		CNEL	**72.74**								

FHWA Sound32 Spreadsheet

Existing Plus Project Traffic Noise

Project: **Moreno Valley Farm Bureau**
Road: **Box Springs Road**
Segment: **Day Street to Interstate 215**

		DAYTIME			EVENING			NIGHTTIME			
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	ADT	19200.00
										SPEED	45.00
--	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	DISTANCE	35.00
INPUT PARAMETERS											
Vehicles per hour	1197.94	21.87	24.64	797.59	5.05	3.08	197.85	3.54	4.10	% A	96.61
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	1.61
NOISE CALCULATIONS											
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14	% HT	1.78
ADJUSTMENTS											
Flow	23.95	6.56	7.08	22.18	0.20	-1.96	16.13	-1.35	-0.71		
Distance	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	CNEL	72.76
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	DAY LEQ	71.57
LEQ	69.77	60.66	65.70	68.00	54.30	56.66	61.95	52.75	57.91	Day hour	89.00
										Absorbtive?	no
	DAY LEQ	71.57		EVENING LEQ	68.48		NIGHT LEQ	63.75		Use hour?	no
										GRADE dB	0.00
		CNEL	**72.76**								

FHWA Sound32 Spreadsheet

Existing Traffic Noise

Project: **Moreno Valley Farm Bureau**
Road: **SR 60**
Segment: **Project Vicinity**

		DAYTIME			EVENING			NIGHTTIME	
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS
INPUT PARAMETERS									
Vehicles per hour	8804.58	64.55	560.23	5862.15	14.92	69.95	1454.18	10.45	93.26
Speed in MPH	65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	75.54	81.71	85.21	75.54	81.71	85.21	75.54	81.71	85.21
ADJUSTMENTS									
Flow	31.01	9.66	19.05	29.25	3.30	10.01	23.19	1.76	11.26
Distance	-11.83	-11.83	-11.83	-11.83	-11.83	-11.83	-11.83	-11.83	-11.83
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	69.72	54.54	67.43	67.96	48.18	58.39	61.90	46.64	59.64
	DAY LEQ	71.82		EVENING LEQ	68.45		NIGHT LEQ	64.01	
		CNEL	**72.97**						

ADT	145000.00
SPEED	65.00
DISTANCE	750.00
% A	94.02
% MT	0.63
% HT	5.36
LEFT	-90.00
RIGHT	90.00
CNEL	72.97
DAY LEQ	71.82
Day hour	89.00
Absorbtive?	no
Use hour?	no
GRADE dB	0.00

FHWA Sound32 Spreadsheet

Existing Plus Project Traffic Noise

Project: **Moreno Valley Farm Bureau**
Road: **SR 60**
Segment: **Project Vicinity**

		DAYTIME			EVENING			NIGHTTIME		ADT	145100.00
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	SPEED	65.00
										DISTANCE	750.00
INPUT PARAMETERS											
Vehicles per hour	8811.04	64.55	560.23	5866.45	14.92	69.95	1455.24	10.45	93.26	% A	94.02
Speed in MPH	65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	0.63
NOISE CALCULATIONS											
Reference levels	75.54	81.71	85.21	75.54	81.71	85.21	75.54	81.71	85.21	% HT	5.36
ADJUSTMENTS											
Flow	31.02	9.66	19.05	29.25	3.30	10.01	23.19	1.76	11.26		
Distance	-11.83	-11.83	-11.83	-11.83	-11.83	-11.83	-11.83	-11.83	-11.83	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	CNEL	72.97
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	DAY LEQ	71.82
LEQ	69.73	54.54	67.43	67.96	48.18	58.39	61.90	46.64	59.64	Day hour	89.00
										Absorbtive?	no
	DAY LEQ	71.82		EVENING LEQ	68.45		NIGHT LEQ	64.01		Use hour?	no
										GRADE dB	0.00
		CNEL	**72.97**								

FHWA Sound32 Spreadsheet

Box Springs Road

		DAYTIME			EVENING			NIGHTTIME		ADT	30000.00
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	SPEED	45.00
										DISTANCE	69.00
INPUT PARAMETERS											
Vehicles per hour	912.15	9.72	10.74	169.29	0.41	0.45	125.94	10.13	11.19	% A	96.60
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	1.62
NOISE CALCULATIONS											
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14	% HT	1.79
ADJUSTMENTS											
Flow	22.76	3.04	3.47	15.45	-10.76	-10.33	14.16	3.22	3.65		
Distance	-1.47	-1.47	-1.47	-1.47	-1.47	-1.47	-1.47	-1.47	-1.47	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	CNEL	69.44
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	DAY LEQ	66.76
LEQ	65.64	54.19	59.14	58.32	40.39	45.34	57.04	54.37	59.32	Day hour	89.00
										Absorbtive?	no
	DAY LEQ	66.76		EVENING LEQ	58.60		NIGHT LEQ	62.13		Use hour?	no
										GRADE dB	0.00
	CNEL		**69.44**								

FHWA Sound32 Spreadsheet

State Route 60

		DAYTIME			EVENING			NIGHTTIME	
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS
INPUT PARAMETERS									
Vehicles per hour	4290.96	19.14	155.44	796.39	0.80	6.48	592.46	19.94	161.92
Speed in MPH	65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	75.54	81.71	85.21	75.54	81.71	85.21	75.54	81.71	85.21
ADJUSTMENTS									
Flow	27.89	4.38	13.48	20.58	-9.42	-0.32	19.29	4.56	13.66
Distance	-11.74	-11.74	-11.74	-11.74	-11.74	-11.74	-11.74	-11.74	-11.74
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	66.69	49.36	61.95	59.38	35.56	48.15	58.10	49.54	62.13
	DAY LEQ	68.01		EVENING LEQ	59.71		NIGHT LEQ	63.74	

ADT		145000.00
SPEED		65.00
DISTANCE		734.00
% A		94.02
% MT		0.66
% HT		5.36
LEFT		-90.00
RIGHT		90.00
CNEL		70.94
DAY LEQ		68.01
Day hour		89.00
Absorbtive?	no	
Use hour?	no	
GRADE dB		0.00

APPENDIX D

SoundPLAN Input/Output Traffic Noise

Noise emissions of road traffic

		Traffic values										
Statio km	ADT Veh/24	Vehicles type	Vehicle name	day Veh/h	evening Veh/h	night Veh/h	Speed km/h	Contr devic	Cons Spee km/h	Affec veh. %	Road surface	Gradie Min / M %
1		Traffic direction: In entry direction										
0+00	40001	Total	-	2445	1741	605	-	none	-	-	Average (of DGAC a	0.0
		Automobiles	-	2317	1720	427	45					
		Medium trucks	-	48	8	67	45					
		Heavy trucks	-	80	13	111	45					
		Buses	-	-	-	-	-					
		Motorcycles	-	-	-	-	-					
		Auxiliary vehicle	-	-	-	-	-					
0+32	40001	Total	-	2445	1741	605	-	none	-	-	Average (of DGAC a	0.0
		Automobiles	-	2317	1720	427	45					
		Medium trucks	-	48	8	67	45					
		Heavy trucks	-	80	13	111	45					
		Buses	-	-	-	-	-					
		Motorcycles	-	-	-	-	-					
		Auxiliary vehicle	-	-	-	-	-					

Receiver list

No.	Receiver name	Building side	Floor	Limit Lden dB(A)	Level Lden dB(A)	Conflict Lden dB
1	2	South	EG	-	72.1	-
			1.OG	-	72.3	-
			2.OG	-	72.2	-
2		West	EG	-	69.4	-
			1.OG	-	69.5	-
			2.OG	-	70.7	-
3	3	South	EG	-	72.3	-
			1.OG	-	72.3	-
			2.OG	-	72.1	-
4	4	South	EG	-	72.1	-
			1.OG	-	72.2	-
			2.OG	-	71.9	-
5	5	South	EG	-	72.0	-
			1.OG	-	72.2	-
			2.OG	-	71.9	-
6	6	East	EG	-	67.9	-
			1.OG	-	67.9	-
			2.OG	-	69.3	-
7	7	West	EG	-	60.5	-
			1.OG	-	60.1	-
			2.OG	-	61.1	-
8	8	East	EG	-	59.2	-
			1.OG	-	58.8	-
			2.OG	-	60.0	-

APPENDIX E

SoundPLAN Input/Output Operational Noise

Noise emissions of industry sources

Source name	Reference	Level		Frequency spectrum [dB(A)]	Corrections		
			dB(A)	500 Hz	Cwall dB	CI dB	CT dB
HVAC1	Lw/unit	Day	79.8		3.0	-	-
HVAC2	Lw/unit	Day	79.8		3.0	-	-
HVAC3	Lw/unit	Day	79.8		3.0	-	-
HVAC4	Lw/unit	Day	79.8		3.0	-	-
HVAC5	Lw/unit	Day	79.8		3.0	-	-
HVAC6	Lw/unit	Day	79.8		3.0	-	-
HVAC7	Lw/unit	Day	79.8		3.0	-	-
HVAC8	Lw/unit	Day	79.8		3.0	-	-
HVAC9	Lw/unit	Day	79.8		3.0	-	-
HVAC10	Lw/unit	Day	79.8		3.0	-	-
HVAC11	Lw/unit	Day	79.8		3.0	-	-
HVAC12	Lw/unit	Day	79.8		3.0	-	-
HVAC13	Lw/unit	Day	79.8		3.0	-	-
HVAC14	Lw/unit	Day	79.8		3.0	-	-
HVAC15	Lw/unit	Day	79.8		3.0	-	-
HVAC16	Lw/unit	Day	79.8		3.0	-	-
HVAC17	Lw/unit	Day	79.8		3.0	-	-
HVAC18	Lw/unit	Day	79.8		3.0	-	-
HVAC19	Lw/unit	Day	79.8		3.0	-	-
HVAC20	Lw/unit	Day	79.8		3.0	-	-
HVAC21	Lw/unit	Day	79.8		3.0	-	-
HVAC22	Lw/unit	Day	79.8		3.0	-	-
HVAC23	Lw/unit	Day	79.8		3.0	-	-
HVAC24	Lw/unit	Day	79.8		3.0	-	-
HVAC25	Lw/unit	Day	79.8		3.0	-	-
HVAC26	Lw/unit	Day	79.5		3.0	-	-
HVAC27	Lw/unit	Day	79.8		3.0	-	-
HVAC28	Lw/unit	Day	79.8		3.0	-	-
HVAC29	Lw/unit	Day	79.8		3.0	-	-
HVAC30	Lw/unit	Day	79.8		3.0	-	-
HVAC31	Lw/unit	Day	79.8		3.0	-	-
HVAC32	Lw/unit	Day	79.8		3.0	-	-
HVAC33	Lw/unit	Day	79.8		3.0	-	-
HVAC34	Lw/unit	Day	79.8		3.0	-	-
HVAC35	Lw/unit	Day	79.8		3.0	-	-
HVAC36	Lw/unit	Day	79.8		3.0	-	-
HVAC37	Lw/unit	Day	79.8		3.0	-	-
HVAC38	Lw/unit	Day	79.8		3.0	-	-
HVAC39	Lw/unit	Day	79.8		3.0	-	-
HVAC40	Lw/unit	Day	79.8		3.0	-	-
HVAC41	Lw/unit	Day	79.8		3.0	-	-
HVAC42	Lw/unit	Day	79.8		3.0	-	-
HVAC43	Lw/unit	Day	79.8		3.0	-	-
HVAC44	Lw/unit	Day	79.8		3.0	-	-
HVAC45	Lw/unit	Day	79.8		3.0	-	-
HVAC46	Lw/unit	Day	79.8		3.0	-	-
HVAC47	Lw/unit	Day	79.8		3.0	-	-
HVAC48	Lw/unit	Day	79.8		3.0	-	-
HVAC49	Lw/unit	Day	79.8		3.0	-	-
HVAC50	Lw/unit	Day	79.8		3.0	-	-
HVAC51	Lw/unit	Day	79.8		3.0	-	-
HVAC52	Lw/unit	Day	79.8		3.0	-	-
HVAC53	Lw/unit	Day	79.8		3.0	-	-
HVAC54	Lw/unit	Day	79.8		3.0	-	-
HVAC55	Lw/unit	Day	79.8		3.0	-	-
HVAC56	Lw/unit	Day	79.8		3.0	-	-
HVAC57	Lw/unit	Day	79.8		3.0	-	-
HVAC58	Lw/unit	Day	79.8		3.0	-	-
HVAC59	Lw/unit	Day	79.8		3.0	-	-
HVAC60	Lw/unit	Day	79.8		3.0	-	-
HVAC61	Lw/unit	Day	79.9		3.0	-	-
HVAC62	Lw/unit	Day	79.8		3.0	-	-
HVAC63	Lw/unit	Day	79.8		3.0	-	-
HVAC64	Lw/unit	Day	79.8		3.0	-	-
HVAC65	Lw/unit	Day	79.8		3.0	-	-

Noise emissions of industry sources

Source name	Reference	Level		Frequency spectrum [dB(A)]	Corrections		
				500	Cwall	CI	CT
			dB(A)	Hz	dB	dB	dB
HVAC66	Lw/unit	Day	79.8		3.0	-	-
HVAC67	Lw/unit	Day	79.8		3.0	-	-
HVAC68	Lw/unit	Day	79.8		3.0	-	-
HVAC69	Lw/unit	Day	79.8		3.0	-	-
HVAC70	Lw/unit	Day	79.8		3.0	-	-
HVAC71	Lw/unit	Day	79.8		3.0	-	-
HVAC72	Lw/unit	Day	79.8		3.0	-	-
HVAC73	Lw/unit	Day	79.8		3.0	-	-
HVAC74	Lw/unit	Day	79.8		3.0	-	-
HVAC75	Lw/unit	Day	79.8		3.0	-	-
HVAC76	Lw/unit	Day	79.8		3.0	-	-
HVAC77	Lw/unit	Day	79.8		3.0	-	-
HVAC78	Lw/unit	Day	79.8		3.0	-	-
HVAC79	Lw/unit	Day	79.8		3.0	-	-
HVAC80	Lw/unit	Day	79.8		3.0	-	-
HVAC81	Lw/unit	Day	79.8		3.0	-	-
HVAC82	Lw/unit	Day	79.8		3.0	-	-
HVAC83	Lw/unit	Day	79.8		3.0	-	-
HVAC84	Lw/unit	Day	79.8		3.0	-	-
HVAC85	Lw/unit	Day	79.8		3.0	-	-
HVAC86	Lw/unit	Day	79.8		3.0	-	-
HVAC87	Lw/unit	Day	79.8		3.0	-	-
HVAC88	Lw/unit	Day	79.8		3.0	-	-
HVAC89	Lw/unit	Day	79.8		3.0	-	-
HVAC90	Lw/unit	Day	79.8		3.0	-	-
HVAC91	Lw/unit	Day	79.8		3.0	-	-
HVAC92	Lw/unit	Day	79.8		3.0	-	-
HVAC93	Lw/unit	Day	79.8		3.0	-	-
HVAC94	Lw/unit	Day	79.8		3.0	-	-
HVAC95	Lw/unit	Day	79.8		3.0	-	-
HVAC96	Lw/unit	Day	79.8		3.0	-	-
HVAC97	Lw/unit	Day	79.8		3.0	-	-
HVAC98	Lw/unit	Day	79.8		3.0	-	-
HVAC99	Lw/unit	Day	79.8		3.0	-	-
HVAC100	Lw/unit	Day	79.8		3.0	-	-
HVAC101	Lw/unit	Day	79.8		3.0	-	-
HVAC102	Lw/unit	Day	79.8		3.0	-	-
HVAC103	Lw/unit	Day	79.8		3.0	-	-
HVAC104	Lw/unit	Day	79.8		3.0	-	-
HVAC105	Lw/unit	Day	79.8		3.0	-	-
HVAC106	Lw/unit	Day	79.8		3.0	-	-
HVAC107	Lw/unit	Day	79.8		3.0	-	-
HVAC108	Lw/unit	Day	79.8		3.0	-	-
HVAC109	Lw/unit	Day	79.8		3.0	-	-
HVAC110	Lw/unit	Day	79.8		3.0	-	-
HVAC111	Lw/unit	Day	79.8		3.0	-	-
HVAC112	Lw/unit	Day	79.8		3.0	-	-
HVAC113	Lw/unit	Day	79.8		3.0	-	-
HVAC114	Lw/unit	Day	79.8		3.0	-	-
HVAC115	Lw/unit	Day	79.8		3.0	-	-
HVAC116	Lw/unit	Day	79.8		3.0	-	-
HVAC117	Lw/unit	Day	79.8		3.0	-	-
HVAC118	Lw/unit	Day	79.8		3.0	-	-
HVAC119	Lw/unit	Day	79.8		3.0	-	-
HVAC120	Lw/unit	Day	79.8		3.0	-	-
HVAC121	Lw/unit	Day	79.8		3.0	-	-
HVAC122	Lw/unit	Day	79.8		3.0	-	-
HVAC123	Lw/unit	Day	79.8		3.0	-	-
HVAC124	Lw/unit	Day	79.8		3.0	-	-
HVAC125	Lw/unit	Day	79.8		3.0	-	-
HVAC126	Lw/unit	Day	79.8		3.0	-	-
HVAC127	Lw/unit	Day	79.8		3.0	-	-
HVAC128	Lw/unit	Day	79.8		3.0	-	-
HVAC129	Lw/unit	Day	79.8		3.0	-	-
HVAC130	Lw/unit	Day	79.8		3.0	-	-

Noise emissions of industry sources

				Frequency spectrum [dB(A)]	Corrections		
Source name	Reference	Level		500	Cwall	CI	CT
			dB(A)	Hz	dB	dB	dB
HVAC131	Lw/unit	Day	79.8		3.0	-	-
HVAC132	Lw/unit	Day	79.8		3.0	-	-
HVAC133	Lw/unit	Day	79.8		3.0	-	-
HVAC134	Lw/unit	Day	79.8		3.0	-	-
HVAC135	Lw/unit	Day	79.8		3.0	-	-
HVAC136	Lw/unit	Day	79.8		3.0	-	-
HVAC137	Lw/unit	Day	79.8		3.0	-	-
HVAC138	Lw/unit	Day	79.8		3.0	-	-
HVAC139	Lw/unit	Day	79.8		3.0	-	-
HVAC140	Lw/unit	Day	79.8		3.0	-	-
HVAC141	Lw/unit	Day	79.8		3.0	-	-
HVAC142	Lw/unit	Day	79.8		3.0	-	-
Pool	Lw/m²	Day	-	-	-	-	-

Receiver list

No.	Receiver name	Building side	Floor	Limit Lden dB(A)	Level Lden dB(A)	Conflict Lden dB
1	2	-	EG	-	52.8	-
2		-	EG	-	57.0	-
3	3	-	EG	-	56.6	-
4	4	-	EG	-	54.6	-
5	5	-	EG	-	46.3	-