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EXECUTIVE SUMMARY

This noise impact analysis report analyzes the potential noise and vibration impacts of the proposed project of Richardson's RV to (1) establish an outdoor storage yard for the temporary staging and storage of Recreational Vehicles ("RVs") on a one-acre property located at 10030 Indiana Avenue in the City of Riverside, California ("Project Site"), and (2) to convert an existing 1,351 square foot residence at the Project Site into an office (collectively, the "Project"). On November 30, 2022, the Development Review Committee ("DRC") approved an application from Steve Richardson of Richardson's RV for a Minor Conditional Use Permit and Design Review for the Project. The Project entails:

- Paving approximately 33,763 square feet of the lot for the purpose of storing RVs;
- Striping forty-five 9 x 35-foot stalls for storage of RVs;
- Conversion of the existing 1,351 square foot residence on the Project Site into an office for Richardson's RV (The building conversion involves minimal interior remodeling only. There is no expansion of the building outside of the existing footprint.);
- Construction of fences and walls; and
- Landscaping.

The Project will operate Monday through Friday from 8:00 AM to 5:00 PM with four employees on-site. No sales of RVs, maintenance, washing or fueling are proposed to take place on-site.

The Project will not result in any significant construction or operational impacts relating to noise or vibration under the California Environmental Quality Act (CEQA), and the Project will not exceed the applicable noise standards set forth in the City's Municipal Code. Notably, project construction will not take place between the hours of 7:00 PM and 7:00 AM on weekdays, between the hours of 5:00 PM and 8:00 AM on Saturdays, or at any time on Sunday or a federal holiday; the Project's construction is thus exempt from the provisions of Title 7 of the City's Municipal Code, which governs noise control (see Riverside Municipal Code, § 7.35.020). Moreover, the Project will have limited operational noise, which would be less than the exterior noise standard of 55 dBA for residential land uses between 7:00 AM to 10:00 PM and less than the exterior noise standard of 65 dBA for office/commercial land uses (see Riverside Municipal Code, Table 7.25.010A). In short, the Project will have less than significant impacts relating to noise and vibration.

1. INTRODUCTION

This section describes the purpose of this study and the proposed project.

PURPOSE AND OBJECTIVES

The purpose of this report is to provide an assessment of the noise impacts that could potentially result from development and operation of the proposed project. The noise issues related to the proposed land use and development have been evaluated in light of applicable federal, state and local policies, including those of the City of Riverside, in the context of the California Environmental Quality Act (CEQA).

Although this is a technical report, effort has been made to write the report clearly and concisely. A list of acronyms and glossary are provided in Appendix A and Appendix B of this report to assist the reader with technical terms related to noise and vibration analysis.

PROJECT LOCATION

The 1.0-acre project site is located at 10030 Indiana Avenue, in the City of Riverside, California. The proposed project is currently developed with an existing 1,351 square foot residence. A vicinity map showing the project location is provided in Figure 1.

PROJECT DESCRIPTION

The project consists of a Minor Conditional Use Permit and a Design Review for an Outdoor Storage Yard and the conversion of an existing 1,351 square foot residence into an office for Richardson's RV storage. The development consists of:

- Paving approximately 33,763 square feet of the lot for outdoor storage purposes;
- Striping forty-five 9 x 35-foot stalls for storage of vehicles;
- Conversion of the existing residence into an office (The building conversion involves minimal interior remodeling only. There is no expansion of the building outside of the existing footprint.);
- Construction of fences and walls; and
- Landscaping

The project will operate Monday through Friday from 8:00 AM to 5:00 PM with four employees on-site. Recreational vehicles and trailers will be transported to and from the storage yard as required for inventory control. Plans indicate the storage yard will be secured and screened as follows:

- A new 6-foot-high opaque tubular steel fence and opaque rolling gate on the north side of the storage yard;
- A combination of an existing 5-foot-high decorative stucco perimeter wall and new 10-foot-high decorative opaque metal fence along the east side property line;
- A combination of an existing 6-foot-high CMU wall and new landscaping along the south property line, adjacent to the AT&SF Railroad; and
- An existing self-storage building along the west side property line.

No sales of recreational vehicles, maintenance, washing or fueling are proposed to take place on-site. Figure 2 illustrates the project site plan.

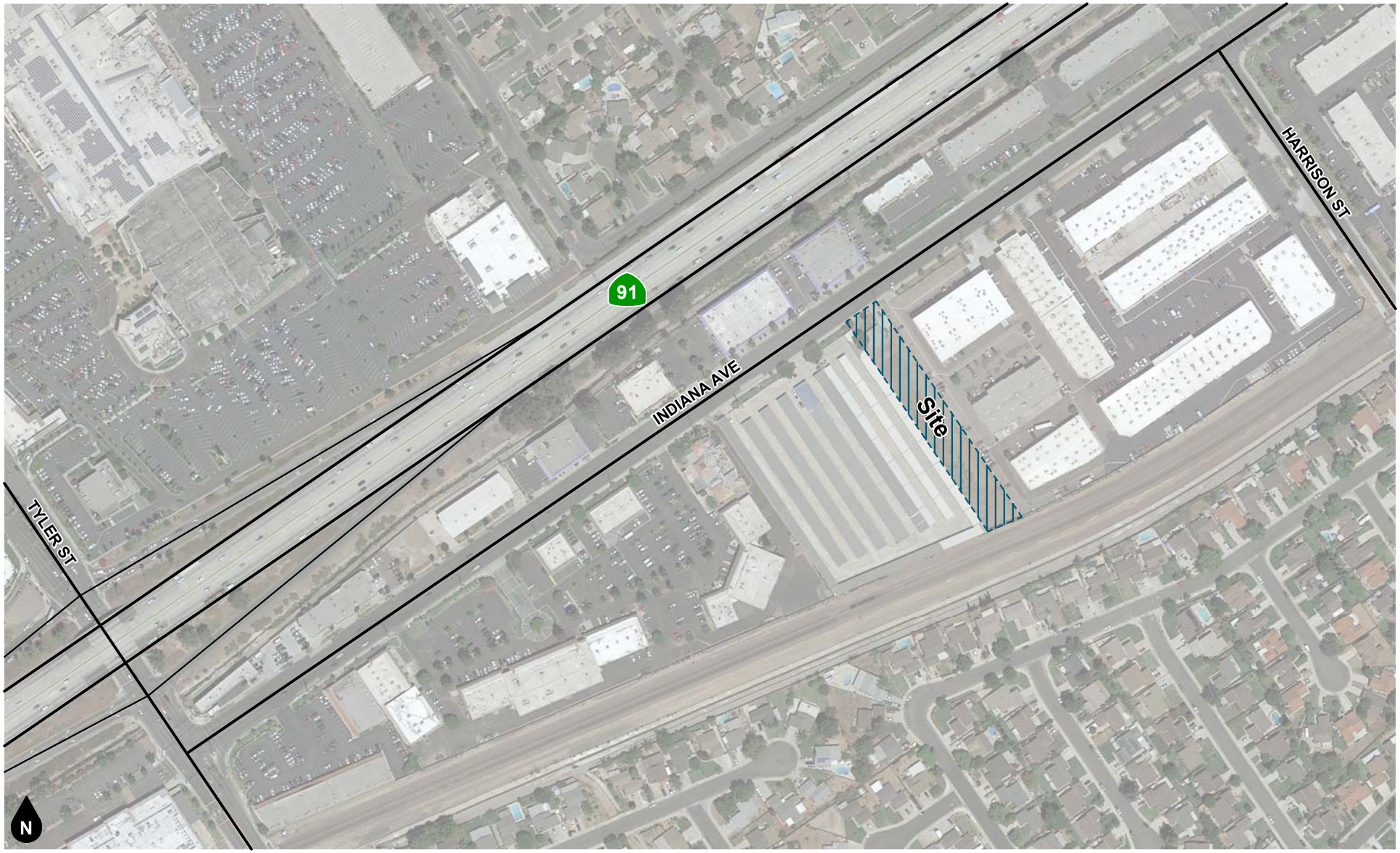


Figure 1
Project Location Map

Figure 2
Site Plan

2. NOISE AND VIBRATION FUNDAMENTALS

This section provides an overview of key noise and vibration concepts.

NOISE FUNDAMENTALS

Sound is a pressure wave created by a moving or vibrating source that travels through an elastic medium such as air. Noise is defined as unwanted or objectionable sound. The effects of noise on people can include general annoyance, interference with speech communication, sleep disturbance, and in extreme circumstances, hearing impairment.

Commonly used noise terms are presented in Appendix B. The unit of measurement used to describe a noise level is the decibel (dB). The human ear is not equally sensitive to all frequencies within the sound spectrum. Therefore, the "A-weighted" noise scale, which weights the frequencies to which humans are sensitive, is used for measurements. Noise levels using A-weighted measurements are written dB(A) or dBA.

From the noise source to the receiver, noise changes both in level and frequency spectrum. The most obvious is the decrease in noise as the distance from the source increases. The manner in which noise reduces with distance depends on whether the source is a point or line source as well as ground absorption, atmospheric effects and refraction, and shielding by natural and manmade features. Sound from point sources, such as air conditioning condensers, radiates uniformly outward as it travels away from the source in a spherical pattern. The noise drop-off rate associated with this geometric spreading is 6 dBA per each doubling of the distance (dBA/DD). Transportation noise sources such as roadways are typically analyzed as line sources, since at any given moment the receiver may be impacted by noise from multiple vehicles at various locations along the roadway. Because of the geometry of a line source, the noise drop-off rate associated with the geometric spreading of a line source is 3 dBA/DD.

Decibels are measured on a logarithmic scale, which quantifies sound intensity in a manner similar to the Richter scale used for earthquake magnitudes. Thus, a doubling of the energy of a noise source, such as a doubled traffic volume, would increase the noise levels by 3 dBA; halving of the energy would result in a 3 dBA decrease. Figure 3 shows the relationship of various noise levels to commonly experienced noise events.

Average noise levels over a period of minutes or hours are usually expressed as dBA L_{eq}, or the equivalent noise level for that period of time. For example, $L_{eq(3\text{-}hr)}$ would represent a 3-hour average. When no period is specified, a one-hour average is assumed.

Noise standards for land use compatibility are stated in terms of the Community Noise Equivalent Level (CNEL) and the Day-Night Average Noise Level (DNL). CNEL is a 24-hour weighted average measure of community noise. CNEL is obtained by adding five decibels to sound levels in the evening (7:00 PM to 10:00 PM), and by adding ten decibels to sound levels at night (10:00 PM to 7:00 AM). This weighting accounts for the increased human sensitivity to noise during the evening and nighttime hours. DNL is a very similar 24-hour average measure that weights only the nighttime hours.

It is widely accepted that the average healthy ear can barely perceive changes of 3 dBA; that a change of 5 dBA is readily perceptible, and that an increase (decrease) of 10 dBA sounds twice (half) as loud. This definition is recommended by the California Department of Transportation's Technical Noise Supplement to the Traffic Noise Analysis Protocol (2013).

VIBRATION FUNDAMENTALS

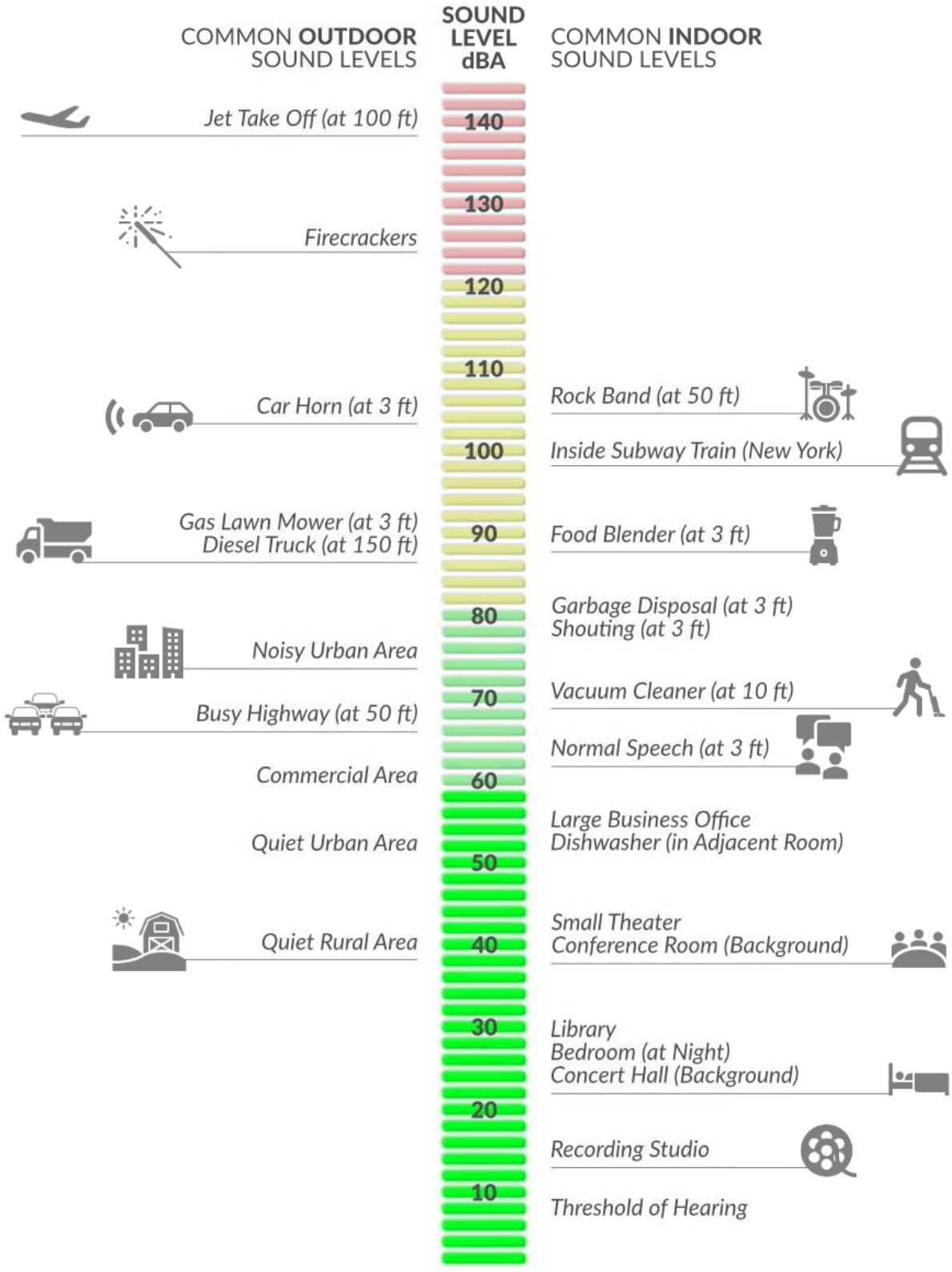
The way in which vibration is transmitted through the earth is called propagation. Propagation of earthborn vibrations is complicated and difficult to predict because of the endless variations in the soil through which waves travel. There are three main types of vibration propagation: surface, compression and shear waves.

Surface waves, or Rayleigh 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.

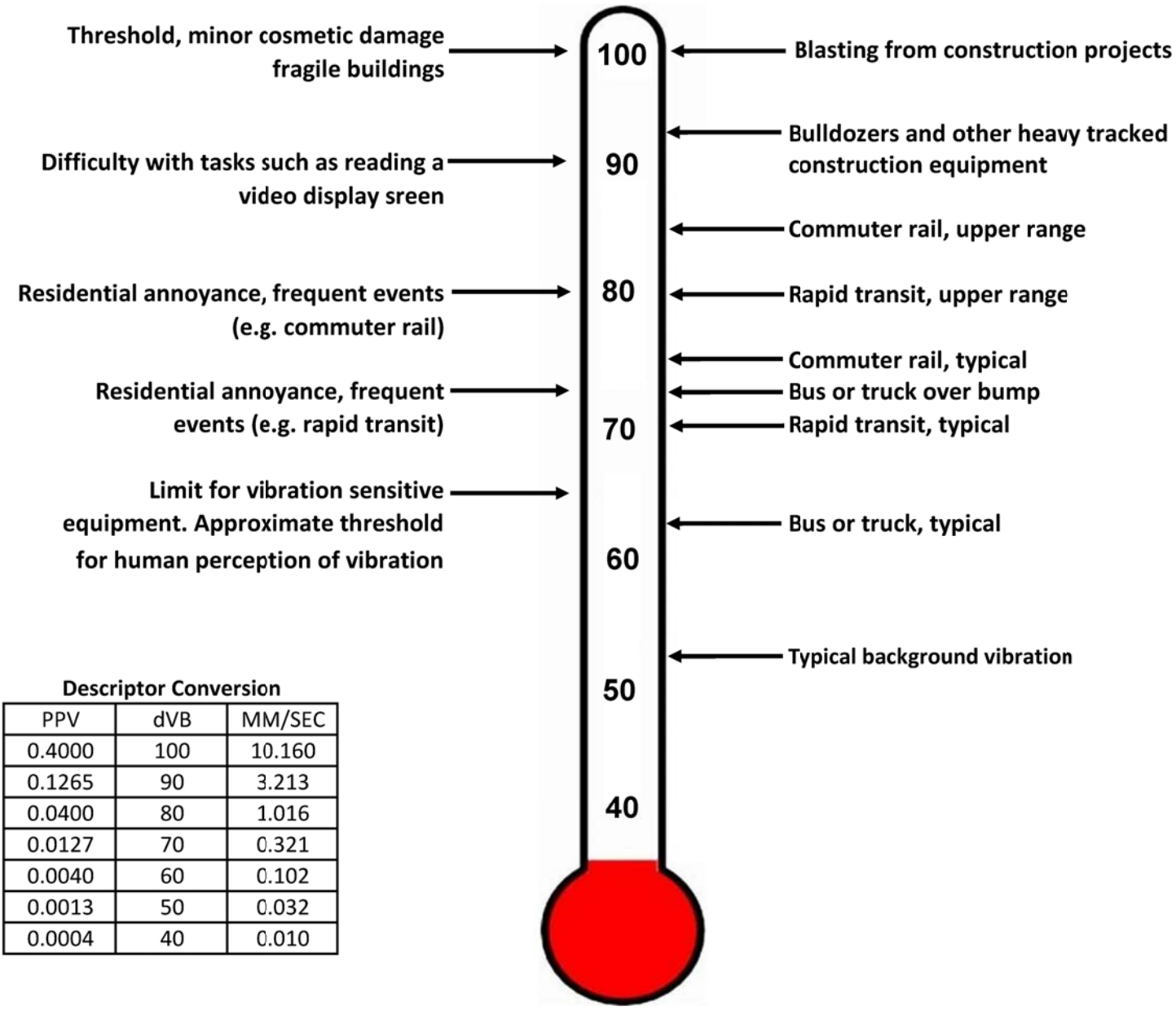
Vibration amplitudes are usually expressed as either peak particle velocity (PPV) or the root mean square (RMS) velocity. The PPV is defined as the maximum instantaneous peak of the vibration signal in inches per second. The RMS of a signal is the average of the squared amplitude of the signal in vibration decibels (VdB), ref one micro-inch per second. The Federal Railroad Administration uses the abbreviation "VdB" for vibration decibels to reduce the potential for confusion with sound decibel.

PPV is appropriate for evaluating the potential of building damage and VdB is commonly used to evaluate human response. Decibel notation acts to compress the range of numbers required in measuring vibration. Similar to the noise descriptors, L_{eq} and L_{max} can be used to describe the average vibration and the maximum vibration level observed during a single vibration measurement interval. Figure 4 illustrates common vibration sources and the human and structural responses to ground-borne vibration. As shown in the figure, the threshold of perception for human response is approximately 65 VdB; however, human response to vibration is not usually substantial unless the vibration exceeds 70 VdB. Vibration tolerance limits for sensitive instruments such as magnetic resonance imaging (MRI) or electron microscopes could be much lower than the human vibration perception threshold.



Based on Policy & Guidance from Federal Aviation Administration

Figure 3
A-Weighted Comparative Sound Levels



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: FRA, 2012. Federal Railroad Administration High-Speed Ground Transportation Noise and Vibration Impact Assessment. Office of Railroad Policy Development, Washington, D.C. DOT/FRA/ORD-12/15. September.

Figure 4
Typical Levels of Groundborne Vibration

3. EXISTING NOISE ENVIRONMENT

This section describes the existing noise setting in the project vicinity.

EXISTING LAND USES AND SENSITIVE RECEPTORS

The project site is bordered by Indiana Avenue to the north, a commercial self-storage use to the west, railroad tracks to the south, and commercial uses to the east of the project site.

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, single and multiple-family residential, including transient lodging, motels and hotel uses make up the majority of these areas. Existing sensitive land uses in the vicinity of the project site include the existing single-family residential land uses located approximately 145 feet south (along Rhinelander Drive) and 465 feet northwest (along the northern side of Diana Avenue) of the project site boundaries.

AMBIENT NOISE MEASUREMENTS

An American National Standards Institute (ANSI Section SI.4 2014, Class 1) Larson Davis model LxT sound level meter was used to document existing ambient noise levels. In order to document existing ambient noise levels in the project area, three (3) 15-minute daytime noise measurements were taken between 1:29 PM and 3:06 PM on September 23, 2024. In addition, one (1) long-term 24-hour noise measurement was also taken from September 23, 2024, to September 24, 2024. Figure 5 shows the noise measurement location map. Field worksheets and noise measurement worksheets are provided in Appendix C.

As shown on Figure 5, the noise meter was placed at the following locations:

- STNM1: represents the existing noise environment of the northern portion of the project site and the commercial uses to the north of the project along the northern side of Indiana Avenue (10031 Indiana Avenue, Riverside). The noise meter was placed near the northern property line of the project site just south of Indiana Avenue.

- STNM2: represents the existing noise environment of the commercial uses to the east of the project site (10020 Indiana Avenue, Riverside). The noise meter was placed near the center of the eastern project property line just west of the commercial use.

- STNM3: represents the existing noise environment of the single-family residential uses located to the south of the project site along Rhinelander Drive (10047 Rhinelander Drive, Riverside). The noise meter was placed just south of the residential use and north of Rhinelander Drive.

- LTNM1: represents the existing noise environment of the southern portion of the project site and the single-family residential uses located to the south of the project site along Rhinelander Drive (10047 Rhinelander Drive, Riverside). The noise meter was placed near the southern property line of the project site.

Table 1 provides a summary of the short-term ambient noise data. Table 2 provides hourly interval ambient noise data from the long-term noise measurement. Measured short-term ambient noise levels ranged between 53.8 and 69 dBA L_{eq}. Long-term hourly noise measurement ambient noise levels ranged from 56.7 to 77.3 dBA L_{eq}. The dominant noise source in the project vicinity was vehicle traffic associated with Indiana Avenue, 91 Freeway, and Rhineland Drive and train activity.

Table 1
Short-Term Noise Measurement Summary (dBA)

Daytime Measurements[1,2]								
Site Location	Time Started	Leq	Lmax	Lmin	L(2)	L(8)	L(25)	L(50)
STNM1	1:29 PM	69.0	83.4	60.0	76.2	72.8	69.1	65.4
STNM2	2:00 PM	58.8	69.7	52.3	65.0	62.8	58.8	56.3
STNM3	2:51 PM	53.8	68.4	46.7	64.2	55.2	50.9	49.8

Notes:
(1) See Figure 5 for noise measurement locations. Each noise measurement was performed over a 15-minute duration.
(2) Noise measurements performed on September 23, 2024.

Table 2
Long-Term Noise Measurement Summary (LTNM1) (dBA)

24-Hour Ambient Noise[1,2]								
Hourly Measurements	Time Started	Leq	Lmax	Lmin	L(2)	L(8)	L(25)	L(50)
Overall Summary	6:00 PM	73.4	101.4	42.7	84.4	69.3	57.1	55.2
1	6:00 PM	74.3	97.4	53.8	86.2	68.8	58.2	56.9
2	7:00 PM	74.8	94.9	51.3	86.0	78.7	57.2	55.9
3	8:00 PM	71.9	95.5	50.2	84.0	59.0	54.8	53.7
4	9:00 PM	72.9	90.3	52.8	84.0	78.0	62.1	59.0
5	10:00 PM	75.4	95.6	51.1	87.4	69.2	56.9	55.7
6	11:00 PM	71.3	92.9	50.4	83.9	58.5	56.4	55.4
7	12:00 AM	70.0	90.1	49.4	81.4	71.1	57.9	55.2
8	1:00 AM	75.1	95.2	42.7	84.9	80.6	70.8	53.5
9	2:00 AM	75.2	98.9	43.4	85.2	66.0	52.2	50.3
10	3:00 AM	75.6	98.4	46.5	85.6	80.9	55.6	54.1
11	4:00 AM	73.3	101.4	50.8	83.2	57.2	55.6	54.7
12	5:00 AM	68.3	94.1	48.4	80.0	56.1	54.3	53.1
13	6:00 AM	74.2	100.3	52.9	85.3	58.9	56.1	55.3
14	7:00 AM	59.0	84.1	47.1	60.2	56.2	54.2	51.5
15	8:00 AM	76.8	101.0	48.1	86.4	80.6	53.6	51.9
16	9:00 AM	73.1	95.4	50.6	84.1	76.1	58.7	56.5
17	10:00 AM	72.2	97.2	50.7	83.9	57.3	55.4	54.6
18	11:00 AM	72.7	99.7	51.9	83.5	59.7	56.5	55.4
19	12:00 PM	56.7	68.9	51.5	60.0	58.8	57.3	56.1
20	1:00 PM	74.0	97.8	51.0	84.2	74.0	56.8	55.6
21	2:00 PM	68.2	85.5	50.7	80.6	61.7	57.6	56.2
22	3:00 PM	74.1	98.1	52.5	83.2	73.8	57.7	56.3
23	4:00 PM	77.3	96.3	47.5	87.1	84.1	57.5	54.1
24	5:00 PM	68.8	92.3	53.3	78.2	64.5	58.1	57.1
CNEL	80.3							

Notes:

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

(2) Noise measurement performed from September 23, 2024 to September 24, 2024.

Legend

NM 1 Noise Measurement Location

ST NM Short-Term Noise Measurement

LT NM Long-Term Noise Measurement

Figure 5
Noise Measurement Location Map

4. REGULATORY SETTING

This section documents the regulatory framework and applicable noise standards.

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 Transit Administration

Transit and Construction Noise

FTA standards and criteria for assessing noise impacts related to transit projects are based on community reactions to noise. The criteria reflect changes in noise exposure using a sliding scale where the higher the level of existing noise, the smaller increase in total noise exposure is allowed. Some land use activities are more sensitive to noise than others, such as parks, churches and residences, as compared to industrial and commercial uses. FTA Noise Impact Criteria groups sensitive land uses into the three categories described below.

(1) Category 1 – High Sensitivity: Land where quiet is an essential element of its intended purpose. Example land uses include preserved land for serenity and quiet, outdoor amphitheaters and concert pavilions, and national historic landmarks with considerable outdoor use. Recording studios and concert halls are also included in this category.
(2) Category 2 – Residential: This category is applicable to all residential land use and buildings where people normally sleep, such as hotels and hospitals.
(3) Category 3 – Institutional: This category is applicable to institutional land uses with primarily daytime and evening use. Example land uses include schools, libraries, theaters, and churches where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material. Places for meditation or study associated with cemeteries, monuments, museums, campgrounds, and recreational facilities are also included in this category.

Most commercial or industrial uses are not considered noise-sensitive because activities within these buildings are generally compatible with higher noise levels. Business can be considered noise-sensitive if low noise levels are an important part of operations, such as sound and motion picture recording studios. Most parks used primarily for active recreation such as sports complexes and bike or running paths are not considered noise sensitive. However, some parks (even some in dense urban areas) are primarily used for passive recreation such as reading, conversation, or meditation. These places, which may be valued as havens from

the noise and rapid pace of everyday city life, are treated as noise-sensitive, and are included in land use Category 3. Non-sensitive uses do not require noise impact assessment.

Construction noise is assessed using guidance provided in the FTA Guidance Manual. The FTA provides reasonable criteria for assessing construction noise impacts based on the potential for adverse community reaction. For residential uses, the daytime noise threshold is 80 dBA L_{eq} averaged over an 8-hour period ($L_{eq\ (8\text{-}hr)}$; and the nighttime noise threshold is 70 dBA $L_{eq\ (8\text{-}hr)}$. For commercial uses, the daytime and nighttime noise threshold is 85 dBA $L_{eq\ (8\text{-}hr)}$ and for industrial uses the daytime and nighttime noise threshold is 90 dBA $L_{eq\ (8\text{-}hr)}$.

Transit and Construction Vibration

FTA has developed impact criteria for acceptable levels of groundborne noise (GBN) and groundborne vibration (GBV). Criteria for ground-borne vibration are expressed in terms of rms velocity levels in VdB, and criteria for ground-borne noise are expressed in terms of A-weighted sound pressure levels in dBA. Table 3 shows that 80 VdB is the threshold for annoyance from groundborne vibration at sensitive receptors for infrequent events. The FTA also provides criteria for special buildings such as concert halls, television and recording studios, auditoriums, and theaters, which are also sensitive to vibration but do not fit into the three FTA sensitive land use categories previously described.

Ground-borne noise that accompanies the building vibration is usually perceptible only inside buildings and typically is only an issue at locations with subway or tunnel operations where there is no airborne noise path or for buildings with substantial sound insulation such as a recording studio.[1] As such, available guidelines from the FTA are utilized to assess impacts due to ground-borne vibration. The FTA has adopted vibration standards that are used to evaluate potential building damage impacts related to construction activities. As shown in Table 4, the threshold at which there is a risk to "architectural" damage to non-engineered timber and masonry buildings is a peak particle velocity (PPV) of 0.2, at engineered concrete and masonry buildings a PPV of 0.3, and at reinforced-concrete, steel, or timber buildings a PPV of 0.5.

[1] Federal Transit Administration, Transit Noise and Vibration Impact Assessment, May 2018, pp 108, 112.

Table 3
Ground-Borne Vibration (GBV) Impact Criteria for General Vibration Assessment

Land Use Category	GBV Impact Levels (VdB re 1 micro-inch/sec)			GBN Impact Levels (dBA, 20 micro Pascals)		
	Frequent Events[1]	Occasional Events[2]	Infrequent Events[3]	Frequent Events[1]	Occasional Events[2]	Infrequent Events[3]
Category 1: Buildings where vibration would interfere with interior operations.	65 VdB*	65 VdB*	65 VdB*	N/A	N/A	N/A
Category 2: Residences and buildings where people normally sleep.	72 VdB	75 VdB	80 VdB	35	38	43
Category 3: Institutional land uses with primarily daytime use.	75 VdB	78 VdB	83 VdB	40	43	48

Source: Federal Transit Administration (FTA), Transit Noise and Vibration Impact Assessment Manual (September 2018).

Notes:

*This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. For equipment that is more sensitive, a Detailed Vibration Analysis must be performed.

1. "Frequent Events" is defined as more than 70 vibration events of the same source per day. Most rapid transit projects fall into this category.
2. "Occasional Events" is defined as between 30 and 70 vibration events of the same source per day. Most commuter trunk lines have this many operation.
3. "Infrequent Events" is defined as fewer than 30 vibration events of the same kind per day. This category includes commuter rail branch lines.

Table 4
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 extemely susceptible to vibration damage	0.1	90

Source: Federal Transit Administration (FTA), Transit Noise and Vibration Impact Assessment Manual (September 2018).

Notes:

*RMS velocity in decibels, VdB re 1 micro-in/sec

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.

LOCAL REGULATIONS

City of Riverside General Plan

Table 5 shows the City's noise level standards related to land use compatibility. This matrix does not provide noise/land use compatibility criteria for multiple family residential land uses. For the purposes of this analysis, the noise/land use compatibility criteria for infill single family residential land uses has been used. As shown in Table 5, commercial uses are considered "normally acceptable" where noise levels are not expected to exceed 65 dBA CNEL and "conditionally acceptable" up to 75 dBA CNEL. These standards apply to the proposed project itself. In addition, single-family residential uses are considered "normally acceptable" where noise levels are not expected to exceed 60 dBA CNEL and "conditionally acceptable" up to 65 dBA CNEL.

The City of Riverside General Plan also includes the following objectives and policies in regard to noise which apply to the proposed project.

Objective N-1 Minimize noise levels from point sources throughout the community and, wherever possible, mitigate the effects of noise to provide a safe and healthful environment.

Policies

N-1.1 Continue to enforce noise abatement and control measures particularly within residential neighborhoods.

N-1.2 Require the inclusion of noise-reducing design features in development consistent with standards in Figure N–10 (Noise/Land Use Compatibility Criteria), Title 24 California Code of Regulations and Title 7 of the Municipal Code.

N-1.3 Enforce the City of Riverside Noise Control Code to ensure that stationary noise (Chapters 7.25 and 7.30) and noise emanating from construction activities (Section 7.35.020G.), private developments/residences and special events (Chapters 7.25 and 7.30) are minimized.

N-1.4 Incorporate noise considerations into the site plan review process, particularly with regard to parking and loading areas, ingress/egress points and refuse collection areas.

N-1.5 Avoid locating noise-sensitive land uses in existing and anticipated noise-impacted areas.

Objective N-2 Minimize the adverse effects of airport related noise through proper land use planning.

N-2.1 Ensure that new development can be made compatible with the noise environment by using noise/land use compatibility standards (Figure N–10 – Noise/Land Use Noise Compatibility Criteria) and the airport noise contour maps (found in the Riverside County Airport Land Use Compatibility Plans) as guides to future planning and development decisions.

N-2.5 Utilize the Airport Protection Overlay Zone, as appropriate, to advise landowners of special noise considerations associated with their development.

Objective N-3 Minimize ground transportation-related noise impacts.

N-3.1 Ensure that noise impacts generated by vehicular sources are minimized through the use of noise reduction features (e.g., earthen berms, landscaped walls, lowered streets, improved technology).

Objective N-4 Minimize ground transportation-related noise impacts.

N-4.1 Ensure that noise impacts generated by vehicular sources are minimized through the use of noise reduction features (e.g., earthen berms, landscaped walls, lowered streets, improved technology).

Table 5
Noise/Land Use Noise Compatibility Criteria

Land Use Category	Community Noise Equivalent Level (CNEL)							
	55	60	65	70	75	80	85	
Single Family Residential*								
Infill Single Family Residential*								
Commercial - Motels, Hotels, Transient Lodging								
Schools, Libraries, Churches, Hospitals, Nursing Homes								
Amphitheaters, Concert Hall, Auditorium, Meeting Hall								
Sports Arenas, Outdoor Spectator Sports								
Playgrounds, Neighborhood Parks								
Golf Courses, Riding Stables, Water Rec., Cemeteries								
Office Buildings, Business, Commercial, Professional								
Industrial, Manufacturing, Utilities, Agriculture								
Freeway Adjacent Commercial, Office, and Industrial Uses								

Normally Acceptable:	Specified land use is satisfactory, based up the assumption that any building is 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 noise reduction requirements is made and needed noise insulation features included in design. Conventional constuction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.
Normally Unacceptable:	New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise insulation features included in design.
Conditionally Unacceptable:	New construction or development should generally not be undertaken, unless it can be demonstrated that noise reduction requirements can be employed to reduce noise impacts to an acceptable level. If new construction or development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise insulation features inluded in the design.

Source: City of Riverside General Pan 2025 Noise Element Figure N-10, February 2018.

Notes:

*For properties located within airport influence areas, acceptable noise limits for single family residential uses are established by the Riverside County Airport Land Use Compatibility Plan.

City of Riverside Municipal Code

Section 7.25.010 Exterior sound level limits

A. Unless a variance has been granted as provided in this title, it shall be unlawful for any person to cause or allow the creation of any noise which exceeds the following:

   a. The exterior noise standard of the applicable land use category, shown in Table 6, up to five decibels, for a cumulative period of more than 30 minutes in any hour; or
   b. The exterior noise standard of the applicable land use category, shown in Table 6, plus five decibels, for a cumulative period of more than 15 minutes in any hour; or
   c. The exterior noise standard of the applicable land use category, shown in Table 6, plus ten decibels, for a cumulative period of more than five minutes in any hour; or
   d. The exterior noise standard of the applicable land use category, shown in Table 6, plus 15 decibels, for the cumulative period of more than one minute in any hour; or
   e. The exterior noise standard for the applicable land use category, shown in Table 6, plus 20 decibels or the maximum measured ambient noise level, for any period of time.

B. If the measured ambient noise level exceeds that permissible within any of the first four noise limit categories, the allowable noise exposure standard shall be increased in five decibel increments in each category as appropriate to encompass the ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.

C. If possible, the ambient noise level shall be measured at the same location along the property line with the alleged offending noise source inoperative. If for any reason the alleged offending noise source cannot be shut down, then the ambient noise must be estimated by performing a measurement in the same general area of the source but at a sufficient distance that the offending noise is inaudible. If the measurement location is on the boundary between two different districts, the noise shall be the arithmetic mean of the two districts.

D. Where the intruding noise source is an air-conditioning unit or refrigeration system which was installed prior to the effective date of this title, the exterior noise level when measured at the property line shall not exceed 60 dBA for units installed before 1-1-80 and 55 dBA for units installed after 1-1-80.

Table 6
Exterior Sound Level Limits

Exterior Noise Standards		
Land Use Category	Time Period	Noise Level
Residential	Night (10:00 PM - 7:00 AM)	45 dBA
	Day (7:00 AM - 10:00 PM)	55 dBA
Office/Commercial	Any time	65 dBA
Industrial	Any time	70 dBA
Community Support	Any time	60 dBA
Public Recreation Facility	Any time	65 dBA
Nonurban	Any time	70 dBA

Land Use Category/Zoning Matrix	
Land Use Category	Underlying Zone
Residential	RE, RA-5, RR, RC, R-1-1/2 acre, R-1-13000, R-1-10500, R-1-8500, R-1-7000, R-3-25000, R-3-4000, R-3-3000, R-3-2000, R-3-1500, R-4
Office/Commercial	O, CRC, CR-NC, CR, CG
Industrial	BMP, I, AIR
Community Support	Any permitted zone
Nonurban	Any permitted zone

Source: Section 7.25.010(D) of the City of Riverside Municipal Code.

Notes:

a. The exterior noise standard of the applicable land use category, shown in Table 6, up to five decibels, for a cumulative period of more than 30 minutes in any hour; or

b. The exterior noise standard of the applicable land use category, shown in Table 6, plus five decibels, for a cumulative period of more than 15 minutes in any hour; or

c. The exterior noise standard of the applicable land use category, shown in Table 6, plus ten decibels, for a cumulative period of more than five minutes in any hour; or

d. The exterior noise standard of the applicable land use category, shown in Table 6, plus 15 decibels, for the cumulative period of more than one minute in any hour; or

e. The exterior noise standard for the applicable land use category, shown in Table 6, plus 20 decibels or the maximum measured ambient noise level, for any period of time.

Section 7.30.015 Interior sound level limits

A. No person shall operate or cause to be operated, any source of sound indoors which causes the noise level, when measured inside another dwelling unit, school or hospital, to exceed:

    1. The interior noise standard for the applicable land category area, shown in Table 7, up to five decibels, for a cumulative period of more than five minutes in any hour;
    2. The interior noise standard for the applicable land use category, shown in Table 7, plus five decibels, for a cumulative period of more than one minute in any hour;
    3. The interior noise standard for the applicable land use category, shown in Table 7, plus ten decibels or the maximum measured ambient noise level, for any period of time.

B. If the measured interior ambient noise level exceeds that permissible within the first two noise limit categories in this section, the allowable noise exposure standard shall be increased in five decibel increments in each category as appropriate to reflect the interior ambient noise level. In the event the interior ambient noise level exceeds the third noise limit category, the maximum allowable interior noise level under said category shall be increased to reflect the maximum interior ambient noise level.

C. The interior noise standard for various land use districts shall apply, unless otherwise specifically indicated, within structures located in designated zones with windows opened or closed as is typical of the season.

Section 7.35.020(G) Exemptions

Noise sources associated with construction, repair, remodeling, or grading of any real property; provided a permit has been obtained from the City as required; and provided said activities do not take place between the hours of 7:00 PM and 7:00 AM on weekdays, between the hours of 5:00 PM and 8:00 AM on Saturdays, or at any time on Sunday or a federal holiday, are exempt from the City's Nuisance noise standards presented in Tables 6 and 7.

Table 7
Interior Sound Level Limits

Interior Noise Standard		
Land Use Category	Time Period	Noise Level
Residential	Night (10:00 PM - 7:00 AM)	35 dBA
	Day (7:00 AM - 10:00 PM)	45 dBA
School	7:00 AM – 10:00 PM (while school is in session)	45 dBA
Hospital	Any time	45 dBA

Source: Section 7.30.015(C) of the City of Riverside Municipal Code.

Notes:

A. No person shall operate or cause to be operated, any source of sound indoors which causes the noise level, when measured inside another dwelling unit, school or hospital, to exceed:

1. The interior noise standard for the applicable land category area, shown in Table 7, up to five decibels, for a cumulative period of more than five minutes in any hour;
2. The interior noise standard for the applicable land use category, shown in Table 7, plus five decibels, for a cumulative period of more than one minute in any hour;
3. The interior noise standard for the applicable land use category, shown in Table 7, plus ten decibels or the maximum measured ambient noise level, for any period of time.

5. ANALYTICAL METHODOLOGY AND MODEL PARAMETERS

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

CONSTRUCTION NOISE MODELING

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.

Construction noise associated with the proposed project was calculated at the sensitive receptor locations, utilizing methodology presented in the Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual* (2018) together with several key construction parameters, including: distance to each sensitive receiver, equipment usage, percent usage factor, and baseline parameters for the project site. Distances to receptors were based on the acoustical center of the project site.

The equipment used to calculate the construction noise levels for each phase were based on assumptions and anticipated project construction activities. For analysis purposes, the distance measured from the project site to sensitive receptors was assumed to be the acoustical center of the project site to the property line of residential properties with existing residential buildings. 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 D.

SOUNDPLAN NOISE MODEL

The SoundPLAN acoustical modeling software was utilized to model project operational stationary noise levels from the proposed project to adjacent sensitive uses (e.g., residences). SoundPLAN is capable of evaluating stationary noise sources (e.g., parking lots, drive-thru menus, carwash equipment, vacuums, etc.). The SoundPLAN software utilizes algorithms (based on the inverse square law) to calculate noise level projections. The software allows the user to input specific noise sources, spectral content, sound barriers, building placement, topography, and sensitive receptor locations. In addition to the information provided below, noise modeling input and outputs assumptions are provided in Appendix E.

Operational Noise

Operational noise levels were modeled utilizing representative sound levels in the SoundPLAN model. Modeled noise sources include parking lot, HVAC equipment, and parking lot noise. The busiest hour associated with project operation was modeled utilizing representative sound levels in the SoundPLAN model. All noise sources were modeled to be in full operation.

Parking Lot Noise

Parking lot noise was calculated using SoundPLAN methodology. Specifically, the traffic volume of the parking lot is entered with the number of moves per parking space, the hour and the number of parking bays. The user defines whether the parking lots are for automobiles, motorcycles, or trucks, and the emission level of a parking lot is automatically adjusted accordingly. The values for the number of parking moves for each time slice is the number of parking moves per reference unit (most often per parking bay), averaged for the hour[2].

SoundPLAN utilizes parking lot noise emission levels from the 6th revised edition of the parking lot study "Recommendations for the Calculation of Sound Emissions of Parking Areas, Motorcar Centers and Bus

[2] SoundPLAN Essential 5.1 Manual. SoundPLAN GmbH. August 2020. https://www.aacacustica.com/galeria/soundplan/essential/Manual_SoundPLAN_Essential_5.1.pdf

Stations as well as of Multi-Story Car Parks and Underground Car Parks" published by the Bavarian Landesamt für Umwelt provides calculation methods to determine the emissions of parking lots.

The parking lot emission table documents the reference level (Lw, ref) from parking lot study:

Lw, ref = Lw0 + KPA + KI + KD + KStrO + 10 log(B) [dB(A)]

With the following parameters:

Lw0 = Basic sound power, sound power level of one motion / per hour on P+R areas = 63 dB(A)
KPA = Surcharge parking lot type
KI = Surcharge for impulse character
KD = Surcharge for the traffic passaging and searching for parking bays in the driving lanes 2.5 * lg (f * B - 9)
f = Parking bays per unit of the reference value
B = Reference value
KStrO = Surcharge for the road surface
B = Reference value

Mechanical Equipment (HVAC Units)

To be conservative, it was assumed that building associated with the proposed project would include a ground mounted heating, ventilation, and air conditioning (HVAC) unit. A noise reference level of 67.7 dBA at 3 feet (sound power level of 78.7 dB) was utilized to represent rooftop 5 Ton Carrier HVAC units[3]. A rooftop HVAC plan is not available at the time of this analysis so the exact location of the unit on the building was estimated. The noise source height for each HVAC unit was assumed at 1 meter above the roof top. The roof top is assumed to be approximately 4.57 meters (~15 feet) above grade.

Truck Drive

For noise modeling purposes, it was assumed that 4 heavy trucks would access the site and travel to the south end per day. The road element in the SoundPLAN noise model was used to account for truck height and emissions.

MOBILE SOURCE NOISE MODELING

Noise from vehicular traffic was projected using a computer program that replicates the FHWA Traffic Noise Noise from vehicular traffic (Existing, Existing Plus Project, and Future) was modeled using a computer program that replicates the FHWA Traffic Noise Prediction Model (FHWA-RD-77-108). The FHWA model arrives 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 outer most 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

[3] MD Acoustics, LLC Noise Measurement Data for RTU –Carrier 50TFQ0006 and car alarm.

- Percentage of total ADT which flows each hour throughout a 24-hour period.

Traffic noise levels were calculated at the right-of-way based on distance from the centerline of the analyzed roadway. 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. Traffic noise calculation worksheets are included in Appendix F.

Existing and Existing Plus Project Traffic Noise Levels

Project generated vehicle traffic is expected to travel on Indiana Avenue to access the project site. Existing average daily vehicle trips for Indiana Avenue were based on the City of Riverside Traffic Volume Counts.[4] As no project trip distribution is provided and to provide a conservative scenario, it was assumed that all project generated vehicle trips would travel on each of the modeled roadway segments. Table 9 includes the modeled roadway segments as well as the average daily traffic volumes, posted speed limits, and vehicle mix utilized in this analysis.

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 10 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 persons in the vicinity and/or result in architectural or structural damage to nearby structures and improvements. For example, as shown in Table 10, a vibratory roller could generate up to 0.21 in/sec PPV at and operation of a large bulldozer could generate up to 0.089 PPV at a distance of 25 feet (two of the most vibratory pieces of construction equipment). Groundborne vibration at sensitive 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 sensitive receptors, the vibration associated with it would drop below 0.0026 in/sec PPV. 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. Groundborne vibration calculations are provided in Appendix G.

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*)

[4] The City of Riverside 24 Hour Volume Counts as updated May 23, 2023. The segment of Indiana Avenue west of Harrison Street was utilized in the analysis. https://riversideca.gov/publicworks/sites/riversideca.gov.publicworks/files/pdf/traffic-volume-counts_5-23-23.pdf

Table 8 (1 of 2)
CA/T Equipment Noise Emissions and Acoustical Usage Factor Database

Equipment Description	Impact Device?	Acoustical Use Factor (%)	Spec. Lmax @ 50ft (dBA, slow)	Actual Measured Lmax @ 50ft (dBA, slow)	No. of Actual Data Samples (Count)
All Other Equipment > 5 HP	No	50	85	-N/A-	0
Auger Drill Rig	No	20	85	84	36
Backhoe	No	40	80	78	372
Bar Bender	No	20	80	-N/A-	0
Blasting	Yes	-N/A-	94	-N/A-	0
Boring Jack Power Unit	No	50	80	83	1
Chain Saw	No	20	85	84	46
Clam Shovel (dropping)	Yes	20	93	87	4
Compactor (ground)	No	20	80	83	57
Compressor (air)	No	40	80	78	18
Concrete Batch Plant	No	15	83	-N/A-	0
Concrete Mixer Truck	No	40	85	79	40
Concrete Pump Truck	No	20	82	81	30
Concrete Saw	No	20	90	90	55
Crane	No	16	85	81	405
Dozer	No	40	85	82	55
Drill Rig Truck	No	20	84	79	22
Drum Mixer	No	50	80	80	1
Dump Truck	No	40	84	76	31
Excavator	No	40	85	81	170
Flat Bed Truck	No	40	84	74	4
Forklift[2,3]	No	50	n/a	61	n/a
Front End Loader	No	40	80	79	96
Generator	No	50	82	81	19
Generator (<25KVA, VMS signs)	No	50	70	73	74
Gradall	No	40	85	83	70
Grader	No	40	85	-N/A-	0
Grapple (on backhoe)	No	40	85	87	1
Horizontal Boring Hydr. Jack	No	25	80	82	6
Hydra Break Ram	Yes	10	90	-N/A-	0
Impact Pile Driver	Yes	20	95	101	11
Jackhammer	Yes	20	85	89	133
Man Lift	No	20	85	75	23
Mounted Impact hammer (hoe ram)	Yes	20	90	90	212
Pavement Scarafier	No	20	85	90	2
Paver	No	50	85	77	9
Pickup Truck	No	50	85	77	9
Paving Equipment	No	50	85	77	9
Pneumatic Tools	No	50	85	85	90

Table 8 (2 of 2)
CA/T Equipment Noise Emissions and Acoustical Usage Factor Database

Equipment Description	Impact Device?	Acoustical Use Factor (%)	Spec. Lmax @ 50ft (dBA, slow)	Actual Measured Lmax @ 50ft (dBA, slow)	No. of Actual Data Samples (Count)
Pumps	No	50	77	81	17
Refrigerator Unit	No	100	82	73	3
Rivit Buster/chipping gun	Yes	20	85	79	19
Rock Drill	No	20	85	81	3
Roller	No	20	85	80	16
Sand Blasting (Single Nozzle)	No	20	85	96	9
Scraper	No	40	85	84	12
Shears (on backhoe)	No	40	85	96	5
Slurry Plant	No	100	78	78	1
Slurry Trenching Machine	No	50	82	80	75
Soil Mix Drill Rig	No	50	80	-N/A-	0
Tractor	No	40	84	-N/A-	0
Vacuum Excavator (Vac-truck)	No	40	85	85	149
Vacuum Street Sweeper	No	10	80	82	19
Ventilation Fan	No	100	85	79	13
Vibrating Hopper	No	50	85	87	1
Vibratory Concrete Mixer	No	20	80	80	1
Vibratory Pile Driver	No	20	95	101	44
Warning Horn	No	5	85	83	12
Welder/Torch	No	40	73	74	5

Notes:

(1) Source: FHWA Roadway Construction Noise Model User's Guide January 2006.

(2) Warehouse & Forklift Noise Exposure - NoiseTesting.info Carl Stautins, November 4, 2014 http://www.noisetesting.info/blog/carl-strautins/page-3/

(3) Data provided Leq as measured at the operator. Sound Level at 50 feet is calculated using Inverse Square Law.

Table 9
Project Average Daily Traffic Volumes and Roadway Parameters

Roadway	Segment	Average Daily Traffic Volume[1]		Posted Travel Speeds (MPH)	Site Conditions
		Existing	Existing Plus Project		
Indiana Avenue	In the vicinity of the Project Site	9,924	9,928	40	Hard

Vehicle Distribution (Heavy Mix)[2]			
Motor-Vehicle Type	Daytime % (7 AM-7 PM)	Evening % (7 PM-10 PM)	Night % (10 PM-7 AM)
Automobiles	75.54	14.02	10.43
Medium Trucks	48.00	2.00	50.00
Heavy Trucks	48.00	2.00	50.00

Notes:

(1) The Air Quality Technical Memorandum prepared for the proposed project states that "the proposed use is for a consumer RV and travel trailer storage yard which has a low associated vehicle trip rate. In addition, the project's associated retail sales yard is located at 10717 Indiana Avenue, which is less than a mile from the project site, and the vehicle trips associated with the proposed project occur between the project site and this location. Based on these project operational details, it is assumed that the proposed project would have up to four vehicle trips per day." Therefore, it was assumed that the project would have four average daily vehile trips. Existing average daily vehicle trips for Indiana Avenue were based on the City of Riverside 24 Hour Volume Counts as updated May 23, 2023. The segment of Indiana Avenue west of Harrison Street was utilized in the analysis.
https://riversideca.gov/publicworks/sites/riversideca.gov.publicworks/files/pdf/traffic-volume-counts_5-23-23.pdf

(2) Existing vehicle percentages are based on the Riverside County Industrial Hygiene Letter for Traffic Noise.

Table 10
Construction Equipment Vibration Source Levels

Equipment		PPV at 25 ft, in/sec	Approximate Lv* at 25 ft
Pile Driver (impact)	upper range	1.518	112
	typical	0.644	104
Pile Driver (sonic)	upper range	0.734	105
	typical	0.170	93
clam shovel drop (slurry wall)		0.202	94
Hydromill (slurry wall)	in soil	0.008	66
	in rock	0.017	75
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

6. NOISE AND VIBRATION IMPACTS

This section analyzes the significance of project-related noise and groundborne vibration impacts relative to standards established by the City of Riverside and other applicable agencies in the context of CEQA. Appendix G of the California Environmental Quality Act Guidelines (Title 14, Division 6, Chapter 3 of the California Code of Regulations) includes an environmental checklist that identifies issues upon which findings of significance should be made. The CEQA Environmental Checklist Appendix G, XIII. Noise, requires determination if the project would result in:

a) *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?*

b) *Generation of excessive groundborne vibration or groundborne noise levels?*

c) *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?*

NOISE IMPACTS

Would the project result in:

a) *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?*

Finding: Less Than Significant

In relation to the Environmental Checklist noise issue "a", applicable standards established by the City of Riverside can be categorized into the following areas:

- Construction Noise
- Operational Noise

Project Construction

On-Site Equipment

City of Riverside Municipal Code Section 7.35.020(G) provides that noise sources associated with construction, repair, remodeling, or grading of any real property is exempt from the provisions of Title 7 of the City's Municipal Code, which governs noise, provided that such activity does not take place between the hours of 7:00 PM to 7:00 AM on weekdays, 5:00 PM to 8:00 AM on Saturdays, or at any time on Sundays or federal holidays.

No construction, repair, remodeling, or grading for the Project will occur between the hours of 7:00 PM to 7:00 AM on weekdays, 5:00 PM to 8:00 AM on Saturdays, or at any time on Sundays or federal holidays. Construction, remodeling, and grading for the project is anticipated to take place over a period of 14 days. Therefore, there is no need for construction activity outside the hours set forth in Municipal Code Section 7.35.020(G), and the project applicant does not propose any construction activity during these times.

Neither the City of Riverside's General Plan nor Municipal Code establish numeric thresholds for maximum acceptable construction source noise levels at potentially affected receivers. The Federal Transit

Administration (FTA) does provide standards for maximum acceptable construction source noise in its *Transit Noise and Vibration Impact Assessment Manual*, and as discussed below, the Project would not generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of those standards. Therefore, based on the below analysis, not only are the noise sources associated with the construction of the Project remodeling and grading exempt from the City's noise regulations pursuant to Municipal Code Section 7.35.020(G), but Project related construction noise sources would additionally not qualify as a significant noise impact under other standards.

According to the FTA, project construction noise criteria should account for the existing noise environment, the absolute noise levels during construction activities, the duration of the construction, and the adjacent land use. Due to the lack of standardized construction noise thresholds, the FTA provides guidelines that can be considered reasonable criteria for construction noise assessment. As shown in Table 4, the FTA considers a daytime exterior construction noise level of 80 dBA L_{eq} for noise sensitive residential land uses and 85 dBA L_{eq} for commercial uses. In addition, the FTA considers a nighttime exterior construction noise level of 70 dBA L_{eq} for noise sensitive residential land uses and 85 dBA L_{eq} for commercial uses.

Accordingly, the project could result in a significant impact if:

- Project construction noise exceeds 80 dBA L_{eq} during the daytime or 70 dBA L_{eq} during the nighttime at residential uses.
- Project construction noise exceeds 85 dBA L_{eq} during the daytime or nighttime at commercial uses.

Project construction noise levels at nearby sensitive receptors were calculated using the FTA methodology. Construction noise modeling worksheets for each phase are provided in Appendix D. Anticipated noise levels during each construction phase are presented in Table 11.

The single-family residential uses to the south and the commercial uses to the east, west, and north of the project site boundaries may be affected by short-term noise impacts associated with construction noise, but, as shown in the results below, impacts would be less than significant.

As shown in Table 11, modeled construction noise levels are forecast to reach up to 65.4 dBA L_{eq} at the nearest residential property line to the south, 84.9 dBA L_{eq} at the nearest commercial property line to the west, 64.8 dBA L_{eq} at the nearest commercial property line to the north, and 84.9 dBA L_{eq} at the nearest commercial property line to the east of the project site.

Table 11 also includes a comparison of existing noise levels and project construction noise levels. Short-term noise measurement (STNM)3 was chosen to represent noise levels at the nearest property lines of the residential uses located to the south, STNM2 was chosen to represent noise levels at the nearest property lines of the commercial uses located to the west and east, and STNM1 was chosen to represent noise levels at the nearest property lines of the commercial uses located to the north of the project site.

Project construction is not expected to occur outside of the hours outlined in Section 7.35.020(G) of the City's Municipal Code. Based on the modeled construction noise levels (see Table 11), construction noise levels are estimated to reach up to 65.4 dBA L_{eq} at the nearest residential use and 84.9 dBA L_{eq} at the nearest commercial use. Therefore, project construction activities will not exceed the daytime FTA residential construction noise standard of 80 dBA L_{eq} for residential uses nor the daytime FTA commercial construction noise standard of 85 dBA L_{eq} for commercial uses. The project impact would be less than significant. No mitigation is required.

Off-Site Vehicle Trips

Construction truck trips would occur throughout the construction period. Given the project site's proximity to the 91 Freeway, it is anticipated that vendor and/or haul truck traffic would take the most direct route to the appropriate freeway ramps, east or west on Indiana Avenue to either Vanburen Boulevard or Tyler Street.

Vehicle emission noise associated with the 91 Freeway is the dominant noise source in the project area. Indiana Avenue currently handles between approximately 9,363 and 9,924 average daily vehicle trips in the vicinity of the project site.[5] As stated previously, a doubling of traffic volume would be anticipated to increase noise levels by approximately 3 dBA. Furthermore, it is widely accepted that the average healthy human ear can barely perceive changes of 3 dBA in an outdoor environment and that a change of 5 dBA is readily perceptible.[6] Therefore, vehicle traffic generated during project construction would be anticipated to be nominal relative to existing roadway volumes and would not result in the doubling of traffic volume necessary to increase noise levels by 3 dBA. The project impact is less than significant; no mitigation is required.

Project Operational Noise

Onsite Noise Sources

The L_{eq} (30-minute) noise levels associated with the proposed project were analyzed in order to determine project compliance with the City's Stationary Exterior and Interior Noise Standards in Section 7.25.010(D) and Section 7.30.015 (C) of the City of Riverside Municipal Code and presented in Table 6 and Table 7 of this report. If noise modeling shows that the project is in compliance with the L_{eq} criteria, it is unlikely that any of the other noise standards which are averaged over other time periods would be exceeded.

The project site is adjacent to or near several types of land uses including parcels zoned Business and Manufacturing Park, Mixed Use Village, and Medium Density Residential. Different noise criteria apply to each zoning designation as presented in Table 6 and Table 7. Operation of the proposed project would result in a substantial increase in noise levels if it would:

- Exceed the day or nighttime exterior noise standards at residential land uses (55 and 45 dBA L_{eq} respectively);
- Exceed the day or nighttime interior noise standards at residential land uses (45 and 35 dBA L_{eq} respectively);
- Exceed the 65 dBA L_{eq} exterior noise standard at commercial land uses; or
- Exceed the 70 dBA L_{eq} exterior noise standard at Business and Manufacturing Park land uses.
-

Compliance with L_{eq} (30-minute) Standard

There are single family residential land uses approximately 145 feet south of the project site. As shown on Figure 6 and on Figure 7 project generated on-site operational noise levels would reach 33.6 dBA L_{eq} at the closest residence and would not exceed the City's exterior noise day or nighttime noise standards of 55 and 45 dBA L_{eq}, respectively. Given that the exterior noise level is expected to be lower than the daytime and nighttime interior noise standards of 45 and 35 dBA $L_{eq,}$ respectively, interior noise standards will also not be exceeded due to project generated noise.

There are existing concrete walls between the project site and the business park and mini storage land uses located east and west of the project site approximately 6 feet in height and, as shown in Figure 6, project

[5] The existing average daily vehicle trips for Indiana Avenue were obtained from the City of Riverside 24 Hour Volume Counts as updated May 23, 2023. The segments of Indiana Avenue east and west of Harrison Street were utilized. https://riversideca.gov/publicworks/sites/riversideca.gov.publicworks/files/pdf/traffic-volume-counts_5-23-23.pdf

[6] California Department of Transportation's *Technical Noise Supplement to the Traffic Noise Analysis Protocol* (2013)

operational noise would range between 44.8 and 46.5 dBA L_{eq} at adjacent land uses and would not exceed the City's exterior noise standard of 70 dBA L_{eq} at either of these uses.

Commercial land uses located north of the project site would be exposed to project operational noise levels up to 34.5 dBA L_{eq} and would not exceed the City's exterior noise standard for commercial land uses of 65 dBA L_{eq}.

In no case would the project exceed the City's applicable exterior noise standards for stationary noise sources. Furthermore, as the measured existing ambient noise levels range between 53.8 to 69 dBA L_{eq}, the project operational noise would not be noticeable over the existing noise environment. This impact is less than significant. No mitigation is required.

Offsite Noise Sources

The City of Riverside has adopted Land Use / Noise Compatibility Guidelines as shown in Table 5. Per these guidelines, noise levels that do not exceed 60 dBA CNEL are considered "normally acceptable" at single-family residential land uses, noise levels that do not exceed 65 dBA CNEL are considered to be "normally acceptable" at commercial land uses, and noise levels that do not exceed 70 dBA CNEL are considered to be "normally acceptable" at industrial land uses.

It is widely accepted that the average healthy human ear can barely perceive changes of 3 dBA in an outdoor environment and that a change of 5 dBA is readily perceptible.[7] Therefore, considering the above land use/noise compatibility guidelines, the project would result in a significant impact if:

- The addition of project trips on surrounding roadways causes noise levels to increase by:
  - 5 dBA where the existing ambient noise level is less than or equal to a CNEL of 60 dBA; or,
  - 3 dBA where the existing ambient noise level is a CNEL of 60 dBA to 65 dBA; or
  - 1.5 dBA where the existing ambient noise level is greater than or equal to a 65 dBA CNEL.

Roadway noise levels were calculated along Indiana Avenue in the vicinity of the project site based on the FHWA Traffic Noise Prediction Model methodology. During operation, the proposed project is expected to generate approximately four average daily vehicle trips. Roadway noise levels were calculated for the following scenarios:

- *Existing (without Project)*: This scenario refers to existing year traffic noise conditions.
- *Existing Plus Project*: This scenario refers to existing year plus project traffic noise conditions.

Table 12 shows the change in existing roadway noise levels with the addition of project-generated operational trips. The modeled existing traffic noise level is 73 dBA CNEL and the modeled Existing Plus Project traffic noise level is 73 dBA CNEL at the right-of-way of the modeled roadway segment. FHWA Traffic Noise Prediction Model calculation worksheets are provided in Table 12. The addition of project trips is not expected to change noise levels in excess of the applicable threshold at any of the study roadway segments (see Table 12). The project impact is less than significant; no mitigation is required.

GROUNDBORNE VIBRATION IMPACTS

Would the project result in:

b) Generation of excessive groundborne vibration or groundborne noise levels?

[7] California Department of Transportation's *Technical Noise Supplement to the Traffic Noise Analysis Protocol* (2013)

Finding: Less Than Significant

In relation to the Environmental Checklist noise issue "b", the City of Riverside has not established thresholds of significance concerning groundborne vibration. In the absence of City-established thresholds, groundborne vibration impacts are based on guidance from the *Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual* (FTA, September 2018) (see Regulatory Setting section). Accordingly, the project would result in a significant impact if:

- Groundborne vibration levels generated by the project have the potential to cause architectural damage at nearby buildings by exceeding the following PPV:
  - 0.10 in/sec at buildings extremely susceptible to vibration damage
  - 0.20 in/sec at non-engineered timber and masonry buildings
  - 0.30 in/sec at engineered concrete and masonry (no plaster) buildings
  - 0.50 in/sec at reinforced-concrete, steel or timber (no plaster) buildings
- Groundborne vibration levels generated by the project have the potential to cause annoyance at sensitive receptors by exceeding 80 VdB for infrequent events.

Groundborne vibration modeling worksheets are provided in Appendix G.

Existing structures in the immediate vicinity of the project site include adjacent commercial buildings (self-storage) along the western property line, commercial buildings located as close as approximately 95 feet north, 45 feet east, and the residential buildings located as close as approximately 163 feet to the south of the project site boundaries (see Table 13 for more detail).[8]

Groundborne vibration levels associated with project construction are provided in Table 13. Based on the groundborne vibration modeling, the use of a vibratory roller within 26 feet or the use of large bulldozers within 15 feet of the self-storage structures immediately west of the project site could potentially result in architectural damage. However, no such use is proposed in connection with the Project. The project proposes installation of a 26-foot-wide swath of concrete extending east from the western property line. The concrete swath will run the entire length of the existing self-storage structure. Vibratory rollers and large bulldozers will not be required for concrete installation. Potential risks to architectural features would be less than significant and no mitigation is required. Therefore, based on the groundborne vibration modeling, and as shown in Table 13, the project has no potential to result in architectural damage to surrounding structures.

The most substantial sources of groundborne vibration during post-construction project operations will include the movement of passenger vehicles and trucks on paved and generally smooth surfaces. Loaded trucks generally have a PPV of 0.076 at a distance of 25 feet (Caltrans 2020), which is a substantially lower PPV than that of a vibratory roller (0.210 in/sec PPV at 25 feet). Therefore, groundborne vibration levels generated by project operation would not exceed those modeled for project construction.

As stated previously, annoyance due to groundborne vibration associated with infrequent events can cause annoyance at 80 VdB. The VdB generated by construction equipment may reach up to 70.2 VdB at the nearest sensitive receptor (residences to the south). This impact would be less than significant. No mitigation is required.

[8] For modeling purposes, as the commercial use to the west of the project site has structures located adjacent to the project's western property line, a distance of one foot has been utilized in the modeling.

AIR TRAFFIC IMPACTS

Would the project result in:

c) *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?*

Finding: No Impact

The closest airport to the project site is the Riverside Municipal Airport, with airport runways located as close as approximately 2.7 miles to the northeast of the project site. Per the Riverside County Airport Land Use Compatibility Plan (ALUCP) Policy Document Map RI-3 (March 2005), the project site is also well outside the 55 dBA CNEL noise contour for the Riverside Municipal Airport.[9] The project would not expose people residing or working in the project area to excessive noise levels associated with airports. This impact would be less than significant. No mitigation is required.

[9] https://rcaluc.org/Plans/New-Compatibility-Plan

Table 11
Construction Noise Levels (dBA L_{eq})

Phase	Receptor Location	Closest Measured Ambient Noise Location[2]	Existing Measured Noise Levels (dBA Leq)	Construction Noise Levels (dBA Leq)	Applicable Daytime FTA Threshold	Construction Noise Levels Exceed Applicable Daytime FTA Threshold?
Grading	Residential to South (10047 Rhinelander Drive)	STNM3	53.8	65.4	80	No
	Commercial to West (Tyler Mall Mini Storage, 10090 Indiana Avenue)	STNM2	58.9	84.9	85	No
	Commercial to North (10031 Indiana Avenue)	STNM1	69.0	64.8	85	No
	Commercial to East (10020 Indiana Avenue)	STNM2	58.8	84.9	85	No
Building Renovation	Residential to South (10047 Rhinelander Drive)	STNM3	53.8	45.3	80	No
	Commercial to West (Tyler Mall Mini Storage, 10090 Indiana Avenue)	STNM2	58.9	71.4	85	No
	Commercial to North (10031 Indiana Avenue)	STNM1	69.0	58.5	85	No
	Commercial to East (10020 Indiana Avenue)	STNM2	58.8	67.8	85	No
Paving	Residential to South (10047 Rhinelander Drive)	STNM3	53.8	64.1	80	No
	Commercial to West (Tyler Mall Mini Storage, 10090 Indiana Avenue)	STNM2	58.9	83.6	85	No
	Commercial to North (10031 Indiana Avenue)	STNM1	69.0	63.4	85	No
	Commercial to East (10020 Indiana Avenue)	STNM2	58.8	83.6	85	No
Architectural Coating	Residential to South (10047 Rhinelander Drive)	STNM3	53.8	56.6	80	No
	Commercial to West (Tyler Mall Mini Storage, 10090 Indiana Avenue)	STNM2	58.9	76.2	85	No
	Commercial to North (10031 Indiana Avenue)	STNM1	69.0	56	85	No
	Commercial to East (10020 Indiana Avenue)	STNM2	58.8	76.2	85	No

Notes:
(1) Construction noise worksheets are provided in Appendix D.
(2) Nearest noise measurement as shown in Figure 5 and Table 1.

Table 12
Increase in Existing Noise Levels Due to Project Generated Vehicle Traffic (dBA CNEL)

Roadway	Segment	Distance from roadway centerline to right-of-way (feet)[2]	Modeled Noise Levels (dBA CNEL)[1]				
			Existing Without Project at right-of-way	Existing Plus Project at right-of-way	Change in Noise Level	Exceeds Standards[3]	Increase of 1.5 dB or More?
Indiana Avenue	In the vicinity of the Project Site	44	72.7	72.7	0.00	Yes	No

Notes:

(1) Exterior noise levels calculated 5 feet above pad elevation, perpendicular to subject roadway.

(2) Roadway right-of-way (ROW) from Figure CCM-2, Standard Roadway Cross Section, in the City of Riverside General Plan Circulation and Community Mobility Element (November 2007).

(3) Per the City of Riverside normally acceptable standard for single-family detached residential dwelling units of 60 dBA CNEL (see Table 5).

Table 13
Construction Vibration Levels at the Nearest Receptors

Receptor Location	Distance from Property Line to Nearest Structure (feet)	Equipment	Vibration Level[2]	Threshold Exceeded?[3]	Vibration Level with Required BMP[2,4]	Threshold Exceeded with BMPs?[3,4]
Architectural Damage Analysis						
Commercial to North (10031 Indiana Avenue, Riverside)	95	Vibratory Roller	0.028	No	-	-
	95	Large Bulldozer	0.012	No	-	-
Commercial to East (10020 Indiana Avenue, Riverside)	45	Vibratory Roller	0.087	No	-	-
	45	Large Bulldozer	0.037	No	-	-
Residential to South (10047 Rhinelander Drive, Riverside)	163	Vibratory Roller	0.013	No	-	-
	163	Large Bulldozer	0.005	No	-	-
Annoyance Analysis						
Residential to South (10047 Rhinelander Drive, Riverside)	163	Vibratory Roller	70	No	-	-
	163	Large Bulldozer	66	No	-	-

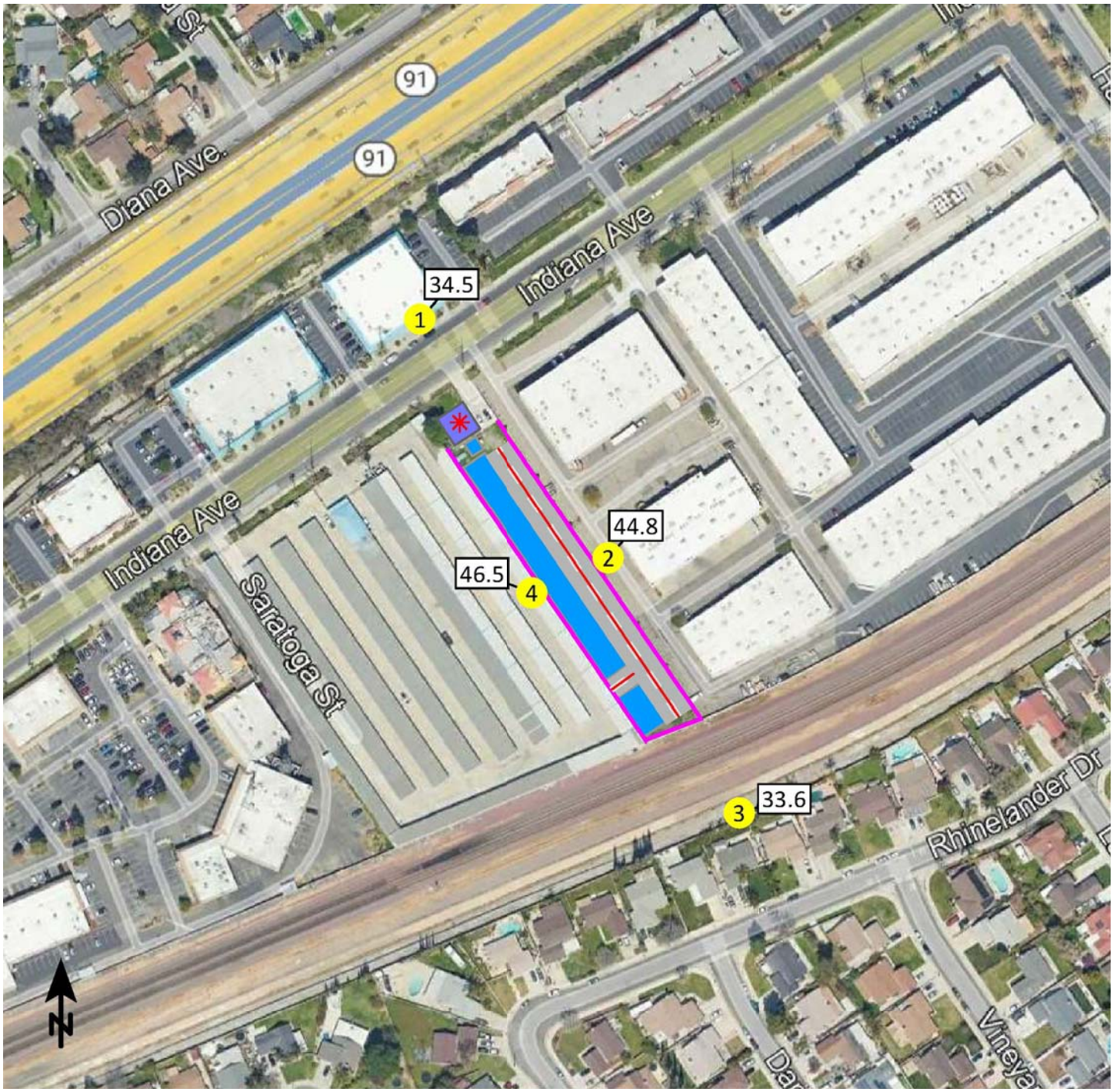
Notes:

(1) For modeling purposes, as the commercial use to the west of the project site has structures located adjacent to the project's western property line, a distance of one foot has been utilized in the modeling.

(2) Vibration levels are provided in PPV in/sec for architectural damage and VdB for annoyance.

(3) The FTA identifies the threshold at which there is a risk to "architectural" damage to non-engineered timber and masonry buildings as a PPV of 0.2 in/sec (see Table 4). In addition, the FTA identifies a vibration annoyance threshold of 72 VdB for residential uses (see Table 3). Per the FTA Transit Noise and VIbration Impact Assessment Manual (September 2018), commercial uses are not considered vibration-sensitive land uses; therefore, the annoyance threshold does not apply to commercial uses.

(4) A BMP measure restricting the use of vibratory rollers, or other similar vibratory equipment, from operating within 26 feet of existing structures and restricting large bulldozers from operating within 15 feet of commercial structures has been added to the project plans.



Signs and symbols

- Existing Concrete Walls (6 -8 ft)
- Building
- Receiver
- Truck Drive
- Point source (HVAC and Industrial Lifts)
- Parking lot
- Noise Level Tables (dBA, Leq)

Figure 6
Operational Noise Levels (dBA, Leq)

Figure 7
Operational Noise Contours (dBA, Leq)

7. REFERENCES

California, State of, Department of Transportation
2020 Transportation and Construction Vibration Guidance Manual. April.

Environmental Protection Agency
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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2018 Transit Noise and Vibration Impact Assessment Manual. Typical Construction Equipment Vibration Emissions.

Ganddini Group, Inc.
2023 Richardson RV Storage Air Quality Technical Memorandum. April 17.

Office of Planning and Research
2017 State of California General Plan Guidelines

Riverside, County of
2001 General Plan, Chapter 4, Figure C-3 "Link Volume Capacities/Level of Service for Riverside County Roadways".
2009 County of Riverside Industrial Hygiene Guidelines for Determining and Mitigating Traffic Noise Impacts to Residential Structures and County.
2015 County of Riverside General Plan
2015 County of Riverside Municipal Code.

U.S. Department of Transportation
2006 FHWA Roadway Construction Noise Model User's Guide. January.

APPENDICES

APPENDIX A

LIST OF ACRONYMS

Term	Definition
ADT	Average Daily Traffic
ANSI	American National Standard Institute
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
D/E/N	Day / Evening / Night
dB	Decibel
dBA or dB(A)	Decibel "A-Weighted"
dBA/DD	Decibel per Double Distance
dBA L_{eq}	Average Noise Level over a Period of Time
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
L_{02},L_{08},L_{50},L_{90}	A-weighted Noise Levels at 2 percent, 8 percent, 50 percent, and 90 percent, respectively, of the time period
DNL	Day-Night Average Noise Level
$L_{eq(x)}$	Equivalent Noise Level for '"x" period of time
L_{eq}	Equivalent Noise Level
L_{max}	Maximum Level of Noise (measured using a sound level meter)
L_{min}	Minimum Level of Noise (measured using a sound level meter)
Lp	Sound pressure level
LOS C	Level of Service C
Lw	Sound Power Level
OPR	California Governor's Office of Planning and Research
PPV	Peak Particle Velocities
RCNM	Road Construction Noise Model
REMEL	Reference Energy Mean Emission Level
RMS	Root Mean Square

APPENDIX B

GLOSSARY

Term	Definition
Ambient Noise Level	The all-encompassing noise environment associated with a given environment, at a specified time, usually a composite of sound from many sources, at many directions, near and far, in which usually no particular sound is dominant.
A-Weighted Sound Level, dBA	The sound level obtained by use of A-weighting. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear.
CNEL	Community Noise Equivalent Level. CNEL is a weighted 24-hour noise level that is obtained by adding five decibels to sound levels in the evening (7:00 PM to 10:00 PM), and by adding ten decibels to sound levels at night (10:00 PM to 7:00 AM). This weighting accounts for the increased human sensitivity to noise during the evening and nighttime hours.
Decibel, dB	A logarithmic unit of noise level measurement that relates the energy of a noise source to that of a constant reference level; the number of decibels is 10 times the logarithm (to the base 10) of this ratio.
DNL, Ldn	Day Night Level. The DNL, or Ldn is a weighted 24-hour noise level that is obtained by adding ten decibels to sound levels at night (10:00 PM to 7:00 AM). This weighting accounts for the increased human sensitivity to noise during the nighttime hours.
Equivalent Continuous Noise Level, L_{eq}	A level of steady state sound that in a stated time period, and a stated location, has the same A-weighted sound energy as the time-varying sound.
Fast/Slow Meter Response	The fast and slow meter responses are different settings on a sound level meter. The fast response setting takes a measurement every 100 milliseconds, while a slow setting takes one every second.
Frequency, Hertz	In a function periodic in time, the number of times that the quantity repeats itself in one second (i.e., the number of cycles per second).
L_{02}, L_{08}, L_{50}, L_{90}	The A-weighted noise levels that are equaled or exceeded by a fluctuating sound level, 2 percent, 8 percent, 50 percent, and 90 percent of a stated time period, respectively.
L_{max}, L_{min}	Lmax is the RMS (root mean squared) maximum level of a noise source or environment measured on a sound level meter, during a designated time interval, using fast meter response. Lmin is the minimum level.
Offensive/ Offending/Intrusive Noise	The noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of sound depends on its amplitude, duration, frequency, and time of occurrence, and tonal information content as well as the prevailing ambient noise level.
Root Mean Square (RMS)	A measure of the magnitude of a varying noise source quantity. The name derives from the calculation of the square root of the mean of the squares of the values. It can be calculated from either a series of lone values or a continuous varying function.

APPENDIX C

NOISE MEASUREMENT FIELD WORKSHEETS

Noise Measurement
Field Data

Project Name: Richardson RV, City of Riverside **Date:** September 23, 2024

Project #: 19631

Noise Measurement #: NM1 Run Time: 15 minutes **Technician:** Ian Edward Gallagher

Nearest Address or Cross Street: 10030 Indiana Avenue, Riverside, CA 92503

Site Description (Type of Existing Land Use and any other notable features): Measurement Site: Taken within the sidewalk just north of residence at 10030 Indiana Ave (project site). Adjacent: Indiana Ave (running NE-SW) just NW, 91 Fwy (running NE-S) ~300' NW, and 2 rail lines (running NE-SW) ~550' SE of NM1. Project site (residence) to south, commercial uses to SE and SW and to north (north of Indiana Avenue).

Weather: <5% cloud, sunshine. Sunset 6:44 PM **Settings:** SLOW FAST

Temperature: 91 deg F **Wind:** 7 mph **Humidity:** 40% **Terrain:** Flat

Start Time: 1:29 PM **End Time:** 1:44 PM **Run Time:**

Leq:	69	dB
Lmax	83.4	dB
L2	76.2	dB
L8	72.8	dB
L25	69.1	dB
L50	65.4	dB

Primary Noise Source: Traffic noise from the 142 vehicles passing NM1 microphone traveling along Indiana Avenue just NE of NM1.

Secondary Noise Sources: Traffic ambiance from the 91 Fwy, 300' NW of NM1. Noise from occasional air traffic. Some bird noise. Ambiance from passing trains 550' SE of NM1.

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:	9/23/2024		

Noise Measurement
Field Data

PHOTOS:

NM1 looking NW from sidewalk across Indiana Avenue towards building 10031 Indiana Avenue, Riverside.

NM1 looking SE from sidewalk towards fence to front yard of residence 10030 Indiana Avenue, Riverside (project site).

Summary	
File Name on Meter	LxT_Data.429.s
File Name on PC	LxT_0003099-20240923 132923-LxT_Data.429.ldbin
Serial Number	0003099
Model	SoundTrack LxT®
Firmware Version	2.404
User	Ian Edward Gallagher
Location	NM1 33°54'29.86"N 117°27'5.21"W
Job Description	15 minute noise measurement
Note	Ganddini 19631 Richardson RV, City of Riverside

Measurement	
Start	2024-09-23 13:29:23
Stop	2024-09-23 13:44:23
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre-Calibration	2024-09-23 13:28:53
Post-Calibration	None

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	122.4 dB

Results			
LAeq		69.0	
LAE		98.5	
EA		786.696	µPa²h
EA8		25.174	mPa²h
EA40		125.871	mPa²h
LApeak (max)	2024-09-23 13:33:16	102.6	dB
LASmax	2024-09-23 13:33:16	83.4	dB
LASmin	2024-09-23 13:39:35	60.0	dB

		Statistics	
LCeq	76.2 dB	**LA2.00**	76.2 dB
LAeq	69.0 dB	**LA8.00**	72.8 dB
LCeq - LAeq	7.2 dB	**LA25.00**	69.1 dB
LAIeq	71.9 dB	**LA50.00**	65.4 dB
LAeq	69.0 dB	**LA66.60**	63.5 dB
LAIeq - LAeq	3.0 dB	**LA90.00**	61.9 dB
Overload Count	0		
Overload Duration	0.0 s		

Measurement Report

Report Summary

Meter's File Name	LxT_Data.429.s	Computer's File Name	LxT_0003099-20240923 132923-LxT_Data.429.ldbin
Meter	LxT1 0003099		
Firmware	2.404		
User	Ian Edward Gallagher	Location	NM1 33°54'29.86"N 117°27'5.21"W
Job Description	15 minute noise measurement		
Note	Ganddini 19631 Richardson RV, City of Riverside		
Start Time	2024-09-23 13:29:23	Duration	0:15:00.0
End Time	2024-09-23 13:44:23	Run Time	0:15:00.0
Pause Time	0:00:00.0		

Results

Overall Metrics

LA_{eq}	69.0 dB		
LAE	98.5 dB	SEA	--- dB
EA	786.7 µPa²h	LAFTM5	74.7 dB
EA8	25.2 mPa²h		
EA40	125.9 mPa²h		
LA_{peak}	102.6 dB	2024-09-23 13:33:16	
LAS_{max}	83.4 dB	2024-09-23 13:33:16	
LAS_{min}	60.0 dB	2024-09-23 13:39:35	
LA_{eq}	69.0 dB		
LC_{eq}	76.2 dB	LC_{eq} - LA_{eq}	7.2 dB
LAI_{eq}	71.9 dB	LAI_{eq} - LA_{eq}	3.0 dB

Exceedances	Count	Duration
LAS > 65.0 dB	27	0:10:01.4
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

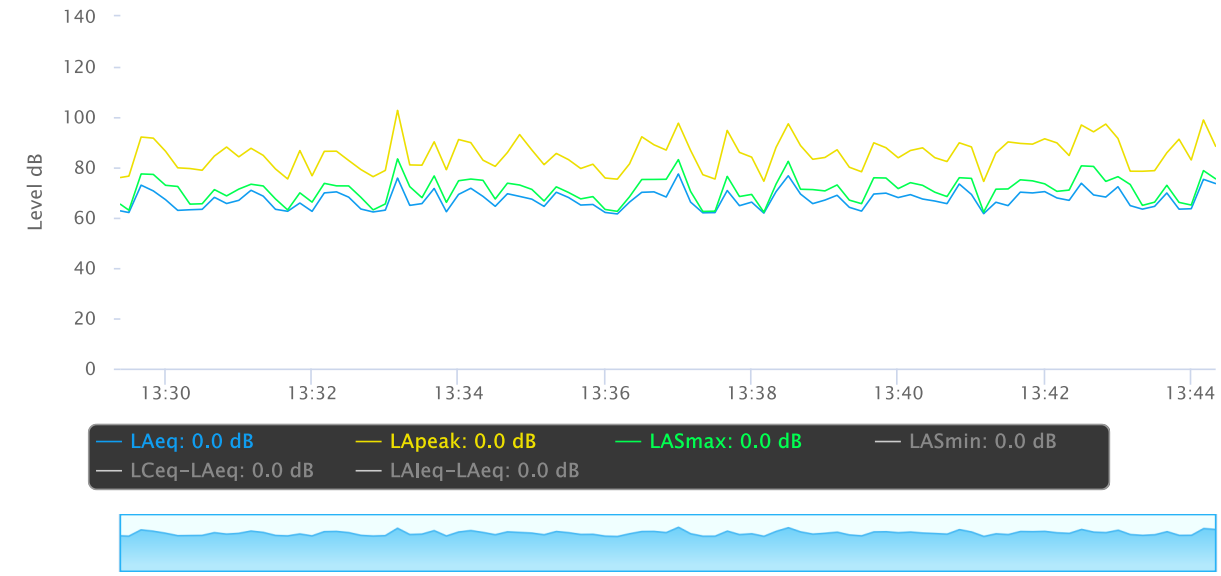
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	69.0 dB		76.2 dB		--- dB	
$L_{S(max)}$	83.4 dB	2024-09-23 13:33:16	--- dB		--- dB	
$L_{S(min)}$	60.0 dB	2024-09-23 13:39:35	--- dB		--- dB	
$L_{Peak(max)}$	102.6 dB	2024-09-23 13:33:16	--- dB		--- dB	

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

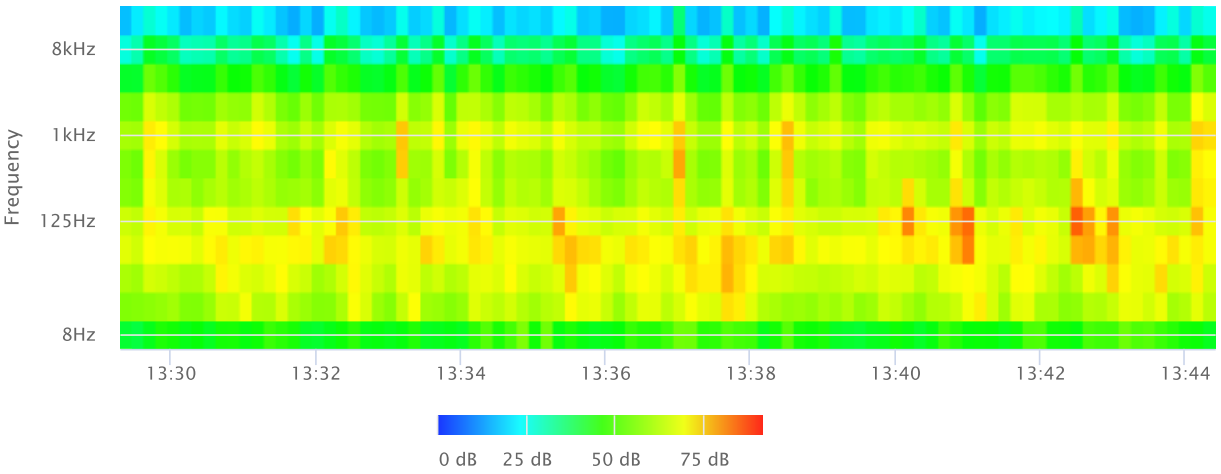
Statistics

LAS 2.0	76.2 dB
LAS 8.0	72.8 dB
LAS 25.0	69.1 dB
LAS 50.0	65.4 dB
LAS 66.6	63.5 dB
LAS 90.0	61.9 dB

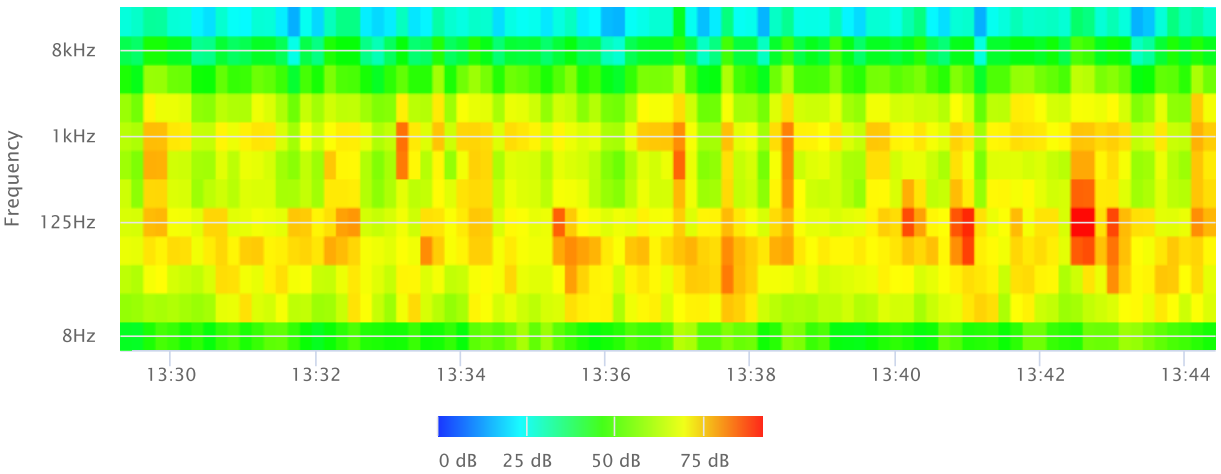
Time History



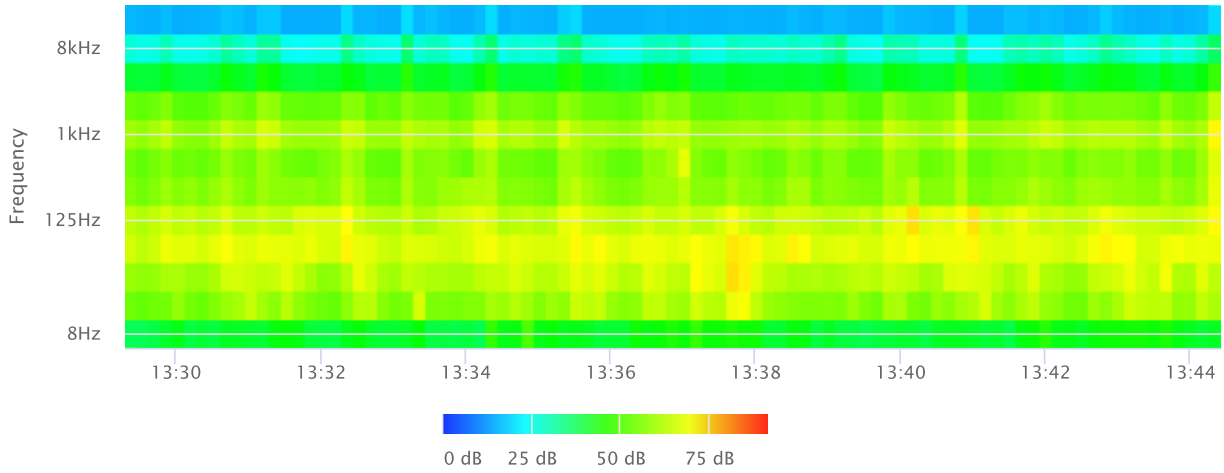
OBA 1/1 Leq



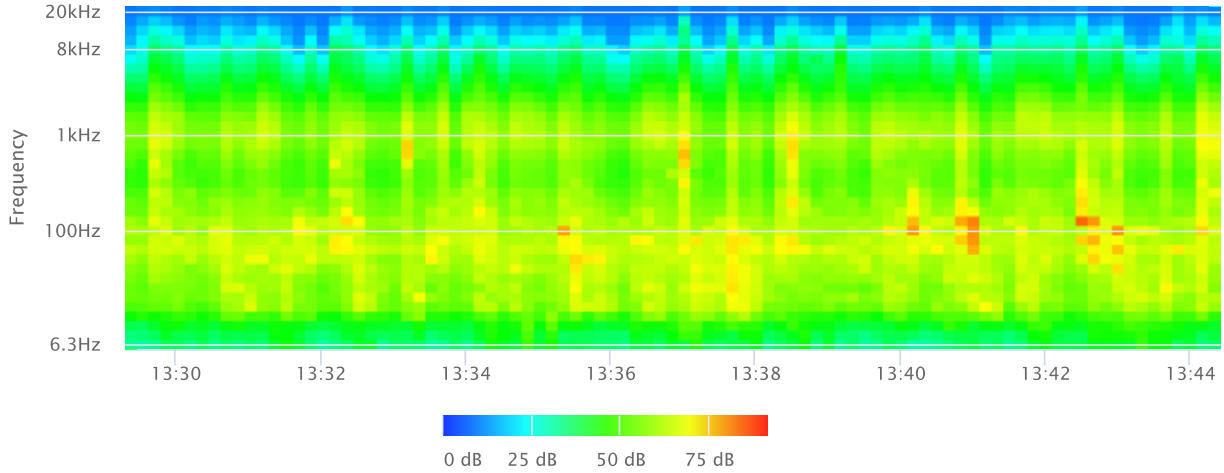
OBA 1/1 Lmax



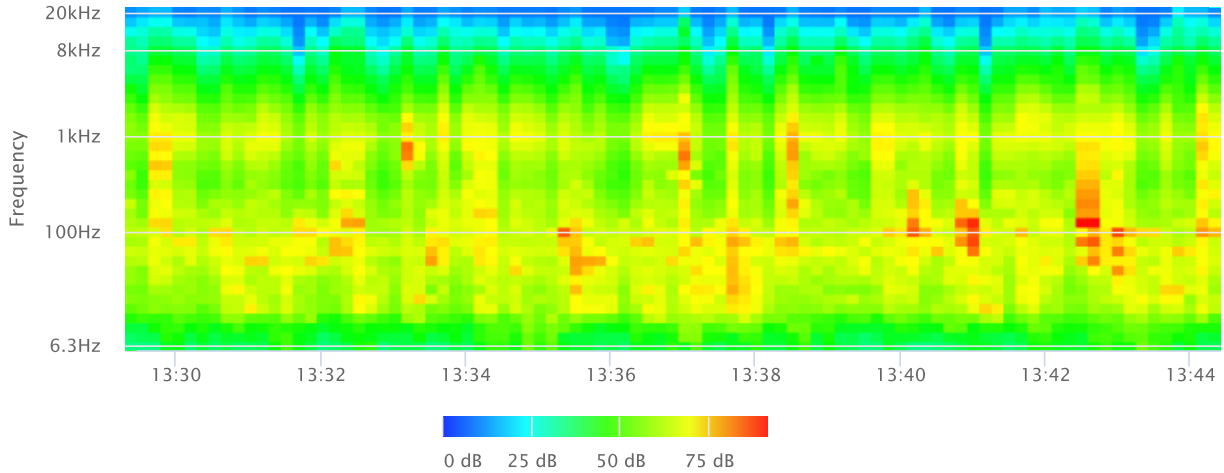
OBA 1/1 Lmin



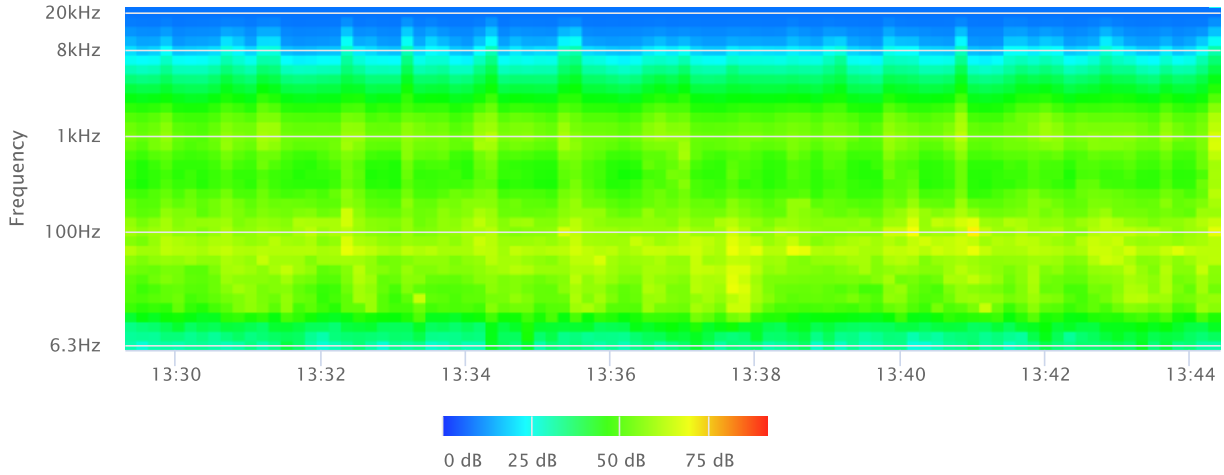
OBA 1/3 Leq



OBA 1/3 Lmax



OBA 1/3 Lmin


20kHz
8kHz
1kHz
100Hz
6.3Hz
Frequency
13:30
13:32
13:34
13:36
13:38
13:40
13:42
13:44
0 dB
25 dB
50 dB
75 dB

Noise Measurement
Field Data

Project Name: Richardson RV, City of Riverside **Date:** September 23, 2024

Project #: 19631

Noise Measurement #: NM2 Run Time: 15 minutes **Technician:** Ian Edward Gallagher

Nearest Address or Cross Street: Warehouse Building 10000 Indiana Avenue, Riverside, CA 92503

Site Description (Type of Existing Land Use and any other notable features): Measurement Site: Taken along access road near the ~6' tall NE wall to project site. Adjcent: Indiana Ave (running NE-SW) to NW, 91 Fwy (running NE-SW) ~300' NW, and 2 rail lines (running NE-SW) ~550' SE of NM1. Warehouses to north/northeast, project sitee to west with various businesses in all directions.

Weather: <5% cloud, sunshine. Sunset 6:44 PM **Settings:** SLOW FAST

Temperature: 91 deg F **Wind:** 7 mph **Humidity:** 40% **Terrain:** Flat

Start Time: 2:00 PM **End Time:** 2:15 PM **Run Time:**

Leq: 58.8 dB **Primary Noise Source:** Traffic ambiance from vehicles traveling along Indiana Ave (~350' NW of NM2).

Lmax 69.7 dB Traffic ambiance from 91 Fwy (~600' NW of NM2).

L2 65.0 dB **Secondary Noise Sources:** Noise from occasional air traffic. Train passing along tracks 2:06PM to 2:09PM.

L8 62.8 dB Some bird noise. Occasional industrial like noise from Warehouses E of NM2.

L25 58.8 dB

L50 56.3 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:	9/23/2024		

Noise Measurement
Field Data

PHOTOS:

NM2 looking NW along access road running parallel to ~6' tall NE wall of site area (on the left of image) towards Indiana Ave (~350'). Warehouse building 10000 Indiana Ave on right of image.

NM2 looking SE towards the two active train tracks (running NE-SW) ~250' SE of NM2. Warehouse building 10000 Indiana Ave left of image and site area on the right (on other side of ~6' tall cinderblock wall).

Summary	
File Name on Meter	LxT_Data.430.s
File Name on PC	LxT_0003099-20240923 140000-LxT_Data.430.ldbin
Serial Number	3099
Model	SoundTrack LxT®
Firmware Version	2.404
User	Ian Edward Gallagher
Location	NM2 33°54'27.42"N 117°27'2.49"W
Job Description	15 minute noise measurement
Note	Ganddini 19631 Richardson RV, City of Riverside

Measurement	
Start	2024-09-23 14:00:00
Stop	2024-09-23 14:15:00
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre-Calibration	2024-09-23 13:59:41
Post-Calibration	None

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	122.6 dB

Results			
L_{Aeq}	58.8		
LAE	88.4		
EA	76.28893	µPa²h	
EA8	2.441246	mPa²h	
EA40	12.20623	mPa²h	
$L_{Apeak\ (max)}$	2024-09-23 14:14:06	89.6	dB
L_{ASmax}	2024-09-23 14:07:21	69.7	dB
L_{ASmin}	2024-09-23 14:01:51	52.3	dB

		Statistics	
L_{Ceq}	73.6 dB	**LA2.00**	65.0 dB
L_{Aeq}	58.8 dB	**LA8.00**	62.8 dB
L_{Ceq} - L_{Aeq}	14.8 dB	**LA25.00**	58.8 dB
L_{AIeq}	60.3 dB	**LA50.00**	56.3 dB
L_{Aeq}	58.8 dB	**LA66.60**	55.4 dB
L_{AIeq} - L_{Aeq}	1.4 dB	**LA90.00**	53.6 dB
Overload Count	0		
Overload Duration	0.0 s		

Measurement Report

Report Summary

Meter's File Name	LxT_Data.430.s	Computer's File Name	LxT_0003099-20240923 140000-LxT_Data.430.ldbin
Meter	LxT1 0003099		
Firmware	2.404		
User	Ian Edward Gallagher	Location	NM2 33°54'27.42"N 117°27'2.49"W
Job Description	15 minute noise measurement		
Note	Ganddini 19631 Richardson RV, City of Riverside		
Start Time	2024-09-23 14:00:00	Duration	0:15:00.0
End Time	2024-09-23 14:15:00	Run Time	0:15:00.0
Pause Time	0:00:00.0		

Results

Overall Metrics

LA_{eq}	58.8 dB		
LAE	88.4 dB	SEA	--- dB
EA	76.3 µPa²h	LAFTM5	61.7 dB
EA8	2.4 mPa²h		
EA40	12.2 mPa²h		
LA_{peak}	89.6 dB	2024-09-23 14:14:06	
LAS_{max}	69.7 dB	2024-09-23 14:07:21	
LAS_{min}	52.3 dB	2024-09-23 14:01:51	
LA_{eq}	58.8 dB		
LC_{eq}	73.6 dB	LC_{eq} - LA_{eq}	14.8 dB
LAI_{eq}	60.3 dB	LAI_{eq} - LA_{eq}	1.4 dB

Exceedances

	Count	Duration
LAS > 65.0 dB	6	0:00:44.1
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}	58.8 dB		73.6 dB		--- dB	
$L_{S(max)}$	69.7 dB	2024-09-23 14:07:21	--- dB		--- dB	
$L_{S(min)}$	52.3 dB	2024-09-23 14:01:51	--- dB		--- dB	
$L_{Peak(max)}$	89.6 dB	2024-09-23 14:14:06	--- dB		--- dB	

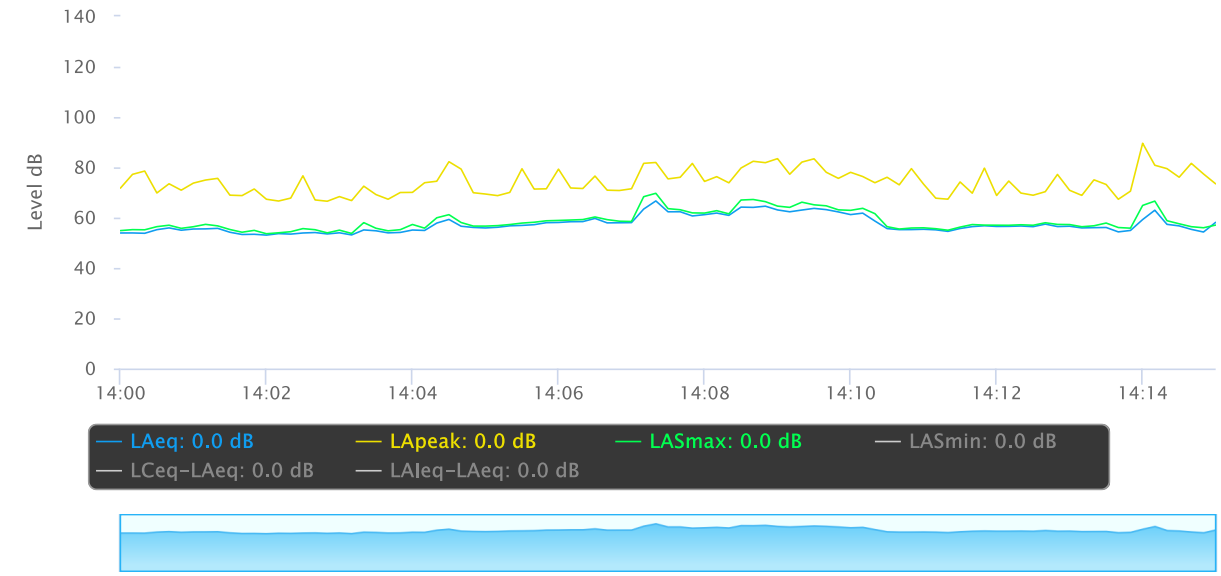
Overloads

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

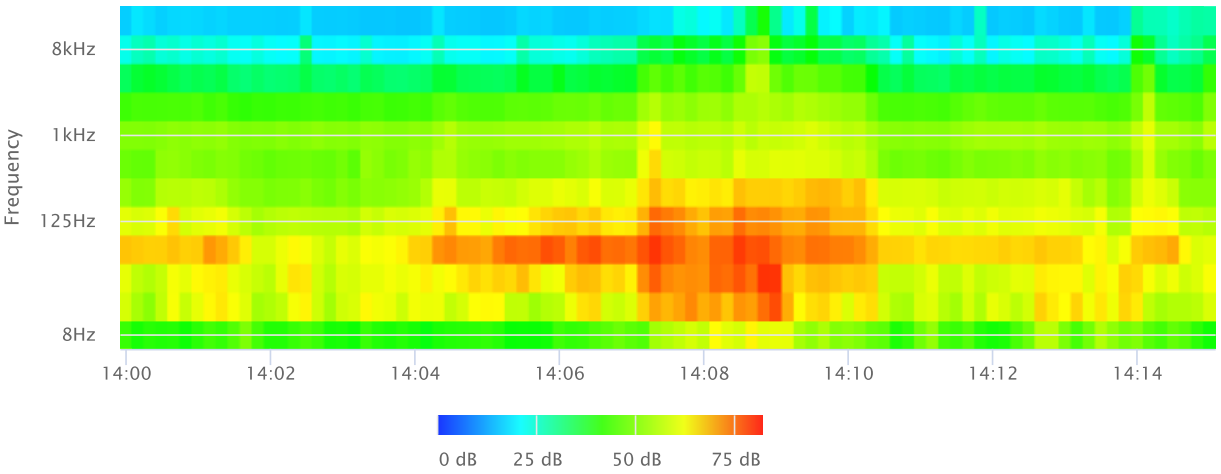
Statistics

LAS 2.0	65.0 dB
LAS 8.0	62.8 dB
LAS 25.0	58.8 dB
LAS 50.0	56.3 dB
LAS 66.6	55.4 dB
LAS 90.0	53.6 dB

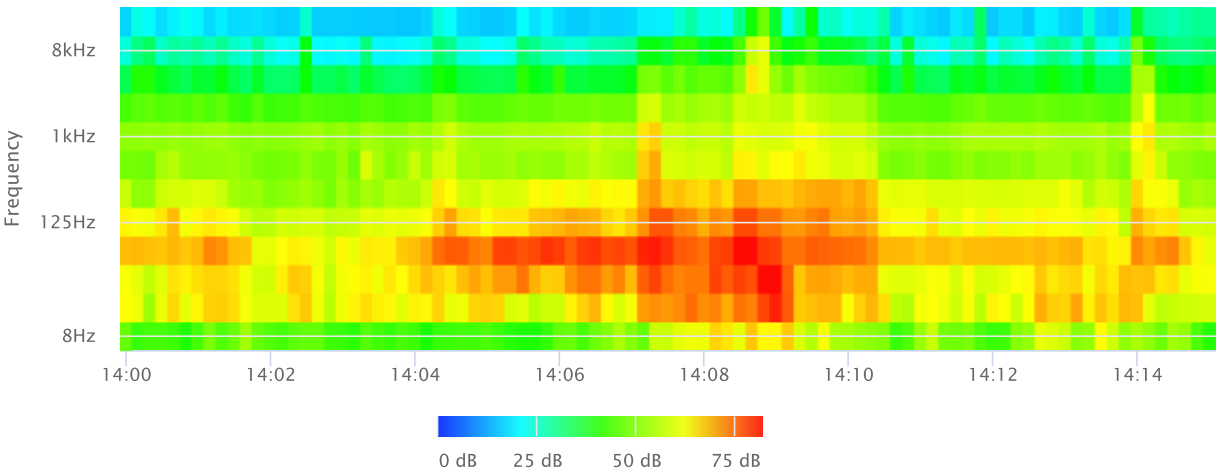
Time History



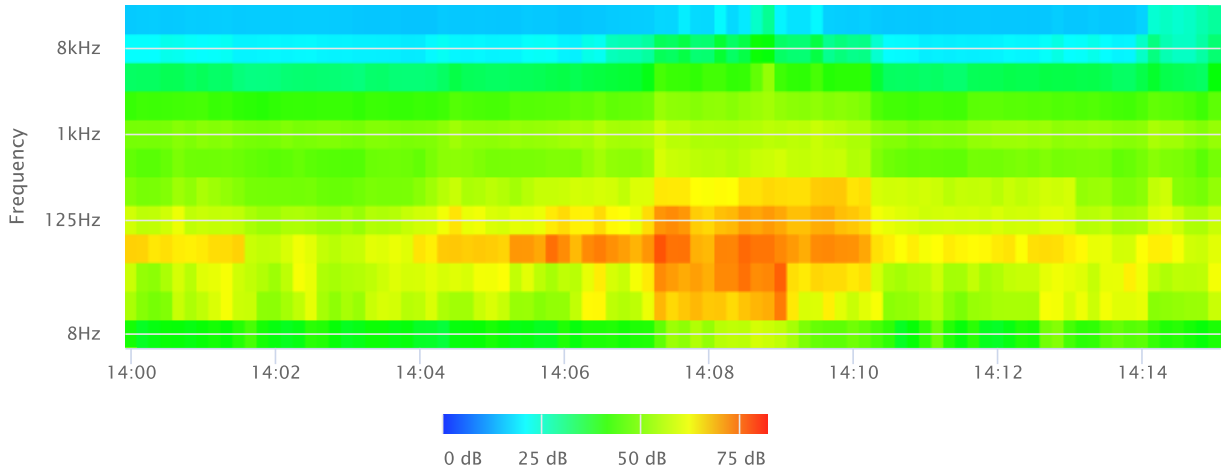
OBA 1/1 Leq



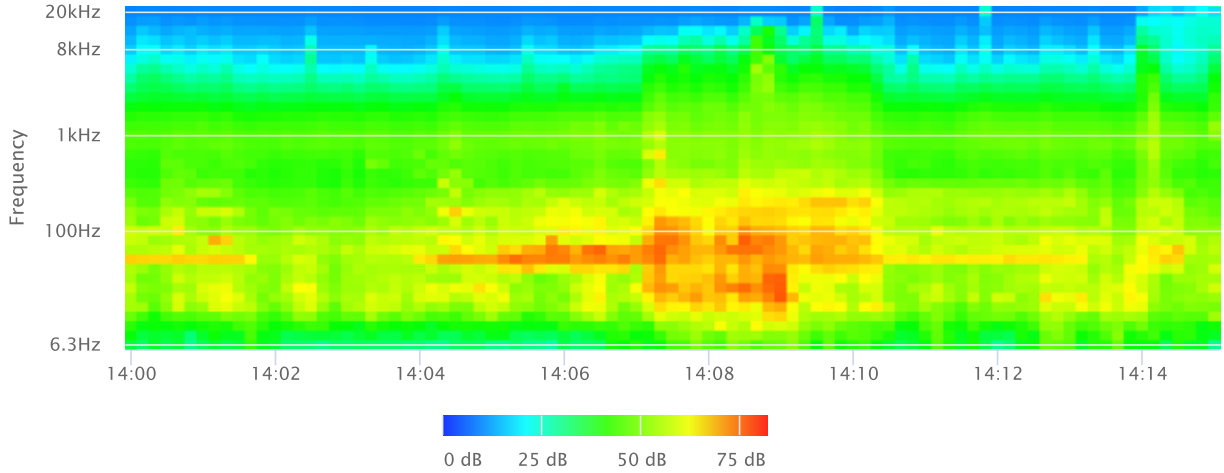
OBA 1/1 Lmax



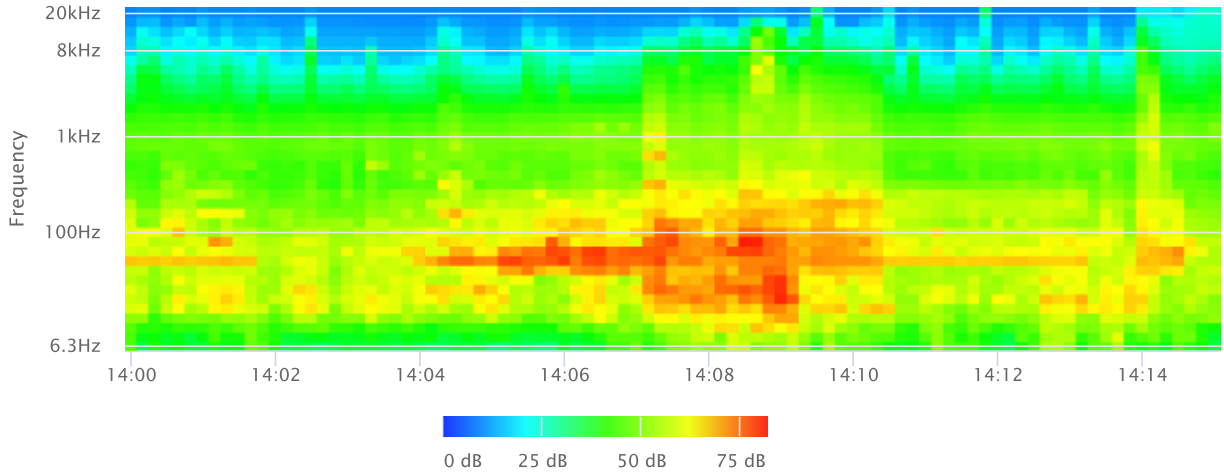
OBA 1/1 Lmin



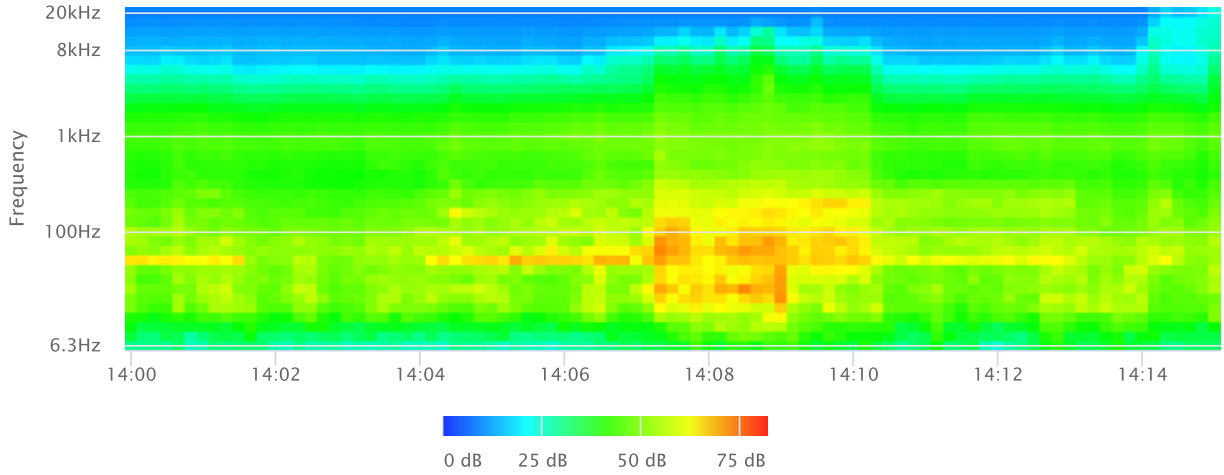
OBA 1/3 Leq



OBA 1/3 Lmax



OBA 1/3 Lmin


20kHz
8kHz
1kHz
100Hz
6.3Hz
Frequency
14:00
14:02
14:04
14:06
14:08
14:10
14:12
14:14
0 dB
25 dB
50 dB
75 dB

Noise Measurement
Field Data

Project Name: Richardson RV, City of Riverside **Date:** September 23, 2024

Project #: 19631

Noise Measurement #: NM3 Run Time: 15 minutes **Technician:** Ian Edward Gallagher

Nearest Address or Cross Street: 10047 Rhineland Drive, Riverside, CA 92503

Site Description (Type of Existing Land Use and any other notable features): Measurement Site: Sidewalk just south of residence 10047 Rhinelander Drive. Adjacent: Rhinelander Drive just S of NM3, 2 active train tracks (running NE-SW) ~200' NW of NM3, 91 Fwy (running NE-SW) ~1,000' NW of NM3. Residential in all directions.

Weather: <5% cloud, sunshine. Sunset 6:44 PM **Settings:** SLOW FAST

Temperature: 91 deg F **Wind:** 7 mph **Humidity:** 40% **Terrain:** Flat

Start Time: 2:51 PM **End Time:** 3:06 PM **Run Time:**

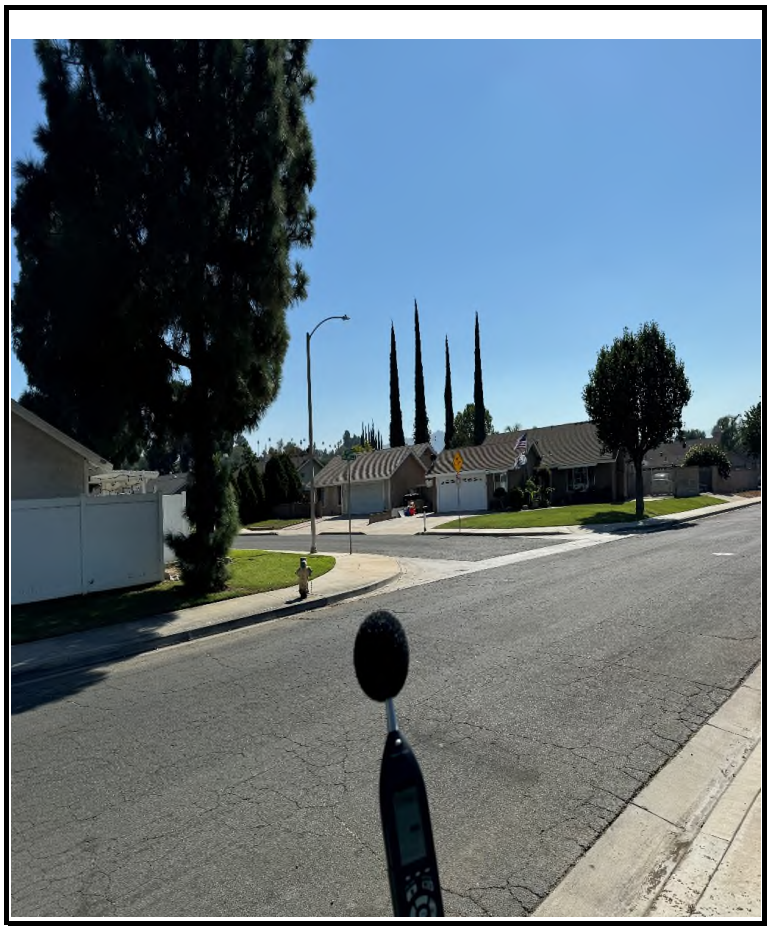
Leq:	53.8	dB	**Primary Noise Source:** Traffic noise from the 4 vehicles passing NM3 microphone traveling along Rhineland Drive just S of NM3.
Lmax	68.4	dB	
L2	64.2	dB	**Secondary Noise Sources:** Traffic ambiance from the 91 Fwy (~1,000' NW of NM3). Noise from occasional air traffic. Some bird noise. Noise from passing trains (2 tracks ~200' NW of NM3).
L8	55.2	dB	
L25	50.9	dB	
L50	49.8	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:	9/23/2024		

Noise Measurement
Field Data

PHOTOS:

NM3 looking NNW across front yard of residence 10047 Rhinelander Drive, Riverside.



NM3 looking SW across Rhinelander Drive towards Rhinelander Drive & Danube Way intersection (~90').

Summary	
File Name on Meter	LxT_Data.431.s
File Name on PC	LxT_0003099-20240923 145115-LxT_Data.431.ldbin
Serial Number	3099
Model	SoundTrack LxT®
Firmware Version	2.404
User	Ian Edward Gallagher
Location	NM3 33°54'25.44"N 117°27'1.49"W
Job Description	15 minute noise measurement
Note	Ganddini 19631 Richardson RV, City of Riverside

Measurement	
Start	2024-09-23 14:51:15
Stop	2024-09-23 15:06:15
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre-Calibration	2024-09-23 14:50:45
Post-Calibration	None

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	122.7 dB

Results			
L_{Aeq}	53.8		
LAE	83.3		
EA	23.9748	µPa²h	
EA8	767.1936	µPa²h	
EA40	3.835968	mPa²h	
$L_{Apeak\ (max)}$	2024-09-23 14:54:25	83.3	dB
L_{ASmax}	2024-09-23 14:54:26	68.4	dB
L_{ASmin}	2024-09-23 14:58:31	46.7	dB

			Statistics	
L_{Ceq}	64.7	dB	**LA2.00**	64.2 dB
L_{Aeq}	53.8	dB	**LA8.00**	55.2 dB
L_{Ceq} - L_{Aeq}	10.9	dB	**LA25.00**	50.9 dB
L_{AIeq}	55.0	dB	**LA50.00**	49.8 dB
L_{Aeq}	53.8	dB	**LA66.60**	49.1 dB
L_{AIeq} - L_{Aeq}	1.2	dB	**LA90.00**	48.1 dB
Overload Count	0			
Overload Duration	0.0	s		

Measurement Report

Report Summary

Meter's File Name	LxT_Data.431.s	Computer's File Name	LxT_0003099-20240923 145115-LxT_Data.431.ldbin
Meter	LxT1 0003099		
Firmware	2.404		
User	Ian Edward Gallagher	Location	NM3 33°54'25.44"N 117°27'1.49"W
Job Description	15 minute noise measurement		
Note	Ganddini 19631 Richardson RV, City of Riverside		
Start Time	2024-09-23 14:51:15	Duration	0:15:00.0
End Time	2024-09-23 15:06:15	Run Time	0:15:00.0
Pause Time	0:00:00.0		

Results

Overall Metrics

LA_{eq}	53.8 dB		
LAE	83.3 dB	SEA	--- dB
EA	24.0 µPa²h	LAFTM5	57.4 dB
EA8	767.2 µPa²h		
EA40	3.8 mPa²h		
LA_{peak}	83.3 dB	2024-09-23 14:54:25	
LAS_{max}	68.4 dB	2024-09-23 14:54:26	
LAS_{min}	46.7 dB	2024-09-23 14:58:31	
LA_{eq}	53.8 dB		
LC_{eq}	64.7 dB	LC_{eq} - LA_{eq}	10.9 dB
LAI_{eq}	55.0 dB	LAI_{eq} - LA_{eq}	1.2 dB

Exceedances	Count	Duration
LAS > 65.0 dB	4	0:00:17.8
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

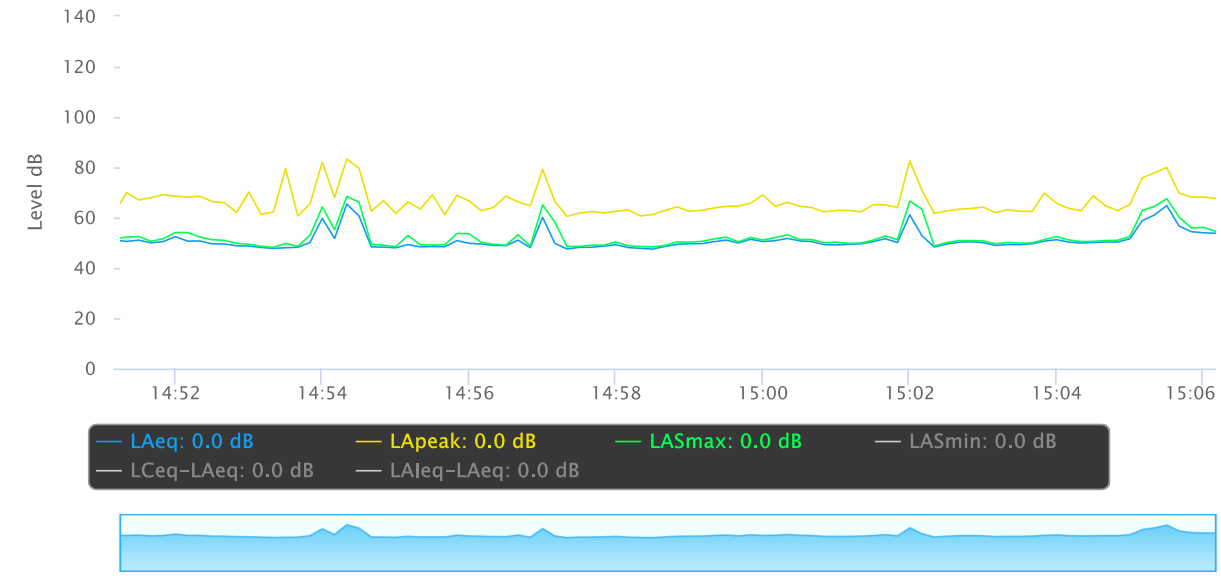
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	53.8 dB		64.7 dB		--- dB	
$L_{S(max)}$	68.4 dB	2024-09-23 14:54:26	--- dB		--- dB	
$L_{S(min)}$	46.7 dB	2024-09-23 14:58:31	--- dB		--- dB	
$L_{Peak(max)}$	83.3 dB	2024-09-23 14:54:25	--- dB		--- dB	

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

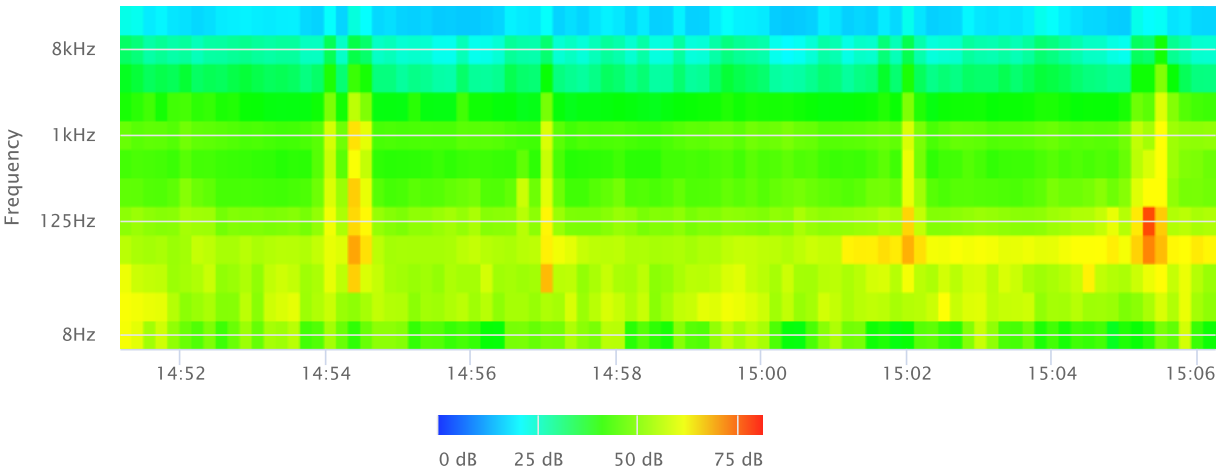
Statistics

LAS 2.0	64.2 dB
LAS 8.0	55.2 dB
LAS 25.0	50.9 dB
LAS 50.0	49.8 dB
LAS 66.6	49.1 dB
LAS 90.0	48.1 dB

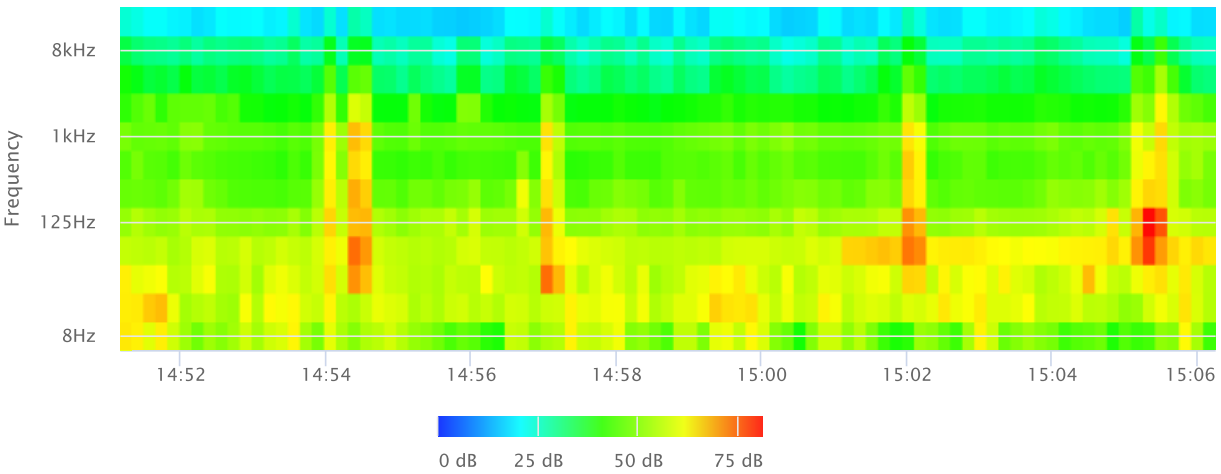
Time History



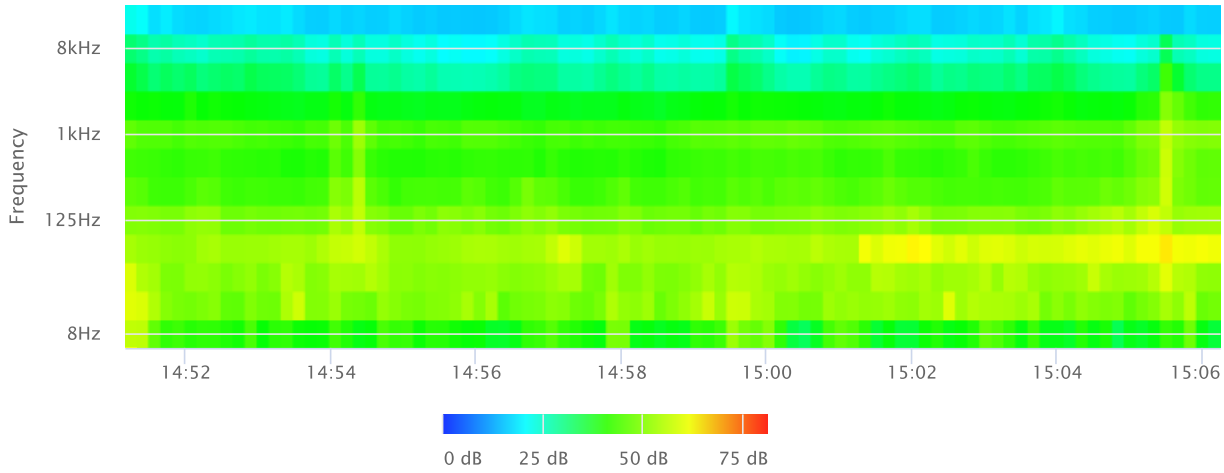
OBA 1/1 Leq



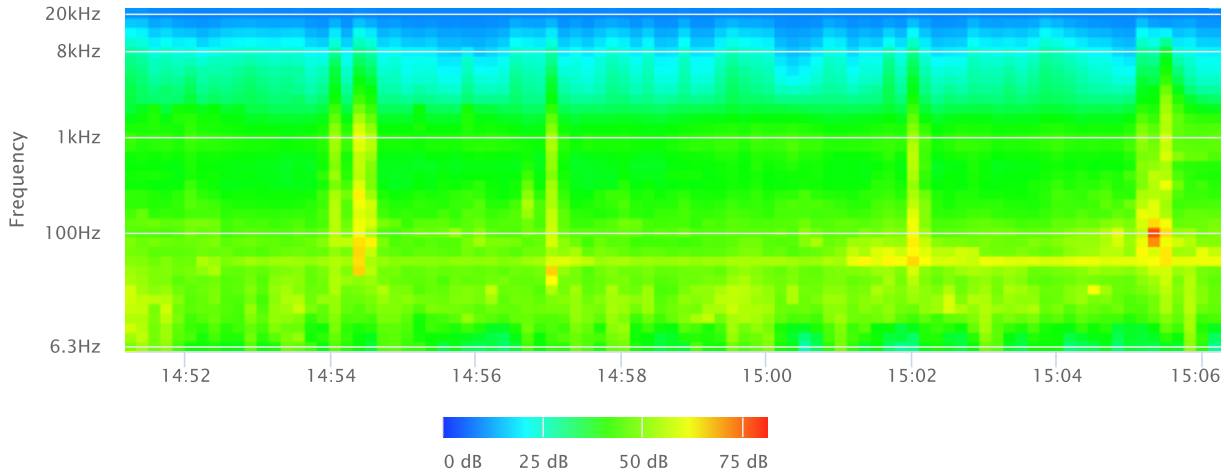
OBA 1/1 Lmax



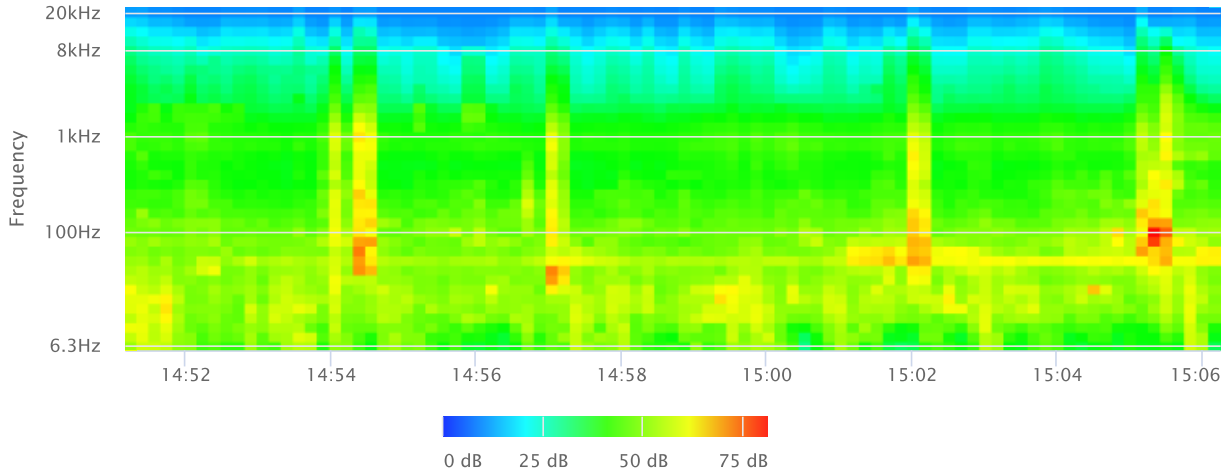
OBA 1/1 Lmin



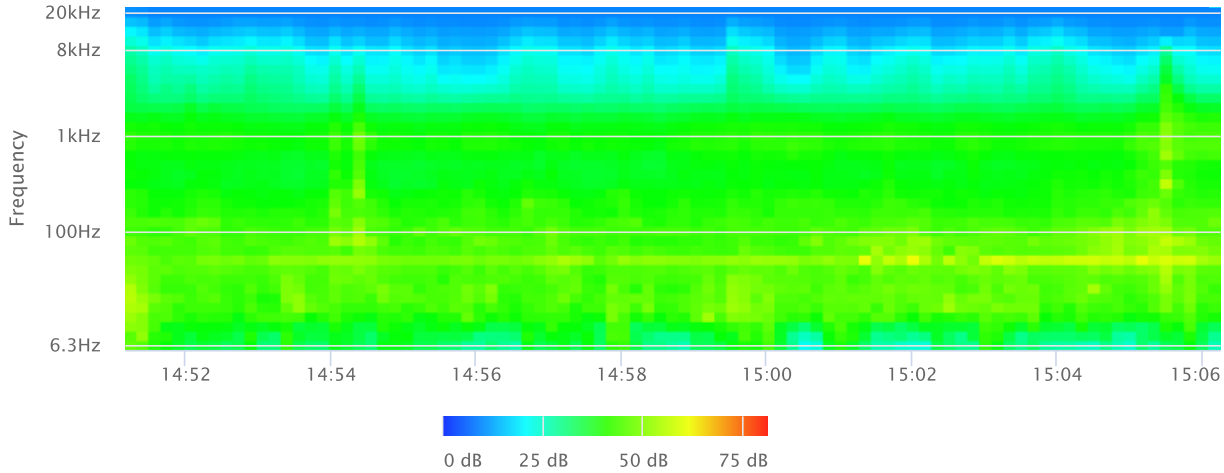
OBA 1/3 Leq



OBA 1/3 Lmax



OBA 1/3 Lmin


20kHz
8kHz
1kHz
100Hz
6.3Hz
Frequency
14:52
14:54
14:56
14:58
15:00
15:02
15:04
15:06
0 dB
25 dB
50 dB
75 dB

Noise Measurement
Field Data

Project Name: Richardson RV, City of Riverside **Date:** September 23, 2024

Project #: 19631

Noise Measurement #: LTNM1 Run Time: 24 hours **Technician:** Ian Edward Gallagher

Nearest Address or Cross Street: 9990 indiana Avenue, Riverside, CA 92503

Site Description (Type of Existing Land Use and any other notable features): Measurement Site: On top of ~8' tall cinder block wall along southern side of project site (10030 Indiana Ave). Adjacent: Project site to north, commercial to NW and NE and 2 active train tracks (running NE-SW) ~35' SE with single-family residnetial further south of site. 91 Fwy (running NE-SW) ~830' NW.

Weather: <5% cloud, sunshine by day. Sunset/rise 6:44PM/6:39AM **Settings:** SLOW FAST

Temperature: 60-93 deg F **Wind:** 1-9mph **Humidity:** 40-80% **Terrain:** Flat

Start Time: 6:00 PM **End Time:** 6:00 PM **Run Time:**

Leq: 73.4 dB

Lmax 101.4 dB

L2 84.4 dB

L8 69.3 dB

L25 57.1 dB

L50 55.2 dB

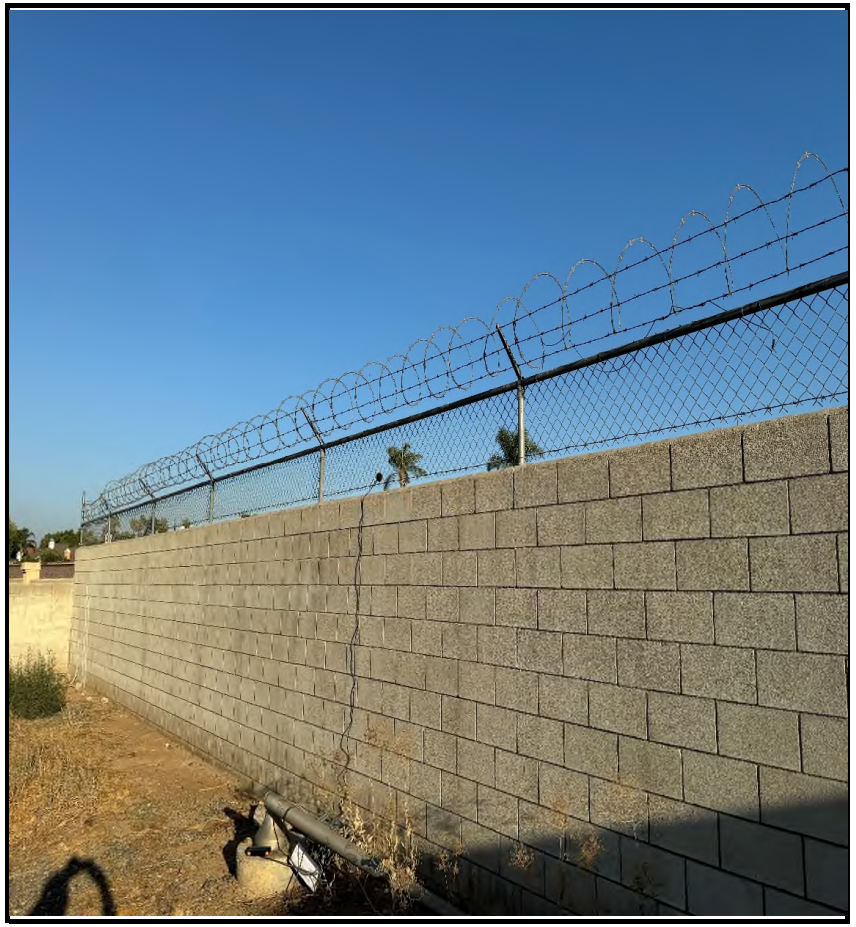
Primary Noise Source: Noise from passing trains from the two tracks located ~35' SE of LTNM1 microphone.

Secondary Noise Sources: Traffic ambiance from the 91 Fwy (~830' NW of LTNM1). Noise from occasional air traffic. Some bird noise by day. Probable cricket noise at night.

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:	9/23/2024		

Noise Measurement
Field Data

PHOTOS:



LTNM1 looking SE towards S end of site area, 2 train tracks ~35' away from microphone on other side of ~8' tall cinderblock wall.

LTNM1 aerial view showing location of LTNM1 in relation to surrounding area.

Summary	
File Name on Meter	LxT_Data.432.s
File Name on PC	LxT_0003099-20240923 180000-LxT_Data.432.ldbin
Serial Number	0003099
Model	SoundTrack LxT®
Firmware Version	2.404
User	Ian Edward Gallagher
Location	LTNM1 33°54'25.44"N 117°27'1.49"W
Job Description	24 hour noise measurement (24 x 1 hours)
Note	Ganddini 19631 Richardson RV, City of Riverside

Measurement	
Start	2024-09-23 18:00:00
Stop	2024-09-24 18:00:00
Duration	24:00:00.0
Run Time	24:00:00.0
Pause	00:00:00.0
Pre-Calibration	2024-09-23 17:03:09
Post-Calibration	None

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	122.6 dB

Results			
LAeq	73.4		
LAE	122.8		
EA	210.858	mPa²h	
EA8	70.286	mPa²h	
EA40	351.430	mPa²h	
LApeak (max)	2024-09-24 13:12:20	115.5	dB
LASmax	2024-09-24 04:16:44	101.4	dB
LASmin	2024-09-24 01:55:16	42.7	dB

			Statistics	
LCeq	82.1	dB	**LA2.00**	84.4 dB
LAeq	73.4	dB	**LA8.00**	69.3 dB
LCeq - LAeq	8.7	dB	**LA25.00**	57.1 dB
LAIeq	75.0	dB	**LA50.00**	55.2 dB
LAeq	73.4	dB	**LA90.00**	51.4 dB
LAIeq - LAeq	1.5	dB	**LA99.00**	47.7 dB
Overload Count	0			
Overload Duration	0.0	s		

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	2024-09-23	18:00:00	01:00:00.0	01:00:00.0	00:00:00.0	74.3	53.8	18:35:31	97.4	18:49:02	86.2	68.8	58.2	56.9	55.4	54.4
2	2024-09-23	19:00:00	01:00:00.0	01:00:00.0	00:00:00.0	74.8	51.3	19:57:34	94.9	19:18:04	86.0	78.7	57.2	55.9	53.6	52.2
3	2024-09-23	20:00:00	01:00:00.0	01:00:00.0	00:00:00.0	71.9	50.2	20:06:05	95.5	20:36:55	84.0	59.0	54.8	53.7	52.2	51.0
4	2024-09-23	21:00:00	01:00:00.0	01:00:00.0	00:00:00.0	72.9	52.8	21:59:56	90.3	21:02:34	84.0	78.0	62.1	59.0	56.2	54.3
5	2024-09-23	22:00:00	01:00:00.0	01:00:00.0	00:00:00.0	75.4	51.1	22:41:48	95.6	22:18:22	87.4	69.2	56.9	55.7	53.7	52.2
6	2024-09-23	23:00:00	01:00:00.0	01:00:00.0	00:00:00.0	71.3	50.4	23:58:09	92.9	23:14:21	83.9	58.5	56.4	55.4	53.7	51.7
7	2024-09-24	00:00:00	01:00:00.0	01:00:00.0	00:00:00.0	70.0	49.4	00:05:17	90.1	00:10:18	81.4	71.1	57.9	55.2	52.9	50.9
8	2024-09-24	01:00:00	01:00:00.0	01:00:00.0	00:00:00.0	75.1	42.7	01:55:16	95.2	01:39:30	84.9	80.6	70.8	53.5	48.3	45.5
9	2024-09-24	02:00:00	01:00:00.0	01:00:00.0	00:00:00.0	75.2	43.4	02:22:31	98.9	02:35:26	85.2	66.0	52.2	50.3	47.2	45.4
10	2024-09-24	03:00:00	01:00:00.0	01:00:00.0	00:00:00.0	75.6	46.5	03:17:07	98.4	03:37:26	85.6	80.9	55.6	54.1	51.1	48.3
11	2024-09-24	04:00:00	01:00:00.0	01:00:00.0	00:00:00.0	73.3	50.8	04:57:37	101.4	04:16:44	83.2	57.2	55.6	54.7	53.1	51.7
12	2024-09-24	05:00:00	01:00:00.0	01:00:00.0	00:00:00.0	68.3	48.4	05:08:43	94.1	05:14:18	80.0	56.1	54.3	53.1	50.8	49.3
13	2024-09-24	06:00:00	01:00:00.0	01:00:00.0	00:00:00.0	74.2	52.9	06:30:16	100.3	06:10:55	85.3	58.9	56.1	55.3	54.1	53.4
14	2024-09-24	07:00:00	01:00:00.0	01:00:00.0	00:00:00.0	59.0	47.1	07:45:32	84.1	07:37:45	60.2	56.2	54.2	51.5	49.0	47.8
15	2024-09-24	08:00:00	01:00:00.0	01:00:00.0	00:00:00.0	76.8	48.1	08:05:16	101.0	08:27:28	86.4	80.6	53.6	51.9	50.0	48.8
16	2024-09-24	09:00:00	01:00:00.0	01:00:00.0	00:00:00.0	73.1	50.6	09:37:39	95.4	09:56:30	84.1	76.1	58.7	56.5	53.2	51.5
17	2024-09-24	10:00:00	01:00:00.0	01:00:00.0	00:00:00.0	72.2	50.7	10:00:09	97.2	10:40:38	83.9	57.3	55.4	54.6	53.0	51.9
18	2024-09-24	11:00:00	01:00:00.0	01:00:00.0	00:00:00.0	72.7	51.9	11:01:02	99.7	11:49:55	83.5	59.7	56.5	55.4	53.8	52.7
19	2024-09-24	12:00:00	01:00:00.0	01:00:00.0	00:00:00.0	56.7	51.5	12:29:30	68.9	12:22:43	60.0	58.8	57.3	56.1	54.1	52.6
20	2024-09-24	13:00:00	01:00:00.0	01:00:00.0	00:00:00.0	74.0	51.0	13:50:28	97.8	13:12:24	84.2	74.0	56.8	55.6	53.6	52.3
21	2024-09-24	14:00:00	01:00:00.0	01:00:00.0	00:00:00.0	68.2	50.7	14:25:30	85.5	14:05:01	80.6	61.7	57.6	56.2	53.9	51.9
22	2024-09-24	15:00:00	01:00:00.0	01:00:00.0	00:00:00.0	74.1	52.5	15:15:16	98.1	15:25:55	83.2	73.8	57.7	56.3	54.5	53.1
23	2024-09-24	16:00:00	01:00:00.0	01:00:00.0	00:00:00.0	77.3	47.5	16:25:32	96.3	16:29:05	87.1	84.1	57.5	54.1	50.5	48.7
24	2024-09-24	17:00:00	01:00:00.0	01:00:00.0	00:00:00.0	68.8	53.3	17:30:40	92.3	17:27:20	78.2	64.5	58.1	57.1	55.5	54.2

Measurement Report

Report Summary

Meter's File Name	LxT_Data.432.s	Computer's File Name	LxT_0003099-20240923 180000-LxT_Data.432.ldbin
Meter	LxT1 0003099		
Firmware	2.404		
User	Ian Edward Gallagher	Location	LTNM1 33°54'25.44"N 117°27'1.49"W
Job Description	24 hour noise measurement (24 x 1 hours)		
Note	Ganddini 19631 Richardson RV, City of Riverside		
Start Time	2024-09-23 18:00:00	Duration	24:00:00.0
End Time	2024-09-24 18:00:00	Run Time	24:00:00.0
Pause Time	0:00:00.0		

Results

Overall Metrics

LA_{eq}	73.4 dB		
LAE	122.8 dB	SEA	--- dB
EA	210.9 mPa²h	LAFTM5	77.5 dB
EA8	70.3 mPa²h		
EA40	351.4 mPa²h		
LA_{peak}	115.5 dB	2024-09-24 13:12:20	
LAS_{max}	101.4 dB	2024-09-24 04:16:44	
LAS_{min}	42.7 dB	2024-09-24 01:55:16	
LA_{eq}	73.4 dB		
LC_{eq}	82.1 dB	LC_{eq} - LA_{eq}	8.7 dB
LAI_{eq}	75.0 dB	LAI_{eq} - LA_{eq}	1.5 dB

Exceedances	Count	Duration
LAS > 65.0 dB	163	2:14:30.5
LAS > 85.0 dB	194	0:34:35.1
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

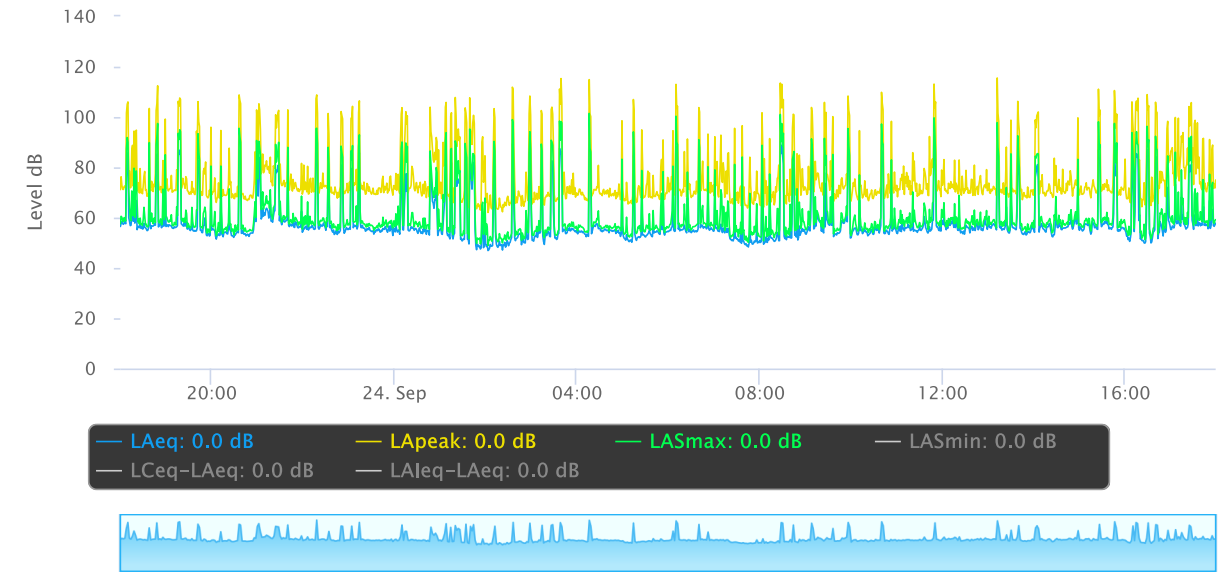
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	73.4 dB		82.1 dB		--- dB	
$L_{S(max)}$	101.4 dB	2024-09-24 04:16:44	--- dB		--- dB	
$L_{S(min)}$	42.7 dB	2024-09-24 01:55:16	--- dB		--- dB	
$L_{Peak(max)}$	115.5 dB	2024-09-24 13:12:20	--- dB		--- dB	

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

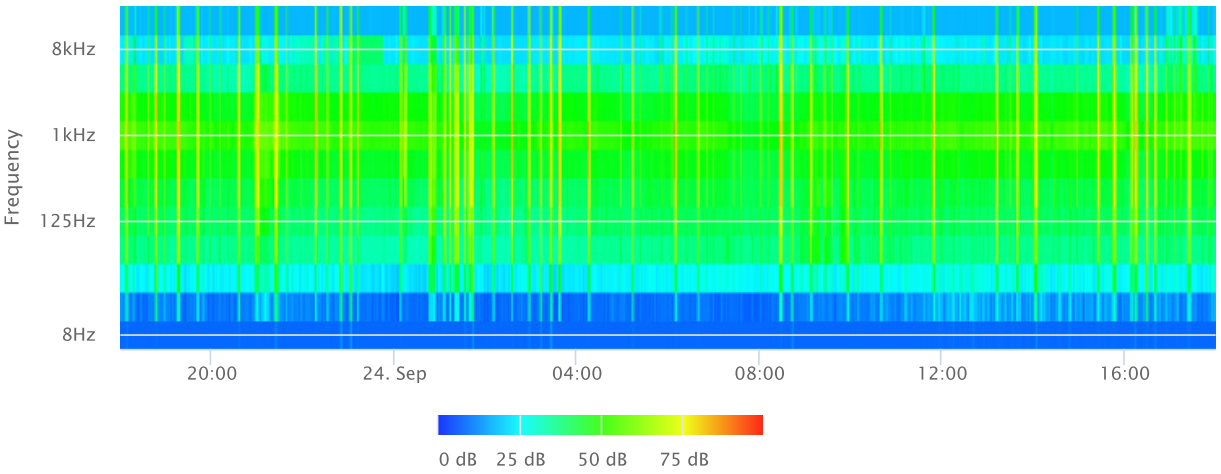
Statistics

LAS 2.0	84.4 dB
LAS 8.0	69.3 dB
LAS 25.0	57.1 dB
LAS 50.0	55.2 dB
LAS 90.0	51.4 dB
LAS 99.0	47.7 dB

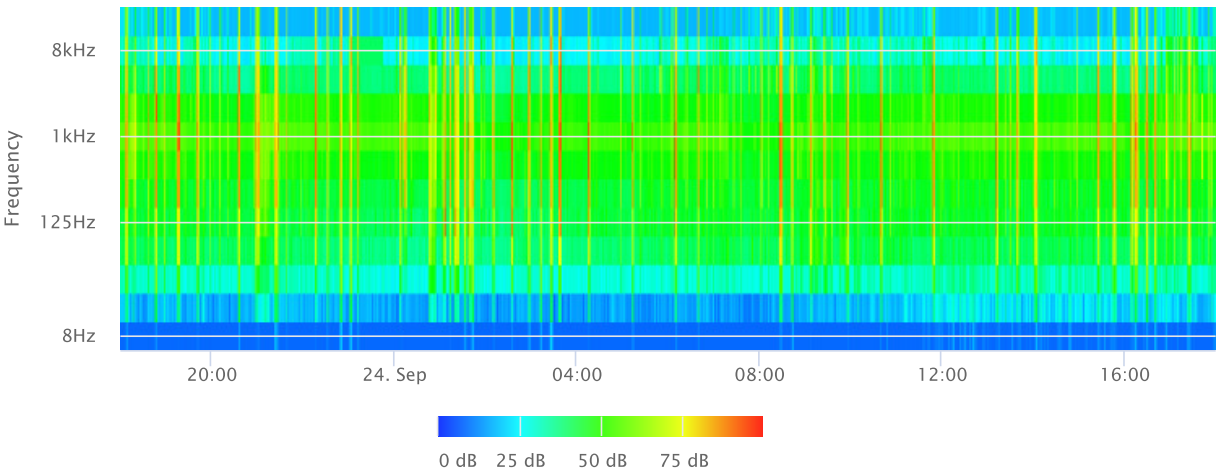
Time History



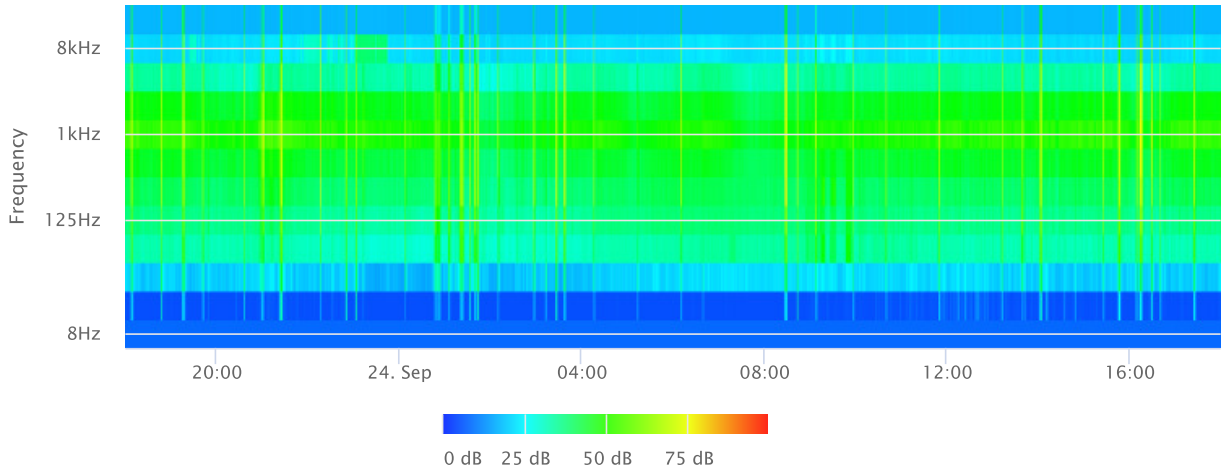
OBA 1/1 Leq



OBA 1/1 Lmax



OBA 1/1 Lmin



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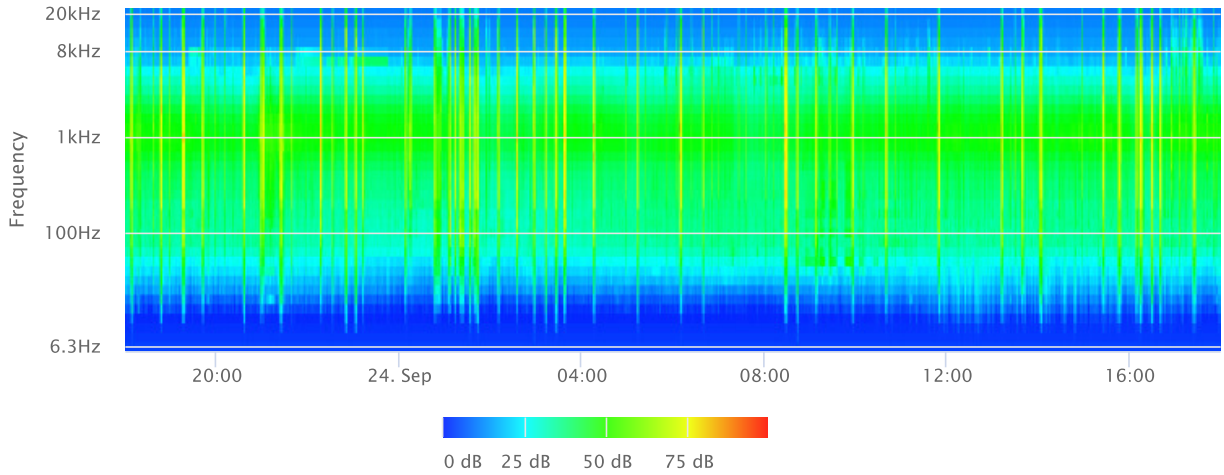

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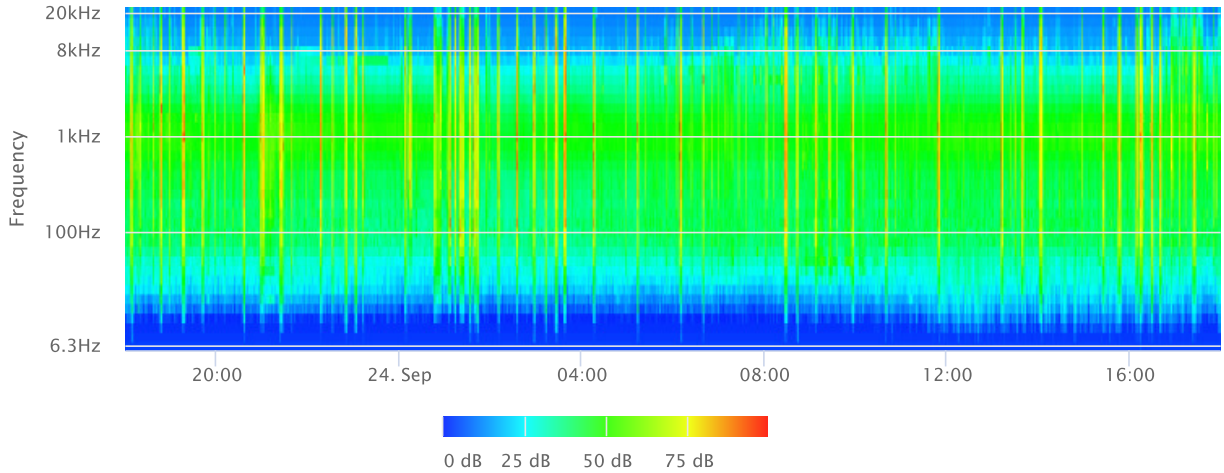

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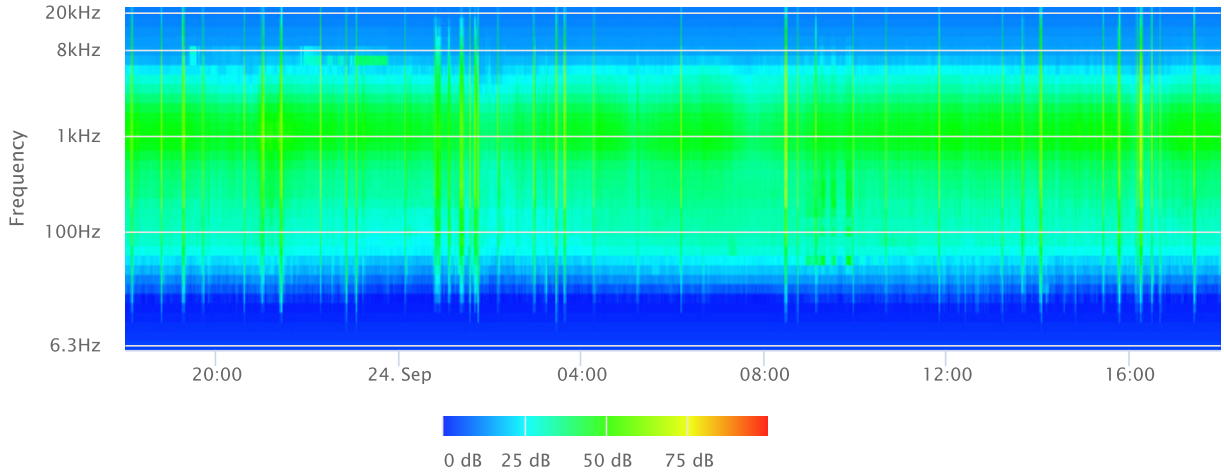
20kHz
8kHz
1kHz
100Hz
6.3Hz
Frequency
20:00
24. Sep
04:00
08:00
12:00
16:00
0 dB
25 dB
50 dB
75 dB

APPENDIX D

CONSTRUCTION NOISE MODEL WORKSHEETS

Receptor - Residential to South (10047 Rhinelander Drive, Riverside)

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1, 2]	Distance to Receptor[3]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Receptor Item Lmax, dBA	Receptor Item Leq, dBA
Grading									
Rubber Tired Dozer	1	82	371	40	0.40	-17.4	-4.0	64.6	60.6
Grader	1	85	371	40	0.40	-17.4	-4.0	67.6	63.6
								Log Sum	65.4
Building Renovation[4]									
Forklifts [2]	1	49	631	40	0.40	-22.0	-4.0	27.0	23.0
Drills/Pneumatic Equipment	1	70	631	50	0.50	-22.0	-3.0	48.0	45.0
Welders	1	59	631	40	0.40	-22.0	-4.0	37.0	33.0
								Log Sum	45.3
Paving									
Cement and Mortar Mixers	1	79	371	40	0.40	-17.4	-4.0	61.6	57.6
Pavers	1	77	371	50	0.50	-17.4	-3.0	59.6	56.6
Paving Equipment	1	85	371	20	0.20	-17.4	-7.0	67.6	60.6
Rollers	1	80	371	20	0.20	-17.4	-7.0	62.6	55.6
								Log Sum	64.1
Architectural Coating									
Air Compressors	1	78	371	40	0.40	-17.4	-4.0	60.6	56.6
								Log Sum	56.6

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 Construction Noise Model User's Guide (January 2006).

(2) Source: SoundPLAN reference list.

(3) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (structure).

(4) Reference level takes into consideration that renovations to the existing building are interior only. Therefore, reference levels for the equipment used during the building renovation phase include a reduction of 15 dB.

Receptor - Commercial to West (Tyler Mall Mini Storage, 10090 Indiana Avenue, Riverside)

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1, 2]	Distance to Receptor[3]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Receptor Item Lmax, dBA	Receptor Item Leq, dBA
Grading									
Rubber Tired Dozer	1	82	39	40	0.40	2.2	-4.0	84.2	80.2
Grader	1	85	39	40	0.40	2.2	-4.0	87.2	83.2
								Log Sum	84.9
Building Renovation[4]									
Forklifts [2]	1	49	31	40	0.40	4.2	-4.0	53.2	49.2
Drills/Pneumatic Equipment	1	70	31	50	0.50	4.2	-3.0	74.2	71.1
Welders	1	59	31	40	0.40	4.2	-4.0	63.2	59.2
								Log Sum	71.4
Paving									
Cement and Mortar Mixers	1	79	39	40	0.40	2.2	-4.0	81.2	77.2
Pavers	1	77	39	50	0.50	2.2	-3.0	79.2	76.1
Paving Equipment	1	85	39	20	0.20	2.2	-7.0	87.2	80.2
Rollers	1	80	39	20	0.20	2.2	-7.0	82.2	75.2
								Log Sum	83.6
Architectural Coating									
Air Compressors	1	78	39	40	0.40	2.2	-4.0	80.2	76.2
								Log Sum	76.2

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 Construction Noise Model User's Guide (January 2006).

(2) Source: SoundPLAN reference list.

(3) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (structure).

(4) Reference level takes into consideration that renovations to the existing building are interior only. Therefore, reference levels for the equipment used during the building renovation phase include a reduction of 15 dB.

Receptor - Commercial to North (10031 Indiana Avenue, Riverside)

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1, 2]	Distance to Receptor[3]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Receptor Item Lmax, dBA	Receptor Item Leq, dBA
Grading									
Rubber Tired Dozer	1	82	398	40	0.40	-18.0	-4.0	64.0	60.0
Grader	1	85	398	40	0.40	-18.0	-4.0	67.0	63.0
								Log Sum	64.8
Building Renovation[4]									
Forklifts [2]	1	49	137	40	0.40	-8.8	-4.0	40.2	36.3
Drills/Pneumatic Equipment	1	70	137	50	0.50	-8.8	-3.0	61.2	58.2
Welders	1	59	137	40	0.40	-8.8	-4.0	50.2	46.3
								Log Sum	58.5
Paving									
Cement and Mortar Mixers	1	79	398	40	0.40	-18.0	-4.0	61.0	57.0
Pavers	1	77	398	50	0.50	-18.0	-3.0	59.0	56.0
Paving Equipment	1	85	398	20	0.20	-18.0	-7.0	67.0	60.0
Rollers	1	80	398	20	0.20	-18.0	-7.0	62.0	55.0
								Log Sum	63.4
Architectural Coating									
Air Compressors	1	78	398	40	0.40	-18.0	-4.0	60.0	56.0
								Log Sum	56.0

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 Construction Noise Model User's Guide (January 2006).

(2) Source: SoundPLAN reference list.

(3) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (structure).

(4) Reference level takes into consideration that renovations to the existing building are interior only. Therefore, reference levels for the equipment used during the building renovation phase include a reduction of 15 dB.

Receptor - Commercial to East (10020 Indiana Avenue, Riverside)

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1, 2]	Distance to Receptor[3]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Receptor Item Lmax, dBA	Receptor Item Leq, dBA
Grading									
Rubber Tired Dozer	1	82	39	40	0.40	2.2	-4.0	84.2	80.2
Grader	1	85	39	40	0.40	2.2	-4.0	87.2	83.2
								Log Sum	84.9
Building Renovation[4]									
Forklifts [2]	1	49	47	40	0.40	0.5	-4.0	49.5	45.6
Drills/Pneumatic Equipment	1	70	47	50	0.50	0.5	-3.0	70.5	67.5
Welders	1	59	47	40	0.40	0.5	-4.0	59.5	55.6
								Log Sum	67.8
Paving									
Cement and Mortar Mixers	1	79	39	40	0.40	2.2	-4.0	81.2	77.2
Pavers	1	77	39	50	0.50	2.2	-3.0	79.2	76.1
Paving Equipment	1	85	39	20	0.20	2.2	-7.0	87.2	80.2
Rollers	1	80	39	20	0.20	2.2	-7.0	82.2	75.2
								Log Sum	83.6
Architectural Coating									
Air Compressors	1	78	39	40	0.40	2.2	-4.0	80.2	76.2
								Log Sum	76.2

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 Construction Noise Model User's Guide (January 2006).

(2) Source: SoundPLAN reference list.

(3) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (structure).

(4) Reference level takes into consideration that renovations to the existing building are interior only. Therefore, reference levels for the equipment used during the building renovation phase include a reduction of 15 dB.

APPENDIX E

SOUNDPLAN WORKSHEETS

Noise emissions of road traffic

Station km	ADT Veh/24h	Vehicles type	Traffic values Vehicle name	day Veh/h	night Veh/h	Speed km/h	Control device	Const Speed km/h	Affec veh. %	Road surface	Gradien Min / M %
1			Traffic direction: In entry direction								
0+000	-						-	-	-	-	-
0+000	-						-	-	-	-	-
2			Traffic direction: In entry direction								
0+000	24	Total	-	1	1	-	none	-	-	Average (of DGAC an	0.0
		Automobiles	-	-	-	-					
		Medium trucks	-	-	-	-					
		Heavy trucks	-	1	1	32					
		Buses	-	-	-	-					
		Motorcycles	-	-	-	-					
		Auxiliary vehicle	-	-	-	-					

Noise emissions of industry sources

Source name	Reference	Level Day dB(A)	Frequency spectrum [dB(A)] 31 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	16 kHz	Corrections Cwall dB	CI dB	CT dB
HVAC	Lw/unit	-	20.0	24.0	37.0	42.0	36.0	47.0	49.0	48.0	50.0	50.0	-	-	-

Noise emissions of parking lot traffic

Name	Parking lot type	Size	Movements per hour Day	Road surface	Separated method	Lw,ref dB(A)
1	Rest stop (Trucks)	7 Parking bays	0.100	Asphaltic driving lanes	no	85.5
1	Rest stop (Trucks)	38 Parking bays	0.100	Asphaltic driving lanes	no	96.5
2	Visitors and staff	2 Parking bays	2.000	Asphaltic driving lanes	no	66.0

Receiver list

No.	Receiver name	Building side	Floor	Limit Day dB(A)	Level w/o NP Day dB(A)	Level w NP Day dB(A)	Difference Day dB	Conflict Day dB
1	1	-	EG	-	34.5	0.0	-34.5	-
2	2	-	EG	-	44.8	0.0	-44.8	-
3	3	-	EG	-	33.6	0.0	-33.6	-
4	4	-	EG	-	46.5	0.0	-46.5	-

APPENDIX F

FHWA TRAFFIC NOISE MODEL WORKSHEETS

Existing Traffic Noise

1	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	9924
		Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow		
Indiana Avenue	:Road						Speed	40
		Automobiles	75.54	14.02	10.43	92.00	Distance	44
In the vicinity of the project site	:Segment	Medium Trucks	48.00	2.00	50.00	3.00	Left Angle	-90
		Heavy Trucks	48.00	2.00	50.00	5.00	Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	574.74	11.91	19.85	426.68	1.98	3.31	105.81	16.54	27.57
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
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	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16
ADJUSTMENTS									
Flow	21.27	4.43	6.65	19.97	-3.35	-1.13	13.92	5.86	8.08
Distance	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
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	64.11	56.23	63.30	62.82	48.45	55.51	56.76	57.66	64.72
	DAY LEQ	67.10		EVENING LEQ	63.69		NIGHT LEQ	66.05	

F		CNEL	72.69	Day hour	89.00
		DAY LEQ	67.10	Absorptive?	no
				Use hour?	no
				GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside heavy truck mix.

Existing Plus Project Traffic Noise

1	:Id
Indiana Avenue	:Road
In the vicinity of the project site	:Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	9928
Speed	40
Distance	44
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	574.97	11.91	19.86	426.85	1.99	3.31	105.85	16.55	27.58
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
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	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16
ADJUSTMENTS									
Flow	21.27	4.43	6.65	19.98	-3.35	-1.13	13.92	5.86	8.08
Distance	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
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	64.12	56.23	63.30	62.82	48.45	55.52	56.77	57.66	64.72
	DAY LEQ	67.11		EVENING LEQ	63.69		NIGHT LEQ	66.05	

CNEL	72.69
DAY LEQ	67.11

Day hour	89.00
Absorptive?	no
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside heavy truck mix.

APPENDIX G

GROUNDBORNE VIBRATION WORKSHEETS

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19697 Moreno Beach and Alessandro Multifamily		Date: 9/23/24
Source:	Vibratory Roller		
Scenario:	Unmitigated		
Location:	Commercial to North		
Address:	10031 Indiana Avenue, Riverside		
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment Type	1	Vibratory Roller	INPUT SECTION IN GREEN
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.	
D =	95.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.			
RESULTS			
PPV =	0.028	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19697 Moreno Beach and Alessandro Multifamily		Date: 9/23/24
Source:	Large Bulldozer		
Scenario:	Unmitigated		
Location:	Commercial to North		
Address:	10031 Indiana Avenue, Riverside		
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment Type =	2	Large Bulldozer	INPUT SECTION IN GREEN
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	95.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.			
RESULTS			
PPV =	0.012	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19697 Moreno Beach and Alessandro Multifamily		Date: 9/23/24
Source:	Vibratory Roller		
Scenario:	Unmitigated		
Location:	Commercial to East		
Address:	10020 Indiana Avenue, Riverside		
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment Type	1	Vibratory Roller	INPUT SECTION IN GREEN
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.	
D =	45.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.			
RESULTS			
PPV =	0.087	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19697 Moreno Beach and Alessandro Multifamily		Date: 9/23/24
Source:	Large Bulldozer		
Scenario:	Unmitigated		
Location:	Commercial to East		
Address:	10020 Indiana Avenue, Riverside		
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment = Type	2	Large Bulldozer	INPUT SECTION IN GREEN
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	45.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.			
RESULTS			
PPV =	0.037	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19697 Moreno Beach and Alessandro Multifamily		Date: 9/23/24
Source:	Vibratory Roller		
Scenario:	Unmitigated		
Location:	Residential to South		
Address:	10047 Rhinelander Drive, Riverside		
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment Type	1	Vibratory Roller	INPUT SECTION IN GREEN
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.	
D =	163.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.			
RESULTS			
PPV =	0.013	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19697 Moreno Beach and Alessandro Multifamily		Date: 9/23/24
Source:	Large Bulldozer		
Scenario:	Unmitigated		
Location:	Residential to South		
Address:	10047 Rhinelander Drive, Riverside		
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment Type =	2	Large Bulldozer	INPUT SECTION IN GREEN
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	163.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.			
RESULTS			
PPV =	0.005	IN/SEC	OUTPUT IN BLUE

Construction Annoyance Vibration Calculations

Source: Federal Transit Administration (FTA), Transit Noise and Vibration Impact Assessment Manual (September 2018).

Eq. 7-3: Lvdistance = Lvref - 30log (D/25)

Lvdistance = the rms velocity level adjsuted for distance, VdB
Lvref = the source reference vibration level at 25 feet, VdB
D = distance from the equipment to th receiver, ft.

Large Bulldozer:

Residential to South: Lvdistance = 87 - 30 log (163/25) = 65.57 VdB

Under Threshold Mitigation Distance: 87 - 30 log (80/25) = 71.85 VdB

Vibratory Roller:

Residential to South: Lvdistance = 94 - 30 log (163/25) = 69.57 VdB

Under Threshold Mitigation Distance: 94 - 30 log (136/25) = 71.93 VdB

GANDDINI GROUP INC.

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EXHIBIT B

April 27, 2023

Mr. Steve Richardson
RICHARDSON'S RV
10717 Indiana Avenue
Riverside, California 92503

RE: Richardson RV Storage Air Quality Technical Memorandum
Project No. 19631

Dear Mr. Richardson:

Ganddini Group, Inc. is pleased to provide this Air Quality Technical Memorandum for the Richardson RV Storage project. The 1.0-acre project site is located at 10030 Indiana Avenue, in the City of Riverside, California. The proposed project is currently developed with an existing 1,351 square foot residence. A project location map, showing the project's location, is provided on Figure 1. A glossary is provided in Appendix A to assist the reader with technical terms related to this air quality analysis.

PROJECT DESCRIPTION

The project consists of a Minor Conditional Use Permit and a Design Review for an Outdoor Storage Yard and the conversion of an existing 1,351 square foot residence into an office for Richardson's RV storage. The development consists of:

- Paving approximately 33,763 square feet of the lot for outdoor storage purposes;
- Striping forty-five 9 x 35-foot stalls for storage of vehicles;
- Conversion of the existing residence into an office;
- Construction of fences and walls; and
- Landscaping

The business will operate Monday through Friday from 8:00 AM to 5:00 PM with four employees on-site. Recreational vehicles and trailers will be transported to and from the storage yard as required for inventory control. Plans indicate the storage yard will be secured and screened as follows:

- A new 6-foot-high opaque tubular steel fence and opaque rolling gate on the north side of the storage yard;
- A combination of an existing 5-foot-high decorative stucco perimeter wall and new 10-foot-high decorative opaque metal fence along the east side property line;
- A combination of an existing 6-foot-high CMU wall and new landscaping along the south property line, adjacent to the AT&SF Railroad; and
- An existing self-storage building along the west side property line.

No sales of recreational vehicles, maintenance, washing or fueling are proposed to take place on-site. The project site plan is shown on Figure 2. Table 1 shows the SCAQMD Air Quality Significance Thresholds.

Table 1
SCAQMD Air Quality Significance Thresholds

Mass Daily Thresholds[1]		
Pollutant	Construction (lbs/day)	Operation (lbs/day)
NOx	100	55
VOC	75	55
PM10	150	150
PM2.5	55	55
SOx	150	150
CO	550	550
Lead	3	3
Toxic Air Contaminants (TACs), Odor and GHG Thresholds		
TACs (including carginogens and non-carcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Chronic & Acute Hazard Index > 1.0 (project increment)	
Odor	Project creates an odor nuisance pursuant to South Coast AQMD Rule 402	
GHG	10,000 MT/yr CO2e for industrial facilities	
Ambient Air Quality Standards for Criteria Pollutants[2]		
NO2 1-hour average annual arithmetic mean	South Coast AQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (state) 0.03 ppm (state) & 0.0534 ppm (federal)	
PM10 24-hour average annual average	10.4 µg/m^3 (construction)[3] & 2.5 ug/m^3 (operation) 1.0 ug/m^3	
PM2.5 24-hour average	10.4 µg/m^3 (construction)[3] & 2.5 µg/m^3 (operation)	
SO2 1-hour average 24-hour average	0.25 ppm (state) & 0.075 ppm (federal – 99th percentile) 0.04 ppm (state)	
Sulfate 24-hour average	25 µg/m^3 (state)	
CO 1-hour average 8-hour average	South Coast AQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) & 35 ppm (federal) 9 ppm (state/federal)	
Lead 3-day average Rolling 3-month average	1.5 µg/m^3 (state) 0.15 µg/m^3 (federal)	

Notes:

Source: http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook

(1) Source: South Coast AQMD CEQA Handbook (South Coast AQMD, 1993)

(2) Ambient air quality thresholds for criteria pollutants based on South Coast AQMD Rule 1303, Table A-2 unless otherwise stated.

(3) Ambient air quality threshold based on South Coast AQMD Rule 403.

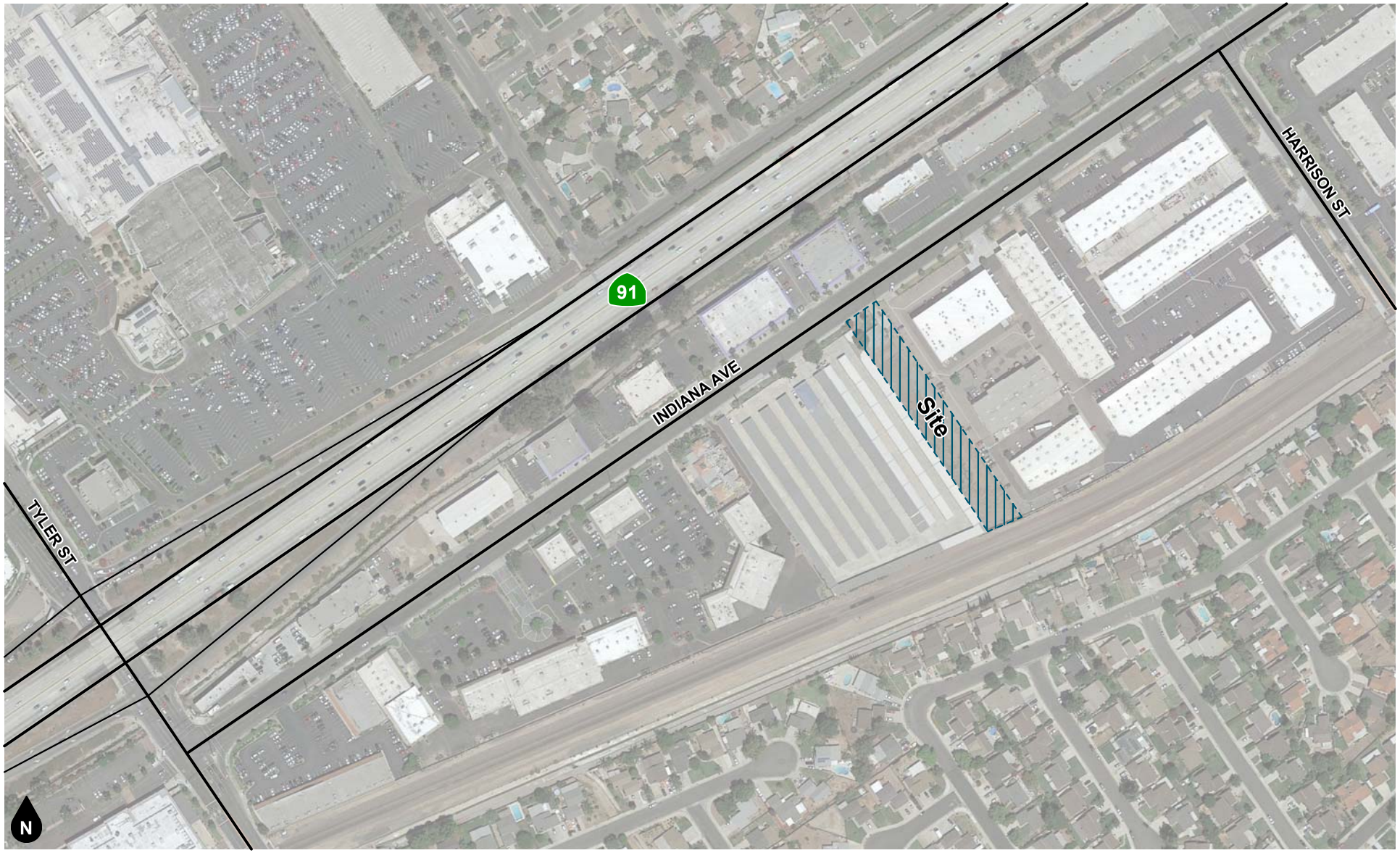

Figure 1
Project Location Map

Figure 2
Site Plan

LONG-TERM AIR QUALITY OPERATIONAL IMPACTS

An analysis of the potential long-term air quality impacts due to operations of the proposed project has been completed. The operations-related criteria air quality impacts created by the proposed project have been analyzed through use of the CalEEMod model. The operating emissions were based on the year 2023, which is the anticipated opening year for the proposed project. CalEEMod output is shown in Appendix B. The CalEEMod analyzes operational emissions from area sources, energy usage, and mobile sources, which are discussed below.

METHODOLOGY

Mobile Sources

Mobile sources include emissions from the additional vehicle miles generated from the proposed project. The vehicle trips associated with the proposed project have been analyzed by inputting the estimated project-generated vehicular trips (trip generation rate) provided by the project applicant into the CalEEMod Model. As stated by the project applicant, the proposed use is for a consumer RV and travel trailer storage yard which has a low associated vehicle trip rate. In addition, the project's associated retail sales yard is located at 10717 Indiana Avenue, which is less than a mile from the project site, and the vehicle trips associated with the proposed project occur between the project site and this location. Based on these project operational details, it is assumed that the proposed project would have up to four vehicle trips per day. Therefore, the proposed project was modeled with a trip generation rate of 2.96 trips per thousand square foot per day.[1] The program then applies the emission factors for each trip which is provided by the EMFAC2021 model to determine the vehicular traffic pollutant emissions. To be conservative, the CalEEMod default trip lengths were used in this analysis.

Area Sources

Area sources include emissions from hearths, consumer products, landscape equipment and architectural coatings. No changes were made to the default area source parameters.

Energy Usage

Energy usage includes emissions from the generation of electricity and natural gas used on-site. No changes were made to the default energy usage parameters.

OPERATIONAL-RELATED REGIONAL AIR QUALITY IMPACTS

The maximum daily pollutant emissions created from the proposed project's long-term operations have been calculated and are summarized below in Table 2. Table 2 shows that none of the analyzed criteria pollutants would exceed the regional emissions thresholds. Therefore, a less than significant regional air quality impact would occur from the operation of the proposed project.

[1] The project's office building is 1,351 square feet; therefore, 4 trips per 1.351 thousand square feet results in 2.96 trips per thousand square foot per day.

Table 2
Regional Operational Pollutant Emissions

Activity	Pollutant Emissions (pounds/day)					
	ROG	NOx	CO	SO2	PM10	PM2.5
Maximum Daily Emissions	0.07	0.03	0.26	0.01	0.02	0.01
SCAQMD Thresholds	55	55	550	150	150	55
Exceeds Threshold?	No	No	No	No	No	No

Notes:

Source: CalEEMod Version 2022.1.1.8; the higher of either summer or winter emissions.

OPERATIONS-RELATED LOCAL AIR QUALITY IMPACTS

Project-related air emissions may have the potential to exceed the State and Federal air quality standards in the project vicinity, even though these pollutant emissions may not be significant enough to create a regional impact to the South Coast Air Basin. The proposed project has been analyzed for the potential local CO emission impacts from the project-generated vehicular trips and from the potential local air quality impacts from on-site operations. The following analysis analyzes the vehicular CO emissions, local impacts from on-site operations per SCAQMD LST methodology, and odor impacts.

Local CO Emission Impacts from Project-Generated Vehicular Trips

CO is the pollutant of major concern along roadways because the most notable source of CO is motor vehicles. For this reason, CO concentrations are usually indicative of the local air quality generated by a roadway network and are used as an indicator of potential local air quality impacts. Local air quality impacts can be assessed by comparing future without and with project CO levels to the State and Federal CO standards which were presented above.

To determine if the proposed project could cause emission levels in excess of the CO standards discussed above, a sensitivity analysis is typically conducted to determine the potential for CO "hot spots" at a number of intersections in the general project vicinity. Because of reduced speeds and vehicle queuing, "hot spots" potentially can occur at high traffic volume intersections with a Level of Service E or worse.

The analysis prepared for CO attainment in the South Coast Air Basin by the SCAQMD can be used to assist in evaluating the potential for CO exceedances in the South Coast Air Basin. CO attainment was thoroughly analyzed as part of the SCAQMD's 2003 Air Quality Management Plan (2003 AQMP) and the 1992 Federal Attainment Plan for Carbon Monoxide (1992 CO Plan). As discussed in the 1992 CO Plan, peak carbon monoxide concentrations in the South Coast Air Basin are due to unusual meteorological and topographical conditions, and not due to the impact of particular intersections. Considering the region's unique meteorological conditions and the increasingly stringent CO emissions standards, CO modeling was performed as part of 1992 CO Plan and subsequent plan updates and air quality management plans. In the 1992 CO Plan, a CO hot spot analysis was conducted for four busy intersections in Los Angeles at the peak morning and afternoon time periods. The intersections evaluated included: South Long Beach Boulevard and Imperial Highway (Lynwood); Wilshire Boulevard and Veteran Avenue (Westwood); Sunset Boulevard and Highland Avenue (Hollywood); and La Cienega Boulevard and Century Boulevard (Inglewood). These analyses did not predict a violation of CO standards. The busiest intersection evaluated was that at Wilshire Boulevard and Veteran Avenue, which has a daily traffic volume of approximately 100,000 vehicles per day. The Los Angeles County Metropolitan Transportation Authority evaluated the Level of Service in the vicinity of the Wilshire Boulevard/Veteran Avenue intersection and found it to be Level of Service E during the morning peak hour and Level of Service F during the afternoon peak hour.

Per the project applicant, the proposed project would generate a maximum of approximately 4 daily vehicle trips. The 1992 Federal Attainment Plan for Carbon Monoxide (1992 CO Plan) showed that an intersection which has a daily traffic volume of approximately 100,000 vehicles per day would not violate the CO standard. Therefore, as the project generates up to only 4 vehicle trips per day, the intersection volume will fall far short of 100,000 vehicles per day, no CO "hot spot" modeling was performed, and no significant long-term air quality impact is anticipated to local air quality with the on-going use of the proposed project.

Local Air Quality Impacts from On-Site Operations

Project-related air emissions from on-site sources such as architectural coatings, landscaping equipment, on-site usage of natural gas appliances as well as the operation of vehicles on-site may have the potential to exceed the State and Federal air quality standards in the project vicinity, even though these pollutant emissions may not be significant enough to create a regional impact to the South Coast Air Basin. The nearest sensitive receptors that may be impacted by the proposed project are the existing single-family residential land uses located approximately 145 feet (~44 meters) to the south (along Rhinelander Drive) and 465 feet (~142 meters) to the northwest (along the northern side of Diana Avenue) of the project.

The local air quality emissions from on-site operations were analyzed according to the methodology described in Localized Significance Threshold Methodology, prepared by SCAQMD, revised July 2008. The Look-up Tables were developed by the SCAQMD in order to readily determine if the daily emissions of CO, NOx, PM10, and PM2.5 from the proposed project could result in a significant impact to the local air quality. Per SCAQMD staff, the 5-acre Look-up Table, which is the largest site available, can be used as a conservative screening analysis for on-site operational emissions to determine whether more-detailed dispersion modeling would be necessary. The proposed project was analyzed based on the Metropolitan Riverside County source receptor area (SRA) 23 and, as the project site is approximately one-acre, used the thresholds for a one-acre project site.

Table 3 shows the on-site emissions from the CalEEMod model that includes natural gas usage, landscape maintenance equipment, and vehicles operating on-site and the calculated emissions thresholds. Per LST methodology, mobile emissions include only on-site sources which equate to approximately 10 percent of the project-related new mobile sources.[2] The data provided in Table 3 shows that the on-going operations of the proposed project would not exceed SCAQMD local operational thresholds of significance discussed above. Therefore, the on-going operations of the proposed project would create a less than significant operations-related impact to local air quality due to on-site emissions and no mitigation would be required.

[2] The project site is approximately 0.11 miles in length at its longest point; therefore the on-site mobile source emissions represent approximately 1/55th of the shortest CalEEMod default distance of 6.11 miles. Therefore, to be conservative, 1/10th the distance (dividing the mobile source emissions by 10) was used to represent the portion of the overall mobile source emissions that would occur on-site.

Table 3
Local Operational Emissions at the Nearest Receptors

On-Site Emission Source	On-Site Pollutant Emissions (pounds/day)[1]			
	NOx	CO	PM10	PM2.5
Area Sources[2]	0.01	0.06	0.01	0.01
Energy Usage[3]	0.01	0.01	0.01	0.01
Vehicle Emissions[4]	0.00	0.02	0.00	0.00
Total Emissions	0.02	0.09	0.01	0.01
SCAQMD Thresholds[5]	118	602	1	1
Exceeds Threshold?	No	No	No	No

Notes:

(1) Source: Calculated from CalEEMod and SCAQMD's Mass Rate Look-up Tables for 1 acre in SRA 23.

(2) Area sources consist of emissions from consumer products, architectural coatings, and landscaping equipment.

(3) Energy usage consists of emissions from on-site natural gas usage.

(4) On-site vehicular emissions based on 1/10 of the gross vehicular emissions and road dust.

(5) The nearest sensitive receptors are the existing single-family residential land uses located approximately 145 feet (~44 meters) to the south and 465 feet (~142 meters) to the northwest of the project site; therefore, to be conservative, the 25 meter threshold was used.

Mr. Steve Richardson
RICHARDSON'S RV
April 27, 2023

CONCLUSIONS

As discussed above, the proposed RV storage project would not exceed SCAQMD thresholds for local and regional operational emissions. Therefore, this technical memorandum found that air quality-related operational impacts are considered to be less than significant. No further analysis or mitigation is required.

It has been a pleasure to service your needs regarding the Richardson RV Storage project. Should you have any questions or if we can be of further assistance, please do not hesitate to call at (714) 975-3100.

Sincerely,

Katie Wilson

Katie Wilson, M.S.
Senior Air Quality Analyst

APPENDIX A

GLOSSARY

AQMP	Air Quality Management Plan
CAAQS	California Ambient Air Quality Standards
CalEPA	California Environmental Protection Agency
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCAA	California Clean Air Act
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFCs	Chlorofluorocarbons
CH4	Methane
CNG	Compressed natural gas
CO	Carbon monoxide
CO_2	Carbon dioxide
CO2e	Carbon dioxide equivalent
DPM	Diesel particulate matter
EPA	U.S. Environmental Protection Agency
GHG	Greenhouse gas
GWP	Global warming potential
HFCs	Hydrofluorocarbons
IPCC	International Panel on Climate Change
LST	Localized Significant Thresholds
$MTCO_2e$	Metric tons of carbon dioxide equivalent
$MMTCO_2e$	Million metric tons of carbon dioxide equivalent
MPO	Metropolitan Planning Organization
NAAQS	National Ambient Air Quality Standards
NOx	Nitrogen Oxides
NO_2	Nitrogen dioxide
N_2O	Nitrous oxide
O_3	Ozone
OPR	Governor's Office of Planning and Research
PFCs	Perfluorocarbons
PM	Particle matter
PM10	Particles that are less than 10 micrometers in diameter
PM2.5	Particles that are less than 2.5 micrometers in diameter
PMI	Point of maximum impact
PPB	Parts per billion
PPM	Parts per million
RTIP	Regional Transportation Improvement Plan
RTP	Regional Transportation Plan
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SF_6	Sulfur hexafluoride
SIP	State Implementation Plan
SOx	Sulfur Oxides
TAC	Toxic air contaminants
UNFCC	United Nations Framework Convention on Climate Change
VOC	Volatile organic compounds

APPENDIX B

CALEEMOD MODEL DETAILED REPORT

19631 Richardson RV Storage Detailed Report

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5.10.3. Landscape Equipment

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5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

5.13. Operational Waste Generation

5.13.1. Unmitigated

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

5.15. Operational Off-Road Equipment

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	19631 Richardson RV Storage
Operational Year	2023
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.20
Precipitation (days)	18.0
Location	10030 Indiana Ave, Riverside, CA 92503, USA
County	Riverside-South Coast
City	Riverside
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	5423
EDFZ	11
Electric Utility	City of Riverside
Gas Utility	Southern California Gas
App Version	2022.1.1.8

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description

General Office Building	1.35	1000sqft	0.03	1,351	3,860	—	—	1,351 sf existing building converted to office & 3,860 sf landscaping
Parking Lot	46.0	Space	0.84	0.00	0.00	—	—	46 spaces (45 RV & 1 ADA) with total area being that of 33,763 sf paving & 2,749 sf concrete (~0.84 acres total)

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.03	0.07	0.03	0.26	< 0.005	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.02	0.06	0.03	0.17	< 0.005	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.03	0.06	0.03	0.22	< 0.005	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.01	0.01	0.01	0.04	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.02	0.02	0.02	0.19	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005
Area	0.01	0.05	< 0.005	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005
Energy	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005
Water	—	—	—	—	—	—	—	—	—	—	—
Waste	—	—	—	—	—	—	—	—	—	—	—
Refrig.	—	—	—	—	—	—	—	—	—	—	—
Total	0.03	0.07	0.03	0.26	< 0.005	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.02	0.02	0.02	0.16	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005
Area	—	0.04	—	—	—	—	—	—	—	—	—
Energy	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005
Water	—	—	—	—	—	—	—	—	—	—	—
Waste	—	—	—	—	—	—	—	—	—	—	—
Refrig.	—	—	—	—	—	—	—	—	—	—	—
Total	0.02	0.06	0.03	0.17	< 0.005	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.02	0.02	0.02	0.17	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005
Area	0.01	0.04	< 0.005	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005
Energy	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005
Water	—	—	—	—	—	—	—	—	—	—	—
Waste	—	—	—	—	—	—	—	—	—	—	—
Refrig.	—	—	—	—	—	—	—	—	—	—	—

Total	0.03	0.06	0.03	0.22	< 0.005	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005
Annual	—	—	—	—	—	—	—	—	—	—	—
Mobile	< 0.005	< 0.005	< 0.005	0.03	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Area	< 0.005	0.01	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005
Energy	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005
Water	—	—	—	—	—	—	—	—	—	—	—
Waste	—	—	—	—	—	—	—	—	—	—	—
Refrig.	—	—	—	—	—	—	—	—	—	—	—
Total	0.01	0.01	0.01	0.04	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
General Office Building	0.02	0.02	0.02	0.19	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.02	0.02	0.02	0.19	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
General Office Building	0.02	0.02	0.02	0.16	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.02	0.02	0.02	0.16	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005

Annual	—	—	—	—	—	—	—	—	—	—	—
General Office Building	< 0.005	< 0.005	< 0.005	0.03	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	< 0.005	< 0.005	< 0.005	0.03	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
General Office Building	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00
Total	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
General Office Building	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00
Total	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005
Annual	—	—	—	—	—	—	—	—	—	—	—
General Office Building	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00
Total	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005

4.3. Area Emissions by Source

4.3.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	0.03	—	—	—	—	—	—	—	—	—

Architectural Coatings	—	0.01	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.01	0.01	< 0.005	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005
Total	0.01	0.05	< 0.005	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	0.03	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.01	—	—	—	—	—	—	—	—	—
Total	—	0.04	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	0.01	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	< 0.005	—	—	—	—	—	—	—	—	—
Landscape Equipment	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005
Total	< 0.005	0.01	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005

4.4. Water Emissions by Land Use

4.4.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.5. Waste Emissions by Land Use

4.5.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

Annual	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—

—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
General Office Building	4.00	4.00	4.00	1,460	50.8	50.8	50.8	18,560
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)

0	0.00	2,027	676	2,195

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	250

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
General Office Building	23,566	873	0.0330	0.0040	37,270
Parking Lot	32,053	873	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
General Office Building	240,118	61,203
Parking Lot	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
General Office Building	1.26	0.00

Parking Lot	0.00	0.00

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
General Office Building	Household refrigerators and/or freezers	R-134a	1,430	0.02	0.60	0.00	1.00
General Office Building	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type
—	—

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	25.1	annual days of extreme heat
Extreme Precipitation	2.00	annual days with precipitation above 20 mm
Sea Level Rise	0.00	meters of inundation depth
Wildfire	3.16	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider different increments of sea level rise coupled with extreme storm events. Users may select from four model simulations to view the range in potential inundation depth for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 50 meters (m) by 50 m, or about 164 feet (ft) by 164 ft.
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	3	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	3	1	1	3
Extreme Precipitation	N/A	N/A	N/A	N/A

Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	91.1
AQ-PM	90.3
AQ-DPM	59.5
Drinking Water	77.4
Lead Risk Housing	42.4
Pesticides	70.7
Toxic Releases	72.0
Traffic	45.7
Effect Indicators	—

CleanUp Sites	17.1
Groundwater	0.00
Haz Waste Facilities/Generators	40.9
Impaired Water Bodies	0.00
Solid Waste	63.7
Sensitive Population	—
Asthma	66.4
Cardio-vascular	81.9
Low Birth Weights	2.90
Socioeconomic Factor Indicators	—
Education	60.1
Housing	45.0
Linguistic	27.3
Poverty	42.4
Unemployment	36.4

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	71.74387271
Employed	68.92082638
Median HI	68.04824843
Education	—
Bachelor's or higher	40.75452329
High school enrollment	100
Preschool enrollment	70.80713461

Transportation	—
Auto Access	67.17567047
Active commuting	28.51276787
Social	—
2-parent households	43.89837033
Voting	47.35018606
Neighborhood	—
Alcohol availability	75.69613756
Park access	34.31284486
Retail density	20.74939048
Supermarket access	34.58231746
Tree canopy	52.2776851
Housing	—
Homeownership	78.81432054
Housing habitability	86.3852175
Low-inc homeowner severe housing cost burden	77.08199666
Low-inc renter severe housing cost burden	62.29949955
Uncrowded housing	78.31387142
Health Outcomes	—
Insured adults	31.25882202
Arthritis	36.0
Asthma ER Admissions	31.6
High Blood Pressure	48.4
Cancer (excluding skin)	25.9
Asthma	58.2
Coronary Heart Disease	54.4
Chronic Obstructive Pulmonary Disease	53.7

Diagnosed Diabetes	70.5
Life Expectancy at Birth	23.2
Cognitively Disabled	72.6
Physically Disabled	69.8
Heart Attack ER Admissions	9.2
Mental Health Not Good	62.3
Chronic Kidney Disease	64.9
Obesity	48.4
Pedestrian Injuries	19.6
Physical Health Not Good	64.0
Stroke	70.4
Health Risk Behaviors	—
Binge Drinking	14.4
Current Smoker	57.8
No Leisure Time for Physical Activity	61.3
Climate Change Exposures	—
Wildfire Risk	1.4
SLR Inundation Area	0.0
Children	76.4
Elderly	50.2
English Speaking	88.6
Foreign-born	29.6
Outdoor Workers	58.0
Climate Change Adaptive Capacity	—
Impervious Surface Cover	77.3
Traffic Density	61.6
Traffic Access	23.0

Other Indices	—
Hardship	29.9
Other Decision Support	—
2016 Voting	66.7

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	62.0
Healthy Places Index Score for Project Location (b)	59.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Operations: Vehicle Data	Per the property owner, up to 4 trips a day for the RV/Trailer storage use. The proposed office building is 1,351 square feet; therefore, 4 trips per 1.351 thousand square feet results in 2.96 trips per thousand square foot per day.

Land Use	~1 acre project site with 1,351 sf existing building converted to office space & parking lot including 45 RV spaces & 1 ADA space. Total paved area is 33,763 sf, concrete areas are 2,479 sf, & landscaped areas are 3,860 sf.

Bill Ward
Elbac Solar
9960 Indiana Avenue Suite 13 & 14,
Riverside, CA 92503
October 21, 2025

Riverside Planning Commission
3900 Main St.
Riverside, CA 92522

RE: Opposition to Proposed RV and Trailer Storage Facility, Planning Case PR-2021-001026

Dear Chair Wilson:

I am writing to strongly oppose the proposed outdoor RV and trailer storage facility adjacent to my place of business. My objection is rooted in the significant and negative impact such a project would have on surrounding businesses, including mine.

Commercial areas thrive when tenants and visitors can expect a professional environment, convenient access, and a setting that enhances rather than diminishes the reputation of the district. Introducing an outdoor storage facility—essentially a parking lot filled with unused vehicles—runs counter to these principles. My customers visit us with expectations of professionalism, safety, and an attractive environment. The presence of a large-scale storage lot filled with recreational vehicles undermines the image we work hard to maintain and risks deterring both new customers and long-standing clients.

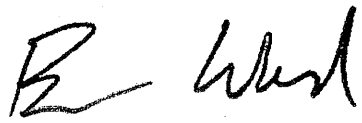
Beyond the image problem, there is a tangible concern regarding foot and vehicle traffic patterns associated with such facilities. Unlike traditional businesses that generate economic activity, an RV and trailer storage site contributes nothing to the commercial fabric of the neighborhood. Its presence will not generate foot traffic for surrounding businesses, nor will it attract complementary services. Instead, it effectively consumes valuable land that could be developed into something that supports—not undermines—the local economy.

Finally, I worry about the long-term implications for property values. Commercial tenants and potential investors evaluate not just the viability of individual businesses, but the overall environment. A storage lot, especially one that is outdoors and highly visible, sends the wrong signal about the vitality of the area. Over time, this risks driving away investment and slowing the economic momentum of our district.

For the reasons stated above, I respectfully request that you deny approval of this proposed RV and trailer storage facility. We must protect the long-term health and vibrancy of our commercial community.

Thank you for your consideration.

Sincerely,
Bill Ward



Elbac Solar, President

INTEGRITY
ARBORIST & ECOSCAPE, INC.

Riverside Planning Commission

3900 Main St.

Riverside, CA 92522

Re: Planning Case PR-2021-001026 (opposed)

Dear Planning Commission Members,

I am writing to oppose the proposed outdoor RV and trailer storage facility near my place of business, specifically due to the heightened risk of crime and vandalism that accompanies such facilities.

Outdoor storage lots are well-known targets for theft and vandalism. Recreational vehicles often contain valuable equipment, electronics, and personal belongings, making them highly attractive to criminals. Even with fencing and lighting, these facilities routinely face break-ins and trespassing incidents. Such activity not only threatens the security of the facility itself but also spills over into adjacent businesses.

As a nearby business owner, I cannot ignore the risk this project poses to my own property. Criminals who target the storage yard will be emboldened to linger in the area, potentially targeting neighboring businesses. The increased presence of suspicious activity undermines the sense of safety we work hard to maintain for our employees, clients, and visitors.

Additionally, crime concerns diminish property values and discourage new investment. Prospective tenants and customers avoid areas perceived as unsafe.

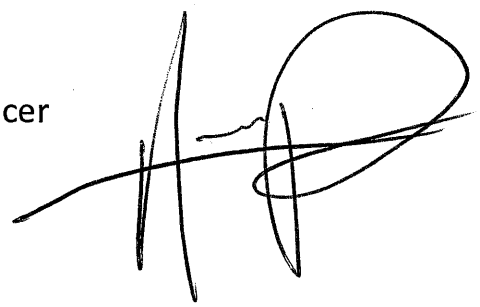
Approving of this facility would therefore not just invite security problems—it would erode the overall reputation of our district.

For these reasons, I strongly urge you to reject this proposal. Protecting the safety and security of our business community must remain a top priority.

Sincerely,

Andre Prado

Chief Executive Officer



10000 Indiana Ave Ste. 207, Riverside, CA 92503 **Phone: 951-406-1062 Fax: 951-406-1022**

Riverside Planning Commission
3900 Main Street
Riverside, CA 92501

Subject: Opposition to Proposal for Minor Conditional Use Permit and Design Review
Applicant: Steve Richardson
Project Address: 10030 Indiana Avenue
Case No.: PR-2021-001026

Dear Planning Commission,

I am the Owner of The Little Gym of Riverside, a gymnastics studio for children that has proudly served the Riverside community for over 20 years. Our members are local Riverside residents, and we are deeply invested in maintaining a safe, welcoming, and family-friendly commercial environment.

I am writing to formally oppose the proposed Minor Conditional Use Permit and Design Review for the project located at 10030 Indiana Avenue (Case No. PR-2021-001026), submitted by Steve Richardson. Based on the project description and intended use, it appears the applicant seeks approval to store trailers and recreational vehicles outdoors, which is incompatible with the surrounding commercial corridor and poses several negative impacts to our business and the community.

1. Negative Impact on Local Businesses

The proposed outdoor storage lot would significantly diminish the commercial appeal of Indiana Avenue. Our business and others in the area rely on a family-oriented, welcoming atmosphere to attract customers. The presence of a fenced storage yard creates an industrial and uninviting image, deterring foot traffic and lowering customer confidence. This visual and reputational impact will harm existing businesses that depend on a positive environment to thrive.

2. Neighborhood Incompatibility

This proposed use is industrial in nature, not commercial, and therefore incompatible with the surrounding land uses. Our corridor is built to serve families, local shoppers, and community businesses, not vehicle storage. Approving this type of project would set a concerning

precedent for future development, gradually transforming a vibrant commercial district into an industrial zone.

For these reasons, I respectfully urge the Planning Commission to deny the proposed Minor Conditional Use Permit and Design Review (Case No. PR-2021-001026). The proposed use would negatively affect The Little Gym of Riverside business, compromise safety, degrade visual quality, and contradict the city's goals for community-compatible development.

Thank you for your time and attention to this matter, and for your continued commitment to protecting the character and vitality of Riverside's business community.

Sincerely,
Cyndi Zomalt
Owner, The Little Gym of Riverside
9900 Indiana Avenue #12
Riverside, CA 92503
951-640-1806

Community Petition to Oppose the Proposed RV and Trailer Outdoor Storage Facility

To: City of Riverside Planning Commission & City Council
From: Concerned Local Businesses, Residents, and Community Members

We, the undersigned, strongly oppose the proposed RV and trailer outdoor storage facility planned for 10030 Indiana Ave. As stakeholders who live, work, and invest in this community, we believe the project is inappropriate, harmful, and inconsistent with the goals of maintaining a vibrant, safe, and prosperous neighborhood.

Reasons for Opposition

1. Negative Impact on Local Businesses
This facility would damage the professional image of nearby businesses, discourage new investment, and reduce customer traffic. The presence of a vehicle storage lot undermines the environment that our commercial community depends on to thrive.

2. Traffic and Circulation Issues
RVs and trailers are oversized vehicles that create congestion, safety hazards, and maneuvering challenges. Increased turning movements, blocked sight lines, and slow circulation will disrupt nearby businesses and endanger pedestrians and drivers.

3. Visual Blight and Aesthetic Degradation
Rows of idle RVs and trailers will create a cluttered and unattractive environment. Outdoor storage lots contribute nothing to the streetscape and instead degrade the overall appearance of our district.

4. Neighborhood Incompatibility
An outdoor storage yard is fundamentally inconsistent with a professional commercial area. It does not complement existing uses, nor does it enhance the identity of the district. This type of use belongs in an industrial or remote location—not next to active businesses.

5. Noise, Light, and Operational Disturbance
RVs are often moved early in the morning, late at night, or on weekends. Idling engines, backup alarms, and security lighting will create ongoing disturbances that affect both businesses and visitors.

6. No Economic or Community Benefit
The facility would provide little to no jobs, sales tax revenue, or customer activity for the community. It locks up valuable commercial land while offering no meaningful contribution to the local economy.

7. Increased Risk of Crime and Vandalism
Outdoor storage yards are frequent targets for theft and trespassing. The concentration of valuable vehicles attracts criminal activity that could spill into surrounding businesses, compromising safety and security.

8. Environmental, Air Quality, and Drainage Concerns
The constant movement of oversized vehicles worsens local air quality, while large paved surfaces increase polluted runoff and stormwater drainage issues. These negative environmental impacts are inconsistent with our community's goals for sustainability.

Our Request

For all of these reasons, we, the undersigned, respectfully urge the Planning Commission and City Council to **deny approval of the proposed RV and trailer outdoor storage facility**.

We ask that the property instead be reserved for uses that support business vitality, enhance aesthetics, generate economic growth, and contribute positively to the long-term health of our community.

Signatures

	Business	Representative	Address	Signature
1.	High Stack		10020 Indiana Avenue #2 Riverside CA 92503	
2.	JACNC	Robert Blanco	9980 Indiana Avenue #3 Riverside CA 92503	
3.	Black Beard Kickboxing	Jason Caldwell	9980 Indiana Ave #2 Riverside CA 92503	
4.	Farmers Ins.	Diana Rodriguez	9980 Indiana Ave #5 Riverside CA 92503	
5.	MNE Moulding	Eveline Fabiole	9980 Indiana #13 Riverside	
6.	Vessmans Inc	[illegible]	9950 Indiana #3,2,1 Riverside	
7.	[illegible]	Arturo Arona	9950 Indiana ave Suite 5 Riverside	OP Metal [illegible]
8.	Pronto Pato Sr	Antonio [illegible]	9950 Indiana ave suite 13	
9.	Adelinos Auto		3300 Harrisons St #13	
10.	O.B's	[illegible]	9960 Indiana Av #11 Riverside, CA 92503	
11.	Grafxs		9960 Indiana Ave. Suite 5 Riverside Ca. 92503	
12.	T3 Contractors	Jaime Thompson	9960 Indiana Suite 7 Riverside, CA 92503	

	Business	Representative	Address	Signature
13.	9960 Indiana Ave Suite 9 Riverside	JPW Services Inc	Yanira real	[signature]
14.	GENESIS RESTORE	Bobby moise	9960 Indiana #11	[signature]
15.	LOS NAKITAS BUILDERS	ALBERTO SANCHEZ	9960 INDIANA AVE #12	[signature]
16.	AmeriWest H.S.	Gerson Priego	9960 Indiana Ave #16	[signature]
17.	Creature Comfort	Cherre Kozna	9990 #1 Indian Ave, RIV, CA	[signature]
18.	DTR motors	Andrew Chaleem	9990 #9 Indiana Ave Riv	[signature]
19.	no Business.	Rick Walker	9990 #13 Indiana Ave Riv	[signature]
20.	Worship Interiors	Greyson Boerner	10000 Indiana #4	[signature]
21.	~~Richard~~ Riverside Submission	Richard Alvarez	10000 St 5. Indiana ave	[signature]
22.	Ochoa Cnc Mach.	Felipe Ochoa	3300 Harrison St Suite 2	[signature]
23.	MCD HotPottery	Chase Spangler	9900 Indiana Ave -5	[signature]
24.	Mezo Wave Studio	Martin Palomino	10000 #8 Indiana	[signature]
25.	ANDERSON CONTROLS	Michael Anderson	9990 INDIANA AVE #16/17	[signature]
26.				
27.				
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35.				

Jorge Hernandez
Simple Orthotics, Inc
9960 Indiana Avenue Ste 15
Riverside, CA 92503
October 21, 2025

Riverside Planning Commission / City Council
3900 Main St.
Riverside, CA 92501
RE: 10030 Indiana Ave - Proposed Outdoor Storage Facility

Dear Council/Commission Members,

I am writing to express my opposition to the proposed RV and trailer storage facility near my business, as it provides no economic or community benefit while imposing significant costs.

Unlike commercial or retail uses, this facility would generate no meaningful sales tax revenue, attract no customer base to neighboring businesses, and create no synergy with surrounding enterprises. It is essentially a low-intensity use that consumes valuable land without contributing to the economic vibrancy of the district.

As a business owner, I know how important land use decisions are for long-term growth. This parcel could be developed into something that generates jobs, attracts customers, and contributes to the vitality of the area. Instead, the proposal seeks to lock up prime land for the passive storage of recreational vehicles—benefiting only a limited number of private owners while harming the greater business community.

Land use policy should prioritize projects that maximize community benefit. An RV and trailer storage lot is the opposite: it offers no jobs beyond minimal maintenance, no customer-facing activity, no improvement to streetscape, and no economic synergy. Simply put, it is a wasted opportunity.

For these reasons, I respectfully urge the board to reject this proposal in favor of uses that actually enhance, rather than diminish, the economic health of our community.

Sincerely,
Jorge Hernandez

Simple Orthotics Inc.
President

Manuel Patron
Illusion Spa Covers
3300 Harrison Street Suite 8 & 9,
Riverside, CA, 92503
October 20, 2025

Re: Planning Case PR-2021-001026

Dear Riverside Planning Commission:

I am writing in opposition to the proposed outdoor RV and trailer storage facility near my business. This project is fundamentally incompatible with the surrounding neighborhood and represents a poor fit for the area.

Our district has evolved as a center for commerce and service, where businesses depend on a professional environment that attracts customers and complements one another. An outdoor RV and trailer storage yard is not aligned with these uses. Unlike retail, office, or service-oriented businesses, a storage facility generates no synergy, no mutual benefit, and no positive interaction with its surroundings.

Zoning decisions must consider compatibility, not just whether a use can technically fit onto a parcel of land. The fact that oversized recreational vehicles would be lined up in plain view, adjacent to active commercial businesses, is deeply concerning. This use is more consistent with industrial or remote areas—not vibrant commercial zones.

My customers expect a clean, professional setting. Introducing an incompatible use next door jeopardizes that expectation and undermines the entire commercial identity of the neighborhood. This would not just harm my business, but erode the character of the district as a whole.

I strongly urge the board to reject this proposal on the grounds of incompatibility and poor fit. Land use decisions must reinforce—not weaken—the identity of our neighborhoods.

Kindest regards,

Manuel Patron
Illusion Spa Covers, President

3D-Design Fabrication, Inc.

9960 Indiana Ave, Ste 3

Riverside, CA. 92503

Contact: 951-373-8096

Date: 10/20/2025

To: Riverside Planning Commission

3900 Main St., Riverside, CA 92501

Re: **Opposition to Proposal for Minor Conditional Permit & Design Case No. PR-2021-001026**

To whom it may concern: This list of reason for the opposition are listed below.

1. Draws more attention to crimes & vandalism
2. Traffic & circulation congestion & safety
3. Environmental contamination
4. Road Damage
5. Safety Hazard
6. Negative impact on neighborhood aesthitics
7. Health concerns from pollution

Regards,

Mike Le
Operation Manager

Eminence Barber Academy
9900 Indiana Ave. #10
Riverside, CA 92503
951-977-9023
www.eminencebarberacademy.com

Riverside Planning Commission
3900 Main St.
Riverside, CA 92501
RE: Case#PR-2021-001026

This letter is to voice our opposition of the storage of trailers and recreational vehicles outdoors at 10030 Indiana Ave. As a business owner, I feel as though this will have a negative impact on businesses. It would potentially cause a drop in foot traffic and customer appeal due to the uninviting presence of the storage lot. The outdoor storage lot will increase traffic and create congestion and safety hazards for our businesses in the area, pedestrians, and vehicles, especially while entering and exiting the surrounding properties.

Thank you,

Fernando Gonzalez
Eminence Barber Academy, Owner