SOUTHEAST CORNER OF RAMONA EXPRESSWAY AND STATE STREET COMMERCIAL PROJECT NOISE IMPACT ANALYSIS

City of San Jacinto

Prepared for

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LIST OF EXHIBITS

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GLOSSARY

ADT	Average Daily Traffic
ANSI	American National Standards Institute
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dB	decibel
dBA	A-weighted decibel
dBA/DD	A-weighted decibel per each doubling of distance
DOT	Department of Transportation
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FICON	Federal Interagency Committee on Noise
FTA	Federal Transit Administration
Hz	Hertz
Ldn	Day-Night Average Sound Level
Leq	Equivalent Sound Level
LV	Vibration Level
ONAC	Federal Office of Noise Abatement Control
ONC	California Department of Health Services Office of Noise Control
OSHA	Occupational Safety and Health Administration
PPV	peak particle velocity
RMS	root mean square
SEL	Single Event Level
sq ft	square feet
UMTA	Urban Mass Transit Administration
VdB	LV at 1 microinch per second

1.0 INTRODUCTION & PROJECT DESCRIPTION

1.1 Purpose of Report & Study Objectives

This Noise Impact Study has been prepared to determine the offsite and onsite noise impacts associated with the proposed Southeast corner of Ramona Expressway and State Street Commercial Project (project). The following is provided in this report:

- A description of the study area and the proposed project.
- Information regarding the fundamentals of noise.
- Information regarding the fundamentals of vibration.
- A description of the local noise guidelines and standards.
- An evaluation of the current noise environment.
- An analysis of the potential short-term construction-related noise and vibration impacts from the proposed project.
- An analysis of long-term operations-related noise impacts from the proposed project.

1.2 Site Location & Project Description

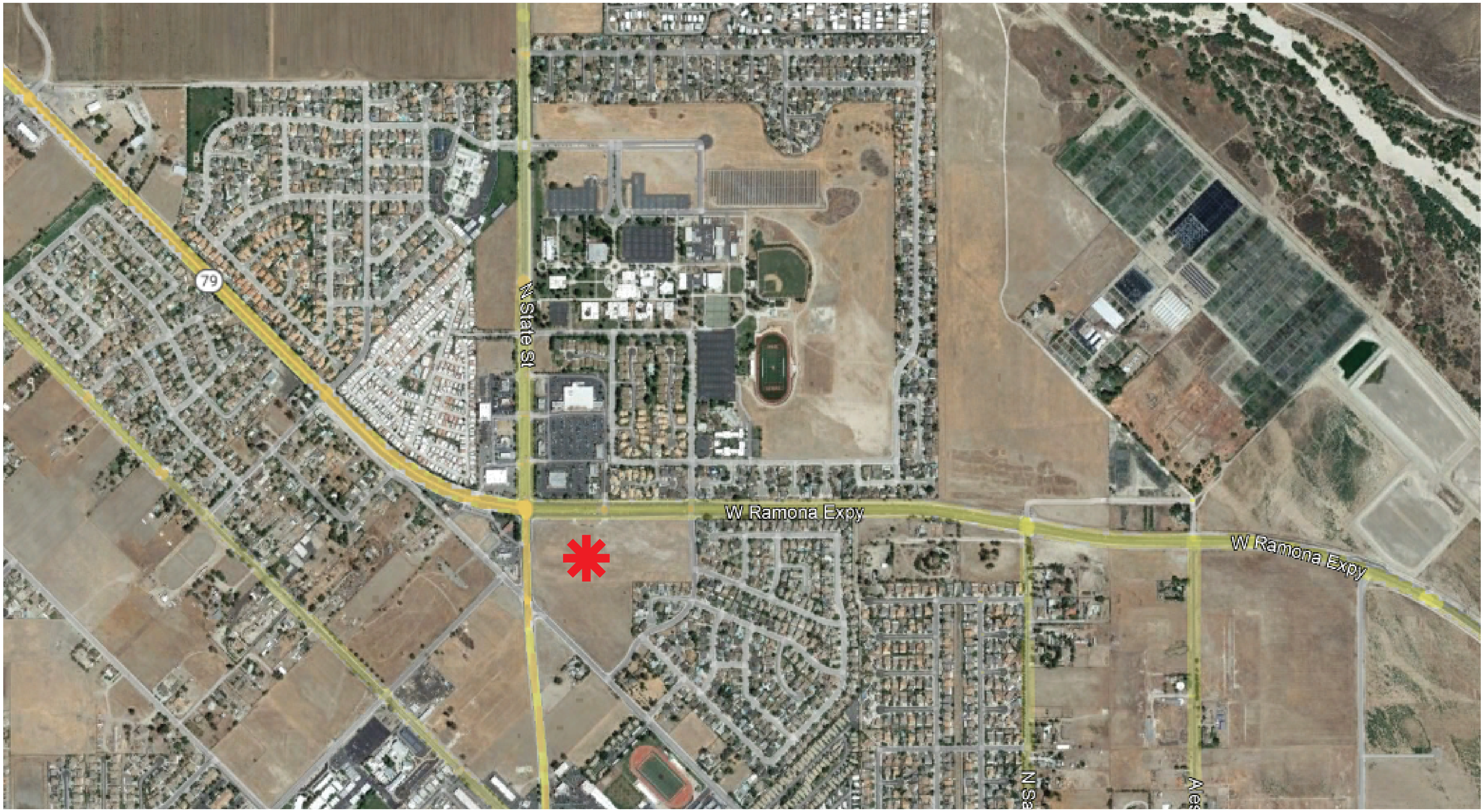
The project site is located on the Southeast corner of Ramona Expressway and State Street, in the City of San Jacinto and is currently vacant. The project site is surrounded by existing residential uses to the north, east and southeast and commercial uses to the north and west.

The proposed project consists of construction and operation of approximately 94,490 square feet of retail commercial use, approximately 257,130 square feet of Gasoline Service Station with Convenience Store and approximately 3,589 square feet of automated car wash. The project construction activities are expected to begin in May 2024 and would occur over a period of eight months. The project will be operational in the year 2025.

Exhibit A shows the project site location. Exhibit B shows the proposed site plan.

1.3 Sensitive Receptors

Noise-sensitive land uses are generally considered to include those uses where noise exposure could result in health-related risks to individuals, as well as places where quiet is an essential



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Site Location

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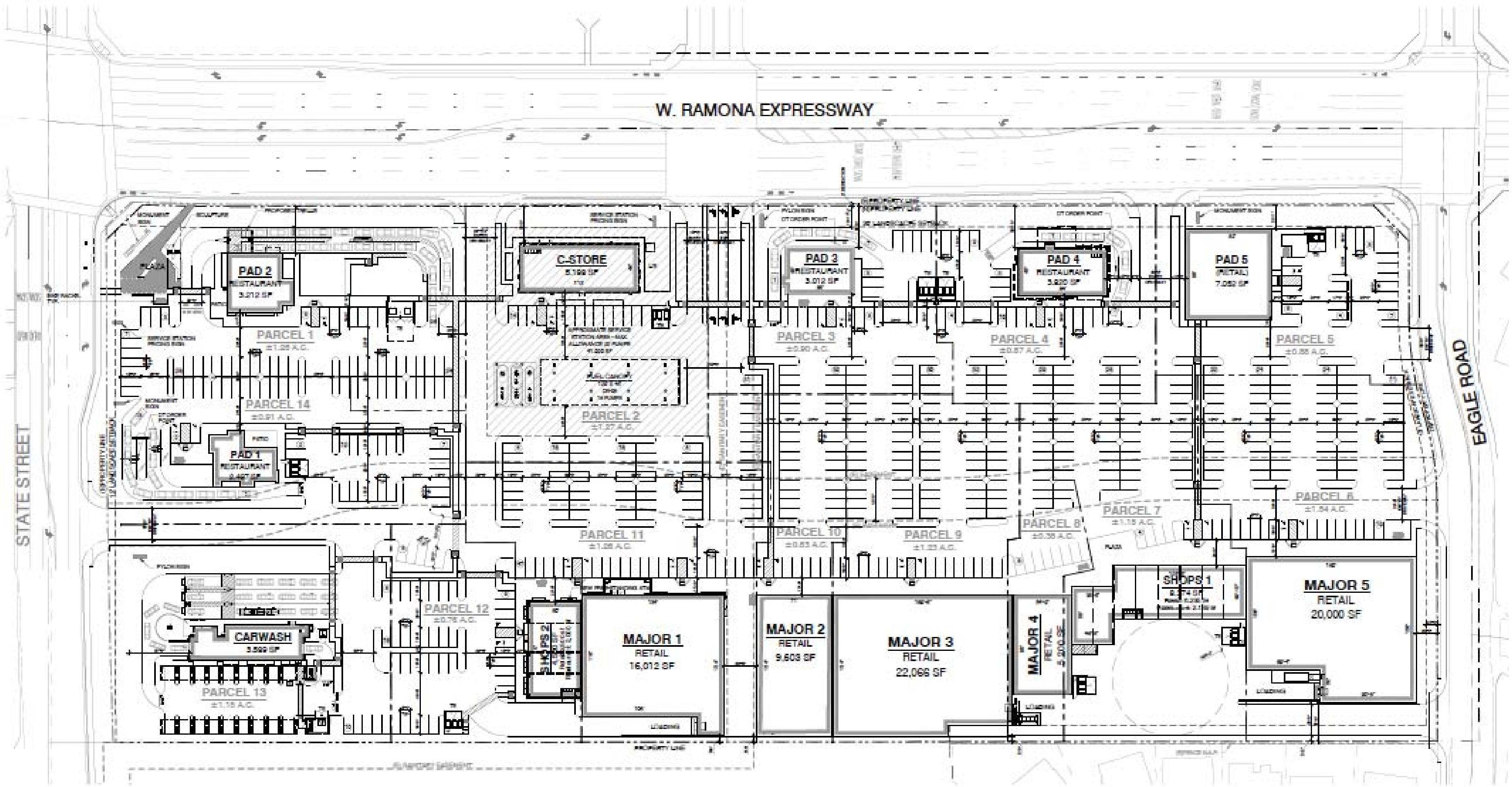
Location

Exhibit A



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Site Plan

Exhibit B

element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels.

Several sensitive land uses are located surrounding the project site. The closest existing sensitive receptors to the project site are the single-family residential uses located immediately to the southeast of the project site. Single-family residential uses are also located at approximately 55 feet to the east and approximately 125 feet to the north of the project site.

2.0 FUNDAMENTAL OF NOISE

2.1 Noise

Noise is defined as unwanted sound. Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm or when it has adverse effects on health. Sound is produced by the vibration of sound pressure waves in the air. Sound pressure levels are used to measure the intensity of sound and are described in terms of decibels. The decibel (dB) is a logarithmic unit, which expresses the ratio of the sound pressure level being measured to a standard reference level. A-weighted decibels (dBA) approximate the subjective response of the human ear to a broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies that are audible to the human ear.

2.1.1 Noise Description

Noise equivalent sound levels are not measured directly but are calculated from sound pressure levels typically measured in dBA. The equivalent sound level (Leq) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. The peak traffic hour Leq is the noise metric used by California Department of Transportation (Caltrans) for all traffic noise impact analyses.

The Day-Night Average Sound Level (Ldn) is the weighted average of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The time-of-day corrections require the addition of ten decibels to sound levels at night between 10 p.m. and 7 a.m. While the Community Noise Equivalent Level (CNEL) is like the Ldn, except that it has another addition of 4.77 dB to sound levels during the evening hours between 7 p.m. and 10 p.m. These additions are made to the sound levels at these times because during the evening and nighttime hours, when compared to daytime hours, there is a decrease in the ambient noise levels, which creates an increased sensitivity to sounds. For this reason, the sound is perceived to be louder in the evening and nighttime hours and is weighted accordingly. Many cities rely on the CNEL noise standard to assess transportation- related impacts on noise sensitive land uses.

Another noise descriptor that is used primarily for the assessment of aircraft noise impacts is the Sound Exposure Level, which is also called the Single Event Level (SEL). The SEL descriptor represents the acoustic energy of a single event (i.e., an aircraft overflight) normalized to one-second event duration. This is useful for comparing the acoustical energy of different events involving different durations of the noise sources. The SEL is based on an integration of the noise during the period when the noise first rises within 10 dBA of its maximum value and last falls below 10 dBA of its maximum value. The SEL is often 10 dBA greater, or more, than the LMAX since the SEL logarithmetically adds the Leq for each second of the duration of the noise.

2.1.2 Tone Noise

A pure tone noise is a noise produced at a single frequency and laboratory tests have shown the humans are more perceptible to changes in noise levels of a pure tone (Caltrans 1998). For a noise source to contain a “pure tone,” there must be a significantly higher A-weighted sound energy in a given frequency band than in the neighboring bands, thereby causing the noise source to “stand out” against other noise sources. A pure tone occurs if the sound pressure level in the one-third octave band with the tone exceeds the average of the sound pressure levels of the two contagious one-third octave bands by: 5 dB for center frequencies of 500 Hertz (Hz) and above; by 8 dB for center frequencies between 160 and 400 Hz; and by 15 dB for center frequencies of 125 Hz or less (Department of Health Services 1977).

2.1.3 Noise Propagation

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, radiate 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.

2.1.4 Ground Absorption

The sound drop-off rate is highly dependent on the conditions of the land between the noise source and receiver. To account for this ground-effect attenuation (absorption), two types of site conditions are commonly used in traffic noise models: soft-site and hard-site conditions. Soft-site conditions account for the sound propagation loss over natural surfaces such as normal earth and ground vegetation. For point sources, a drop-off rate of 7.5 dBA/DD is typically observed over soft ground with landscaping, as compared with a 6.0 dBA/DD drop-off rate over hard ground such as asphalt, concrete, stone and very hard packed earth. For line sources a 4.5 dBA/DD is typically observed for soft-site conditions compared to the 3.0 dBA/DD drop-off rate for hard-site conditions. To be conservative, hard-site conditions were used in this analysis.

2.1.5 Traffic Noise Prediction

The level of traffic noise depends on the three primary factors: (1) the volume of the traffic, (2) the speed of the traffic, and (3) the number of trucks in the flow of traffic. Generally, the loudness of traffic noise is increased by heavier traffic volumes, higher speeds, and greater number of trucks.

Vehicle noise is a combination of the noise produced by the engine, exhaust, and tires. Because of the logarithmic nature of traffic noise levels, a doubling of the traffic volume (assuming that the speed and truck mix do not change) results in a noise level increase of 3 dBA. Based on the FHWA community noise assessment criteria, this change is "barely perceptible," for reference a doubling of perceived noise levels would require an increase of approximately 10 dBA. However, the 1992 findings of Federal Interagency Committee on Noise (FICON), which assessed changes in ambient noise levels resulting from aircraft operations, found that noise increases as low as 1.5 dB can cause annoyance, when the existing noise levels are already greater than 65 dB. The truck mix on a given roadway also has an effect on community noise levels. As the number of heavy trucks increases and becomes a larger percentage of the vehicle mix, adjacent noise levels increase.

2.2 Vibration Fundamentals

Groundborne vibrations consist of rapidly fluctuating motions within the ground that have an average motion of zero. The effects of groundborne vibrations typically only cause a nuisance to people, but at extreme vibration levels, damage to buildings may occur. Although groundborne vibration can be felt outdoors, it is typically only an annoyance to people indoors where the associated effects of the shaking of a building can be notable. Groundborne noise is an effect of groundborne vibration and only exists indoors, since it is produced from noise radiated from the motion of the walls and floors of a room and may also consist of the rattling of windows or dishes on shelves.

2.2.1 Vibration Description

Several different methods are used to quantify vibration amplitude such as the maximum instantaneous peak in the vibrations velocity, which is known as the peak particle velocity (PPV) or the root mean square (RMS) amplitude of the vibration velocity. Because of the typically small amplitudes of vibrations, vibration velocity is often expressed in decibels and is denoted as LV and is based on the RMS velocity amplitude. A commonly used abbreviation is VdB, which in this text, is when vibration level (LV) is based on the reference quantity of 1 microinch per second.

2.2.2 Vibration Perception

Typically, developed areas are continuously affected by vibration velocities of 50 VdB or lower. These continuous vibrations are not noticeable to humans whose threshold of perception is around 65 VdB. Offsite sources that may produce perceptible vibrations are usually caused by construction equipment, steel-wheeled trains, and traffic on rough roads, while smooth roads rarely produce perceptible groundborne noise or vibration.

2.2.3 Vibration Propagation

The propagation of groundborne vibration is not as simple to model as airborne noise. This is because noise in the air travels through a relatively uniform median, while groundborne vibrations travel through the earth, which may contain significant geological differences. 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. P-waves, or compression 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. S-waves, or shear 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 vibration energy decreases in a logarithmic nature and the vibration levels typically decrease by 6 VdB per doubling of the distance from the vibration source. As stated above, this drop-off rate can vary greatly depending on the soil but has been shown to be effective enough for screening purposes, in order to identify potential vibration impacts that may need to be studied through actual field tests.

2.2.4 Construction Related Vibration Level Prediction

Construction activity can result in varying degrees of ground vibration, depending on the equipment used on the site. Operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Buildings in the vicinity of the construction site respond to these vibrations with varying results ranging from no perceptible effects at the low levels to slight damage at the highest levels. Table 1 gives approximate vibration levels for particular construction activities. The data in Table 1 provides a reasonable estimate for a wide range of soil conditions.

Table 1
Vibration Source Levels for Construction Equipment

Equipment	Peak Particle Velocity (inches/second) at 25 feet	Approximate Vibration Level (LV) at 25 feet
Pile driver (impact)	1.518 (upper range) 0.644 (typical)	112 104
Pile driver (sonic)	0.734 upper range 0.170 typical	105 93
Clam shovel drop (slurry wall)	0.202	94
Hydromill (slurry wall)	0.008 in soil 0.017 in rock	66 75
Vibratory Roller	0.210	94
Hoe Ram	0.089	87
Large bulldozer	0.089	87
Caisson drill	0.089	87
Loaded trucks	0.076	86
Jackhammer	0.035	79
Small bulldozer	0.003	58

Source: Transit Noise and Vibration Impact Assessment, Federal Transit Administration, September 2018.

3.0 REGULATORY SETTING

The proposed project is located in the City of San Jacinto and noise regulations are addressed through the efforts of various federal, State, and local government agencies. The agencies responsible for regulating noise are discussed below.

3.1 Federal Regulations

The adverse impact of noise was officially recognized by the federal government in the Noise Control Act of 1972, which serves three purposes:

- Promulgating noise emission standards for interstate commerce.
- Assisting state and local abatement efforts.
- Promoting noise education and research.

The Federal Office of Noise Abatement and Control (ONAC) was initially tasked with implementing the Noise Control Act. However, the ONAC has since been eliminated, leaving the development of federal noise policies and programs to other federal agencies and interagency committees. For example, the Occupational Safety and Health Administration (OSHA) agency limits noise exposure of workers to 90 dB Leq or less for 8 continuous hours or 105 dB Leq or less for 1 continuous hour.

The Department of Transportation (DOT) assumed a significant role in noise control through its various operating agencies. The Federal Aviation Administration (FAA) regulates noise of aircraft and airports. Surface transportation system noise is regulated by a host of agencies, including the Federal Transit Administration (FTA). Transit noise is regulated by the federal Urban Mass Transit Administration (UMTA), while freeways that are part of the interstate highway system are regulated by the Federal Highway Administration (FHWA). Finally, the federal government actively advocates that local jurisdiction use their land use regulatory authority to arrange new development in such a way that “noise sensitive” uses are either prohibited from being sited adjacent to a highway or, alternately that the developments are planned and constructed in such a manner that potential noise impacts are minimized.

Since the federal government has preempted the setting of standards for noise levels that can be emitted by the transportation sources, the City is restricted to regulating the noise generated by the transportation system through nuisance abatement ordinances and land use planning.

3.2 State Regulations

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, any special acoustical is defined as the highest noise level that should be considered for the construction of the buildings which do not incorporate 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. The City of Indio has adopted their own version of the State Land Use Compatibility Guidelines for land use planning and to assess potential transportation noise impacts to proposed land uses (see Table 2). Title 24, Chapter 1, Article 4 of the California Administrative Code (California Noise Insulation Standards) requires noise insulation in new hotels, motels, apartment houses, and dwellings (other than single-family detached housing) that provides an annual average noise level of no more than 45 dBA CNEL. When such structures are located within a 60-dBA CNEL (or greater) noise contour, an acoustical analysis is required to ensure that interior levels do not exceed the 45-dBA CNEL annual threshold. In addition, Title 21, Chapter 6, Article 1 of the California Administrative Code requires that all habitable rooms, hospitals, convalescent homes, and places of worship shall have an interior CNEL of 45 dB or less due to aircraft noise.

Government Code Section 65302 mandates that the legislative body of each county and city in California adopt a noise element as part of its comprehensive general plan. The local noise element must recognize the land use compatibility guidelines published by the State Department of Health Services. The guidelines rank noise land use compatibility in terms of normally acceptable, conditionally acceptable, normally unacceptable and clearly unacceptable.

3.3 Local Regulations

3.3.1 City of San Jacinto Noise Regulations

The City of San Jacinto outlines their noise regulations and standards within the General Plan 2040 Noise Element and the Municipal Code, Chapter 8.40, Noise Control. The Municipal Code establishes the residential noise standards for code enforcement purposes during construction and operation.

City of San Jacinto Municipal Code Noise Ordinance

Section 8.040.090 (A) of the City of San Jacinto Municipal Code allows construction activities between the hours of 7:00 a.m. and 7:00 p.m. Monday through Saturday. No construction is allowed on Sunday or federal holidays. Construction occurring consistent with these provisions is exempt from noise regulations.

Section 8.040.040 (A) of the San Jacinto Municipal Code states the maximum exterior noise level for single-family residences is 65 dBA Leq from 7:00 a.m. and 10:00 p.m. and 45 dBA Leq from 10:00 p.m. to 7:00 a.m. Section 8.040.050 (A) states the maximum interior noise level for single family residences is 45 dBA Leq from 7:00 a.m. and 10:00 p.m. and 40 dBA Leq from 10:00 p.m. to 7:00 a.m.

4.0 EXISTING NOISE CONDITIONS

To determine the existing noise level environment, long-term noise measurements were taken in the project study area at three locations in the project vicinity and surrounding receptors. The following describes the measurement procedures, measurement locations, and the noise measurement results.

4.1 Measurement Procedure & Criteria

To ascertain the existing noise at the project site, field monitoring was conducted on November 15, 2023. The field survey noted that noise within the proposed project area is generally characterized by traffic noise propagating from Ramona Expressway, Eagle Road and State Street.

4.2 Measurement Equipment

Noise monitoring was performed using a Piccolo Type-2 sound level meter. The sound level meter was programmed in “slow” mode to record the sound pressure level at one second intervals for in A-weighted form.

The sound level meters and microphones were mounted approximately five feet above the ground and equipped with a windscreen during all measurements. The sound level meter was calibrated before monitoring. The noise level measurement equipment meets American National Standards Institute (ANSI) specifications for sound level meters.

4.3 Measurement Locations

The noise monitoring locations were selected in order to obtain noise measurements of the current noise sources impacting the vicinity of the project site and the surroundings to provide a baseline for the existing noise levels. The noise measurement locations are shown in Exhibit C.

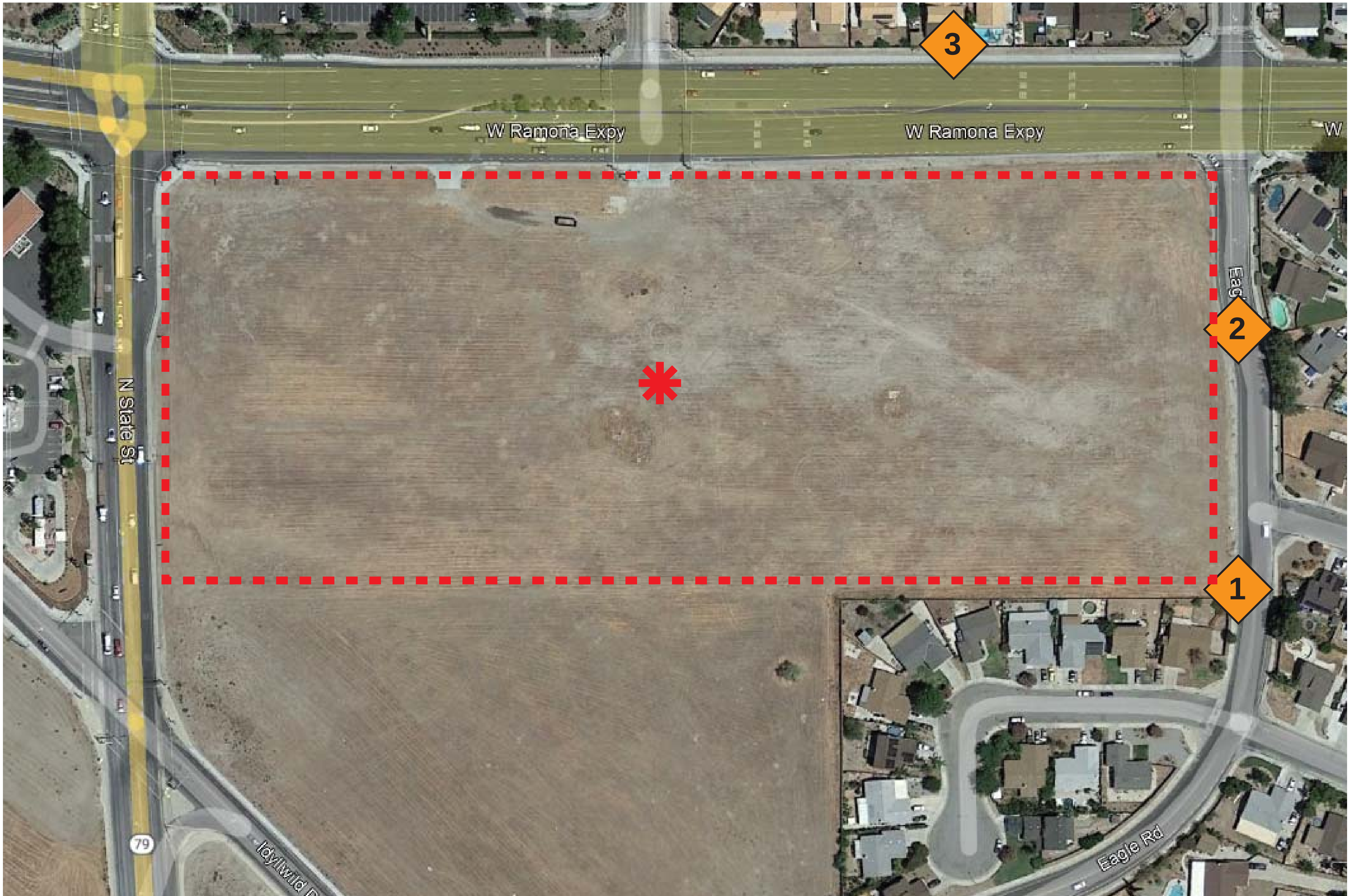
4.4 Noise Measurement and Results

The noise measurements were taken at three locations surrounding the project site near the existing noise sensitive receptors. The results of the noise level measurements are provided below in Table 2.

Table 2
Measured Noise Levels

Site No.	Location	Time	L_{eq} (dBA)	L_{max} (dBA)	L_{min} (dBA)
1	At the Southeastern corner of the project site	11:12 a.m.	62.3	75.8	45.1
2	Along Eagle Road, behind 497 Cambridge Drive	11:33 a.m.	63.7	74.7	47.7
3	Along Ramona Freeway, behind 556 Cumbre Court	12:08 p.m.	74.5	89.2	53.6

Meteorological conditions consisted of cloudy skies, mild temperatures, with light wind speeds (5 miles per hour), and low humidity. Measured daytime noise levels ranged from 62.3 to 74.5 dBA L_{eq}. The results of the field measurements are included in Appendix A. Refer to Exhibit C for the noise measurement locations.



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Site Location

Site Boundary

Noise Measurement Location

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Noise Measurement Locations

Southeast Corner of Ramona Expressway & State Street Commercial Project, City of San Jacinto California / 0043-2023-01

DEC/2023

Exhibit C

5.0 NOISE AND VIBRATION ANALYSES

Consistent with the California Environmental Quality Act (CEQA) and the CEQA Guidelines, a significant impact related to noise would occur if a proposed project were determined to 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 project area to excessive noise levels.

According to the CEQA checklist, to determine whether impacts to noise resources are significant environmental effects, the following thresholds are analyzed and evaluated:

- Exceedance of noise standards for construction and operational noise
- Groundborne vibration.
- Operational noise.
- Short-term construction noise.

Each of these thresholds is analyzed below.

5.1 Impact Analyses

This impact discussion analyzes the potential for project construction noise to cause an exposure of persons to or generation of noise levels in excess of established City of San Jacinto noise standards or applicable standards of other agencies. Noise levels in the project area would be influenced by construction activities.

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.

5.1.1 Construction Noise

Construction activities generally are temporary and have a short duration, resulting in periodic increases in the ambient noise environment. Construction activities would occur over approximately eight months and would include the following phases: grading, building construction, paving, and architectural coating. Ground-borne noise and other types of construction-related noise impacts typically occur during the initial demolition and grading phase. This phase of construction has the potential to create the highest levels of noise. Typical noise levels generated by construction equipment are shown in Table 3, Maximum Construction Noise Levels. It should be noted that the noise levels identified in Table 3 are maximum sound levels (L_{max}), which are the highest individual sound occurring at an individual time period. Operating cycles for these types of construction equipment may involve one or two minutes of full power operation followed by three to four minutes at lower power settings. Other primary sources of acoustical disturbance would be due to random incidents, which would last less than one minute (such as dropping large pieces of equipment or the hydraulic movement of machinery lifts).

Table 3
Maximum Construction Noise Levels

Type of Equipment	Acoustical Use Factor[1]	L_{max} at 50 Feet (dBA)[2]	L_{max} at 10 Feet (dBA)
Backhoe	40	78	92
Compressor	40	78	92
Concrete Saw	20	90	104
Dozer	40	82	96
Dump Truck	40	76	90
Excavator	40	81	95
Flatbed Truck	40	74	88
Grader	40	85	99
Loader	40	79	93
Paver	50	77	91
Roller	20	80	94
Scraper	40	85	99
Tractor	40	84	98
Water Truck	40	80	89
Welder	40	74	88

Note:
1. Acoustical Use Factor (percent): Estimates the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a construction operation.
2. These noise levels represent the A-weighted maximum sound level (L_{max}) measured at a distance of 50 feet from the construction equipment.
Source: Federal Highway Administration, Roadway Construction Noise Model (FHWA-HEP-05-054), January 2006.

As shown, the highest noise levels from construction are predicted to range from approximately 88 dBA Lmax to 104 dBA Lmax at the nearest receivers at 10 feet to the southeast. These maximum noise levels are considered to be a peak exposure, applicable to not more than 10%–15% of the total construction period, only while the construction activity is taking place along the property boundary closest to these nearest off-site receivers. The City does not have established numerical noise standards for construction noise if the construction activities occur within the allowable hours specified by the Municipal Code. Section 8.040.090 (A) of the City of San Jacinto Municipal Code allows construction activities between the hours of 7:00 a.m. and 7:00 p.m. Monday through Saturday. No construction is allowed on Sunday or federal holidays. Construction occurring consistent with these provisions is exempt from noise regulations described in the City of San Jacinto's Noise Ordinance.

5.2 Operational Noise

5.2.1 Stationary Noise Source

Stationary noise sources associated with the project would include the operation of mechanical equipment, parking lot activities, and car wash activities.

Mechanical Equipment Noise

Implementation of the project would result in changes to existing noise levels on and around the project site by developing new stationary sources of noise, including introduction of Heating, ventilation, and air conditioning (HVAC) equipment. These sources may affect noise-sensitive vicinity land uses off the project site. HVAC units would be installed on the roof of the proposed commercial buildings. Typically, mechanical equipment noise is approximately 66 dBA at 3 feet from the source.[1] Based upon the Inverse Square Law, sound levels decrease by 6 dBA for each doubling of distance from the source.[2] The nearest sensitive receptor to the project site is the single-family residences located adjacent to the southeast. However, HVAC units would be located at the center of the rooftop and would be located approximately 72 feet from the nearest sensitive receptor to the southeast. Noise from the proposed HVAC units would be approximately 38 dBA at 72 feet and would not be audible above the existing noise levels. In addition, the proposed HVAC units would be shielded by a screen, which would further attenuate operational noise from the HVAC units. Therefore, the proposed HVAC units would not generate noise levels in excess of City of San Jacinto's maximum exterior noise level of 65 dBA L_{eq} during daytime and 45 dBA L_{eq} during nighttime. Thus, the proposed project would not result in significant noise impacts from HVAC units at the nearest sensitive receptor, and stationary noise levels from the proposed HVAC units would comply with the City's Municipal Code Noise Ordinance. Impacts in this regard would be less than significant.

[1] Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden, *Noise Navigator Sound Level Database with Over 1700 Measurement Values*, June 26, 2015.
[2] Cyril M. Harris, *Noise Control in Buildings*, 1994.

Parking Lot Noise

Traffic associated with parking lots is typically not of sufficient volume to exceed community noise standards, which are based on a time-averaged scale such as the CNEL scale. However, the instantaneous maximum sound levels generated by a car door slamming, engine starting up, and car pass-bys may be an annoyance to adjacent noise-sensitive receptors.

The project proposes 532 parking spaces within the project site. The nearest sensitive receptor (single-family uses) to the proposed parking lot would be located approximately 55 feet to the east of the project site. Parking lot noise levels could range between 53 dBA and 63 dBA at 50 feet.[3] However, there is an existing seven-foot noise barrier wall along the western property line of the residential uses to the east which would shield the parking lot noise. Further, parking lot noise would be partially masked by background noise from traffic along Eagle Road and Ramona Expressway. As such, parking lot noise levels would not exceed the City's day-night average exterior sound level standard for residential use (65 dBA) and the City's nighttime noise standards (45 dBA). As such, the noise impacts from parking lot activities would be less than significant.

Car Wash Activity Noise

The proposed automated carwash facility including a machine dryer would be a total of 110 feet long and would be located at the southwestern side of the project site. Typical measured noise level from the car wash activities is approximately 78 dBA at 45 feet from the car wash exit.[4] The nearest sensitive receptor to the project site is the single-family residence located approximately 600 feet to the east of the proposed car wash exit. Noise from the proposed car wash activities would be approximately 55 dBA at 600 feet and would not exceed the City's daytime noise standard of 65 dBA for single-family residential uses. The proposed car wash would not be operational during the nighttime hours. Thus, the proposed project would not result in significant noise impacts from car wash activities to the nearest sensitive receptor, and stationary noise levels from the proposed car wash activities would comply with the City's Municipal Code Noise Ordinance. Impacts in this regard would be less than significant.

5.2.2 Project Generated Traffic Noise Levels

Based on the Trip Generation Data received from LINSCOTT, LAW & GREENSPAN, engineers, the proposed project is expected to generate approximately 11,265 average daily trips (ADT). The project is expected to provide access along Ramona Expressway and State Street. Based on the City of San Jacinto General Plan Noise Impact Study, prepared by MD Acoustics, LLC dated July 15, 2022, existing traffic volumes along Ramona Expressway and State Street would be approximately 20,150 and 22,050 respectively. As a conservative analysis, the proposed

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[3] Kariel, H. G., Noise in Rural Recreational Environments, Canadian Acoustics 19(5), 3-10, 1991

[4] Dudek, *Noise Study Report – Splash n Dash Car Wash 222 East Donovan Road, Santa Maria*, September 24, 2014.

project ADT would represent approximately 55 percent and 51 percent increase in the daily traffic compared to the existing traffic conditions on the Ramona Expressway and State Street respectively. According to Caltrans, a doubling of Traffic (100 percent increase) on a roadway would result in a perceptible increase in traffic noise levels (3 dBA)[5].

As a result, project-related increase in traffic volume would not significantly increase the existing traffic noise levels. Thus, project's operational traffic noise levels are not expected to be significant.

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

5.3 Groundborne Vibration

This impact discussion analyzes the potential for the proposed project to cause an exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels. Vibration levels in the project area would be influenced by construction activities.

5.3.1 Construction Vibration

Project construction can generate varying degrees of groundborne vibration, depending on the construction procedure and the construction equipment used. Operation of construction equipment generates vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings in the vicinity of a construction site often varies depending on soil type, ground strata, and construction characteristics of the receiver building(s). The Caltrans Transportation and Construction Vibration Manual identifies various vibration damage criteria for different building classes. This evaluation uses the Caltrans architectural damage criterion for continuous vibrations at residential buildings of 0.2 inch-per-second (inch/second) PPV. The types of construction vibration impacts include human annoyance and building damage. Table 4 displays vibration levels for typical construction equipment.

Based on the site plan, construction activities would likely take place as near as approximately 15 feet from the nearest residential uses to the southeast of the project. However, it is acknowledged that construction activities would occur throughout the project site and would not be concentrated at the point closest to the nearest structure.

[5] California Department of Transportation, technical Noise Supplement to the Traffic Noise Analysis Protocol, September 2013.

Table 4
Project Typical Construction Equipment Vibration Levels

Equipment	Approximate peak particle velocity at 15 feet (inches/second)[1]
Large Bulldozer	0.1915
Loaded Trucks	0.1635
Small Bulldozers	0.0065

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

Based on the vibration levels presented in Table 4, ground vibration generated by heavy-duty equipment would range from approximately 0.0065 to 0.1915 in/sec PPV at 15 feet from the source of activity. As such, the nearest residential buildings located 15 feet southeast of the project site would not be exposed to vibration levels exceeding the Caltrans 0.2 in/sec PPV significance threshold for vibration. Additionally, groundborne vibration during construction would be a temporary impact and would cease completely when construction ends. Once operational, the project would not be a source of groundborne vibration. Impacts would be less than significant.

The project would not involve operation of trains or heavy trucks, as such operational vibration impacts from the project would be less than significant.

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 project area to excessive noise levels.

The nearest airports are Hemet-Ryan Airport located at approximately 5.2 miles to the southwest of the project site. Furthermore, the project site is not located within the private or public airports within 2 miles radius. Impacts would be less than significant.

APPENDIX A:
Noise Measurement Data

Site Number: NM-1		
Recorded Date: 11/15/2023		
Start Time: 11:12 a.m.		
Meteorological Data		
Sky:	**Wind Speed: (mph or m/s)**	**Temperature: (degree Fahrenheit)**
Cloudy	5 mph	68

Measurement Data			
Location	**L_{eq} (dBA)**	**L_{max} (dBA)**	**L_{min} (dBA)**
At the Southeastern corner of the project site	62.3	75.8	45.1
Ambient Noise Source: Traffic noise along Eagle Street and Romona Freeway			

Noise Measurement Location Photo

Site Number: NM-2		
Recorded Date: 11/15/2023		
Start Time: 11:33 a.m.		
Meteorological Data		
Sky:	**Wind Speed: (mph or m/s)**	**Temperature: (degree Fahrenheit)**
Cloudy	5 mph	68

Measurement Data			
Location	**L_{eq} (dBA)**	**L_{max} (dBA)**	**L_{min} (dBA)**
Along Eagle Road, behind 497 Cambridge Drive	63.7	74.7	47.7
Ambient Noise Source: Traffic noise along Eagle Street and Romona Freeway			

Noise Measurement Location Photo

Site Number: NM-3		
Recorded Date: 11/15/2023		
Start Time: 12:08 p.m.		
Meteorological Data		
Sky:	**Wind Speed: (mph or m/s)**	**Temperature: (degree Fahrenheit)**
Cloudy	5 mph	68

Measurement Data			
Location	**L_{eq} (dBA)**	**L_{max} (dBA)**	**L_{min} (dBA)**
Along Romona Freeway, behind 556 Cumbre Court	74.5	89.2	53.6
Ambient Noise Source: Traffic noise along Romona Freeway			

Noise Measurement Location Photo