SAN JACINTO RESIDENTIAL TTM 38202 PROJECT

NOISE STUDY

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SAN JACINTO, CALIFORNIA
Noise Study

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SAN JACINTO RESIDENTIAL TTM 38202 PROJECT SAN JACINTO, CALIFORNIA

This report is an analysis of the potential noise impacts associated with the proposed Tentative Tract Map 38202 in the City of San Jacinto, California. This report has been prepared by Birdseye Planning Group (BPG) under contract to the applicant, to support preparation of the environmental documentation pursuant to the California Environmental Quality Act (CEQA). This study analyzes the potential for temporary noise impacts associated with construction activity and long-term impacts associated with operation of the proposed project.

PROJECT DESCRIPTION

The proposed Project would develop an approximately 33.8-acre vacant site with up to 181 single-family residential homes and associated infrastructure. The Project requires subdividing five (5) existing parcels (APNs 436-280-011, 436-280-012, 436-280-013, 436-280-014 and 436-280-025) (Figure 1 – Vicinity Map). Lot sizes would vary within an approximate range of 5,000 to 8,000 square feet. The Project proposes to modify development standards and reduce the minimum RL lot size below 7,200 square feet and density above 2.1 units per acre as allowable under a Planned Development Permit (PDP), Site Plan, and Design Review. The preliminary site plan is shown on Figure 2 – Proposed Site Plan.

Access to the new development would be provided from Lyon Avenue/Appaloosa Drive and Marilyn Drive/Estrella Street. Internal vehicular and pedestrian circulation would be accessible on new streets and sidewalks that would be publicly maintained in the future. Parking would be accommodated in two-car garages, two-car driveways, and on public streets.

Offsite improvements include connecting the proposed internal circulation system to the intersections of Lyon Avenue/Appaloosa Drive and Marilyn Drive/Estrella Street; connecting to existing utility systems within Lyon Avenue; frontage improvements along Lyon Avenue including a Class I multi-use path (per City of San Jacinto Trails Master Plan), sidewalk and street lights; and constructing a portion of the San Jacinto Valley Master Drainage Plan storm drain system Line G-3 from Marilyn Drive/Estrella Street along the northeast edge of the development to a future connection point (note: continuation of Line G-3 to be constructed by others) at the Monte Vista Middle School property to the north. Total off-site improvements would comprise approximately 1.26 acres.

Project construction stages would include site preparation, import of fill soils, grading, building construction (and construction of offsite facilities), underground utility construction, export of lot spoils and street paving. Project construction is anticipated to begin in the first quarter of 2023 and last approximately 24 months.

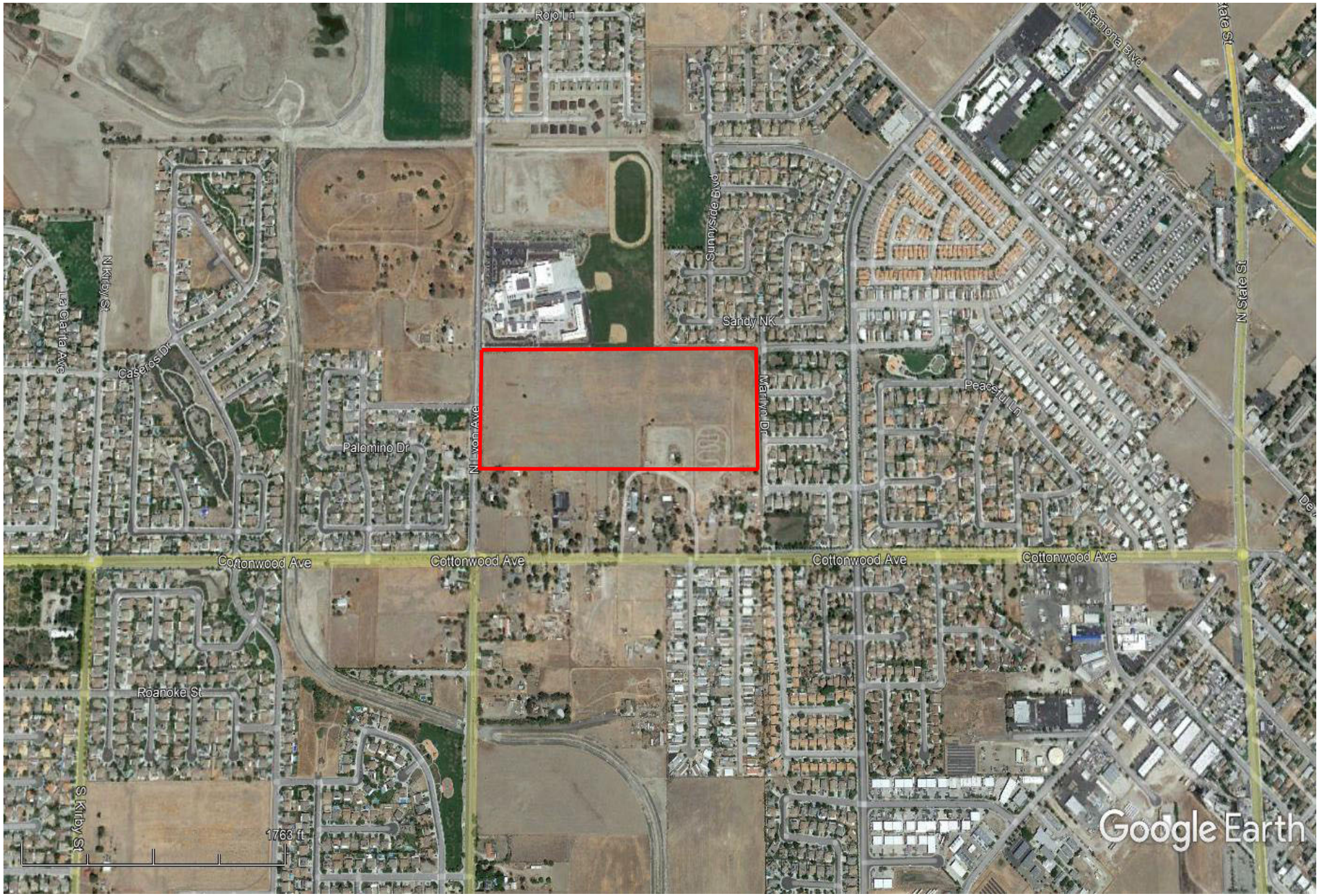

Figure 1 — Vicinity Map **- Project Site**

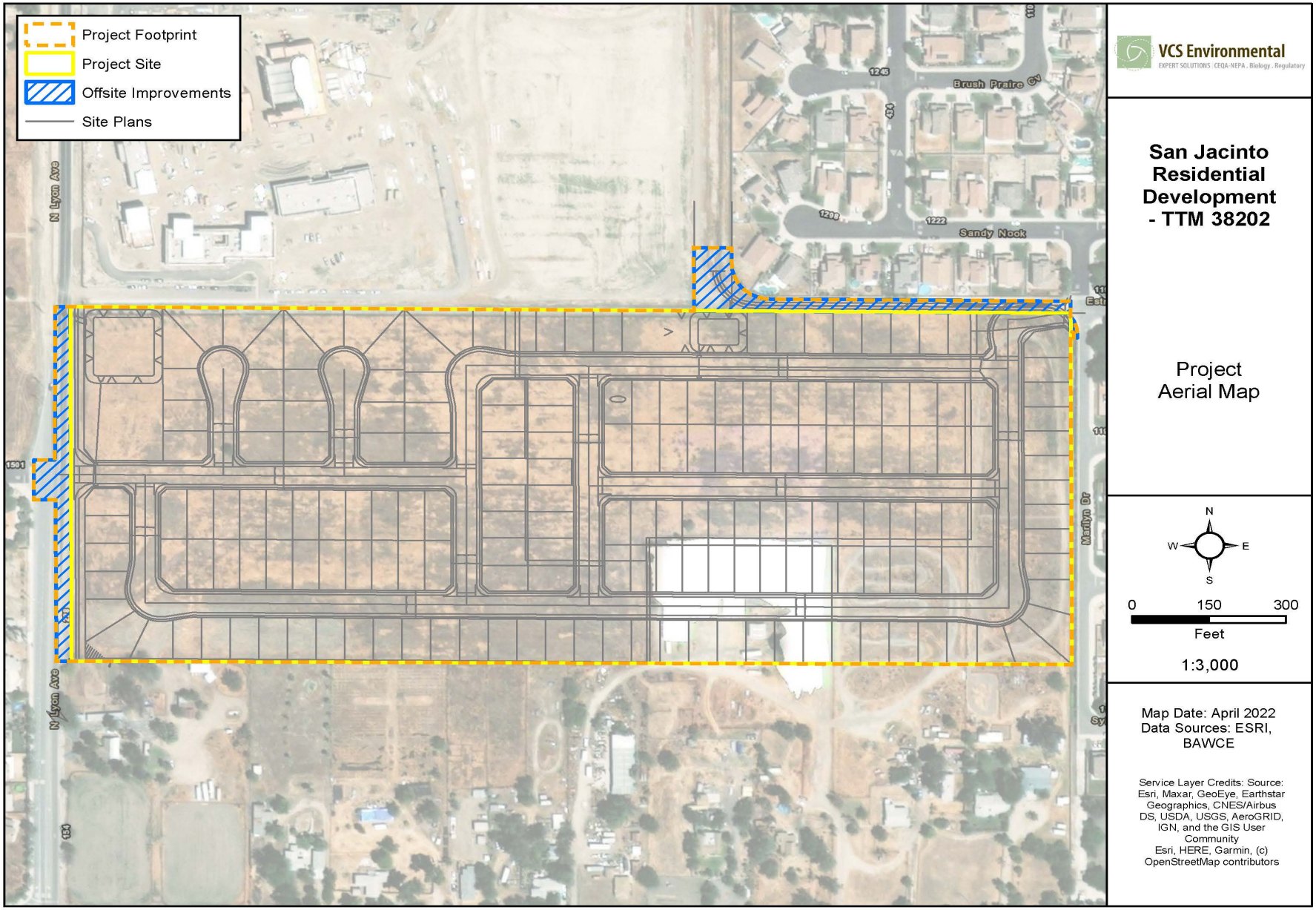

Figure 2 — Site Plan

SETTING

Overview of Sound Measurement

Noise level (or volume/loudness) is generally measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound pressure levels to be consistent with that of human hearing response, which is most sensitive to frequencies around 4,000 Hertz (about the highest note on a piano) and less sensitive to low frequencies (below 100 Hertz).

Sound pressure level is measured on a logarithmic scale with the 0 dB level based on the lowest detectable sound pressure level that people can perceive (an audible sound that is not zero sound pressure level). Based on the logarithmic scale, a doubling of sound energy is equivalent to an increase of 3 dBA, and a sound that is 10 dBA less than the ambient sound level would be half as loud and influence the character of ambient noise without influencing the overall sound level. Because of the nature of the human ear, a sound must be about 10 dBA greater than the reference sound to be judged as twice as loud. In general, a 3 dBA change in community noise levels is noticeable, while 1-2 dB changes generally are not perceived. Quiet suburban areas typically have noise levels in the range of 40-50 dBA, while arterial streets are in the 50-60+ dBA range. Normal conversational levels are in the 60-65 dBA range, and ambient noise levels greater than 65 dBA can interrupt conversations. Noise levels typically attenuate (or drop off) at a rate of 6 dBA per doubling of distance from point sources (i.e., industrial machinery). Noise from lightly traveled roads typically attenuates at a rate of about 4.5 dBA per doubling of distance. Noise from heavily traveled roads typically attenuates at about 3 dBA per doubling of distance. Noise levels may also be reduced by intervening structures; generally, a single row of buildings between the receptor and the noise source reduces the noise level by about 5 dBA, while a solid wall or berm reduces noise levels by 5 to 10 dBA. The manner in which older homes in California were constructed (approximately 30 years old or older) generally provides a reduction of exterior-to-interior noise levels of about 20 to 25 dBA with closed windows. The exterior-to-interior reduction of newer residential units and office buildings construction to California Energy Code standards is generally 30 dBA or more (FTA 2018).

In addition to the actual instantaneous measurement of sound levels, the duration of sound is important since sounds that occur over a long period of time are more likely to be an annoyance or cause direct physical damage or environmental stress. One of the most frequently used noise metrics that considers both duration and sound pressure level is the equivalent noise level (Leq). The Leq is defined as the single steady A-weighted level that is equivalent to the same amount of energy as that contained in the actual fluctuating levels over a period of time (essentially, the average noise level). Typically, Leq is summed over a one-hour period. Lmax is the highest RMS (root mean squared) sound pressure level within the measuring period, and Lmin is the lowest RMS sound pressure level within the measuring period.

The time period in which noise occurs is also important since noise that occurs at night tends to be more disturbing than that which occurs during the day. Community noise is usually measured using Day-Night Average Level (Ldn), which is the 24-hour average noise level with a 10-dBA penalty for noise occurring during nighttime (10 p.m. to 7 a.m.) hours, or Community Noise Equivalent Level (CNEL), which is the 24-hour average noise level with a 5 dBA penalty for noise occurring from 7 p.m. to 10 p.m. and a 10 dBA penalty for noise occurring from 10 p.m. to 7 a.m. Noise levels described by Ldn and CNEL usually do not differ by more than 1 dB. Table 1 shows sound levels of typical noise sources in Leq.

Sensitive Receptors

Noise exposure goals for various types of land uses reflect the varying noise sensitivities associated with each of these uses. Urban areas contain a variety of land use and development types that are noise sensitive including residences, schools, churches, hospitals and convalescent care facilities. The closest properties defined herein as sensitive receptors are single-family residences and Monte Vista Middle School located within approximately 50 feet from the eastern and northern project boundaries, respectively.

Project Site Setting

The project area is urbanizing and located proximal to existing single-family residences. Low-density residential uses are located adjacent to and south of the site. Single-family neighborhoods are located to the east/northeast and west. Monte Vista Middle School is north of the project site. The most common and primary sources of noise in the project site vicinity are motor vehicles (e.g., automobiles and trucks) operating on North Lyon Avenue. Motor vehicle noise is of concern because where a high number of individual events occur, it can create a sustained noise level. Aircraft overflights occur but do not noticeably contribute to the ambient noise environment.

To gather data on the general noise environment at the project site, three weekday morning 15-minute noise measurements were taken on the site on January 6, 2022, using an ANSI Type II integrating sound level meter. The predominant noise source was traffic. The temperature during monitoring was 55 degrees Fahrenheit with no perceptible wind.

The monitoring site (Site 1) is located along the western site boundary along North Lyon Avenue approximately 600 feet north of Cottonwood Avenue. Site 2 is located at the southwest corner of the Marilyn Drive/Estrella Street intersection. Site 3 is located along the north side of Cottonwood Avenue approximately 700 feet west of Palm Avenue. During monitoring, 41 cars/light trucks, one medium truck (six tires/two axles) and zero heavy trucks (all vehicles with three or more axles) passed Site 1. A total of seven cars/light trucks, zero medium truck (six tires/two axles) and zero heavy trucks (all vehicles with three or more axles) passed Site 2. A total of 64 cars/light trucks, one medium truck (six tires/two axles) and one heavy truck (all vehicles with three or more axles) passed Site 3.

Table 1. Sound Levels of Typical Noise Sources and Noise Environments

Noise Source (at Given Distance)	Noise Environment	A-Weighted Sound Level (Decibels)	Human Judgment of Noise Loudness (Relative to Reference Loudness of 70 Decibels*)
Military Jet Takeoff with Afterburner (50 ft)	Carrier Flight Deck	140	128 times as loud
Civil Defense Siren (100 ft)		130	64 times as loud
Commercial Jet Take-off (200 ft)		120	32 times as loud **Threshold of Pain**
Pile Driver (50 ft)	Rock Music Concert Inside Subway Station (New York)	110	16 times as loud
Ambulance Siren (100 ft) Newspaper Press (5 ft) Gas Lawn Mower (3 ft)		100	8 times as loud **Very Loud**
Food Blender (3 ft) Propeller Plane Flyover (1,000 ft) Diesel Truck (150 ft)	Boiler Room Printing Press Plant	90	4 times as loud
Garbage Disposal (3 ft)	Noisy Urban Daytime	80	2 times as loud
Passenger Car, 65 mph (25 ft) Living Room Stereo (15 ft) Vacuum Cleaner (10 ft)	Commercial Areas	70	Reference Loudness **Moderately Loud**
Normal Speech (5 ft) Air Conditioning Unit (100 ft)	Data Processing Center Department Store	60	½ as loud
Light Traffic (100 ft)	Large Business Office Quiet Urban Daytime	50	¼ as loud
Bird Calls (distant)	Quiet Urban Nighttime	40	1/8 as loud **Quiet**
Soft Whisper (5 ft)	Library and Bedroom at Night Quiet Rural Nighttime	30	1/16 as loud
	Broadcast and Recording Studio	20	1/32 as loud **Just Audible**
		0	1/64 as loud **Threshold of Hearing**

Source: Compiled by dBF Associates, Inc., 2016

The dominant noise source is traffic on North Lyon and Cottonwood Avenue. General background noise noticeably contributes to ambient conditions. Table 2 identifies the noise measurement location and measured noise level.

Table 2
Noise Monitoring Results

Measurement Location	Primary Noise Source	Sample Time	Leq (dBA)
Project site approximately 600 feet north of Cottonwood Avenue	Traffic	Weekday morning	61.2
Southwest corner of Marilyn Drive and Estrella Street	Traffic	Weekday morning	53.7
North side of Cottonwood Avenue approximately 700 feet west of Palm Avenue.	Traffic	Weekday morning	64.7

Source: Field visit using ANSI Type II Integrating sound level meter.

The monitoring locations are shown in Figure 3. As shown in Table 2, the measured Leq at Site 1 was 61.2 dBA; 53.7 dBA at Site 2 and 64.7 dBA at Site 3. The monitoring data sheet is provided in Appendix A.

Regulatory Setting

In 1976, the California Department of Health, State Office of Noise Control published a recommended noise/land use compatibility matrix which many jurisdictions have adopted as a standard in their general plan noise elements. The California State Office of Planning and Research 2017 updates to the General Plan Guidelines, Appendix D Noise Element Guidelines, Figure 2, shows that exterior noise levels up to 60 dBA (CNEL or Ldn) are normally compatible in rural residential areas. Noise levels up to 70 dBA (CNEL or Ldn) are conditionally compatible.

City of San Jacinto 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.

Figure 3 — Noise Monitoring Locations **- Project Site** • - Noise Monitoring Location

Vibration Standards

Vibration is a unique form of noise as the energy is transmitted through buildings, structures and the ground whereas audible noise energy is transmitted through the air. Thus, vibration is generally felt rather than heard. The ground motion caused by vibration is measured as peak particle velocity in inches per second and is referenced as vibration decibels (VdB). The vibration velocity level threshold of perception for humans is approximately 65 VdB. A vibration velocity of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels.

The City of San Jacinto Municipal Code does not address construction-related vibration; thus, for the purpose of evaluating project-related vibration impacts, thresholds established in the Federal Transit Administration's (FTA) *Transit Noise and Vibration Impact Assessment* (September 2018) (Table 6-3) are used. A threshold of 65 VdB is used for buildings where low ambient vibration is essential for interior operations. These buildings include hospitals and recording studios. A threshold of 72 VdB is used for residences and buildings where people normally sleep (i.e., hotels and rest homes). A threshold of 75 VdB is used for institutional land uses where activities occur primarily during the daytime (i.e., churches and schools). The threshold used for the proposed project is 72 VdB as single-family residences are the nearest sensitive receptors to the site.

Construction activities such as blasting, pile driving, demolition, excavation or drilling have the potential to generate ground vibrations. With respect to ground-borne vibration impacts on structures, the FTA states that ground-borne vibration levels in excess of 90 VdB would damage buildings extremely susceptible to vibration damage. No historic buildings or buildings extremely susceptible to vibration damage are known to occur near the site; thus, 94 VdB (PPV 0.2), the standard for potential damage to non-engineered timber and masonry buildings is used herein to evaluate potential vibration impacts to neighboring structures. Construction activities referenced above that would generate significant vibration levels are not proposed. However, to provide information for use in completing the CEQA evaluation, construction-related vibration impacts are evaluated using the above referenced criteria.

IMPACT ANALYSIS

Methodology and Significance Thresholds

Construction noise estimates are based upon noise levels reported by the Federal Transit Administration, Office of Planning and Environment, and the distance to nearby sensitive receptors. Reference noise levels from that document were used to estimate noise levels at nearby sensitive receptors based on a standard noise attenuation rate of 6 dB per doubling of distance (free field propagation of sound attenuation).

The proposed project would be a new use; thus, noise levels associated with existing and future traffic were based on the difference in trip volumes between existing conditions and the proposed use. A doubling of traffic volumes would be required to cause a noticeable increase (3 dBA) in traffic noise. Baseline conditions do not exceed 65 dBA Leq, the normally acceptable exterior sound level at single-family residences referenced in Section 8.040.040 (A) and depicted in Table N-1 of the City of San Jacinto General Plan Noise Element. Baseline and with project sound levels were calculated to determine whether project traffic, when added to baseline traffic, would exceed the conditionally compatible standard or noticeably increase (+3 dBA or greater) the Leq over baseline conditions.

As noted, a noise increase greater than 3 dBA is readily perceptible to the average human ear; and thus, is the level considered a substantial noise increase related to traffic operations. For the purpose of this evaluation, the peak hour Leq is used for traffic noise as it provides a conservative estimate of potential noise levels. As discussed, existing noise levels do not exceed the normally acceptable sound levels for single-family residential receivers. Thus, the impact determination is based on whether noise levels would exceed those levels considered acceptable for single-family residential areas.

Temporary Construction Noise

The main sources of noise during construction activities would include heavy machinery used during, site preparation, grading the site, as well as equipment used during building construction and paving. Table 3 demonstrates the typical noise levels associated with heavy construction equipment. As shown, average noise levels associated with the use of heavy equipment at construction sites can range from about 81 to 95 dBA at 25 feet from the source, depending upon the types of equipment in operation at any given time and phase of construction (FTA 2018).

The noise level used to estimate the typical maximum noise level that could occur during project construction is based on use of a bulldozer as it is likely to be the noisiest type of equipment used over a sustained period of time adjacent to nearby residences and Monte Vista Middle School during site preparation and grading activities. Site preparation and grading activities are estimated to last approximately 136 working days. Actual noise levels will fluctuate throughout the day and may periodically exceed 88 dBA at the property line depending on the type and location of equipment used and whether multiple pieces of equipment are operating simultaneously in the same area. For noise and distance reference purposes, the project site is approximately 750 feet by 1,960 feet.

Table 3
Typical Maximum Construction Equipment Noise Levels

Equipment Onsite	Typical Maximum Level (dBA) 25 Feet from the Source	Typical Maximum Level (dBA) 50 Feet from the Source	Typical Maximum Level (dBA) 100 Feet from the Source
Air Compressor	84	79	73
Backhoe	84	79	73
Bobcat Tractor	84	79	73
Concrete Mixer	85	78	72
Bulldozer	88	82	76
Jack Hammer	95	89	83
Pavement Roller	86	80	74
Street Sweeper	88	82	76
Man Lift	81	75	69
Dump Truck	82	76	70

Source: Noise levels based on FHWA Roadway Construction Noise Model (2006) Users Guide Table 1.
Noise levels based on actual maximum measured noise levels at 50 feet (Lmax).
Noise levels assume a noise attenuation rate of 6 dBA per doubling of distance.

The proposed project's estimated maximum construction noise levels at varying distances are shown in Table 4 based on a reference noise level of 88 dBA at 25 feet. The reference level of 88 dBA is associated with operation of a bulldozer, which is the loudest piece of equipment commonly used during site preparation and grading. Noise levels at neighboring residences and Monte Vista Middle School will vary based on the distance from the equipment and the receiver as equipment moves around the approximately 750 feet by 1,960 foot project site. 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.

As shown in Table 4, exterior noise levels would periodically exceed 88 dBA at the project site boundary. Such exceedances would be expected to occur during the most heavy-equipment intensive construction phases of site preparation and grading, which are estimated to last 136 working days. Exterior noise levels experienced at different receptor locations would be reduced by approximately 6 dBA with each doubling of distance that equipment is operating away from a particular receptor. Further interior noise attenuation of approximately 20 to 30 dBA would occur inside residential and school structures with closed windows.

Table 4
Typical Maximum Construction Noise Levels at Various Distances from Project Construction

Distance from Construction	Typical Maximum Noise Level at Receptor (dBA)
25 feet	88
50 feet	82
100 feet	76
250 feet	68
500 feet	62
1,000 feet	56

While construction noise would be periodically audible at residences and Monte Vista Middle School neighboring the project site, construction noise would be temporary and is not anticipated to be a cause of substantial annoyance or to cause direct physical damage or environmental stress. In addition, the proposed project would comply with limitations on hours of construction activity defined in Section 8.040.090 of the San Jacinto Municipal Code. Based on the analysis above, noise impacts during construction of each phase would be **less than significant and no mitigation is required**.

Temporary construction noise could be reduced by implementing one or more of the following measures:

N-1 **Construction Equipment**. Electrical power shall be used to run air compressors and similar power tools. Internal combustion engines should be equipped with a muffler of a type recommended by the manufacturer and in good repair. All diesel equipment shall be operated with closed engine doors and be equipped with factory-recommended mufflers. Construction equipment that continues to generate substantial noise at the project boundaries shall be shielded with temporary noise barriers, such as barriers that meet a sound transmission class (STC) rating of 25, sound absorptive panels, or sound blankets on individual pieces of construction equipment. Stationary noise-generating equipment, such as generators and compressors, shall be located as far as practically possible from the nearest residential and school property lines.

N-2 **Limit Operations Adjacent to Receivers**. Limit the number of large pieces of equipment (i.e., bulldozers or concrete mixers) operating adjacent to receivers at any given time.

N-3 **Neighbor Notification**. Provide notification to Monte Vista Middle School and residential occupants nearest to the project site at least two weeks prior to initiation of construction activities that could result in substantial noise levels at outdoor or indoor living areas. This notification shall include the anticipated hours and duration of construction and a description of noise reduction measures being implemented at the project site. The notification shall include a telephone number for local residents to call to submit complaints associated with construction noise. The notification should be posted along North Lyon Avenue and Marilyn Drive and be visible from adjacent properties.

Temporary Construction-Related Vibration

The vibration velocity level threshold of perception for humans is approximately 65 VdB. A vibration velocity of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for many people. If a roadway is smooth, the groundborne vibration from traffic is barely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration velocity, to 94 VdB, which is the standard for potential damage to non-engineered timber and masonry buildings. There are no exisitng activities occurring in the project area that generate perceptible groundborne vibration.

Construction activity on the project site would be temporary and any vibration would not persist for long periods. Assuming vibration levels would be simlar to those associated with a large bulldozer, typical groundborne vibration levels would be 91 VdB at 25 feet, 85 VdB at 50 feet, and 79 Vdb at 100 feet, based on the Federal Transit Administration's (FTA's) *Transit Noise and Vibration Impact Assessment* (September 2018) as shown in Table 5.

As referenced, the closest single-family residence is approximately 50 feet east of the eastern property line. The nearest school structure is also approximately 50 feet from the project's northern property line. Based on the information presented in Table 5, vibration levels would attenuate to between 91 VdB (distance at 25 feet) and 85 VdB (distance at 50 feet) at these residences during construction along the eastern and northern property lines assuming a bulldozer is the heaviest piece of equipment used during site preparation or grading. As discussed below, 94 VdB is the threshold where minor damage can occur in non-engineered timber and masonry buildings. Vibration levels are projected to be under this threshold; thus, structural damage is not expected to occur as a result of construction activities associated with the proposed project.

Vibration may be perceptible at the nearest receiver periodically during equipment pass by events. Any vibration would be temporary in duration and occur within the timeframe designated in the City of San Jacinto Code as referenced above. Thus, temporary vibration impacts would be **less than significant and no mitigation is required**.

Table 5
Vibration Source Levels for Construction Equipment

Equipment	Approximate VdB				
	25 Feet	50 Feet	60 Feet	75 Feet	100 Feet
Large Bulldozer	91	85	83	82	79
Loaded Trucks	90	84	82	81	78
Jackhammer	94	88	86	85	82
Loader	86	80	78	77	74

Source: FTA, 2018

Operational Noise Exposure

Operation of the proposed project was evaluated for potential exterior traffic related impacts caused by increased traffic volumes associated with the project as well as interior noise levels caused by traffic. The proposed project is considered a typical development that would not significantly contribute new vehicle trips to the existing road network or distribution of nighttime traffic. The majority of all project traffic would be concentrated on North Lyon Avenue west of the site, Cottonwood Avenue south of the site and Marilyn Drive/Estrella Street/Sykes Street east of the site. The Ldn/CNEL values associated with project-related traffic Leq are estimated by adding 1 dB to predicted peak-hour Leq traffic noise levels for comparison with the City of San Jacinto Noise Element Table N-2 criteria for exterior noise levels generated by traffic. For the purpose of the impact assessment, the Leq is used per the City of San Jacinto Municipal Code as referenced above.

Exterior Traffic Noise. Traffic is the primary noise source that would be generated by the proposed project. Existing noise levels were measured at the project site on January 6, 2021. The Leq during the 15-minute monitoring period was 61.2 dBA along North Lyon Avenue, 53.7 at the northeast corner of the site along Marilyn Drive and 64.7 dBA along Cottonwood Avenue. Existing measured noise levels do not exceed the 65 dBA Leq exterior standard referenced above at any of the monitoring locations. Measured baseline and with project sound levels were calculated to determine whether project traffic, when added to baseline traffic, would exceed the noise standard or noticeably increase (+3 dBA or greater) over baseline conditions.

The roadway network adjacent to the project site (i.e., North Lyon Avenue, Cottonwood Avenue, Estrella Street and Marilyn and Sykes Avenues) was modeled using the Federal

Highway Administration Traffic Noise Model (TNM) version 2.5 software. The model calculates traffic noise at receiver locations based on traffic volumes, travel speed, mix of vehicle types operating on the roadways (i.e., cars/trucks, medium trucks and heavy trucks) and related factors. Traffic volumes used to establish the vehicle mix on North Lyon Avenue and Cottonwood Avenue are based on traffic counts obtained during the monitoring period.

Hourly average baseline noise levels (Leq) were calculated for four residential receivers located proximal to the project site to establish baseline conditions. These are the closest receivers to the project site and would experience the highest concentration of project-related traffic.

1. Single-family residence at 179 North Lyon Avenue south of the site;
2. Single-family residence at 1407 Cottonwood Avenue south of the site;
3. Single-family residence at 1182 Estrella Street northeast of the site; and
4. Single-family residence at 1198 Sykes Avenue southeast of the site.

Noise levels associated with the project were calculated by distributing the 169 P.M. peak hour project trips into the baseline traffic volumes onto North Lyon Avenue, Cottonwood Avenue, Estrella Street, Marilyn Drive and Sykes Street as shown in Traffic Impact Study (TJW Engineering, Inc., March 2022). Volumes were concentrated in this area for the purpose of evaluating worst case noise conditions. The receiver locations are shown in Figure 4 and the modeling results are shown in Table 6. Project traffic will have no noticeable effect on baseline conditions. The highest projected increase would occur at Receiver 1 (+1.4 dBA) , but would not result in a perceptible change (3 dBA or greater) and would not result in exceeding the 65 dBA Leq standard. The highest modeled existing Leq is 64.1 dBA at Receiver 2, which is located along Cottonwood Avenue. With the addition of project traffic, the Leq would increase by +0.9 dBA to 65.0 dBA at this location but would not exceed the Leq standard. The Leq with project traffic would not exceed the 65 dBA Leq standard at any of the receivers modeled. Thus, the project will have no adverse traffic-related noise effects.

Table 6
Modeled Noise Levels

Receptor	Existing Leq	Existing Ldn/CNEL	With Project Leq	With Project Ldn/CNEL	Decibel Change	Significant Impact
Receiver 1	60.6	61.6	62.0	63.0	+1.4	No
Receiver 2	64.1	65.1	65.0	66.0	+0.9	No
Receiver 3	54.0	55.0	55.2	56.2	+1.2	No
Receiver 4	53.0	54.0	54.3	55.3	+1.3	No

As shown, the projected Ldn/CNEL at Receiver 2 exceeds the 65 dBA standard depicted in the City of San Jacinto General Plan Noise Element (Table N-1) referenced above by 1 dBA. When baseline conditions exceed the standard, the project impact is determined by whether project-related traffic will cause a noticeable increase in noise levels. As stated, a noticeable increase is a change of +/- 3 dBA. As shown in Table 6, project traffic would add 0.9 dBA to the Ldn/CNEL

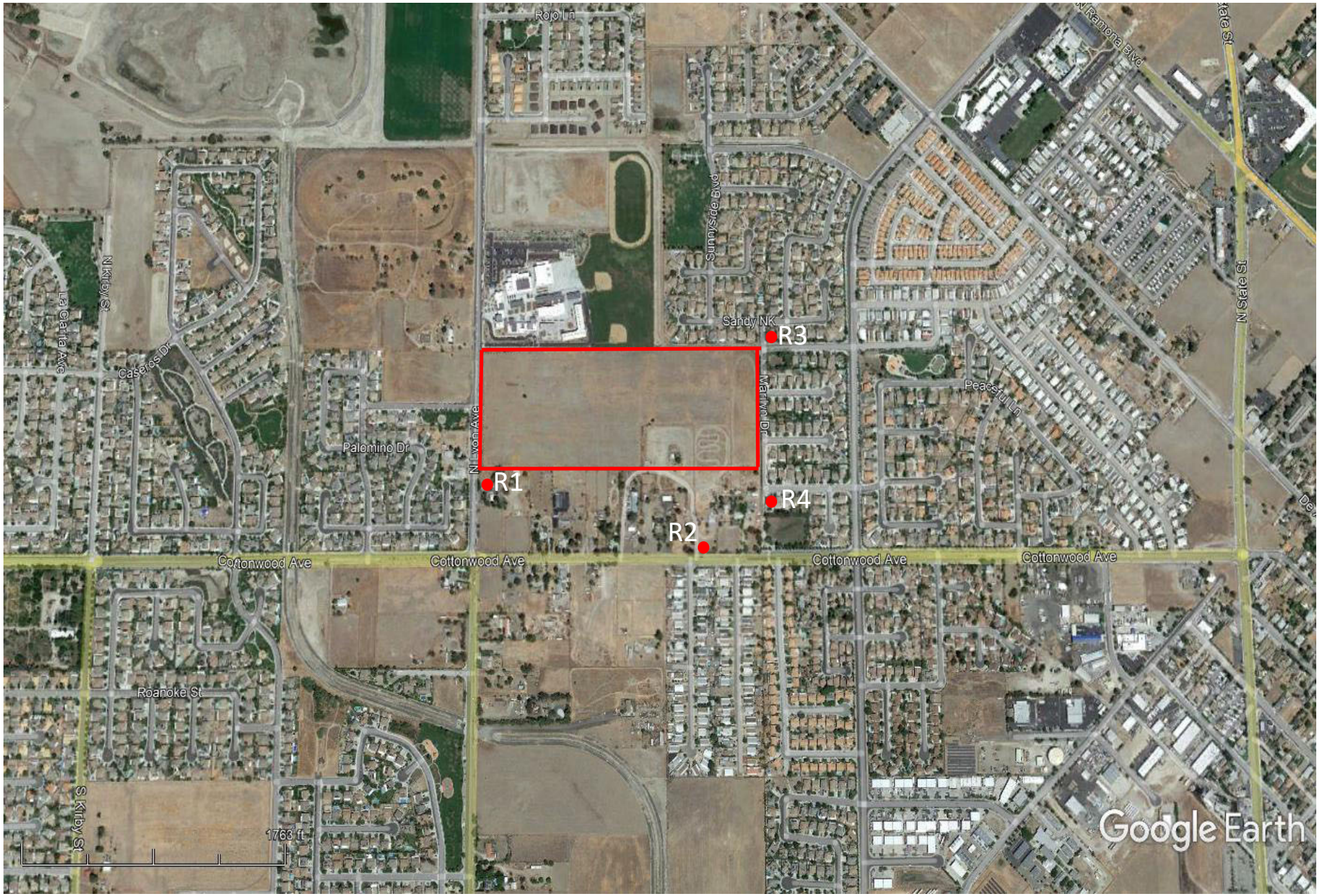

Figure 4 — Noise Receiver Locations

- Project Site • - Noise Receiver Locations

This would not be a noticeable increase; thus, the project will have a **less than significant impact** based on the General Plan standard of 65 dBA Ldn/CNEL.

Interior Traffic Noise. California Energy Code Title 24 standards specify construction methods and materials that result in energy efficient structures up to a 30 dBA reduction in exterior noise levels (assuming windows are closed). This includes operation of mechanical ventilation (e.g., heating and air conditioning), in combination with standard building construction that includes dual-glazed windows with a minimum Sound Transmission Class (STC) rating of 26 or higher. When windows are open, the insertion loss drops to about 10 dBA.

Some residences within the project area appear to have been constructed before Title 24 standards were implemented. As stated, the manner in which older homes in California were constructed (approximately 30 years old or older) generally provides a reduction of exterior-to-interior noise levels of approximately 20 to 25 dBA with closed windows. Assuming windows are closed and a 20 dBA insertion loss, interior noise levels at residences modeled would range between 35.3 dBA and 46.0 dBA. Interior noise levels could reach 46 dBA CNEL at Receiver 2; however, the project-related increase is +0.9 dBA. This would not be considered a significant impact as operation of the project would not cause a noticeable increase in noise levels relative to existing conditions (i.e., +3 dBA or greater).Thus, exterior and interior noise levels associated with operation of the project would be less than significant.

CONCLUSION

The proposed project will have no adverse construction or operational traffic noise impacts. 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.

Baseline peak hour noise conditions at the modeled receivers are within the City standards for both exterior and interior noise levels. The proposed project would not noticeably change noise levels. While the exterior or interior CNEL would exceed the single-family daytime or nighttime residential standard at Receiver 2, the project increase would not be noticeable relative to baseline conditions. The project would have a less than significant noise impact.

REFERENCES

City of San Jacinto Municipal Code, Chapter 8.40 Noise Control, August 2021

City of San Jacinto General Plan, Noise Element, Tables N-1 and N-2, May 2006.

dBF & Associates, Inc., Reference Noise Level Compilation Table, 2016.

Federal Highway Administration. *Roadway Construction Noise Model. 2006*. Users Guide Table 1.

Federal Highway Administration, Traffic Noise Model Version 2.5, 2004.

Federal Transit Administration. *Transit Noise and Vibration Impact Assessment*. September 2018.

TWJ Engineering Inc., *291 North Lyon Traffic Impact Analysis,* San Jacinto, CA, March 2022.

Appendix A

Monitoring Data Sheet and Modeling Results

Project Name: TM 38202 Page 1 of

Project #: Day / Date My Name.

Sound Level Meter
Model #: Pico II
Serial #:
Weighting: (A) / C / Flat
Response: (Slow) / Fast / Impl
Windscreen: (Yes) / No

Calibrator
Model #:
Serial #:
Pre-Test: ____ dBA SPL
Post-Test: ____ dBA SPL

Weather Meter
Model #: Serial #:
Terrain: Hard / Soft / (Mixed)
Topo: (Flat) / Hilly (describe)
Wind: (Steady) / Gusty

ID	Time Start	Time Stop	Leq	Lmin	Lmax	L10	L50	L90	Wind Spd/ Dir (mph)	Temp (°F)	RH (%)	Bar Psr (in Hg)	Cloud Cover (%)
1	7:05	7:30	61.2	47.5	72.3				0	55			0%
2	7:30	7:45	53.7	42.9	63.1				0	55			0%
3	7:50	8:05	64.7	50.3	81.4				0	57			0%

Roadway Name: N Lyon Ave
Speed (post/obs): 40
Number of Lanes: 2
Width (pave/row): 36
1- or 2- way: 2
Grade: 0
Bus Stops: NO
Stoplights: NO
Street Parking: NO
Automobiles: 41
Medium Trucks: 1
Heavy Trucks: 0

Location(s) / GPS Reading(s): Estrella / Marilyn
25
2
24
2
0
NO
NO
NO/STOP SIGNS
YES
7
0
0

COTTON WOOD
50
2
36
2
0
NO
NO
NO
64
1
1

HUMOROUS background sounds contribute to ambient.

Other Noise Sources: distant aircraft / roadway traffic / trains / landscaping / rustling leaves / children playing / dogs barking / birds vocalizing

Notes and Sketches on Reverse

Site 1

Start Date	1/6/2022
Start Time	7:01:47 AM
End Time	7:16:46 AM
Duration	00:14:59
Meas Mode	Single
Input Range	High
Input Type	Mic
SPL Time Weight	Slow
LN% Freq Weight	dBA
Overload	No
UnderRange	No
Sensitivity	18.44mV/Pa

LZeq	67.0
LCeq	66.3
LAeq	61.2
LZSmax	77.5
LCSmax	76.9
LASmax	72.3
LZSmin	60.2
LCSmin	58.7
LASmin	47.3
LZE	96.5
LCE	95.8
LAE	90.7
LZpeak	90.6
LCpeak	90.5
LApeak	86.0
1%	70.8
2%	70.3
5%	68.5
8%	67.0
10%	65.9
25%	60.0
50%	55.0
90%	51.1
95%	50.1
99%	48.2

Site 2

Start Date	1/6/2022
Start Time	7:27:33 AM
End Time	7:42:32 AM
Duration	00:14:59
Meas Mode	Single
Input Range	High
Input Type	Mic
SPL Time Weight	Slow
LN% Freq Weight	dBA
Overload	No
UnderRange	No
Sensitivity	18.44mV/Pa

LZeq	63.5
LCeq	62.2
LAeq	53.7
LZSmax	73.1
LCSmax	71.4
LASmax	63.1
LZSmin	60.7
LCSmin	59.2
LASmin	47.9
LZE	93.0
LCE	91.7
LAE	83.2
LZpeak	88.7
LCpeak	86.3
LApeak	83.5
1%	60.5
2%	59.2
5%	57.1
8%	56.2
10%	55.8
25%	54.4
50%	52.7
90%	49.6
95%	49.1
99%	48.4

Site 3

Start Date	1/6/2022
Start Time	7:51:05 AM
End Time	8:06:04 AM
Duration	00:14:59
Meas Mode	Single
Input Range	High
Input Type	Mic
SPL Time Weight	Slow
LN% Freq Weight	dBA
Overload	No
UnderRange	No
Sensitivity	18.44mV/Pa

LZeq	70.9
LCeq	70.1
LAeq	64.7
LZSmax	86.9
LCSmax	86.4
LASmax	81.4
LZSmin	62.4
LCSmin	61.2
LASmin	50.3
LZE	100.4
LCE	99.6
LAE	94.2
LZpeak	101.3
LCpeak	100.2
LApeak	96.2
1%	74.4
2%	72.9
5%	70.6
8%	69.5
10%	68.9
25%	64.6
50%	58.6
90%	52.2
95%	51.3
99%	50.7

<Organization?>
6 January 2022
<Analysis By?>
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: <Project Name?>
RUN: TM 38202 Existing
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Increase over existing Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
R1 - 179 North Lyon Avenue	1	1	0.0	60.6	66	60.6	10	----	60.6	0.0	8	-8.0
R2 - 1407 Cottonwood	2	1	0.0	64.1	66	64.1	10	----	64.1	0.0	8	-8.0
R3 - 1182 Estrella	3	1	0.0	54.0	66	54.0	10	----	54.0	0.0	8	-8.0
R4 - 1198 Sykes	4	1	0.0	53.0	66	53.0	10	----	53.0	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	4	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

<Organization?>
<Analysis By?>

13 April 2022
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: <Project Name?>
RUN: TM 38202 w-Project
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Increase over existing Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
R1 - 179 North Lyon Avenue	1	1	0.0	62.0	66	62.0	10	----	62.0	0.0	8	-8.0
R2 - 1407 Cottonwood	2	1	0.0	65.0	66	65.0	10	----	65.0	0.0	8	-8.0
R3 - 1182 Estrella	3	1	0.0	55.2	66	55.2	10	----	55.2	0.0	8	-8.0
R4 - 1198 Sykes	4	1	0.0	54.3	66	54.3	10	----	54.3	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	4	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0