Appendix G
Noise Impact Analysis

BERGAMOT SPECIFIC PLAN
INITIAL STUDY

NOISE IMPACT ANALYSIS

CITRUS VALLEY RESIDENTIAL PROJECT

CITY OF REDLANDS

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ACRONYMS AND ABBREVIATIONS

ANSI	American National Standards Institute
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
City	City of Redlands
cmu	Concrete masonry unit
CNEL	Community Noise Equivalent Level
dB	Decibel
dBA	A-weighted decibels
DOT	Department of Transportation
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
EPA	Environmental Protection Agency
Hz	Hertz
Ldn	Day-night average noise level
Leq	Equivalent sound level
Lmax	Maximum noise level
ONAC	Federal Office of Noise Abatement and Control
OSHA	Occupational Safety and Health Administration
PPV	Peak particle velocity
RMS	Root mean square
SEL	Single Event Level or Sound Exposure Level
STC	Sound Transmission Class
UMTA	Federal Urban Mass Transit Administration
VdB	Vibration velocity level in decibels

1.0 INTRODUCTION

1.1 Purpose of Analysis and Study Objectives

This Noise Impact Analysis has been prepared to determine the noise impacts associated with the proposed Citrus Valley Residential project (proposed 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 impacts from the proposed project; and,
- An analysis of long-term operations-related noise impacts from the proposed project.

1.2 Site Location and Study Area

The project site is located in the northwestern portion of the City of Redlands (City). The approximately 58.64 gross acre project site is currently vacant and is bounded by agricultural/vacant land to the north, vacant land to the east, Domestic Avenue and Citrus Valley High School to the south, and a storm control channel and Interstate 210 to the west. The project study area is shown in Figure 1.

Sensitive Receptors in Project Vicinity

The nearest sensitive receptors to the project site are students and staff at Citrus Valley High School that is located as near as 50 feet south of the project site. The nearest homes are located as near as 750 feet to the east of the project site, which are located on the east side of Texas Street.

1.3 Proposed Project Description

The proposed project would consist of development of a residential community with 317 single-family homes. The proposed project would include an 11.81 acre City park on the southwest corner that is proposed to include a softball field and six mini soccer fields that could also be arranged into two regular soccer fields and an infiltration basin. There would also be approximately 3.41 acres of open space maintained by the HOA that would include two parks with play areas and shade structures, basketball courts, nature/walking trail areas, and an infiltration basin. In addition, there would be approximately 1.41 acres of private alleys and 13.59 acres of public streets on the project site. The proposed site plan is shown in Figure 2 and the proposed fence and wall plan for the western portion of the project site is shown in Figure 3.

1.4 Standard Noise Regulatory Conditions

The proposed project will be required to comply with the following regulatory conditions from the City of Redlands and State of California.

City of Redlands Municipal Code

The following lists the City of Redlands Municipal Code regulations that are applicable to all residential projects in the City.

Section 8.06.120(G) – Construction Activity

Section 8.06.120(G) of the City's Municipal Code exempts noise sources associated with new construction, remodeling, rehabilitation or grading of any property from the City's noise standards provided construction activities that occur do not take place between the hours of 7:00 p.m. and 7:00 a.m. on weekdays and Saturdays, with no activities occurring at any time on Sundays or federal holidays. Additionally, all construction equipment must be equipped with functioning mufflers.

Section 8.06.070(A) – Exterior Noise Limits

Section 8.06.070(A) of the City's Municipal Code limits noise from City Parks to single-family residential uses to 50 dBA between 10:00 p.m. and 7:00 a.m. and to 60 dBA between 7:00 a.m. and 10:00 p.m..

Section 8.06.080(A) –Interior Noise Limits

Section 8.06.080(A) of the City's Municipal Code limits interior noise levels of single-family residential uses to 45 dBA at all times.

State of California Rules

The following lists the State of California rules that are applicable to all commercial projects in the State.

California Vehicle Code Section 27200-27207 – On-Road Vehicle Noise

California Vehicle Code Section 27200-27207 provides noise limits for vehicles operated in California. For vehicles over 10,000 pounds noise is limited to 88 dB for vehicles manufactured before 1973, 86 dB for vehicles manufactured before 1975, 83 dB for vehicles manufactured before 1988, and 80 dB for vehicles manufactured after 1987. All measurements are based at 50 feet from the vehicle.

California Vehicle Section 38365-38380 – Off-Road Vehicle Noise

California Vehicle Code Section 38365-38380 provides noise limits for off-highway motor vehicles operated in California. 92 dBA for vehicles manufactured before 1973, 88 dBA for vehicles manufactured before 1975, 86 dBA for vehicles manufactured before 1986, and 82 dBA for vehicles manufactured after December 31, 1985. All measurements are based at 50 feet from the vehicle.

1.5 Summary of Analysis Results

The following is a summary of the proposed project's impacts with regard to the State CEQA Guidelines noise checklist questions.

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?

Potentially significant impact. Implementation of Mitigation Measures 1 and 2 would reduce the impact to less than significant levels.

Generation of excessive groundborne vibration or groundborne noise levels?

Less than significant impact.

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?

No impact.

1.6 Mitigation Measures for the Proposed Project

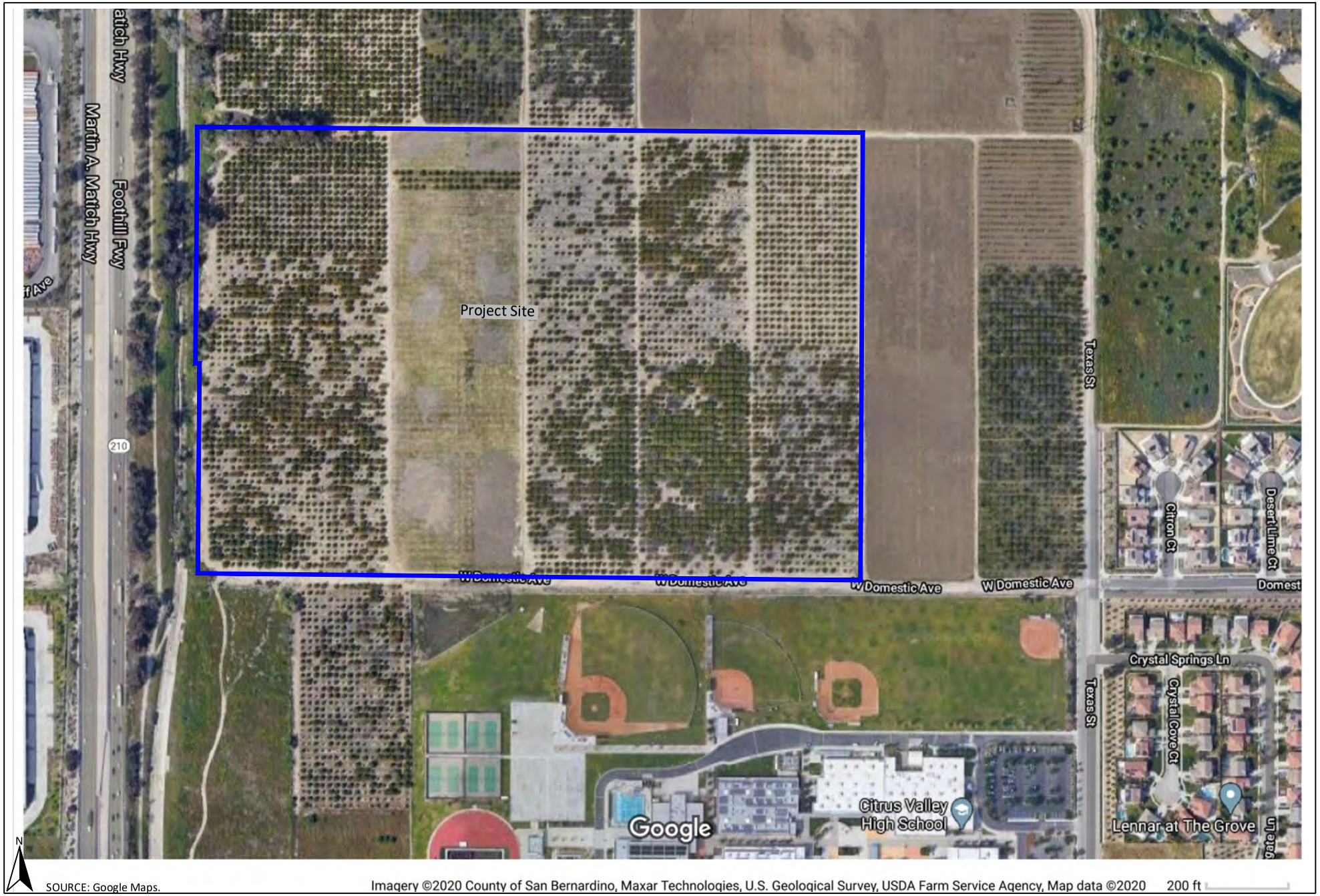
This analysis found that through adherence to the noise and vibration regulations detailed in Section 1.4 above, and through implementation of the following mitigation all noise and vibration impacts would be reduced to less than significant levels.

Mitigation Measure 1:

No soccer practice or games shall be permitted on the soccer fields between the hours of 10 p.m. and 7 a.m. daily. This shall be enforced through programmed field light controls and signage placed around the soccer fields.

Mitigation Measure 2:

The project applicant shall construct a minimum 6.5-foot high wall on the west side of Lots 300, 301, and 302 and a minimum 7.5-foot high wall on the west side of Lots 297, 298, and 299. The walls shall be constructed of concrete masonry units (CMUs) and shall be free of any decorative cutouts or openings.



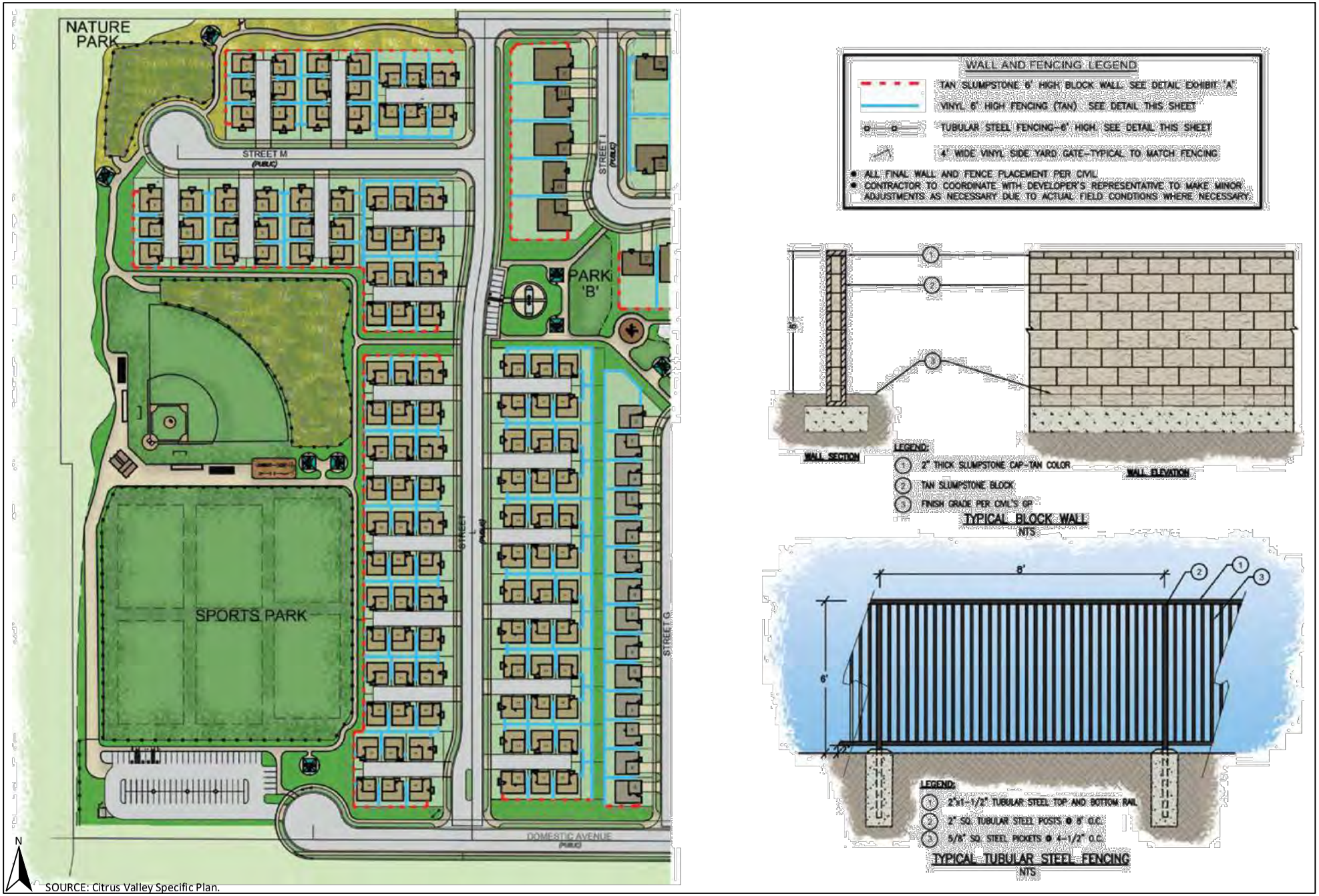
VISTA ENVIRONMENTAL

Figure 1
Project Location Map

SOURCE: STB Landscape Architects, Inc.

VISTA ENVIRONMENTAL

Figure 2
Proposed Site Plan



SOURCE: Citrus Valley Specific Plan.

VISTA ENVIRONMENTAL

Figure 3
Propose Fence and Wall Plan (West Side)

2.0 NOISE FUNDAMENTALS

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 which are audible to the human ear.

2.1 Noise Descriptors

Noise Equivalent sound levels are not measured directly, but are calculated from sound pressure levels typically measured in A-weighted decibels (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 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 similar to the Ldn, except that it has another addition of 4.77 decibels 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 time periods 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 appears louder in the evening and nighttime hours and is weighted accordingly. The City of Redlands relies on the CNEL noise standard to assess transportation-related impacts on noise sensitive land uses.

2.2 Tone Noise

A pure tone noise is a noise produced at a single frequency and laboratory tests have shown that humans are more perceptible to changes in noise levels of a pure tone. 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 contiguous one-third octave bands by:

- 5 dB for center frequencies of 500 hertz (Hz) and above
- 8 dB for center frequencies between 160 and 400 Hz
- 15 dB for center frequencies of 125 Hz or less

2.3 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.

2.4 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. Caltrans research has shown that the use of soft-site conditions is more appropriate for the application of the Federal Highway Administration (FHWA) traffic noise prediction model used in this analysis.

3.0 GROUND-BORNE VIBRATION FUNDAMENTALS

Ground-borne vibrations consist of rapidly fluctuating motions within the ground that have an average motion of zero. The effects of ground-borne vibrations typically only cause a nuisance to people, but at extreme vibration levels damage to buildings may occur. Although ground-borne 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. Ground-borne noise is an effect of ground-borne 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.

3.1 Vibration Descriptors

There are several different methods that 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. Due to the typically small amplitudes of vibrations, vibration velocity is often expressed in decibels and is denoted as (L_v) and is based on the rms velocity amplitude. A commonly used abbreviation is "VdB", which in this text, is when L_v is based on the reference quantity of 1 micro inch per second.

3.2 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. Off-site 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 ground-borne noise or vibration.

3.3 Vibration Propagation

The propagation of ground-borne vibration is not as simple to model as airborne noise. This is due to the fact that noise in the air travels through a relatively uniform median, while ground-borne 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.

4.0 REGULATORY SETTING

The project site is located in the City of Redlands. Noise regulations are addressed through the efforts of various federal, state, and local government agencies. The agencies responsible for regulating noise are discussed below.

4.1 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 prohibits exposure of workers to excessive sound levels. 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 jurisdictions 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.

Although the proposed project is not under the jurisdiction of the FTA, the FTA is the only agency that provides guidance on construction noise and recommends developing construction noise criteria on a project-specific basis that utilizes local noise ordinances if possible. However, local noise ordinances usually relates to nuisance and hours of allowed activity and sometimes specify limits in terms of maximum levels, but are generally not practical for assessing the noise impacts of a construction project. Project construction noise criteria should take into account the existing noise environment, the absolute noise levels during construction activities, the duration of the construction, and the adjacent land uses. The FTA standards are based on extensive studies by the FTA and other governmental agencies on the human effects and reaction to noise and a summary of the FTA findings for a detailed construction noise assessment are provided below in Table A.

Table A – FTA Construction Noise Criteria

Land Use	Day (dBA $Leq_{(8\text{-hour})}$)	Night (dBA $Leq_{(8\text{-hour})}$)	30-day Average (dBA Ldn)
Residential	80	70	75
Commercial	85	85	80[(1)]
Industrial	90	90	85[(1)]

Notes:
[(1)] Use a 24-hour $Leq_{(24\ hour)}$ instead of $Ldn_{(30\ day)}$.
Source: Federal Transit Administration, 2018.

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

4.2 State Regulations

Noise Standards

California Department of Health Services Office of Noise Control

Established in 1973, the California Department of Health Services Office of Noise Control (ONC) was instrumental in developing regularity tools to control and abate noise for use by local agencies. One significant model is the "Land Use Compatibility for Community Noise Environments Matrix," which allows the local jurisdiction to clearly delineate compatibility of sensitive uses with various incremental levels of noise.

California Noise Insulation Standards

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

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.

Vibration Standards

Title 14 of the California Administrative Code Section 15000 requires that all state and local agencies implement the California Environmental Quality Act (CEQA) Guidelines, which requires the analysis of exposure of persons to excessive groundborne vibration. However, no statute has been adopted by the state that quantifies the level at which excessive groundborne vibration occurs.

Caltrans issued the *Transportation- and Construction-Induced Vibration Guidance Manual* in 2004. The manual provides practical guidance to Caltrans engineers, planners, and consultants who must address vibration issues associated with the construction, operation, and maintenance of Caltrans projects. However, this manual is also used as a reference point by many lead agencies and CEQA practitioners throughout California, as it provides numeric thresholds for vibration impacts. Thresholds are established for continuous (construction-related) and transient (transportation-related) sources of vibration, which found that the human response becomes distinctly perceptible at 0.25 inch per second PPV for transient sources and 0.04 inch per second PPV for continuous sources.

4.3 Local Regulations

The City of Redlands General Plan and Municipal Code establishes the following applicable policies related to noise and vibration.

City of Redlands General Plan Implementing Policies

9.0e Use the criteria specified in GP Table 9.1 (see Table B) to assess the compatibility of proposed land uses with the projected noise environment, and apply the noise standards in GP Table 9.2 (see Table C), which prescribe interior and exterior noise standards in relation to specific land uses. Do not approve projects that would not comply with the standards in GP Table 9.2.

Table B – City of Redlands Noise and Land Use Compatibility Matrix

Land Use Categories	Uses	Community Noise Equivalent Level (CNEL)						
		<60	65	70	75	80	>85	
Residential	Single-Family, Duplex, Multiple-Family	A	C	C	C	D	D	D
	Mobile Homes	A	C	C	C	D	D	D
Commercial Regional, District	Hotel, Motel, Transient Lodging	A	A	B	B	C	C	D
Commercial Regional, Village, District, Special	Commercial, Retail, Bank, Restaurant, Movie Theatre	A	A	A	A	B	B	C
Commercial Industrial, Institutional	Office Building, Research and Development, Professional Offices, City Office Building	A	A	A	B	B	C	D
Commercial Recreation Institutional Civic Center	Amphitheatre, Concert Hall, Auditorium, Meeting Hall	B	B	C	C	D	D	D
Commercial Recreation	Children's Amusement Park, Miniature Golf Course, Go-cart Track, Equestrian Center, Sports Club	A	A	A	A	B	B	B
Commercial General, Special Industrial, Institutional	Automobile Service Station, Auto Dealership, Manufacturing, Warehousing, Wholesale, Utilities	A	A	A	A	B	B	B
Institutional General	Hospital, Church, Library, Schools, Classroom	A	B	C	C	D	D	
Open Space	Parks	A	A	A	B	C	D	D
	Golf Course, Cemeteries, Nature Centers, Wildlife Reserves, Wildlife Habitat	A	A	A	A	B	C	C
Agriculture	Agriculture	A	A	A	A	A	A	A

Interpretation:
Zone A: Clearly Compatible. Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.

Zone B: Normally Compatible. New construction or development should be undertaken only after detailed analysis of the noise reduction requirements are made and needed noise insulation features in the design are determined. Conventional construction, with closed windows and fresh air supply systems or air conditioning, will normally suffice.
Zone C: Normally Incompatible. 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 the design.
Zone D: Clearly Incompatible. New construction or development should generally not be undertaken.
Source: Table 7-10 from City of Redlands General Plan, 2017.

Table C – City of Redlands Interior and Exterior Noise Standards

Land Use Categories	Uses	Community Noise Equivalent (CNEL)	
		Interior[(1)]	Exterior[(2)]
Residential	Single-Family, Duplex, Multiple-Family	45[(3,5)]	60
	Mobile Homes	--	60[(4)]
Commercial, Institutional, Open Space	Hotel, Motel, Transient Lodging	45	65[(5)]
	Commercial Retail, Bank, Restaurant	55	--
	Office Building, Research & Development, Professional Offices, City Office Building	50	--
	Amphitheater, Concert Hall, Auditorium, Meeting Hall	45	--
	Gymnasium (Multipurpose)	50	--
	Sports Club	55	--
	Manufacturing, Warehousing, Wholesale, Utilities	60	--
	Movie Theatres	45	--
	Hospital, School's Classroom	45	--
	Parks	--	60

Interpretation:
[1] Indoor environment excluding: bathrooms, toilets, closets, corridors.
[2] Outdoor environment limited to: private yard of single-family as measured at the property line; multi-family private patio or balcony which is served by a means of exit from inside; mobile home park, hospital patio; park picnic area; school playground; hotel and recreational area..
[3] Noise level requirement with closed windows, if they are used to meet natural ventilation requirement.
[4] Exterior noise level should be such that interior noise level will not exceed 45 CNEL.
[5] Except those areas affected by aircraft noise.
See also Policy 9.0s.
Source: Table 9.2 from City of Redlands General Plan, 2017.

9.0f Require a noise impact evaluation based on noise measurements at the site for all projects in Noise Referral Zones (B, C, or D) as shown on GP Table 9.1 (see Table B) and on GP Figure 9.1 or as determined from tables in the Appendix, as part of the project review process. Should measurements indicate that unacceptable noise levels will be created or experienced, require mitigation measures based on a detailed technical study prepared by a qualified acoustical engineer (i.e., a Registered Professional Engineer in the State of California with a minimum of three years experience in acoustics).

9.0i Require construction of barriers to mitigate sound emissions where necessary or where feasible, and encourage use of walls and berms to protect residential or other noise sensitive land uses that are adjacent to major roads, commercial, or industrial areas.

9.0s Require mitigation to ensure that indoor noise levels for residential living spaces not exceed 45 dB LDN/CNEL due to the combined effect for all exterior noise sources.

The Uniform Building Code (specifically, the California Administrative Code, Title 24, Part 6, Division T25, Chapter 1, Subchapter 1, Article 4, Sections T25-28) requires that "Interior community noise levels (CNEL/LDN) with windows closed, attributable to exterior sources shall not exceed an annual CNEL or LDN of a 45 dB in any habitable room." The code requires that this standard be applied to all new hotels, motels, apartment houses and dwellings other than detached single-family dwellings.

Policy 9-s sets the maximum acceptable interior noise level at 45 CNEL. The Noise Referral Zones (65 CNEL) delineate areas within which tests to ensure compliance are to be required for new structures

9.0u Require all new residential projects or replacement dwellings to be constructed near existing sources of non transportation noise (including but not limited to commercial facilities or public parks with sports activities) to demonstrate via an acoustical study conducted by a Registered Engineer that the indoor noise levels will be consistent with the limits contained in the Community Noise Ordinance (see Table C).

City of Redlands Municipal Code

The City of Redlands Municipal Code establishes the following applicable standards related to noise.

Section 8.06.030 – General Noise Regulations

It shall be unlawful for any person to willfully or negligently make, or cause to be made, any loud, unnecessary or unusual noise which disturbs the peace and quiet of any neighborhood or which causes discomfort or annoyance to a reasonable person of normal sensitivity in the area. The factors that may be considered in determining whether a violation of this chapter exists include, but are not limited to, the following:

A. The sound level of the objectionable noise;

B. The sound level of the ambient noise;

C. The proximity of the noise to residential living or sleeping facilities;

D. The nature and zoning of the area within which the noise emanates;

E. The number of persons affected by the noise;

F. The time of day or night the noise occurs;

G. The duration of the noise;

H. The tonal, informative or musical content of the noise;

I. Whether the noise is continuous, recurrent, or intermittent;

J. Whether the noise is produced by a commercial or noncommercial activity;

K. Whether the nature of the noise is usual or unusual;

L. Whether the origin of the noise is natural or unnatural; and

M. Whether the noise occurs on a weekday, weekend or a holiday.

Section 8.06.070 – Exterior Noise Limits

A. The noise standards for the categories of land uses identified in Table 1 (see Table D) of this section shall, unless otherwise specifically indicated, apply to all such property within a designated zone.

B. No person shall operate, or cause to be operated, any source of sound at any location within the city or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person which causes the noise level when measured on any other property to exceed:

1. The noise standard for that land use specified in Table 1 of this section for a cumulative period of more than thirty (30) minutes in any hour; or
2. The noise standard specified in Table 1 of this section plus five (5) dB for a cumulative period of more than fifteen (15) minutes in any hour; or
3. The noise standard specified in Table 1 of this section plus ten (10) dB for a cumulative period of more than five (5) minutes in any hour; or
4. The noise standard specified in Table 1 of this section plus fifteen (15) dB for a cumulative period of more than one minute in any hour; or
5. The noise standard specified in Table 1 of this section plus twenty (20) dB or the maximum measured ambient level, for any period of time.

C. If the measured ambient level exceeds the allowable noise exposure standard within any of the first four (4) noise limit categories below, the allowable noise exposure standard shall be adjusted in five (5) dB increments in each category as appropriate to encompass or reflect said ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under this category shall be increased to reflect the maximum ambient noise level.

D. The ambient noise shall be measured at the same location along the property line utilized in subsection 8.06.06B of this chapter, with the alleged offending noise source inoperative. If the alleged offending noise source cannot be shut down, the ambient noise shall be estimated by performing a measurement in the same general area of the source but at sufficient distance that the noise from the source is at least ten (10) dB below the ambient in order that only the ambient level be measured. If the difference between the ambient and noise source is five (5) to ten (10) dB, then the level of the ambient itself can be reasonably determined by subtracting a one decibel correction to account for the contribution of the source.

E. In the event the alleged offensive noise contains a steady, audible tone such as a whine, screech, hum, or is a repetitive noise such as a hammering or riveting, or contains music or speech conveying informational content, the standard limits set forth in Table 1 of this section shall be reduced by five (5) dB.

Table D – City of Redlands Maximum Permissible Sound Levels By Receiving Land Use

Receiving Land Use Category	Time Period	Noise Level (dBA)
Single-Family Residential Districts	10:00 p.m. – 7:00 a.m.	50
	7:00 a.m. – 10:00 p.m.	60
Multi-Family Residential Districts, Public Space, Institutional	10:00 p.m. – 7:00 a.m.	50
	7:00 a.m. – 10:00 p.m.	60
Commercial	10:00 p.m. – 7:00 a.m.	60
	7:00 a.m. – 10:00 p.m.	65

Receiving Land Use Category	Time Period	Noise Level (dBA)
Industrial	Any time	75

Source: City of Redlands Municipal Code Section 8.06.070.

Section 8.06.080 – Interior Noise Standards

A. No person shall operate or cause to be operated any source of sound, or allow the creation of any noise, which causes the noise level when measured inside a neighboring receiving occupied building to exceed the following standards.

1. The noise standard for that land use specified in Table 2 (see Table E) of this section for a cumulative period of more than five (5) minutes in any hour.
2. The noise standard for that land use specified in Table 2 of this section plus five (5) dB for a cumulative period of more than one minute in any hour.
3. The noise standard for that land use specified in Table 2 of this section plus ten (10) dB for the maximum measured ambient noise level for any period of time.

Table E – City of Redlands Maximum Permissible Interior Sound Levels By Receiving Land Use

Receiving Land Use Category	Time Period	Noise Level (dBA)
Single-Family Residential Districts	Any time	45
Multi-Family Residential Districts, Institutional, Hotels	Any time	45
Commercial	Any time	50
Industrial	Any time	60

Source: City of Redlands Municipal Code Section 8.06.080.

B. If the measured ambient level exceeds the allowable exterior noise exposure standard in Table 1 (see Table D) of this chapter, the allowable interior noise exposure level shall be adjusted in five (5) dB increments as appropriate too reflect the ambient noise level.

Section 8.06.090 – Noise Disturbances Prohibited

The following acts, and the causing or permitting thereof, are declared to be in violation of this chapter:

F. Construction And/Or Demolition: Operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration or demolition work between weekday hours of six o'clock (6:00) P.M. and seven o'clock (7:00) A.M., including Saturdays, or at any time on Sundays or holidays, such that the sound therefrom creates a noise disturbance across a residential or commercial real property line, except for emergency work by public service utilities, the city or another government entity. All mobile or stationary internal combustion engine powered equipment or machinery shall be equipped with exhaust and air intake silencers in proper working order, or suitable to meet the standards set forth herein.

G. Vibration: Operating or permitting the operation of any device that creates a vibration which is above the vibration perception threshold of an individual at or beyond the property boundary of the source if on private property or at one hundred fifty feet (150') from the source if on a public space or public right of way.

Section 8.06.120 – Exemptions

A. Emergency Exemption: This chapter shall not apply to:

1. The emission of sound for the purpose of alerting persons to the existence of an emergency such as, but not limited to, loudspeakers, horns, sirens, whistles or other similar devices which emit sound, only for the time required to make notification of the emergency condition; or
2. The emission of sound in the performance of emergency work or the temporary provision of essential services such as, but not limited to, utility system repairs or upgrades, infrastructure repairs, structural repairs and other unscheduled, infrequent and nonrecurring activities, required to protect persons and property from physical harm or loss of essential services.

B. Warning Devices: This chapter shall not apply to warning devices necessary for the protection of public safety. Police, fire and ambulance sirens and train horns are exempt from this chapter.

C. Outdoor Activities: This chapter shall not apply to occasional outdoor public gatherings, public dances, shows, and sporting and entertainment events conducted within city parks and city owned facilities, including events conducted at the Redlands Bowl, provided such events are conducted pursuant to a permit or license issued by the city.

D. School Activities: This chapter shall not apply to activities and operations conducted on the grounds of any public or private elementary, intermediate or secondary school or colleges and universities.

E. Hospital: This chapter shall not apply to activities and operations conducted within the grounds of the Redlands Community Hospital provided that said activities and operations are in compliance with the acoustical provisions of the hospital's conditional use permit.

F. Minor Maintenance Of Residential Property: This chapter shall not apply to noise sources associated with the minor maintenance of residential property, provided such activities take place between the hours of seven o'clock (7:00) A.M. to eight o'clock (8:00) P.M. on weekdays, and seven o'clock (7:00) A.M. to eight o'clock (8:00) P.M. on weekends and legal holidays, and provided that such activities generate no more than ninety (90) dBA at or within the real property line of the residential property. Activities covered under this provision include, but are not limited to, maintenance of landscaping and minor repair of residential dwellings or ancillary structures.

G. Construction Activities: This chapter shall not apply to noise sources associated with new construction, remodeling, rehabilitation or grading of any property provided such activities take place between the hours of seven o'clock (7:00) and six o'clock (6:00) P.M. on weekdays, including Saturdays, with no activities taking place at any time on Sundays or federal holidays. All motorized equipment used in such activity shall be equipped with functioning mufflers.

H. Agricultural Operations: This chapter shall not apply to mobile noise sources associated with agricultural operations for use in maintenance, cultivation, planting and harvesting of agricultural areas provided said activities take place between the hours of seven o'clock (7:00) A.M. to eight o'clock (8:00) P.M. on weekdays including Saturdays, with no activities taking place at any time on Sundays or federal holidays. All motorized equipment used in such activity shall be equipped with functioning mufflers.

I. Chapter Application: This chapter shall not apply to any activity in which state or federal law has preempted the regulation of such activity.

5.0 EXISTING NOISE CONDITIONS

To determine the existing noise levels, noise measurements have been taken in the vicinity of the project site. The field survey noted that noise within the proposed project area is generally characterized by vehicle traffic on Interstate 210, where the nearest travel lane is located as near as 220 feet west of the project site and from noise created by activities at Citrus Valley High School that is located as near as 50 feet south of the project site. The following describes the measurement procedures, measurement locations, noise measurement results, and the modeling of the existing noise environment.

5.1 Noise Measurement Equipment

The noise measurements were taken using two Extech Model 407780 Type 2 integrating sound level meters programmed in "slow" mode to record the sound pressure level at 3-second intervals for approximately 24 hours in "A" weighted form. In addition, the L_{eq} averaged over the entire measuring time and L_{max} were recorded. The sound level meters and microphones were mounted on trees approximately four to six feet above the ground and were equipped with a windscreen. The sound level meters were calibrated before and after the monitoring using an Extech calibrator, Model 407766. The noise level measurement equipment meets American National Standards Institute specifications for sound level meters (S1.4-1983 identified in Chapter 19.68.020.AA).

Noise Measurement Locations

The noise monitoring locations were selected in order to obtain noise levels on the project site. Descriptions of the noise monitoring sites are provided below in Table F and Appendix A includes a photo index of the study area and noise level measurement locations.

Noise Measurement Timing and Climate

The noise measurements were recorded between 12:05 p.m. on Monday March 18, 2019 and 12:11 p.m. on Tuesday, March 19, 2019. At the start of the noise measurements, the sky was clear (no clouds), the temperature was 79 degrees Fahrenheit, the humidity was 25 percent, barometric pressure was 28.61 inches of mercury, and there was no wind. Overnight, the sky was clear and the temperature dropped to 51 degrees Fahrenheit. At the conclusion of the noise measurements, the sky was partly cloudy, the temperature was 73 degrees Fahrenheit, the humidity was 37 percent, barometric pressure was 28.59 inches of mercury, and the wind was blowing at an average rate of three miles per hour.

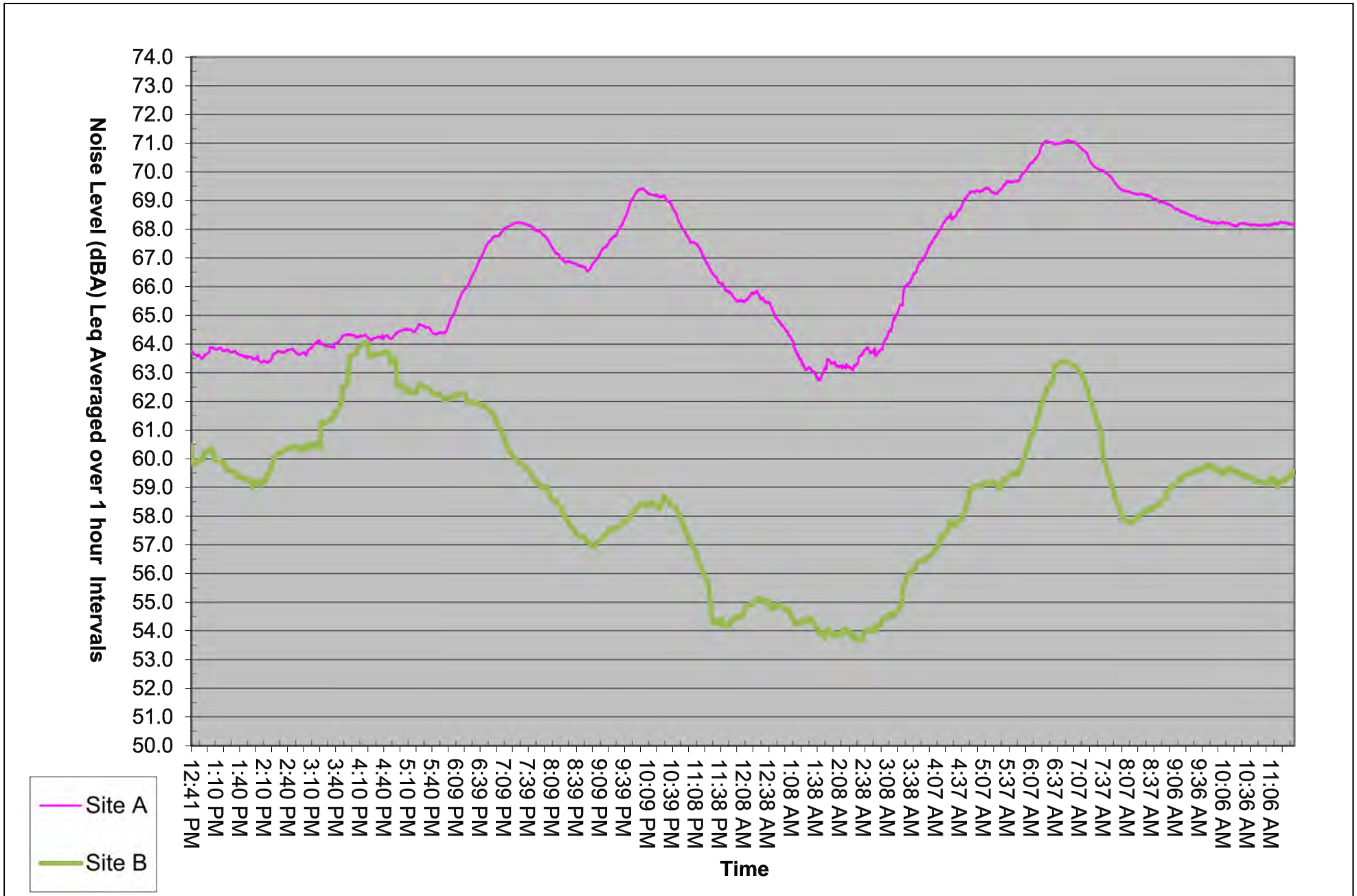
5.2 Noise Measurement Results

The results of the noise level measurements are presented in Table F. Table F shows the Leq, Lmax, and CNEL, based on the entire measurement time as well as the minimum and maximum L_{eq} averaged over 1-hour intervals. In addition, a graph of the 24-hour noise measurements are shown in Figure 4 and the noise monitoring data printouts are included in Appendix B.

Table F – Existing (Ambient) Noise Measurement Results

Site No.	Measurement Location	Average (dBA L_{eq})	Maximum (dBA L_{max})	Min. 1-Hour Interval (dBA L_{eq}/Time)	Max. 1-Hour Interval (dBA L_{eq}/Time)	Average (dBA CNEL)
1	Located on an orange tree, approximately 30 feet east of the west property line and approximately 320 feet from I-210 centerline.	67.3	81.5	62.7 1:41 a.m.	71.1 6:24 a.m.	74.3
2	Located on an orange tree, approximately 370 feet east of the west property line and approximately 660 feet from I-210 centerline.	59.7	78.8	53.6 2:34 a.m.	64.1 4:16 p.m.	65.0

Source: Noise measurements taken with two Extech Model 407780 Type 2 integrating sound level meters between Monday, March 18 and Tuesday, March 19, 2019.



SOURCE: Extech Model 407780 Type 2 Sound Level Meters.

VISTA ENVIRONMENTAL

Figure 4
Field Noise Measurements Graph

6.0 MODELING PARAMETERS AND ASSUMPTIONS

6.1 Construction Noise

The noise impacts from construction of the proposed project have been analyzed through use of the FHWA's Roadway Construction Noise Model (RCNM). The FHWA compiled noise measurement data regarding the noise generating characteristics of several different types of construction equipment used during the Central Artery/Tunnel project in Boston. Table G below provides a list of the construction equipment anticipated to be used for each phase of construction as detailed in *Air Quality, Energy, and Greenhouse Gas Emissions Impact Analysis Citrus Valley Residential Project* (Air Quality Analysis), prepared by Vista Environmental, July 13, 2020.

Table G – Construction Equipment Noise Emissions and Usage Factors

Equipment Description	Number of Equipment	Acoustical Use Factor[1] (percent)	Spec 721.560 Lmax at 50 feet[2] (dBA, slow[3])	Actual Measured Lmax at 50 feet[4] (dBA, slow[3])
Site Preparation				
Rubber Tired Dozer	3	40	85	83
Tractor, Loader, or Backhoe	4	40	84	N/A
Grading				
Excavators	2	40	85	81
Grader	1	40	85	83
Rubber Tired Dozer	1	40	85	82
Scrapers	4	40	85	84
Tractor, Loader or Backhoe	2	40	84	N/A
Building Construction				
Crane	1	16	85	81
Forklift (Gradall)	3	40	85	83
Generator	1	50	82	81
Tractor, Loader or Backhoe	3	40	84	N/A
Welder	1	40	73	74
Paving				
Paver	2	50	85	77
Paving Equipment	2	50	85	77
Rollers	2	20	85	80
Architectural Coating				
Air Compressor	1	40	80	78

Notes:
[1] Acoustical use factor is the percentage of time each piece of equipment is operational during a typical workday.
[2] Spec 721.560 is the equipment noise level utilized by the RCNM program.
[3] The "slow" response averages sound levels over 1-second increments. A "fast" response averages sound levels over 0.125-second increments.
[4] Actual Measured is the average noise level measured of each piece of equipment during the Central Artery/Tunnel project in Boston, Massachusetts primarily during the 1990s.
Source: Federal Highway Administration, 2006 and CalEEMod default equipment mix.

Table G also shows the associated measured noise emissions for each piece of equipment from the RCNM model and measured percentage of typical equipment use per day. Construction noise impacts to the nearby sensitive receptors have been calculated according to the equipment noise levels and usage

factors listed in Table G and through use of the RCNM. For each phase of construction, the nearest piece of equipment was placed at the shortest distance of the proposed activity to the nearest sensitive receptor and each subsequent piece of equipment was placed an additional 50 feet away.

6.2 Operations-Related Noise

FHWA Roadway Noise Model Methodology

The proposed project would result in increases in traffic noise to the nearby roadways as well as introduce new sensitive receptors to the project site. The project impacts to the offsite roadways were analyzed through use of the FHWA Traffic Noise Prediction Model - FHWA-RD-77-108 (FHWA Model). The FHWA Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). Adjustments are then made to the reference energy mean emission level to account for: the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway), the total average daily traffic (ADT) and the percentage of ADT which flows during the day, evening and night, the travel speed, the vehicle mix on the roadway, which is a percentage of the volume of automobiles, medium trucks and heavy trucks, the roadway grade, the angle of view of the observer exposed to the roadway and site conditions ("hard" or "soft" relates to the absorption of the ground, pavement or landscaping). The following section provides a discussion of the software and modeling input parameters used in this analysis and a discussion of the resultant existing noise model.

FHWA Model Traffic Noise Prediction Model Inputs

The roadway parameters used for this study are presented in Table H. The roadway classifications are based on the City's General Plan Circulation Element. The roadway speeds are based on the posted speed limits. The distance to the nearest sensitive receptor was determined by measuring the distance from the roadway centerline to the nearest residence. Since the study area is located in a suburban to rural environment and vegetation exists along the sides of most of the analyzed roadways, soft site conditions were modeled.

Table H – FHWA Model Roadway Parameters

Roadway	Segment	General Plan Classification	Vehicle Speed (MPH)	Distance to Nearest Receptor[1] (feet)
Texas Street	North of Domestic Avenue	Collector	30	110
Texas Street	South of Domestic Avenue	Collector	30	105
Texas Street	South of Pioneer Avenue	Minor Arterial	30	75
Texas Street	South of San Bernardino Avenue	Minor Arterial	40	65
Pioneer Avenue	West of Texas Street	Collector	35	135
Pioneer Avenue	East of Texas Street	Modified Collector	35	50
San Bernardino Avenue	East of Texas Street	Major Arterial	45	75
Interstate 210	North of Pioneer Avenue	Freeway	70	2,980[2]

Notes:
[1] Distance measured from nearest existing residential structure to centerline of roadway.
[2] Approximate distance to nearest existing residential structure on east side of Texas Street to Interstate 210.
Source: Urban Crossroads, 2020; and City of Redlands, 2017.

The average daily traffic (ADT) volumes were obtained from the *Citrus Valley Traffic Analysis* (Traffic Analysis), prepared by Urban Crossroads, June 30, 2020. The ADT volumes were calculated by multiplying the PM peak hour volumes by 12. The ADT volumes used in this analysis are shown in Table I.

Table I – FHWA Model Average Daily Traffic Volumes

Roadway	Segment	Average Daily Traffic Volumes					
		Existing	Existing + Project	2025	2025 + Project	2035	2035 + Project
Texas Street	North of Domestic Avenue	100	1,100	2,200	3,200	2,500	3,400
Texas Street	South of Domestic Avenue	800	4,100	3,000	6,300	3,300	6,600
Texas Street	South of Pioneer Avenue	4,300	7,100	7,300	10,000	7,900	10,700
Texas Street	South of San Bernardino Avenue	7,200	7,700	9,200	9,700	9,900	10,400
Pioneer Avenue	West of Texas Street	8,600	8,700	9,600	9,700	10,400	10,500
Pioneer Avenue	East of Texas Street	8,300	8,600	9,600	9,900	10,400	10,700
San Bernardino Avenue	East of Texas Street	15,300	15,600	17,600	17,900	19,900	20,200
Interstate 210	North of Pioneer Avenue	79,800	79,800	79,800	79,800	97,000	97,000

Source: Urban Crossroads, 2020.

The vehicle mixes used in the FHWA-RD-77-108 Model is shown in Table J and Interstate 210 is based on Caltrans data the other roadways are based on the typical vehicle mixes observed for collector and arterial roadways in southern California. The vehicle mix provides the hourly distribution percentages of automobiles, medium trucks, and heavy trucks for input into the FHWA model.

Table J – Roadway Vehicle Mix

Vehicle Type	Traffic Flow Distributions			
	Day (7 a.m. to 7 p.m.)	Evening (7 p.m. to 10 p.m.)	Night (10 p.m. to 7 a.m.)	Overall
Collector				
Automobiles	73.6%	13.6%	10.2%	97.4%
Medium Trucks	0.9%	0.9%	0.0%	1.8%
Heavy Trucks	0.4%	0.0%	0.4%	0.7%
Secondary				
Automobiles	69.5%	12.9%	9.6%	92.0%
Medium Trucks	1.4%	0.1%	1.5%	3.0%
Heavy Trucks	2.4%	0.1%	2.5%	5.0%
Interstate 210				
Automobiles	43.8%	13.3%	38.1%	95.3%
Medium Trucks	0.5%	0.1%	0.7%	1.3%
Heavy Trucks	1.1%	0.3%	2.0%	3.4%

Source: Caltrans, 2018; Vista Environmental.

FHWA Model Source Assumptions

To assess the roadway noise generation in a uniform manner, all vehicles are analyzed at the single lane equivalent acoustic center of the roadway being analyzed. In order to determine the height above the road grade where the noise is being emitted from, each type of vehicle has been analyzed independently with autos at road grade, medium trucks at 2.3 feet above road grade, and heavy trucks at 8 feet above road grade. These elevations were determined through a noise-weighted average of the elevation of the exhaust pipe, tires and mechanical parts in the engine, which are the primary noise emitters from a vehicle.

6.3 Vibration

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 K gives approximate vibration levels for particular construction activities. The data in Table K provides a reasonable estimate for a wide range of soil conditions.

Table K – Vibration Source Levels for Construction Equipment

Equipment		Peak Particle Velocity (inches/second)	Approximate Vibration Level (L_v)at 25 feet
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
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: Federal Transit Administration, 2018.

The construction-related vibration impacts have been calculated through the vibration levels shown above in Table K and through typical vibration propagation rates. The equipment assumptions were based on the equipment lists provided above in Table G.

7.0 IMPACT ANALYSIS

7.1 CEQA Thresholds of Significance

Consistent with the California Environmental Quality Act (CEQA) and the State CEQA Guidelines, a significant impact related to noise would occur if a proposed project is determined to result in:

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

7.2 Generation of Noise Levels in Excess of Standards

The proposed project would not generate 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. The following section calculates the potential noise emissions associated with the temporary construction activities and long-term operations of the proposed project and compares the noise levels to the City standards.

Construction-Related Noise

The construction activities for the proposed project are anticipated to include site preparation and grading of the 6.04 acre project site, building construction of the guard shack with restroom, paving of the trailer stalls and onsite roadway and pedestrian walkway systems, and application of architectural coatings. Noise impacts from construction activities associated with the proposed project would be a function of the noise generated by construction equipment, equipment location, sensitivity of nearby land uses, and the timing and duration of the construction activities. The nearest sensitive receptor to the project site are students and staff at Citrus Valley High School that is located as near as 50 feet south of the project site. The nearest homes are located as near as 750 feet to the east of the project site, which are located on the east side of Texas Street.

Section 8.06.120(G) of the City's Municipal Code exempts noise sources associated with new construction, remodeling, rehabilitation or grading of any property from the City's noise standards provided construction activities that occur do not take place between the hours of 7:00 p.m. and 7:00 a.m. on weekdays and Saturdays, with no activities occurring at any time on Sundays or federal holidays. However, the City construction noise standards do not provide any limits to the noise levels that may be created from construction activities and even with adherence to the City standards, the resultant construction noise levels may result in a significant substantial temporary noise increase to the nearby residents.

In order to determine if the proposed construction activities would create a significant substantial temporary noise increase, the FTA construction noise criteria thresholds detailed above in Section 4.1 have been utilized, which shows that a significant construction noise impact would occur if construction noise exceeds 80 dBA during the daytime at any of the nearby homes or school.

Construction noise impacts to the nearby sensitive receptors have been calculated through use of the RCNM and the parameters and assumptions detailed in Section 6.1 of this report including Table G – Construction Equipment Noise Emissions and Usage Factors. The results are shown below in Table L and the RCNM printouts are provided in Appendix C.

Table L – Construction Noise Levels at the Nearby Sensitive Receptors

Construction Phase	Construction Noise Level (dBA Leq) at:	
	School to South	Homes to East
Site Preparation	79.5	60.6
Grading	79.4	63.3
Building Construction	77.9	61.9
Paving	75.9	56.8
Painting	70.8	49.9
FTA Construction Noise Threshold[1]	**80**	**80**
Exceed Thresholds?	No	No

Notes:
[1] FTA Construction Noise Threshold obtained from Table A above.
Source: RCNM, Federal Highway Administration, 2018

Table L shows that greatest construction noise impacts would be as high as 79.5 dBA Leq during the site preparation phase at the Citrus Valley High School, located south of the project site. All calculated construction noise levels shown in Table L are within the FTA daytime construction noise standard of 80 dBA averaged over eight hours. Therefore, through adherence to the limitation of allowable construction times provided in Section 8.06.120(G) of the City's Municipal Code, construction-related noise levels would not exceed any standards established in the General Plan or Noise Ordinance nor would construction activities create a substantial temporary increase in ambient noise levels from construction of the proposed project. Impacts would be less than significant.

Operational-Related Noise

The proposed project would consist of the development of a development of a residential community with 317 single-family homes and a City Park. Potential noise impacts associated with the operations of the proposed project would be from project-generated vehicular traffic on the nearby roadways. In addition, the proposed homes would be impacted by Interstate 210, where the nearest travel lane is located as near as 220 feet west of the project site and from activities at the proposed City Park that may create exterior and interior noise levels in excess of City standards at the proposed homes. The noise impacts to the nearby existing homes and school, and proposed homes have been analyzed separately below.

Roadway Vehicular Noise Impacts to Nearby Sensitive Receptors

Vehicle noise is a combination of the noise produced by the engine, exhaust and tires. The level of traffic noise depends on three primary factors (1) the volume of traffic, (2) the speed of traffic, and (3) the number of trucks in the flow of traffic. The proposed project does not propose any uses that would require a substantial number of truck trips and the proposed project would not alter the speed limit on any existing roadway so the proposed project's potential offsite noise impacts have been focused on the noise impacts associated with the change of volume of traffic that would occur with development of the proposed project.

Policy 9.0v of the City's General Plan defines a significant impact as a 4 dB increase where the existing noise level exceeds the clearly compatible noise standard for the affected land use, or as a 6 dB increase where the existing noise level is below the clearly compatible noise standard for the affected land use.

The potential offsite traffic noise impacts created by the on-going operations of the proposed project have been analyzed through utilization of the FHWA model and parameters described above in Section 6.2 and the FHWA model noise calculation spreadsheets are provided in Appendix D. The proposed project's offsite traffic noise impacts have been analyzed for the existing year, opening year 2025, and horizon year 2040 conditions that are discussed below.

Existing Year Conditions

The proposed project's potential offsite noise impacts have been calculated through a comparison of the existing year scenario to the existing year with project scenario. The results of this comparison are shown in Table M.

Table M – Existing Year Project Traffic Noise Contributions

		dBA CNEL at Nearest Receptor[1]			
Roadway	Segment	Existing	Existing Plus Project	Project Contribution	Increase Threshold[2]
Texas Street	North of Domestic Avenue[3]	56.0	56.4	0.4	+6 dBA
Texas Street	South of Domestic Avenue[3]	56.3	57.4	1.1	+6 dBA
Texas Street	South of Pioneer Avenue[3]	59.3	60.3	1.0	+6 dBA
Texas Street	South of San Bernardino Avenue	61.5	61.8	0.3	+4 dBA
Pioneer Avenue	West of Texas Street[3]	58.8	58.8	0.0	+6 dBA
Pioneer Avenue	East of Texas Street	61.9	62.0	0.1	+4 dBA
San Bernardino Avenue	East of Texas Street	65.4	65.5	0.1	+4 dBA

Notes:
[1] Distance to nearest residential or school use shown in Table H, does not take into account existing noise barriers.
[2] Increase threshold based on General Plan Policy 9.0v, which defines a significant impact as a 4 dB increase where the existing noise level exceeds the clearly compatible noise standard for the affected land use or 6 dB where it is below the clearly compatible noise standard of 60 dBA CNEL for residential and 65 dBA CNEL for school uses.
[3] Since the noise created from these roadways are below the noise created from Interstate 210 at the nearby homes/school of 56.0 dBA CNEL, the roadway segment noise was combined with Interstate 210, in order to provide more accurate noise levels experienced at the nearby sensitive receptors.
Source: FHWA Traffic Noise Prediction Model FHWA-RD-77-108.

Table M shows that for the existing year conditions, the proposed project's permanent noise increases to the nearby sensitive receptors from the generation of additional vehicular traffic would not exceed the increase thresholds detailed in General Plan Policy 9.0v. Therefore, the proposed project would not result in a substantial permanent increase in ambient noise levels for the existing year conditions. Impacts would be less than significant.

Opening Year 2025 Conditions

The proposed project's potential offsite noise impacts have been calculated through a comparison of the opening year 2025 without project scenario to the opening year 2025 with project scenario. The results of this comparison are shown in Table N.

Table N – Opening Year 2025 Project Traffic Noise Contributions

Roadway	Segment	dBA CNEL at Nearest Receptor[1] 2025 No Project	2025 Plus Project	Project Contribution	Increase Threshold[2]
Texas Street	North of Domestic Avenue[3]	56.8	57.1	0.3	+6 dBA
Texas Street	South of Domestic Avenue[3]	57.1	58.1	1.0	+6 dBA
Texas Street	South of Pioneer Avenue	57.8	59.2	1.4	+6 dBA
Texas Street	South of San Bernardino Avenue	62.5	62.8	0.3	+4 dBA
Pioneer Avenue	West of Texas Street[3]	59.0	59.0	0.0	+6 dBA
Pioneer Avenue	East of Texas Street	62.5	62.6	0.1	+4 dBA
San Bernardino Avenue	East of Texas Street	66.0	66.1	0.1	+4 dBA

Notes:
[1] Distance to nearest residential or school use shown in Table H, does not take into account existing noise barriers.
[2] Increase threshold based on General Plan Policy 9.0v, which defines a significant impact as a 4 dB increase where the existing noise level exceeds the clearly compatible noise standard for the affected land use or 6 dB where it is below the clearly compatible noise standard of 60 dBA CNEL for residential and 65 dBA CNEL for school uses.
[3] Since the noise created from these roadways are below the noise created from Interstate 210 at the nearby homes/school of 56.0 dBA CNEL, the roadway segment noise was combined with Interstate 210, in order to provide more accurate noise levels experienced at the nearby sensitive receptors.
Source: FHWA Traffic Noise Prediction Model FHWA-RD-77-108.

Table N shows that for the opening year 2025 conditions, the proposed project's permanent noise increases to the nearby sensitive receptors from the generation of additional vehicular traffic would not exceed the increase thresholds detailed in General Plan Policy 9.0v. Therefore, the proposed project would not result in a substantial permanent increase in ambient noise levels for the opening year 2025 conditions. Impacts would be less than significant.

Horizon Year 2035 Conditions

The proposed project's potential offsite noise impacts have been calculated through a comparison of the horizon year 2035 without project scenario to the horizon year 2035 with project scenario. The results of this comparison are shown in Table O.

Table O – Horizon Year 2035 Project Traffic Noise Contributions

Roadway	Segment	dBA CNEL at Nearest Receptor[1] 2035 No Project	2035 Plus Project	Project Contribution	Increase Threshold[2]
Texas Street	North of Domestic Avenue[3]	57.6	57.8	0.2	+6 dBA
Texas Street	South of Domestic Avenue[3]	57.8	58.7	0.9	+6 dBA
Texas Street	South of Pioneer Avenue	58.2	59.5	1.3	+6 dBA
Texas Street	South of San Bernardino Avenue	62.8	63.1	0.3	+4 dBA
Pioneer Avenue	West of Texas Street[3]	56.3	56.4	0.1	+6 dBA
Pioneer Avenue	East of Texas Street	62.9	63.0	0.1	+4 dBA
San Bernardino Avenue	East of Texas Street	66.6	66.6	0.1	+4 dBA

Notes:
[1] Distance to nearest residential or school use shown in Table H, does not take into account existing noise barriers.
[2] Increase threshold based on General Plan Policy 9.0v, which defines a significant impact as a 4 dB increase where the existing noise level exceeds the clearly compatible noise standard for the affected land use or 6 dB where it is below the clearly compatible noise standard of 60 dBA CNEL for residential and 65 dBA CNEL for school uses.

[3] Since the noise created from these roadways are below the noise created from Interstate 210 at the nearby homes/school of 56.8 dBA CNEL, the roadway segment noise was combined with Interstate 210, in order to provide more accurate noise levels experienced at the nearby sensitive receptors.
Source: FHWA Traffic Noise Prediction Model FHWA-RD-77-108.

Table O shows that for the horizon year 2035 conditions, the proposed project's permanent noise increases to the nearby sensitive receptors from the generation of additional vehicular traffic would not exceed the increase thresholds detailed in General Plan Policy 9.0v. Therefore, the proposed project would not result in a substantial permanent increase in ambient noise levels for the horizon year 2035 conditions. Impacts would be less than significant.

Proposed Park Noise Impacts

The proposed project includes development of a City Park that would contain baseball and soccer fields that may create noise levels that exceed City noise standards at the proposed homes. General Plan Policy 9.0u requires all new residential projects that are constructed near public parks to be consistent with the limits contained in the Noise Ordinance, which includes Section 8.06.070, that limits the exterior noise at the proposed single-family homes to 50 dBA between 10:00 p.m. and 7:00 a.m. and 60 dBA between 7:00 a.m. and 10:00 p.m.. In addition, Section 8.06.080 of the Municipal Code limits interior noise created from the City Park at the proposed single-family homes to 45 dBA anytime of the day. Since a typical new home that is constructed to meet the required California Code of Regulations Title 24, Part 6 building energy-efficiency standards that require the installation of dual-paned windows as well as enhanced insulation requirements, provides a minimum 25 dB of exterior to interior noise reduction, this analysis has utilized only the exterior noise standards, since it is not possible to exceed the interior noise standards, without also exceeding the exterior noise standards.

In order to determine the noise impacts created from the proposed baseball field a reference noise measurement was taken of a little league baseball game at 25 feet from the bleachers, which measured 60.9 dBA Leq. The reference noise measurement printout for the baseball field is provided in Appendix E. In order to determine the noise impacts from the proposed soccer fields, the reference noise measurements provided in the *Draft Initial Study/Mitigated Negative Declaration for the Joint Use Fields Project*, prepared by ICF, November 2016, which found that soccer games created an average noise level of 59.9 dBA at 115 feet from the middle of the nearest soccer field. Table J provides a summary of the baseball and soccer field reference noise levels and shows the anticipated noise level from each source at the nearest homes to each field. The noise reduction calculations provided by the proposed minimum 6.0-foot high sound walls located between the proposed homes and proposed City Park that is shown in the proposed Fence and Wall Plan (see Figure 3) are shown in Appendix F.

Table P –Operational Noise Levels at the Nearest Homes to the Proposed City Park

	Reference Noise Measurement		Calculated Noise Levels		City Noise Standards	Exceed Standard?
Noise Source	Distance Receptor to Source (feet)	Reference Noise Level (dBA Leq)	Distance to Homes (feet)	Noise Level[1] (dBA Leq)	(Day/Night)	(Day/Night)
Baseball Field (Bleachers)	25	60.9	150	40.4	60/50	No/No
Soccer Field (Field Center)	115	59.9	70	53.8	60/50	No/Yes

Notes:
[1] The calculated noise levels account for the noise reduction provided by the proposed 6.0-foot high wall between the proposed homes and City Park as detailed on the Proposed Fence and Wall Plan (see Figure 3).

Table I shows that soccer field activities would exceed the City's residential nighttime noise standard of 50 dB at the nearest homes. This would be considered a significant impact.

Mitigation Measure 1 is provide that restricts use of the soccer fields between the hours of 10 p.m. and 7 a.m.. Through implementation of Mitigation Measure 1, noise created from the proposed City Park would result in a less than significant impact.

Roadway Vehicular Noise Impacts to Proposed Homes

The proposed project would consist of the development of a residential community with 317 single-family homes. General Plan Policy 9.0e requires that the noise levels at the proposed homes be limited to 60 dBA CNEL at the exterior of the homes and 45 dBA CNEL at the interior of the homes.

It is anticipated that the primary source of noise impacts to the project site will be traffic noise from Interstate 210, where the nearest travel lane is located as near as 220 feet west of the project site. The proposed homes will also experience some background traffic noise impacts from the proposed project's internal roadways and neighboring residential roadways. As the traffic on these local streets would consist of low traffic volumes at slower speeds and the traffic noise from these roads would not make a significant contribution to the noise environment, the noise levels from these local roads were not analyzed. The FHWA traffic noise prediction model parameters used in this analysis are discussed above in detail in Section 6.2 and the FHWA model printouts are provided in Appendix G. The exterior and interior noise impacts to the proposed homes have been analyzed separately below.

Exterior Noise Impacts to Proposed Homes

The anticipated exterior noise levels have been calculated for the backyards of the nearest proposed homes to Interstate 210 with construction of the proposed 6-foot sound wall detailed in the Fence and Wall Plan (see Figure 3) and the results are shown below in Table Q.

Table Q – Proposed Homes Exterior Noise Levels from Interstate 210 Prior to Mitigation

Lot Number	Calculated Exterior Noise Level (dBA CNEL)	Sound Wall Height[1] (feet)	City Residential Exterior Noise Standard[2] (dBA CNEL)	Exceed Standard?
236	59.0	6.0	60	No
248	58.9	6.0	60	No
260	58.9	6.0	60	No
272	58.8	6.0	60	No
298	63.0	6.0	60	**Yes**
301	60.9	6.0	60	**Yes**

Notes:
[1] Sound wall height based on the 6-foot high wall depicted in the Fence and Wall Plan (see Figure 3).s
[2] City's residential exterior noise standard from General Plan Policy 9.0e.
Source: FHWA RD-77-108 Model.

Table Q shows that with implementation of proposed 6-foot wall detailed in the Fence and Wall Plan, that the exterior noise would exceed the City's residential exterior noise standard of 60 dBA CNEL at Lots 298 and 301, which are located on the northwest portion of the project site. This would be considered a significant impact.

Mitigation Measure 2 is provided that would require a minimum 6.5-foot high wall on the west side of Lots 300, 301, and 302 and a minimum 7.5-foot high wall on the west side of Lots 297, 298, and 299. The FHWA model was re-run with implementation of the sound wall heights provided in Mitigation Measure 2 and the results are shown in Table R. Table R shows that with implementation of Mitigation Measure 2, the proposed homes exterior noise levels would be within the City's residential exterior noise standard and would result in a less than significant impact.

Table R –Proposed Homes Mitigated Exterior Noise Levels from Interstate 210

Lot Number	Calculated Exterior Noise Level (dBA CNEL)	Sound Wall Height[1] (feet)	City Residential Exterior Noise Standard[2] (dBA CNEL)	Exceed Standard?
236	59.0	6.0	60	No
248	58.9	6.0	60	No
260	58.9	6.0	60	No
272	58.8	6.0	60	No
298	59.2	7.5	60	No
301	59.5	6.5	60	No

Notes:
[1] Sound wall heights based on the 6.0-foot high wall depicted in the Fence and Wall Plan (see Figure 3) and from Implementation of Mitigation Measure 2.
[2] City's residential exterior noise standard from General Plan Policy 9.0e.
Source: FHWA RD-77-108 Model.

Interior Noise Impacts to Proposed Homes

To assess the interior noise levels, the same proposed homes analyzed for the exterior private backyard analysis were also analyzed for their interior noise levels. The exterior noise level at the façade of the first and second floors were calculated through use of the same methodology detailed above for the outdoor noise calculations and in Section 4.1 above and the results are shown below in Table S. Table S also shows the interior noise levels calculated based on 25 dB of attenuation, which is the minimum exterior to interior noise reduction rate for new homes that are constructed to meet the required California Code of Regulations Title 24, Part 6 building energy-efficiency standards that require the installation of dual-paned windows as well as enhanced insulation requirements.

Table S – Proposed Homes Interior Noise Levels from Interstate 210

Lot Number	Floor	Exterior Noise Level at Building Façade (dBA CNEL)	Interior Noise Level[1] (dBA CNEL)	City Residential Interior Noise Standard[2] (dBA CNEL)	Exceed Standard?
236	1	60.6	35.6	45	No
	2	65.8	40.8	45	No
248	1	60.4	35.4	45	No
	2	65.7	40.7	45	No
260	1	60.4	35.4	45	No
	2	65.7	40.7	45	No
272	1	60.4	35.4	45	No
	2	65.7	40.7	45	No
298	1	62.2	37.2	45	No
	2	69.8	44.8	45	No
301	1	61.7	36.7	45	No
	2	67.8	42.8	45	No

Notes:
[1] Based on standard dual pane windows and doors with a 26 STC rating, which are required per Title 24 energy saving requirements.
[2] City's interior noise standard from General Plan Policy 9.0e.
Source: FHWA RD-77-108 Model.

Table S shows that the interior noise levels for both the first and second floors of the proposed homes would be within the City's residential interior noise standards of 45 dBA CNEL. Therefore, the proposed project would comply with the City's residential interior noise standards. Impacts would be less than significant.

Level of Significance Before Mitigation

Potentially significant impact.

Mitigation Measures

Mitigation Measure 1:

No soccer practice or games shall be permitted on the soccer fields between the hours of 10 p.m. and 7 a.m. daily. This shall be enforced through programmed field light controls and signage placed around the soccer fields.

Mitigation Measure 2:

The project applicant shall construct a minimum 6.5-foot high wall on the west side of Lots 300, 301, and 302 and a minimum 7.5-foot high wall on the west side of Lots 297, 298, and 299. The walls shall be constructed of concrete masonry units (CMUs) and shall be free of any decorative cutouts or openings.

Level of Significance After Mitigation

Less than significant impact.

7.3 Generation of Excessive Groundborne Vibration

The proposed project would not expose persons to or generation of excessive groundborne vibration or groundborne noise levels. The following section analyzes the potential vibration impacts associated with the construction and operations of the proposed project.

Construction-Related Vibration Impacts

The construction activities for the proposed project are anticipated to include site preparation and grading of the 58.64 acre project site, building construction of the 317 single-family homes and City Park, paving of the onsite roads and parking areas and application of architectural coatings. Vibration impacts from construction activities associated with the proposed project would typically be created from the operation of heavy off-road equipment. The nearest offsite structure where people may sit, which makes them much more susceptible to vibration, would be school building at Citrus Valley High School that are located as near as 530 feet south of the project site.

Section 9.06.090(G) limits vibration activities to vibration levels that are not discernible at or beyond the boundary line of private property or at 150 feet from the vibration source if on a public space or public right of way. Based on these standards, there is potential that groundborne vibration may expose persons to excessive vibration levels. In order to provide a conservative analysis, the construction activities have

been analyzed based on the standard of being discernible at the nearest sensitive receptors which are the school buildings located as near as 530 feet south of the project site.

The primary source of vibration during construction would be from the operation of a bulldozer. From Table K above a large bulldozer would create a vibration level of 0.089 inch per second PPV at 25 feet. Based on typical propagation rates, the vibration level at the nearest sensitive receptors (530 feet away from the proposed project) would be 0.003 inch per second PPV. Caltrans research found that human response to transient sources becomes distinctly perceptible at 0.25 inch per second PPV. Construction activities associated with the proposed project would be below the distinctly perceptible levels of vibration at the nearby sensitive receptors. Impacts would be less than significant.

Operations-Related Vibration Impacts

The proposed project would consist of the development of 317 single-family homes and a City Park. The on-going operation of the proposed project would not include the operation of any known vibration sources other than typical onsite vehicle operations for a residential development. Therefore, a less than significant vibration impact is anticipated from operation of the proposed project.

Level of Significance

Less than significant impact.

7.4 Aircraft Noise

The proposed project would not expose people residing or working in the project area to excessive noise levels from aircraft. The nearest airport is San Bernardino International Airport that is located approximately 1.2 miles northwest of the project site. The *Airport Layout Plan Narrative Report for San Bernardino International Airport,* prepared by Coffman Associates, November 2010, provides the Airport noise contours for both the existing (2010) conditions and the ultimate noise contours, which are shown in Figure 5. Figure 5 shows that even at ultimate buildout of the Airport that the 65 dBA noise contours will barely extend a half mile from the runway, which is aligned away from the project site. As such, the project site is located well outside of the 65 dBA CNEL noise contours of San Bernardino International Airport. No impacts would occur from aircraft noise.

Level of Significance

No impact.

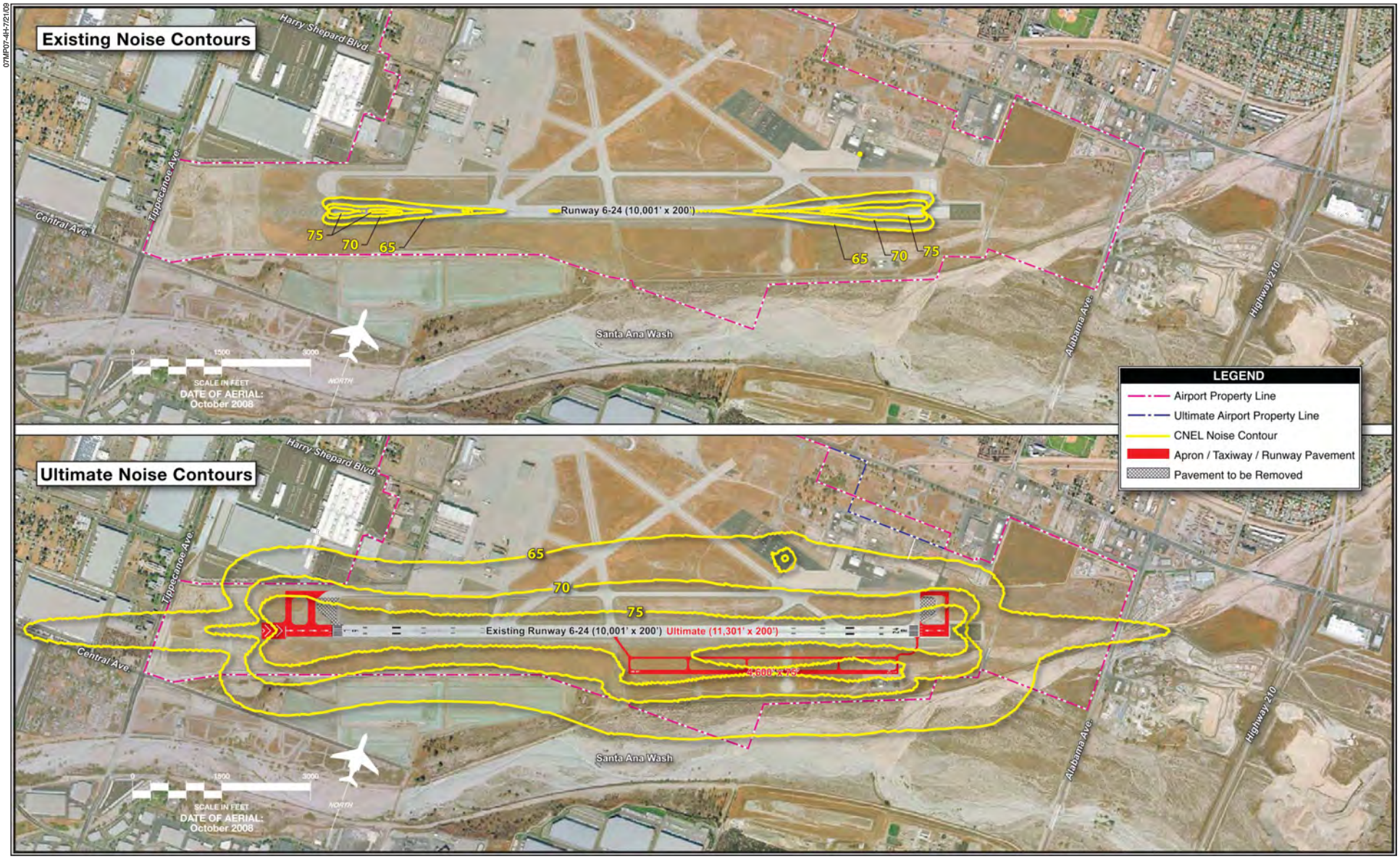


Exhibit 4H
EXISTING AND ULTIMATE NOISE CONTOURS

SOURCE: Coffman Associates, 2010.

VISTA ENVIRONMENTAL

Figure 5
San Bernardino International Airport Noise Contour Maps

8.0 REFERENCES

California Department of Transportation, *2016 Annual Average Daily Truck Traffic on the California State Highway System*, 2018.

California Department of Transportation (Caltrans), *Technical Noise Supplement to the Traffic Noise Analytics Protocol*, September 2013.

California Department of Transportation, *Transportation- and Construction-Induced Vibration Guidance Manual*, September 2013.

Coffman Associates, *Airport Layout Plan Narrative Report for San Bernardino International Airport,* November 2010

City of Redlands, *City of Redlands General Plan 2035,* Adopted December 5, 2017.

City of Redlands, *City Code of Redlands, California,* December 17, 2019.

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

Urban Crossroads, *Citrus Valley Traffic Analysis City of Redlands,* June 30, 2020.

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

Vista Environmental, *Air Quality, Energy, and Greenhouse Gas Emissions Impact Analysis Citrus Valley Residential Project,* July 13, 2020.

APPENDIX A

Field Noise Measurements Photo Index

Noise Measurement Site 1 - looking north

Noise Measurement Site 1 - looking northeast

Noise Measurement Site 1 - looking east

Noise Measurement Site 1 - looking southeat

Noise Measurement Site 1 - looking south

Noise Measurement Site 1 - looking southwest

Noise Measurement Site 1 - looking west

Noise Measurement Site 1 - looking northwest

Noise Measurement Site 2 - looking north

Noise Measurement Site 2 - looking northeast

Noise Measurement Site 2 - looking east

Noise Measurement Site 2 - looking southeast

Noise Measurement Site 2 - looking south

Noise Measurement Site 2 - looking southwest

Noise Measurement Site 2 - looking west

Noise Measurement Site 2 - looking northwest

APPENDIX B

Field Noise Measurements Printouts

Site A - On Tree Near West Property Line

Date	Time=03/18/19	12:05:00 PM			
Sampling	Time=3	Weighting=A			
Record	Num= 28800	Weighting=Slow	CNEL(24hr)=	74.3	
Leq	67.3 SEL	Value=116.7	Ldn(24hr)=	74.0	
MAX	81.5	Min Leq1hr =	62.7	1:41 AM	
MIN	44.7	Max Leq1hr =	71.1	6:24 AM	

Site B - On Tree 370' East of West Property Line

Date	Time=03/18/19	12:11:00 PM			
Sampling	Time=3	Freq Weighting=A			
Record	Num= 28800	Weighting=Slow	CNEL(24hr)=	65.0	
Leq	59.7 SEL	Value=120.2	Ldn(24hr)=	64.7	
MAX	78.8	Min Leq1hr =	53.6	2:34 AM	
MIN	42.4	Max Leq1hr =	64.1	4:16 PM	

Site A - On Tree Near West Property Line

SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL
63.6	12:05:00		63.6	63.6
67.5	12:05:03		67.5	67.5
67.1	12:05:06		67.1	67.1
72.2	12:05:09		72.2	72.2
64.8	12:05:12		64.8	64.8
66.3	12:05:15		66.3	66.3
69.6	12:05:18		69.6	69.6
64.8	12:05:21		64.8	64.8
70.3	12:05:24		70.3	70.3
68.5	12:05:27		68.5	68.5
62.5	12:05:30		62.5	62.5
62.2	12:05:33		62.2	62.2
61	12:05:36		61	61
64.9	12:05:39		64.9	64.9
66.1	12:05:42		66.1	66.1
66.1	12:05:45		66.1	66.1
68.9	12:05:48		68.9	68.9
65.8	12:05:51		65.8	65.8
63.1	12:05:54		63.1	63.1
64.6	12:05:57		64.6	64.6
70.7	12:06:00		70.7	70.7
65.2	12:06:03		65.2	65.2
68.9	12:06:06		68.9	68.9
71.1	12:06:09		71.1	71.1
71.9	12:06:12		71.9	71.9
68.8	12:06:15		68.8	68.8
66.2	12:06:18		66.2	66.2
65.9	12:06:21		65.9	65.9
65.5	12:06:24		65.5	65.5
68.3	12:06:27		68.3	68.3
63.9	12:06:30		63.9	63.9
65.5	12:06:33		65.5	65.5
62	12:06:36		62	62
63	12:06:39		63	63
64.3	12:06:42		64.3	64.3
62.8	12:06:45		62.8	62.8
64.4	12:06:48		64.4	64.4
63.2	12:06:51		63.2	63.2
63.8	12:06:54		63.8	63.8
62.9	12:06:57		62.9	62.9
64.1	12:07:00		64.1	64.1
64.7	12:07:03		64.7	64.7
65.3	12:07:06		65.3	65.3
64.1	12:07:09		64.1	64.1
63.9	12:07:12		63.9	63.9
64	12:07:15		64	64
64.9	12:07:18		64.9	64.9
64.6	12:07:21		64.6	64.6
63.2	12:07:24		63.2	63.2
64.2	12:07:27		64.2	64.2
65.2	12:07:30		65.2	65.2
65.4	12:07:33		65.4	65.4
66.2	12:07:36		66.2	66.2
65.8	12:07:39		65.8	65.8
64.9	12:07:42		64.9	64.9
65.6	12:07:45		65.6	65.6
68	12:07:48		68	68
67.8	12:07:51		67.8	67.8
66.8	12:07:54		66.8	66.8
65.8	12:07:57		65.8	65.8
66.2	12:08:00		66.2	66.2
68	12:08:03		68	68
67.2	12:08:06		67.2	67.2
65.3	12:08:09		65.3	65.3
64.6	12:08:12		64.6	64.6
65.9	12:08:15		65.9	65.9
67.4	12:08:18		67.4	67.4
68	12:08:21		68	68
66.9	12:08:24		66.9	66.9
65.9	12:08:27		65.9	65.9
65.5	12:08:30		65.5	65.5
65.4	12:08:33		65.4	65.4
65.8	12:08:36		65.8	65.8
66.2	12:08:39		66.2	66.2
65.7	12:08:42		65.7	65.7
65.4	12:08:45		65.4	65.4
65.6	12:08:48		65.6	65.6

Site B - On Tree 370' East of West Property Line

SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL
70.8	12:11:00		70.8	70.8
67.4	12:11:03		67.4	67.4
65.5	12:11:06		65.5	65.5
68.7	12:11:09		68.7	68.7
73.4	12:11:12		73.4	73.4
59.8	12:11:15		59.8	59.8
57.8	12:11:18		57.8	57.8
64	12:11:21		64	64
60.6	12:11:24		60.6	60.6
70.7	12:11:27		70.7	70.7
66.5	12:11:30		66.5	66.5
66.8	12:11:33		66.8	66.8
65.3	12:11:36		65.3	65.3
66.9	12:11:39		66.9	66.9
66.8	12:11:42		66.8	66.8
63.7	12:11:45		63.7	63.7
70.3	12:11:48		70.3	70.3
66.5	12:11:51		66.5	66.5
67.3	12:11:54		67.3	67.3
58.7	12:11:57		58.7	58.7
60.8	12:12:00		60.8	60.8
59.6	12:12:03		59.6	59.6
62.1	12:12:06		62.1	62.1
69.2	12:12:09		69.2	69.2
64.2	12:12:12		64.2	64.2
66.1	12:12:15		66.1	66.1
65.1	12:12:18		65.1	65.1
62.4	12:12:21		62.4	62.4
73	12:12:24		73	73
63.7	12:12:27		63.7	63.7
66.6	12:12:30		66.6	66.6
65.7	12:12:33		65.7	65.7
61.8	12:12:36		61.8	61.8
66.4	12:12:39		66.4	66.4
70.9	12:12:42		70.9	70.9
67.1	12:12:45		67.1	67.1
68.8	12:12:48		68.8	68.8
62.6	12:12:51		62.6	62.6
64.6	12:12:54		64.6	64.6
59.5	12:12:57		59.5	59.5
60.3	12:13:00		60.3	60.3
59.3	12:13:03		59.3	59.3
59.4	12:13:06		59.4	59.4
60.3	12:13:09		60.3	60.3
59.4	12:13:12		59.4	59.4
58.1	12:13:15		58.1	58.1
58	12:13:18		58	58
56.6	12:13:21		56.6	56.6
55.8	12:13:24		55.8	55.8
57	12:13:27		57	57
58.5	12:13:30		58.5	58.5
56.6	12:13:33		56.6	56.6
57	12:13:36		57	57
59.6	12:13:39		59.6	59.6
56.3	12:13:42		56.3	56.3
55.2	12:13:45		55.2	55.2
55.7	12:13:48		55.7	55.7
56.3	12:13:51		56.3	56.3
57.1	12:13:54		57.1	57.1
57.5	12:13:57		57.5	57.5
58.3	12:14:00		58.3	58.3
58.5	12:14:03		58.5	58.5
58.2	12:14:06		58.2	58.2
57.6	12:14:09		57.6	57.6
57.4	12:14:12		57.4	57.4
56.8	12:14:15		56.8	56.8
56.6	12:14:18		56.6	56.6
56.6	12:14:21		56.6	56.6
57.2	12:14:24		57.2	57.2
57.3	12:14:27		57.3	57.3
57.9	12:14:30		57.9	57.9
57.5	12:14:33		57.5	57.5
57.1	12:14:36		57.1	57.1
56.7	12:14:39		56.7	56.7
57.2	12:14:42		57.2	57.2
56.9	12:14:45		56.9	56.9
58.1	12:14:48		58.1	58.1

APPENDIX C

RCNM Model Construction Noise Calculations

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 7/13/2020
Case Description: Citrus Valley Residential - Site Preparation

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
School to South	Residential	59.7	59.7	59.7

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	50	0
Dozer	No	40		81.7	100	0
Dozer	No	40		81.7	150	0
Tractor	No	40	84		200	0
Front End Loader	No	40		79.1	250	0
Backhoe	No	40		77.6	300	0

Equipment	Calculated (dBA) *Lmax	Leq	Results Day Lmax	Noise Limits (dBA) Day Leq	Evening Lmax	Evening Leq
Dozer	81.7	77.7	N/A	N/A	N/A	N/A
Dozer	75.6	71.7	N/A	N/A	N/A	N/A
Dozer	72.1	68.1	N/A	N/A	N/A	N/A
Tractor	72.0	68.0	N/A	N/A	N/A	N/A
Front End Loader	65.1	61.2	N/A	N/A	N/A	N/A
Backhoe	62.0	58.0	N/A	N/A	N/A	N/A
Total	**81.7**	**79.5**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 7/13/2020
Case Description: Citrus Valley Residential - Site Preparation

				---- Receptor #2 ----
		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Homest to East	Residential	60	60	59.7

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	750	0
Dozer	No	40		81.7	800	0
Dozer	No	40		81.7	850	0
Tractor	No	40	84		900	0
Front End Loader	No	40		79.1	950	0
Backhoe	No	40.0		77.6	1000	0

		Calculated (dBA)		Results			
				Noise Limits (dBA)			
				Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer		58.1	54.2	N/A	N/A	N/A	N/A
Dozer		57.6	53.6	N/A	N/A	N/A	N/A
Dozer		57.1	53.1	N/A	N/A	N/A	N/A
Tractor		58.9	54.9	N/A	N/A	N/A	N/A
Front End Loader		53.5	49.6	N/A	N/A	N/A	N/A
Backhoe		51.5	47.6	N/A	N/A	N/A	N/A
	Total	**58.9**	**60.6**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 7/13/2020
Case Description: Citrus Valley Residential - Grading

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
School to South	Residential	59.7	59.7	59.7

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	50	0
Excavator	No	40		80.7	100	0
Grader	No	40	85		150	0
Dozer	No	40		81.7	200	0
Scraper	No	40		83.6	250	0
Scraper	No	40		83.6	300	0
Scraper	No	40		83.6	350	0
Scraper	No	40		83.6	400	0
Tractor	No	40	84		450	0
Front End Loader	No	40.0		79.1	500	0

Equipment	Calculated (dBA) *Lmax	Leq	Results Day Lmax	Noise Limits (dBA) Day Leq	Evening Lmax	Evening Leq
Excavator	80.7	76.7	N/A	N/A	N/A	N/A
Excavator	74.7	70.7	N/A	N/A	N/A	N/A
Grader	75.5	71.5	N/A	N/A	N/A	N/A
Dozer	69.6	65.6	N/A	N/A	N/A	N/A
Scraper	69.6	65.6	N/A	N/A	N/A	N/A
Scraper	68.0	64.0	N/A	N/A	N/A	N/A
Scraper	66.7	62.7	N/A	N/A	N/A	N/A
Scraper	65.5	61.5	N/A	N/A	N/A	N/A
Tractor	64.9	60.9	N/A	N/A	N/A	N/A
Front End Loader	59.1	55.1	N/A	N/A	N/A	N/A
Total	**80.7**	**79.4**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 7/13/2020
Case Description: Citrus Valley Residential - Grading

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homest to East	Residential	60	60	59.7

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	750	0
Excavator	No	40		80.7	800	0
Grader	No	40	85		850	0
Dozer	No	40		81.7	900	0
Scraper	No	40		83.6	950	0
Scraper	No	40		83.6	1000	0
Scraper	No	40		83.6	1050	0
Scraper	No	40		83.6	1100	0
Tractor	No	40	84		1150	0
Front End Loader	No	40		79.1	1200	0

Equipment	Calculated (dBA) *Lmax	Leq	Results Day Lmax	Noise Limits (dBA) Day Leq	Evening Lmax	Evening Leq
Excavator	57.2	53.2	N/A	N/A	N/A	N/A
Excavator	56.6	52.6	N/A	N/A	N/A	N/A
Grader	60.4	56.4	N/A	N/A	N/A	N/A
Dozer	56.6	52.6	N/A	N/A	N/A	N/A
Scraper	58.0	54.0	N/A	N/A	N/A	N/A
Scraper	57.6	53.6	N/A	N/A	N/A	N/A
Scraper	57.1	53.2	N/A	N/A	N/A	N/A
Scraper	56.7	52.8	N/A	N/A	N/A	N/A
Tractor	56.8	52.8	N/A	N/A	N/A	N/A
Front End Loader	51.5	47.5	N/A	N/A	N/A	N/A
Total	**60.4**	**63.3**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 7/13/2020
Case Description: Citrus Valley Residential - Building Construction

				---- Receptor #1 ----
		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
School to South	Residential	59.7	59.7	59.7

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	50	0
Gradall	No	40		83.4	100	0
Gradall	No	40		83.4	150	0
Gradall	No	40		83.4	200	0
Generator	No	50		80.6	250	0
Tractor	No	40	84		300	0
Front End Loader	No	40		79.1	350	0
Backhoe	No	40		77.6	400	0
Welder / Torch	No	40		74	450	0

		Calculated (dBA)		Results			
				Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane		80.6	72.6	N/A	N/A	N/A	N/A
Gradall		77.4	73.4	N/A	N/A	N/A	N/A
Gradall		73.9	69.9	N/A	N/A	N/A	N/A
Gradall		71.4	67.4	N/A	N/A	N/A	N/A
Generator		66.7	63.6	N/A	N/A	N/A	N/A
Tractor		68.4	64.5	N/A	N/A	N/A	N/A
Front End Loader		62.2	58.2	N/A	N/A	N/A	N/A
Backhoe		59.5	55.5	N/A	N/A	N/A	N/A
Welder / Torch		54.9	50.9	N/A	N/A	N/A	N/A
	Total	**80.6**	**77.9**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 7/13/2020
Case Description: Citrus Valley Residential - Building Construction

				---- Receptor #2 ----
		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Homest to East	Residential	59.7	59.7	59.7

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	750	0
Gradall	No	40		83.4	800	0
Gradall	No	40		83.4	850	0
Gradall	No	40		83.4	900	0
Generator	No	50		80.6	950	0
Tractor	No	40	84		1000	0
Front End Loader	No	40		79.1	1050	0
Backhoe	No	40		77.6	1100	0
Welder / Torch	No	40		74	1150	0

		Calculated (dBA)		Results	Noise Limits (dBA)		
				Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane		57.0	49.1	N/A	N/A	N/A	N/A
Gradall		59.3	55.3	N/A	N/A	N/A	N/A
Gradall		58.8	54.8	N/A	N/A	N/A	N/A
Gradall		58.3	54.3	N/A	N/A	N/A	N/A
Generator		55.1	52.0	N/A	N/A	N/A	N/A
Tractor		58.0	54.0	N/A	N/A	N/A	N/A
Front End Loader		52.7	48.7	N/A	N/A	N/A	N/A
Backhoe		50.7	46.7	N/A	N/A	N/A	N/A
Welder / Torch		46.8	42.8	N/A	N/A	N/A	N/A
	Total	**59.3**	**61.9**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 7/13/2020
Case Description: Citrus Valley Residential - Paving

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
School to South	Residential	59.7	59.7	59.7

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	50	0
Paver	No	50		77.2	100	0
Paver	No	50		77.2	150	0
Paver	No	50		77.2	200	0
Roller	No	20		80	250	0
Roller	No	20		80	300	0

Equipment	Calculated (dBA) *Lmax	Leq	Results Day Lmax	Noise Limits (dBA) Day Leq	Evening Lmax	Evening Leq
Paver	77.2	74.2	N/A	N/A	N/A	N/A
Paver	71.2	68.2	N/A	N/A	N/A	N/A
Paver	67.7	64.7	N/A	N/A	N/A	N/A
Paver	65.2	62.2	N/A	N/A	N/A	N/A
Roller	66.0	59.0	N/A	N/A	N/A	N/A
Roller	64.4	57.4	N/A	N/A	N/A	N/A
Total	**77.2**	**75.9**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 7/13/2020
Case Description: Citrus Valley Residential - Paving

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homest to East	Residential	59.7	59.7	59.7

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	770	0
Paver	No	50		77.2	820	0
Paver	No	50		77.2	870	0
Paver	No	50		77.2	920	0
Roller	No	20		80	970	0
Roller	No	20		80	1020	0

Equipment		Calculated (dBA) *Lmax	Leq	Results Day Lmax	Noise Limits (dBA) Day Leq	Evening Lmax	Evening Leq
Paver		53.5	50.5	N/A	N/A	N/A	N/A
Paver		52.9	49.9	N/A	N/A	N/A	N/A
Paver		52.4	49.4	N/A	N/A	N/A	N/A
Paver		51.9	48.9	N/A	N/A	N/A	N/A
Roller		54.2	47.3	N/A	N/A	N/A	N/A
Roller		53.8	46.8	N/A	N/A	N/A	N/A
	Total	**54.2**	**56.8**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 7/13/2020
Case Description: Citrus Valley Residential - Painting

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
School to South	Residential	59.7	59.7	59.7

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	70	0

Equipment		Calculated (dBA) *Lmax	Leq	Results Day Lmax	Day Leq	Noise Limits (dBA) Evening Lmax	Evening Leq
Compressor (air)		74.7	70.8	N/A	N/A	N/A	N/A
	Total	**74.7**	**70.8**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homest to East	Residential	59.7	59.7	59.7

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	770	0

Equipment		Calculated (dBA) *Lmax	Leq	Results Day Lmax	Day Leq	Noise Limits (dBA) Evening Lmax	Evening Leq
Compressor (air)		53.9	49.9	N/A	N/A	N/A	N/A
	Total	**53.9**	**49.9**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

APPENDIX D

FHWA Model Offsite Traffic Noise Calculation Printouts

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING CONDITIONS

Project: Citrus Valley Residential
Site Conditions: Soft

	Vehicle Mix 1 (Local)				Vehicle Mix 2 (Arterial)				Vehicle Mix 3 (I-210)			
Vehicle Type	Day	Evening	Night	Daily	Day	Evening	Night	Daily	Day	Evenin	Night	Daily
Automobiles	73.60%	13.60%	10.22%	97.42%	69.50%	12.90%	9.60%	92.00%	43.85%	13.34%	38.13%	95.32%
Medium Trucks	0.90%	0.90%	0.04%	1.84%	1.44%	0.06%	1.50%	3.00%	0.51%	0.14%	0.65%	1.30%
Heavy Trucks	0.35%	0.04%	0.35%	0.74%	2.40%	0.10%	2.50%	5.00%	1.08%	0.34%	1.96%	3.38%

Road Name: Texas Street **Segment: North of Domestic Avenue**

Average Daily Traffic: 100 Vehicles Vehicle Speed: 30 MPH Vehicle Mix: 1 Roadway Classification: Collector

	NOISE PARAMETERS AT 110 FEET FROM CENTERLINE (Equiv. Lane Dist: 109.78 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	62.51	-20.19	-5.23	-1.20	35.90	33.77	32.46	26.45	34.87	35.49	70 dBA:	**1**	**1**
Medium Trucks	73.11	-37.43	-5.23	-1.20	29.26	8.01	14.03	-4.26	8.88	11.63	65 dBA:	**1**	**1**
Heavy Trucks	80.26	-41.38	-5.23	-1.20	32.45	7.10	3.70	8.35	14.55	14.64	60 dBA:	**2**	**3**
				Total:	**38.12**	**33.79**	**32.53**	**26.52**	**34.92**	**35.55**	55 dBA:	**5**	**6**

Road Name: Texas Street **Segment: South of Domestic Avenue**

Average Daily Traffic: 800 Vehicles Vehicle Speed: 30 MPH Vehicle Mix: 1 Roadway Classification: Collector

	NOISE PARAMETERS AT 105 FEET FROM CENTERLINE (Equiv. Lane Dist: 104.77 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	62.51	-11.16	-4.92	-1.20	45.23	43.11	41.80	35.78	44.20	44.83	70 dBA:	**2**	**2**
Medium Trucks	73.11	-28.40	-4.92	-1.20	38.59	17.35	23.37	5.07	18.22	20.97	65 dBA:	**4**	**5**
Heavy Trucks	80.26	-32.35	-4.92	-1.20	41.79	16.43	13.03	17.68	23.88	23.98	60 dBA:	**9**	**10**
				Total:	**47.46**	**43.13**	**41.86**	**35.85**	**44.25**	**44.88**	55 dBA:	**20**	**22**

Road Name: Texas Street **Segment: South of Pioneer Avenue**

Average Daily Traffic: 4300 Vehicles Vehicle Speed: 30 MPH Vehicle Mix: 2 Roadway Classification: Minor Arterial

	NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 74.03 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	62.51	-4.10	-2.66	-1.20	54.55	52.18	50.88	44.83	53.26	53.89	70 dBA:	**8**	**8**
Medium Trucks	73.11	-18.97	-2.66	-1.20	50.28	31.08	23.29	32.50	38.66	38.69	65 dBA:	**16**	**18**
Heavy Trucks	80.26	-16.75	-2.66	-1.20	59.65	42.66	34.88	44.09	50.24	50.27	60 dBA:	**35**	**38**
				Total:	**61.19**	**52.67**	**51.00**	**47.62**	**55.12**	**55.55**	55 dBA:	**76**	**82**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING CONDITIONS

Project: Citrus Valley Residential
Site Conditions: Soft

Road Name: Texas Street **Segment: South of San Bernardino Avenue**
Average Daily Traffic: 7200 Vehicles Vehicle Speed: 40 MPH Vehicle Mix: 2 Roadway Classification: Minor Arterial

	NOISE PARAMETERS AT 65 FEET FROM CENTERLINE (Equiv. Lane Dist: 63.88 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	67.36	-3.11	-1.70	-1.20	61.35	58.97	57.68	51.63	60.06	60.69	70 dBA:	**16**	**18**
Medium Trucks	76.31	-17.98	-1.70	-1.20	55.43	36.22	28.44	37.65	43.80	43.84	65 dBA:	**35**	**38**
Heavy Trucks	81.16	-15.76	-1.70	-1.20	62.50	45.51	37.73	46.93	53.09	53.12	60 dBA:	**75**	**81**
				Total:	**65.43**	**59.19**	**57.73**	**53.02**	**60.94**	**61.46**	55 dBA:	**162**	**175**

Road Name: Pioneer Avenue **Segment: West of Texas Street**
Average Daily Traffic: 8600 Vehicles Vehicle Speed: 35 MPH Vehicle Mix: 1 Roadway Classification: Collector

	NOISE PARAMETERS AT 135 FEET FROM CENTERLINE (Equiv. Lane Dist: 134.82 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	65.11	-1.51	-6.57	-1.20	55.83	53.71	52.39	46.38	54.80	55.43	70 dBA:	**13**	**14**
Medium Trucks	74.83	-18.75	-6.57	-1.20	48.31	27.06	33.08	14.79	27.93	30.68	65 dBA:	**28**	**31**
Heavy Trucks	80.05	-22.71	-6.57	-1.20	49.57	24.22	20.82	25.47	31.67	31.77	60 dBA:	**61**	**67**
				Total:	**57.33**	**53.72**	**52.45**	**46.42**	**54.83**	**55.46**	55 dBA:	**132**	**145**

Road Name: Pioneer Avenue **Segment: East of Texas Street**
Average Daily Traffic: 8300 Vehicles Vehicle Speed: 35 MPH Vehicle Mix: 1 Roadway Classification: Modified Collector

	NOISE PARAMETERS AT 50 FEET FROM CENTERLINE (Equiv. Lane Dist: 49.18 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	65.11	-1.67	0.00	-1.20	62.24	60.12	58.81	52.80	61.22	61.84	70 dBA:	**13**	**14**
Medium Trucks	74.83	-18.91	0.00	-1.20	54.72	33.48	39.50	21.20	34.35	37.10	65 dBA:	**28**	**31**
Heavy Trucks	80.05	-22.86	0.00	-1.20	55.99	30.64	27.24	31.89	38.08	38.18	60 dBA:	**61**	**67**
				Total:	**63.75**	**60.14**	**58.86**	**52.84**	**61.25**	**61.88**	55 dBA:	**130**	**144**

Road Name: San Bernardino Avenue **Segment: East of Texas Street**
Average Daily Traffic: 15300 Vehicles Vehicle Speed: 45 MPH Vehicle Mix: 2 Roadway Classification: Major Arterial

	NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 70.35 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	69.34	-0.35	-2.33	-1.20	65.46	63.09	61.80	55.74	64.18	64.81	70 dBA:	**34**	**37**
Medium Trucks	77.62	-15.22	-2.33	-1.20	58.88	39.67	31.89	41.09	47.25	47.28	65 dBA:	**74**	**80**
Heavy Trucks	82.14	-13.00	-2.33	-1.20	65.61	48.62	40.84	50.05	56.20	56.24	60 dBA:	**159**	**173**
				Total:	**68.99**	**63.26**	**61.84**	**56.90**	**64.89**	**65.44**	55 dBA:	**343**	**372**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING CONDITIONS

Project: Citrus Valley Residential
Site Conditions: Soft

Road Name: Interstate 210 **Segment: North of Pioneer Avenue**

Average Daily Traffic: 79800 Vehicles Vehicle Speed: 65 MPH Vehicle Mix: 3 Roadway Classification: Freeway

	NOISE PARAMETERS AT 2980 FEET FROM CENTERLINE (Equiv. Lane Dist: 2979.63 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	75.54	5.38	-26.73	-1.20	52.99	48.61	49.47	49.26	55.60	55.88	70 dBA:	**331**	**345**
Medium Trucks	81.71	-13.27	-26.73	-1.20	40.51	16.80	17.19	19.10	25.25	25.43	65 dBA:	**712**	**743**
Heavy Trucks	85.21	-9.13	-26.73	-1.20	48.15	27.70	28.67	31.53	37.57	37.72	60 dBA:	**1534**	**1601**
				Total:	**54.40**	**48.65**	**49.51**	**49.33**	**55.68**	**55.95**	55 dBA:	**3306**	**3448**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT CONDITIONS

Project: Citrus Valley Residential
Site Conditions: Soft

	Vehicle Mix 1 (Local)				Vehicle Mix 2 (Arterial)				Vehicle Mix 3 (I-210)			
Vehicle Type	Day	Evening	Night	Daily	Day	Evening	Night	Daily	Day	Evenin	Night	Daily
Automobiles	73.60%	13.60%	10.22%	97.42%	69.50%	12.90%	9.60%	92.00%	43.85%	13.34%	38.13%	95.32%
Medium Trucks	0.90%	0.90%	0.04%	1.84%	1.44%	0.06%	1.50%	3.00%	0.51%	0.14%	0.65%	1.30%
Heavy Trucks	0.35%	0.04%	0.35%	0.74%	2.40%	0.10%	2.50%	5.00%	1.08%	0.34%	1.96%	3.38%

Road Name: Texas Street **Segment: North of Domestic Avenue**

Average Daily Traffic: 1100 Vehicles Vehicle Speed: 30 MPH Vehicle Mix: 1 Roadway Classification: Collector

	NOISE PARAMETERS AT 110 FEET FROM CENTERLINE (Equiv. Lane Dist: 109.78 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	62.51	-9.78	-5.23	-1.20	46.31	44.19	42.87	36.86	45.28	45.91	70 dBA:	**2**	**3**
Medium Trucks	73.11	-27.01	-5.23	-1.20	39.67	18.42	24.44	6.15	19.30	22.05	65 dBA:	**5**	**6**
Heavy Trucks	80.26	-30.97	-5.23	-1.20	42.86	17.51	14.11	18.76	24.96	25.06	60 dBA:	**12**	**13**
				Total:	**48.53**	**44.21**	**42.94**	**36.93**	**45.33**	**45.96**	55 dBA:	**25**	**27**

Road Name: Texas Street **Segment: South of Domestic Avenue**

Average Daily Traffic: 4100 Vehicles Vehicle Speed: 30 MPH Vehicle Mix: 1 Roadway Classification: Collector

	NOISE PARAMETERS AT 105 FEET FROM CENTERLINE (Equiv. Lane Dist: 104.77 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	62.51	-4.06	-4.92	-1.20	52.33	50.20	48.89	42.88	51.30	51.93	70 dBA:	**6**	**7**
Medium Trucks	73.11	-21.30	-4.92	-1.20	45.69	24.44	30.46	12.17	25.31	28.07	65 dBA:	**13**	**14**
Heavy Trucks	80.26	-25.26	-4.92	-1.20	48.88	23.53	20.13	24.78	30.98	31.07	60 dBA:	**28**	**31**
				Total:	**54.55**	**50.23**	**48.96**	**42.95**	**51.35**	**51.98**	55 dBA:	**60**	**66**

Road Name: Texas Street **Segment: South of Pioneer Avenue**

Average Daily Traffic: 7100 Vehicles Vehicle Speed: 30 MPH Vehicle Mix: 2 Roadway Classification: Minor Arterial

	NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 74.03 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	62.51	-1.93	-2.66	-1.20	56.73	54.35	53.06	47.01	55.44	56.07	70 dBA:	**11**	**11**
Medium Trucks	73.11	-16.79	-2.66	-1.20	52.46	33.25	25.47	34.68	40.83	40.87	65 dBA:	**23**	**25**
Heavy Trucks	80.26	-14.57	-2.66	-1.20	61.83	44.84	37.05	46.26	52.42	52.45	60 dBA:	**50**	**53**
				Total:	**63.36**	**54.84**	**53.18**	**49.80**	**57.29**	**57.73**	55 dBA:	**107**	**114**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT CONDITIONS

Project: Citrus Valley Residential
Site Conditions: Soft

Road Name: Texas Street **Segment: South of San Bernardino Avenue**
Average Daily Traffic: 7700 Vehicles Vehicle Speed: 40 MPH Vehicle Mix: 2 Roadway Classification: Minor Arterial

	NOISE PARAMETERS AT 65 FEET FROM CENTERLINE (Equiv. Lane Dist: 63.88 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	67.36	-2.82	-1.70	-1.20	61.64	59.27	57.97	51.92	60.35	60.98	70 dBA:	**17**	**18**
Medium Trucks	76.31	-17.69	-1.70	-1.20	55.72	36.52	28.73	37.94	44.10	44.13	65 dBA:	**36**	**40**
Heavy Trucks	81.16	-15.47	-1.70	-1.20	62.79	45.80	38.02	47.23	53.38	53.41	60 dBA:	**78**	**85**
				Total:	**65.72**	**59.48**	**58.02**	**53.31**	**61.23**	**61.76**	55 dBA:	**169**	**183**

Road Name: Pioneer Avenue **Segment: West of Texas Street**
Average Daily Traffic: 8700 Vehicles Vehicle Speed: 35 MPH Vehicle Mix: 1 Roadway Classification: Collector

	NOISE PARAMETERS AT 135 FEET FROM CENTERLINE (Equiv. Lane Dist: 134.82 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	65.11	-1.46	-6.57	-1.20	55.88	53.76	52.44	46.43	54.85	55.48	70 dBA:	**13**	**15**
Medium Trucks	74.83	-18.70	-6.57	-1.20	48.36	27.11	33.13	14.84	27.98	30.73	65 dBA:	**29**	**31**
Heavy Trucks	80.05	-22.66	-6.57	-1.20	49.62	24.27	20.87	25.52	31.72	31.82	60 dBA:	**62**	**68**
				Total:	**57.38**	**53.77**	**52.50**	**46.47**	**54.88**	**55.51**	55 dBA:	**133**	**146**

Road Name: Pioneer Avenue **Segment: East of Texas Street**
Average Daily Traffic: 8600 Vehicles Vehicle Speed: 35 MPH Vehicle Mix: 1 Roadway Classification: Modified Collector

	NOISE PARAMETERS AT 50 FEET FROM CENTERLINE (Equiv. Lane Dist: 49.18 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	65.11	-1.51	0.00	-1.20	62.40	60.28	58.96	52.95	61.37	62.00	70 dBA:	**13**	**15**
Medium Trucks	74.83	-18.75	0.00	-1.20	54.88	33.63	39.65	21.36	34.50	37.25	65 dBA:	**29**	**32**
Heavy Trucks	80.05	-22.71	0.00	-1.20	56.14	30.79	27.39	32.04	38.24	38.33	60 dBA:	**62**	**68**
				Total:	**63.90**	**60.29**	**59.02**	**52.99**	**61.40**	**62.03**	55 dBA:	**134**	**147**

Road Name: San Bernardino Avenue **Segment: East of Texas Street**
Average Daily Traffic: 15600 Vehicles Vehicle Speed: 45 MPH Vehicle Mix: 2 Roadway Classification: Major Arterial

	NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 70.35 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	69.34	-0.27	-2.33	-1.20	65.55	63.18	61.88	55.83	64.26	64.89	70 dBA:	**35**	**38**
Medium Trucks	77.62	-15.14	-2.33	-1.20	58.96	39.75	31.97	41.18	47.33	47.37	65 dBA:	**75**	**81**
Heavy Trucks	82.14	-12.92	-2.33	-1.20	65.70	48.71	40.93	50.13	56.29	56.32	60 dBA:	**161**	**175**
				Total:	**69.08**	**63.35**	**61.92**	**56.98**	**64.98**	**65.52**	55 dBA:	**347**	**377**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT CONDITIONS

Project: Citrus Valley Residential
Site Conditions: Soft

Road Name: Interstate 210 **Segment: North of Pioneer Avenue**

Average Daily Traffic: 1 Vehicles Vehicle Speed: 65 MPH Vehicle Mix: 3 Roadway Classification: Freeway

	NOISE PARAMETERS AT 2980 FEET FROM CENTERLINE (Equiv. Lane Dist: 2979.63 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	75.54	-43.64	-26.73	-1.20	3.97	-0.41	0.45	0.24	6.58	6.86	70 dBA:	**0**	**0**
Medium Trucks	81.71	-62.29	-26.73	-1.20	-8.51	-32.22	-31.83	-29.92	-23.77	-23.59	65 dBA:	**0**	**0**
Heavy Trucks	85.21	-58.15	-26.73	-1.20	-0.87	-21.32	-20.35	-17.49	-11.45	-11.30	60 dBA:	**1**	**1**
				Total:	**5.38**	**-0.37**	**0.49**	**0.31**	**6.66**	**6.93**	55 dBA:	**2**	**2**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: OPENING YEAR 2025 WITHOUT PROJECT CONDITIONS

Project: Citrus Valley Residential
Site Conditions: Soft

	Vehicle Mix 1 (Local)				Vehicle Mix 2 (Arterial)				Vehicle Mix 3 (I-210)			
Vehicle Type	Day	Evening	Night	Daily	Day	Evening	Night	Daily	Day	Evenin	Night	Daily
Automobiles	73.60%	13.60%	10.22%	97.42%	69.50%	12.90%	9.60%	92.00%	43.85%	13.34%	38.13%	95.32%
Medium Trucks	0.90%	0.90%	0.04%	1.84%	1.44%	0.06%	1.50%	3.00%	0.51%	0.14%	0.65%	1.30%
Heavy Trucks	0.35%	0.04%	0.35%	0.74%	2.40%	0.10%	2.50%	5.00%	1.08%	0.34%	1.96%	3.38%

Road Name: Texas Street **Segment: North of Domestic Avenue**

Average Daily Traffic: 2200 Vehicles | Vehicle Speed: 30 MPH | Vehicle Mix: 1 | Roadway Classification: Collector

	NOISE PARAMETERS AT 110 FEET FROM CENTERLINE (Equiv. Lane Dist: 109.78 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	62.51	-6.77	-5.23	-1.20	49.32	47.20	45.88	39.87	48.29	48.92	70 dBA:	**4**	**4**
Medium Trucks	73.11	-24.00	-5.23	-1.20	42.68	21.43	27.45	9.16	22.31	25.06	65 dBA:	**9**	**9**
Heavy Trucks	80.26	-27.96	-5.23	-1.20	45.87	20.52	17.12	21.77	27.97	28.07	60 dBA:	**18**	**20**
				Total:	**51.55**	**47.22**	**45.95**	**39.94**	**48.34**	**48.97**	55 dBA:	**40**	**44**

Road Name: Texas Street **Segment: South of Domestic Avenue**

Average Daily Traffic: 3000 Vehicles | Vehicle Speed: 30 MPH | Vehicle Mix: 1 | Roadway Classification: Collector

	NOISE PARAMETERS AT 105 FEET FROM CENTERLINE (Equiv. Lane Dist: 104.77 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	62.51	-5.42	-4.92	-1.20	50.97	48.85	47.54	41.52	49.94	50.57	70 dBA:	**5**	**5**
Medium Trucks	73.11	-22.66	-4.92	-1.20	44.33	23.09	29.11	10.81	23.96	26.71	65 dBA:	**10**	**12**
Heavy Trucks	80.26	-26.61	-4.92	-1.20	47.53	22.17	18.77	23.42	29.62	29.72	60 dBA:	**23**	**25**
				Total:	**53.20**	**48.87**	**47.60**	**41.59**	**49.99**	**50.62**	55 dBA:	**49**	**54**

Road Name: Texas Street **Segment: South of Pioneer Avenue**

Average Daily Traffic: 7300 Vehicles | Vehicle Speed: 30 MPH | Vehicle Mix: 2 | Roadway Classification: Minor Arterial

	NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 74.03 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	62.51	-1.81	-2.66	-1.20	56.85	54.47	53.18	47.13	55.56	56.19	70 dBA:	**11**	**12**
Medium Trucks	73.11	-16.67	-2.66	-1.20	52.58	33.37	25.59	34.80	40.95	40.99	65 dBA:	**23**	**25**
Heavy Trucks	80.26	-14.45	-2.66	-1.20	61.95	44.96	37.18	46.38	52.54	52.57	60 dBA:	**50**	**54**
				Total:	**63.48**	**54.96**	**53.30**	**49.92**	**57.42**	**57.85**	55 dBA:	**109**	**116**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: OPENING YEAR 2025 WITHOUT PROJECT CONDITIONS

Project: Citrus Valley Residential
Site Conditions: Soft

Road Name: Texas Street **Segment: South of San Bernardino Avenue**
Average Daily Traffic: 9200 Vehicles Vehicle Speed: 40 MPH Vehicle Mix: 2 Roadway Classification: Minor Arterial

	NOISE PARAMETERS AT 65 FEET FROM CENTERLINE (Equiv. Lane Dist: 63.88 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	67.36	-2.05	-1.70	-1.20	62.41	60.04	58.74	52.69	61.12	61.75	70 dBA:	**19**	**21**
Medium Trucks	76.31	-16.92	-1.70	-1.20	56.50	37.29	29.51	38.71	44.87	44.90	65 dBA:	**41**	**44**
Heavy Trucks	81.16	-14.70	-1.70	-1.20	63.56	46.57	38.79	48.00	54.15	54.19	60 dBA:	**88**	**96**
				Total:	**66.49**	**60.25**	**58.79**	**54.09**	**62.00**	**62.53**	55 dBA:	**190**	**206**

Road Name: Pioneer Avenue **Segment: West of Texas Street**
Average Daily Traffic: 9600 Vehicles Vehicle Speed: 35 MPH Vehicle Mix: 1 Roadway Classification: Collector

	NOISE PARAMETERS AT 135 FEET FROM CENTERLINE (Equiv. Lane Dist: 134.82 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	65.11	-1.04	-6.57	-1.20	56.31	54.18	52.87	46.86	55.28	55.91	70 dBA:	**14**	**16**
Medium Trucks	74.83	-18.28	-6.57	-1.20	48.79	27.54	33.56	15.27	28.41	31.16	65 dBA:	**31**	**34**
Heavy Trucks	80.05	-22.23	-6.57	-1.20	50.05	24.70	21.30	25.95	32.15	32.24	60 dBA:	**66**	**72**
				Total:	**57.81**	**54.20**	**52.93**	**46.90**	**55.31**	**55.94**	55 dBA:	**142**	**156**

Road Name: Pioneer Avenue **Segment: East of Texas Street**
Average Daily Traffic: 9600 Vehicles Vehicle Speed: 35 MPH Vehicle Mix: 1 Roadway Classification: Modified Collector

	NOISE PARAMETERS AT 50 FEET FROM CENTERLINE (Equiv. Lane Dist: 49.18 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	65.11	-1.04	0.00	-1.20	62.88	60.75	59.44	53.43	61.85	62.48	70 dBA:	**14**	**16**
Medium Trucks	74.83	-18.28	0.00	-1.20	55.36	34.11	40.13	21.84	34.98	37.73	65 dBA:	**31**	**34**
Heavy Trucks	80.05	-22.23	0.00	-1.20	56.62	31.27	27.87	32.52	38.72	38.81	60 dBA:	**67**	**73**
				Total:	**64.38**	**60.77**	**59.49**	**53.47**	**61.88**	**62.51**	55 dBA:	**144**	**158**

Road Name: San Bernardino Avenue **Segment: East of Texas Street**
Average Daily Traffic: 17600 Vehicles Vehicle Speed: 45 MPH Vehicle Mix: 2 Roadway Classification: Major Arterial

	NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 70.35 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	69.34	0.26	-2.33	-1.20	66.07	63.70	62.41	56.35	64.78	65.42	70 dBA:	**38**	**41**
Medium Trucks	77.62	-14.61	-2.33	-1.20	59.48	40.28	32.49	41.70	47.86	47.89	65 dBA:	**81**	**88**
Heavy Trucks	82.14	-12.39	-2.33	-1.20	66.22	49.23	41.45	50.66	56.81	56.85	60 dBA:	**175**	**190**
				Total:	**69.60**	**63.87**	**62.45**	**57.50**	**65.50**	**66.05**	55 dBA:	**376**	**409**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: OPENING YEAR 2025 WITHOUT PROJECT CONDITIONS

Project: Citrus Valley Residential
Site Conditions: Soft

Road Name: Interstate 210 **Segment: North of Pioneer Avenue**

Average Daily Traffic: 79800 Vehicles Vehicle Speed: 65 MPH Vehicle Mix: 3 Roadway Classification: Freeway

	NOISE PARAMETERS AT 2980 FEET FROM CENTERLINE (Equiv. Lane Dist: 2979.63 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	75.54	5.38	-26.73	-1.20	52.99	48.61	49.47	49.26	55.60	55.88	70 dBA:	**331**	**345**
Medium Trucks	81.71	-13.27	-26.73	-1.20	40.51	16.80	17.19	19.10	25.25	25.43	65 dBA:	**712**	**743**
Heavy Trucks	85.21	-9.13	-26.73	-1.20	48.15	27.70	28.67	31.53	37.57	37.72	60 dBA:	**1534**	**1601**
				Total:	**54.40**	**48.65**	**49.51**	**49.33**	**55.68**	**55.95**	55 dBA:	**3306**	**3448**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: OPENING YEAR 2025 WITH PROJECT CONDITIONS

Project: Citrus Valley Residential
Site Conditions: Soft

	Vehicle Mix 1 (Local)				Vehicle Mix 2 (Arterial)				Vehicle Mix 3 (I-210)			
Vehicle Type	Day	Evening	Night	Daily	Day	Evening	Night	Daily	Day	Evenin	Night	Daily
Automobiles	73.60%	13.60%	10.22%	97.42%	69.50%	12.90%	9.60%	92.00%	43.85%	13.34%	38.13%	95.32%
Medium Trucks	0.90%	0.90%	0.04%	1.84%	1.44%	0.06%	1.50%	3.00%	0.51%	0.14%	0.65%	1.30%
Heavy Trucks	0.35%	0.04%	0.35%	0.74%	2.40%	0.10%	2.50%	5.00%	1.08%	0.34%	1.96%	3.38%

Road Name: Texas Street **Segment: North of Domestic Avenue**

Average Daily Traffic: 3200 Vehicles Vehicle Speed: 30 MPH Vehicle Mix: 1 Roadway Classification: Collector

	NOISE PARAMETERS AT 110 FEET FROM CENTERLINE (Equiv. Lane Dist: 109.78 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	62.51	-5.14	-5.23	-1.20	50.95	48.82	47.51	41.50	49.92	50.55	70 dBA:	**5**	**6**
Medium Trucks	73.11	-22.38	-5.23	-1.20	44.31	23.06	29.08	10.79	23.93	26.69	65 dBA:	**11**	**12**
Heavy Trucks	80.26	-26.33	-5.23	-1.20	47.50	22.15	18.75	23.40	29.60	29.69	60 dBA:	**24**	**26**
				Total:	**53.17**	**48.84**	**47.58**	**41.57**	**49.97**	**50.60**	55 dBA:	**51**	**56**

Road Name: Texas Street **Segment: South of Domestic Avenue**

Average Daily Traffic: 6300 Vehicles Vehicle Speed: 30 MPH Vehicle Mix: 1 Roadway Classification: Collector

	NOISE PARAMETERS AT 105 FEET FROM CENTERLINE (Equiv. Lane Dist: 104.77 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	62.51	-2.20	-4.92	-1.20	54.19	52.07	50.76	44.75	53.17	53.79	70 dBA:	**8**	**9**
Medium Trucks	73.11	-19.44	-4.92	-1.20	47.56	26.31	32.33	14.04	27.18	29.93	65 dBA:	**17**	**19**
Heavy Trucks	80.26	-23.39	-4.92	-1.20	50.75	25.40	22.00	26.65	32.85	32.94	60 dBA:	**37**	**41**
				Total:	**56.42**	**52.09**	**50.83**	**44.82**	**53.22**	**53.85**	55 dBA:	**80**	**88**

Road Name: Texas Street **Segment: South of Pioneer Avenue**

Average Daily Traffic: 10000 Vehicles Vehicle Speed: 30 MPH Vehicle Mix: 2 Roadway Classification: Minor Arterial

	NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 74.03 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	62.51	-0.44	-2.66	-1.20	58.21	55.84	54.55	48.49	56.93	57.56	70 dBA:	**13**	**14**
Medium Trucks	73.11	-15.31	-2.66	-1.20	53.95	34.74	26.96	36.17	42.32	42.36	65 dBA:	**29**	**31**
Heavy Trucks	80.26	-13.09	-2.66	-1.20	63.31	46.32	38.54	47.75	53.90	53.94	60 dBA:	**62**	**66**
				Total:	**64.85**	**56.33**	**54.66**	**51.28**	**58.78**	**59.21**	55 dBA:	**134**	**143**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: OPENING YEAR 2025 WITH PROJECT CONDITIONS

Project: Citrus Valley Residential
Site Conditions: Soft

Road Name: Texas Street **Segment: South of San Bernardino Avenue**
Average Daily Traffic: 9700 Vehicles Vehicle Speed: 40 MPH Vehicle Mix: 2 Roadway Classification: Minor Arterial

	NOISE PARAMETERS AT 65 FEET FROM CENTERLINE (Equiv. Lane Dist: 63.88 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	67.36	-1.82	-1.70	-1.20	62.64	60.27	58.97	52.92	61.35	61.98	70 dBA:	**20**	**21**
Medium Trucks	76.31	-16.69	-1.70	-1.20	56.73	37.52	29.74	38.94	45.10	45.13	65 dBA:	**42**	**46**
Heavy Trucks	81.16	-14.47	-1.70	-1.20	63.79	46.80	39.02	48.23	54.38	54.42	60 dBA:	**92**	**99**
				Total:	**66.72**	**60.48**	**59.02**	**54.32**	**62.23**	**62.76**	55 dBA:	**197**	**214**

Road Name: Pioneer Avenue **Segment: West of Texas Street**
Average Daily Traffic: 9700 Vehicles Vehicle Speed: 35 MPH Vehicle Mix: 1 Roadway Classification: Collector

	NOISE PARAMETERS AT 135 FEET FROM CENTERLINE (Equiv. Lane Dist: 134.82 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	65.11	-0.99	-6.57	-1.20	56.35	54.23	52.92	46.90	55.32	55.95	70 dBA:	**14**	**16**
Medium Trucks	74.83	-18.23	-6.57	-1.20	48.83	27.58	33.60	15.31	28.46	31.21	65 dBA:	**31**	**34**
Heavy Trucks	80.05	-22.19	-6.57	-1.20	50.09	24.74	21.34	25.99	32.19	32.29	60 dBA:	**66**	**73**
				Total:	**57.86**	**54.24**	**52.97**	**46.94**	**55.35**	**55.98**	55 dBA:	**143**	**157**

Road Name: Pioneer Avenue **Segment: East of Texas Street**
Average Daily Traffic: 9900 Vehicles Vehicle Speed: 35 MPH Vehicle Mix: 1 Roadway Classification: Modified Collector

	NOISE PARAMETERS AT 50 FEET FROM CENTERLINE (Equiv. Lane Dist: 49.18 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	65.11	-0.90	0.00	-1.20	63.01	60.89	59.57	53.56	61.98	62.61	70 dBA:	**15**	**16**
Medium Trucks	74.83	-18.14	0.00	-1.20	55.49	34.24	40.26	21.97	35.11	37.86	65 dBA:	**32**	**35**
Heavy Trucks	80.05	-22.10	0.00	-1.20	56.75	31.40	28.00	32.65	38.85	38.95	60 dBA:	**68**	**75**
				Total:	**64.51**	**60.90**	**59.63**	**53.60**	**62.01**	**62.64**	55 dBA:	**147**	**162**

Road Name: San Bernardino Avenue **Segment: East of Texas Street**
Average Daily Traffic: 17900 Vehicles Vehicle Speed: 45 MPH Vehicle Mix: 2 Roadway Classification: Major Arterial

	NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 70.35 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	69.34	0.33	-2.33	-1.20	66.15	63.77	62.48	56.43	64.86	65.49	70 dBA:	**38**	**41**
Medium Trucks	77.62	-14.54	-2.33	-1.20	59.56	40.35	32.57	41.78	47.93	47.96	65 dBA:	**82**	**89**
Heavy Trucks	82.14	-12.32	-2.33	-1.20	66.29	49.30	41.52	50.73	56.89	56.92	60 dBA:	**177**	**192**
				Total:	**69.68**	**63.95**	**62.52**	**57.58**	**65.58**	**66.12**	55 dBA:	**380**	**413**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: OPENING YEAR 2025 WITH PROJECT CONDITIONS

Project: Citrus Valley Residential
Site Conditions: Soft

Road Name: Interstate 210 **Segment: North of Pioneer Avenue**

Average Daily Traffic: 1 Vehicles | Vehicle Speed: 65 MPH | Vehicle Mix: 3 | Roadway Classification: Freeway

	NOISE PARAMETERS AT 2980 FEET FROM CENTERLINE (Equiv. Lane Dist: 2979.63 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	75.54	-43.64	-26.73	-1.20	3.97	-0.41	0.45	0.24	6.58	6.86	70 dBA:	**0**	**0**
Medium Trucks	81.71	-62.29	-26.73	-1.20	-8.51	-32.22	-31.83	-29.92	-23.77	-23.59	65 dBA:	**0**	**0**
Heavy Trucks	85.21	-58.15	-26.73	-1.20	-0.87	-21.32	-20.35	-17.49	-11.45	-11.30	60 dBA:	**1**	**1**
				Total:	**5.38**	**-0.37**	**0.49**	**0.31**	**6.66**	**6.93**	55 dBA:	**2**	**2**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: HORIZON YEAR 2035 WITHOUT PROJECT CONDITIONS

Project: Citrus Valley Residential
Site Conditions: Soft

	Vehicle Mix 1 (Local)				Vehicle Mix 2 (Arterial)				Vehicle Mix 3 (I-210)			
Vehicle Type	Day	Evening	Night	Daily	Day	Evening	Night	Daily	Day	Evenin	Night	Daily
Automobiles	73.60%	13.60%	10.22%	97.42%	69.50%	12.90%	9.60%	92.00%	43.85%	13.34%	38.13%	95.32%
Medium Trucks	0.90%	0.90%	0.04%	1.84%	1.44%	0.06%	1.50%	3.00%	0.51%	0.14%	0.65%	1.30%
Heavy Trucks	9.00%	0.04%	0.35%	0.74%	2.40%	0.10%	2.50%	5.00%	1.08%	0.34%	1.96%	3.38%

Road Name: Texas Street **Segment: North of Domestic Avenue**

Average Daily Traffic: 2500 Vehicles | Vehicle Speed: 30 MPH | Vehicle Mix: 1 | Roadway Classification: Collector

	NOISE PARAMETERS AT 110 FEET FROM CENTERLINE (Equiv. Lane Dist: 109.78 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	62.51	-6.21	-5.23	-1.20	49.88	47.75	46.44	40.43	48.85	49.47	70 dBA:	**4**	**5**
Medium Trucks	73.11	-23.45	-5.23	-1.20	43.24	21.99	28.01	9.72	22.86	25.61	65 dBA:	**9**	**10**
Heavy Trucks	80.26	-27.40	-5.23	-1.20	46.43	35.18	17.68	22.33	33.61	33.64	60 dBA:	**20**	**22**
				Total:	**52.10**	**48.00**	**46.51**	**40.50**	**48.99**	**49.60**	55 dBA:	**44**	**48**

Road Name: Texas Street **Segment: South of Domestic Avenue**

Average Daily Traffic: 3300 Vehicles | Vehicle Speed: 30 MPH | Vehicle Mix: 1 | Roadway Classification: Collector

	NOISE PARAMETERS AT 105 FEET FROM CENTERLINE (Equiv. Lane Dist: 104.77 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	62.51	-5.00	-4.92	-1.20	51.39	49.26	47.95	41.94	50.36	50.98	70 dBA:	**5**	**6**
Medium Trucks	73.11	-22.24	-4.92	-1.20	44.75	23.50	29.52	11.23	24.37	27.12	65 dBA:	**11**	**12**
Heavy Trucks	80.26	-26.20	-4.92	-1.20	47.94	36.69	19.19	23.84	35.12	35.15	60 dBA:	**24**	**27**
				Total:	**53.61**	**49.51**	**48.02**	**42.01**	**50.50**	**51.11**	55 dBA:	**53**	**58**

Road Name: Texas Street **Segment: South of Pioneer Avenue**

Average Daily Traffic: 7900 Vehicles | Vehicle Speed: 30 MPH | Vehicle Mix: 2 | Roadway Classification: Minor Arterial

	NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 74.03 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	62.51	-1.46	-2.66	-1.20	57.19	54.82	53.52	47.47	55.90	56.53	70 dBA:	**11**	**12**
Medium Trucks	73.11	-16.33	-2.66	-1.20	52.92	33.72	25.94	35.14	41.30	41.33	65 dBA:	**25**	**26**
Heavy Trucks	80.26	-14.11	-2.66	-1.20	62.29	45.30	37.52	46.73	52.88	52.92	60 dBA:	**53**	**57**
				Total:	**63.83**	**55.31**	**53.64**	**50.26**	**57.76**	**58.19**	55 dBA:	**115**	**122**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: HORIZON YEAR 2035 WITHOUT PROJECT CONDITIONS

Project: Citrus Valley Residential
Site Conditions: Soft

Road Name: Texas Street **Segment: South of San Bernardino Avenue**

Average Daily Traffic: 9900 Vehicles | Vehicle Speed: 40 MPH | Vehicle Mix: 2 | Roadway Classification: Minor Arterial

	NOISE PARAMETERS AT 65 FEET FROM CENTERLINE (Equiv. Lane Dist: 63.88 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	67.36	-1.73	-1.70	-1.20	62.73	60.36	59.06	53.01	61.44	62.07	70 dBA:	**20**	**22**
Medium Trucks	76.31	-16.60	-1.70	-1.20	56.81	37.61	29.83	39.03	45.19	45.22	65 dBA:	**43**	**47**
Heavy Trucks	81.16	-14.38	-1.70	-1.20	63.88	46.89	39.11	48.32	54.47	54.51	60 dBA:	**93**	**101**
				Total:	**66.81**	**60.57**	**59.11**	**54.41**	**62.32**	**62.85**	55 dBA:	**200**	**217**

Road Name: Pioneer Avenue **Segment: West of Texas Street**

Average Daily Traffic: 10400 Vehicles | Vehicle Speed: 35 MPH | Vehicle Mix: 1 | Roadway Classification: Collector

	NOISE PARAMETERS AT 135 FEET FROM CENTERLINE (Equiv. Lane Dist: 134.82 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	65.11	-0.69	-6.57	-1.20	56.66	54.53	53.22	47.21	55.63	56.25	70 dBA:	**15**	**17**
Medium Trucks	74.83	-17.93	-6.57	-1.20	49.14	27.89	33.91	15.61	28.76	31.51	65 dBA:	**32**	**36**
Heavy Trucks	80.05	-21.88	-6.57	-1.20	50.40	39.15	21.65	26.30	37.58	37.61	60 dBA:	**70**	**77**
				Total:	**58.16**	**54.67**	**53.27**	**47.25**	**55.70**	**56.33**	55 dBA:	**150**	**166**

Road Name: Pioneer Avenue **Segment: East of Texas Street**

Average Daily Traffic: 10400 Vehicles | Vehicle Speed: 35 MPH | Vehicle Mix: 1 | Roadway Classification: Modified Collector

	NOISE PARAMETERS AT 50 FEET FROM CENTERLINE (Equiv. Lane Dist: 49.18 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	65.11	-0.69	0.00	-1.20	63.22	61.10	59.79	53.78	62.20	62.82	70 dBA:	**15**	**17**
Medium Trucks	74.83	-17.93	0.00	-1.20	55.70	34.46	40.48	22.18	35.33	38.08	65 dBA:	**33**	**36**
Heavy Trucks	80.05	-21.88	0.00	-1.20	56.97	45.72	28.22	32.86	44.15	44.18	60 dBA:	**71**	**78**
				Total:	**64.73**	**61.23**	**59.84**	**53.81**	**62.27**	**62.90**	55 dBA:	**153**	**168**

Road Name: San Bernardino Avenue **Segment: East of Texas Street**

Average Daily Traffic: 19900 Vehicles | Vehicle Speed: 45 MPH | Vehicle Mix: 2 | Roadway Classification: Major Arterial

	NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 70.35 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	69.34	0.79	-2.33	-1.20	66.61	64.23	62.94	56.89	65.32	65.95	70 dBA:	**41**	**44**
Medium Trucks	77.62	-14.08	-2.33	-1.20	60.02	40.81	33.03	42.24	48.39	48.42	65 dBA:	**88**	**96**
Heavy Trucks	82.14	-11.86	-2.33	-1.20	66.75	49.76	41.98	51.19	57.35	57.38	60 dBA:	**189**	**206**
				Total:	**70.14**	**64.41**	**62.98**	**58.04**	**66.04**	**66.58**	55 dBA:	**408**	**444**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: HORIZON YEAR 2035 WITHOUT PROJECT CONDITIONS

Project: Citrus Valley Residential
Site Conditions: Soft

Road Name: Interstate 210 **Segment: North of Pioneer Avenue**

Average Daily Traffic: 97000 Vehicles Vehicle Speed: 65 MPH Vehicle Mix: 3 Roadway Classification: Freeway

	NOISE PARAMETERS AT 2980 FEET FROM CENTERLINE (Equiv. Lane Dist: 2979.63 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	75.54	6.23	-26.73	-1.20	53.83	49.46	50.32	50.10	56.45	56.73	70 dBA:	**377**	**393**
Medium Trucks	81.71	-12.42	-26.73	-1.20	41.36	17.65	18.04	19.95	26.10	26.28	65 dBA:	**811**	**846**
Heavy Trucks	85.21	-8.28	-26.73	-1.20	49.00	28.55	29.51	32.38	38.42	38.57	60 dBA:	**1748**	**1823**
				Total:	**55.25**	**49.50**	**50.36**	**50.18**	**56.52**	**56.80**	55 dBA:	**3765**	**3928**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: HORIZON YEAR 2035 WITH PROJECT CONDITIONS

Project: Citrus Valley Residential
Site Conditions: Soft

	Vehicle Mix 1 (Local)				Vehicle Mix 2 (Arterial)				Vehicle Mix 3 (I-210)			
Vehicle Type	Day	Evening	Night	Daily	Day	Evening	Night	Daily	Day	Evenin	Night	Daily
Automobiles	73.60%	13.60%	10.22%	97.42%	69.50%	12.90%	9.60%	92.00%	43.85%	13.34%	38.13%	95.32%
Medium Trucks	0.90%	0.90%	0.04%	1.84%	1.44%	0.06%	1.50%	3.00%	0.51%	0.14%	0.65%	1.30%
Heavy Trucks	9.00%	0.04%	0.35%	0.74%	2.40%	0.10%	2.50%	5.00%	1.08%	0.34%	1.96%	3.38%

Road Name: Texas Street **Segment: North of Domestic Avenue**

Average Daily Traffic: 3400 Vehicles Vehicle Speed: 30 MPH Vehicle Mix: 1 Roadway Classification: Collector

	NOISE PARAMETERS AT 110 FEET FROM CENTERLINE (Equiv. Lane Dist: 109.78 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	62.51	-4.88	-5.23	-1.20	51.21	49.09	47.77	41.76	50.18	50.81	70 dBA:	**5**	**6**
Medium Trucks	73.11	-22.11	-5.23	-1.20	44.57	23.32	29.35	11.05	24.20	26.95	65 dBA:	**12**	**13**
Heavy Trucks	80.26	-26.07	-5.23	-1.20	47.76	36.52	19.01	23.66	34.95	34.98	60 dBA:	**25**	**27**
				Total:	**53.44**	**49.33**	**47.84**	**41.83**	**50.32**	**50.94**	55 dBA:	**54**	**59**

Road Name: Texas Street **Segment: South of Domestic Avenue**

Average Daily Traffic: 6600 Vehicles Vehicle Speed: 30 MPH Vehicle Mix: 1 Roadway Classification: Collector

	NOISE PARAMETERS AT 105 FEET FROM CENTERLINE (Equiv. Lane Dist: 104.77 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	62.51	-1.99	-4.92	-1.20	54.40	52.27	50.96	44.95	53.37	53.99	70 dBA:	**8**	**9**
Medium Trucks	73.11	-19.23	-4.92	-1.20	47.76	26.51	32.53	14.24	27.38	30.13	65 dBA:	**18**	**20**
Heavy Trucks	80.26	-23.19	-4.92	-1.20	50.95	39.70	22.20	26.85	38.13	38.16	60 dBA:	**39**	**43**
				Total:	**56.62**	**52.52**	**51.03**	**45.02**	**53.51**	**54.12**	55 dBA:	**83**	**92**

Road Name: Texas Street **Segment: South of Pioneer Avenue**

Average Daily Traffic: 10700 Vehicles Vehicle Speed: 30 MPH Vehicle Mix: 2 Roadway Classification: Minor Arterial

	NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 74.03 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	62.51	-0.14	-2.66	-1.20	58.51	56.14	54.84	48.79	57.22	57.85	70 dBA:	**14**	**15**
Medium Trucks	73.11	-15.01	-2.66	-1.20	54.24	35.03	27.25	36.46	42.62	42.65	65 dBA:	**30**	**32**
Heavy Trucks	80.26	-12.79	-2.66	-1.20	63.61	46.62	38.84	48.04	54.20	54.23	60 dBA:	**65**	**70**
				Total:	**65.14**	**56.63**	**54.96**	**51.58**	**59.08**	**59.51**	55 dBA:	**140**	**150**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: HORIZON YEAR 2035 WITH PROJECT CONDITIONS

Project: Citrus Valley Residential
Site Conditions: Soft

Road Name: Texas Street **Segment: South of San Bernardino Avenue**
Average Daily Traffic: 10400 Vehicles Vehicle Speed: 40 MPH Vehicle Mix: 2 Roadway Classification: Minor Arterial

	NOISE PARAMETERS AT 65 FEET FROM CENTERLINE (Equiv. Lane Dist: 63.88 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	67.36	-1.52	-1.70	-1.20	62.94	60.57	59.28	53.22	61.65	62.29	70 dBA:	**21**	**22**
Medium Trucks	76.31	-16.38	-1.70	-1.20	57.03	37.82	30.04	39.25	45.40	45.44	65 dBA:	**45**	**48**
Heavy Trucks	81.16	-14.17	-1.70	-1.20	64.09	47.10	39.32	48.53	54.69	54.72	60 dBA:	**96**	**104**
				Total:	**67.02**	**60.78**	**59.33**	**54.62**	**62.53**	**63.06**	55 dBA:	**207**	**224**

Road Name: Pioneer Avenue **Segment: West of Texas Street**
Average Daily Traffic: 10500 Vehicles Vehicle Speed: 35 MPH Vehicle Mix: 1 Roadway Classification: Collector

	NOISE PARAMETERS AT 135 FEET FROM CENTERLINE (Equiv. Lane Dist: 134.82 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	65.11	-0.65	-6.57	-1.20	56.70	54.57	53.26	47.25	55.67	56.30	70 dBA:	**15**	**17**
Medium Trucks	74.83	-17.89	-6.57	-1.20	49.18	27.93	33.95	15.66	28.80	31.55	65 dBA:	**33**	**36**
Heavy Trucks	80.05	-21.84	-6.57	-1.20	50.44	39.19	21.69	26.34	37.62	37.65	60 dBA:	**70**	**77**
				Total:	**58.20**	**54.71**	**53.31**	**47.29**	**55.75**	**56.37**	55 dBA:	**151**	**167**

Road Name: Pioneer Avenue **Segment: East of Texas Street**
Average Daily Traffic: 10700 Vehicles Vehicle Speed: 35 MPH Vehicle Mix: 1 Roadway Classification: Modified Collector

	NOISE PARAMETERS AT 50 FEET FROM CENTERLINE (Equiv. Lane Dist: 49.18 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	65.11	-0.57	0.00	-1.20	63.35	61.22	59.91	53.90	62.32	62.95	70 dBA:	**16**	**17**
Medium Trucks	74.83	-17.80	0.00	-1.20	55.83	34.58	40.60	22.31	35.45	38.20	65 dBA:	**34**	**37**
Heavy Trucks	80.05	-21.76	0.00	-1.20	57.09	45.84	28.34	32.99	44.27	44.30	60 dBA:	**72**	**79**
				Total:	**64.85**	**61.36**	**59.97**	**53.94**	**62.40**	**63.02**	55 dBA:	**156**	**171**

Road Name: San Bernardino Avenue **Segment: East of Texas Street**
Average Daily Traffic: 20200 Vehicles Vehicle Speed: 45 MPH Vehicle Mix: 2 Roadway Classification: Major Arterial

	NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 70.35 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	69.34	0.85	-2.33	-1.20	66.67	64.30	63.01	56.95	65.38	66.01	70 dBA:	**41**	**45**
Medium Trucks	77.62	-14.01	-2.33	-1.20	60.08	40.87	33.09	42.30	48.45	48.49	65 dBA:	**89**	**97**
Heavy Trucks	82.14	-11.79	-2.33	-1.20	66.82	49.83	42.05	51.26	57.41	57.44	60 dBA:	**191**	**208**
				Total:	**70.20**	**64.47**	**63.04**	**58.10**	**66.10**	**66.65**	55 dBA:	**412**	**448**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: HORIZON YEAR 2035 WITH PROJECT CONDITIONS

Project: Citrus Valley Residential
Site Conditions: Soft

Road Name: Interstate 210 **Segment: North of Pioneer Avenue**

Average Daily Traffic: 97000 Vehicles Vehicle Speed: 65 MPH Vehicle Mix: 3 Roadway Classification: Freeway

	NOISE PARAMETERS AT 2980 FEET FROM CENTERLINE (Equiv. Lane Dist: 2979.63 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	75.54	6.23	-26.73	-1.20	53.83	49.46	50.32	50.10	56.45	56.73	70 dBA:	**377**	**393**
Medium Trucks	81.71	-12.42	-26.73	-1.20	41.36	17.65	18.04	19.95	26.10	26.28	65 dBA:	**811**	**846**
Heavy Trucks	85.21	-8.28	-26.73	-1.20	49.00	28.55	29.51	32.38	38.42	38.57	60 dBA:	**1748**	**1823**
				Total:	**55.25**	**49.50**	**50.36**	**50.18**	**56.52**	**56.80**	55 dBA:	**3765**	**3928**

APPENDIX E

City Park Reference Noise Measurement Printouts

General Information

Serial Number	02509
Model	831
Firmware Version	2.314
Filename	831_Data.001
User	GT
Job Description	Laguna Beach Riddle Field during AAA Little League Game
Location	Approx 25 ft North of Clubhouse 5 feet East of Parking Lot 15 ft from Baseball Field
Measurement Description	
Start Time	Sunday, 2019 October 06 13:08:15
Stop Time	Sunday, 2019 October 06 13:18:15
Duration	00:10:00.0
Run Time	00:10:00.0
Pause	00:00:00.0
Pre Calibration	Sunday, 2019 October 06 13:07:01
Post Calibration	None
Calibration Deviation	---

Note

Noise from baseball game and from cars in parking lot.
76 F, 29.81 in Hg, 55% Hu, 2 mph wind, clear sky

Overall Data

LAeq		60.9	dB
LASmax	2019 Oct 06 13:11:27	78.9	dB
LZpeak (max)	2019 Oct 06 13:13:15	106.6	dB
LASmin	2019 Oct 06 13:16:17	42.2	dB
LCeq		65.3	dB
LAeq		60.9	dB
LCeq - LAeq		4.4	dB
LAIeq		66.2	dB
LAeq		60.9	dB
LAIeq - LAeq		5.3	dB
Ldn		60.9	dB
LDay 07:00-22:00		60.9	dB
LNight 22:00-07:00		---	dB
Lden		60.9	dB
LDay 07:00-19:00		60.9	dB
LEvening 19:00-22:00		---	dB
LNight 22:00-07:00		---	dB
LAE		88.7	dB
# Overloads		0	
Overload Duration		0.0	s
# OBA Overloads		0	
OBA Overload Duration		0.0	s

Statistics

LAS5.00	65.2	dBA
LAS10.00	60.3	dBA
LAS33.30	53.8	dBA
LAS50.00	51.6	dBA
LAS66.60	49.8	dBA
LAS90.00	46.4	dBA

LAS > 65.0 dB (Exceedence Counts / Duration)	7 / 39.7	s
LAS > 85.0 dB (Exceedence Counts / Duration)	0 / 0.0	s
LZpeak > 135.0 dB (Exceedence Counts / Duration)	0 / 0.0	s
LZpeak > 137.0 dB (Exceedence Counts / Duration)	0 / 0.0	s
LZpeak > 140.0 dB (Exceedence Counts / Duration)	0 / 0.0	s

Settings

RMS Weight	A Weighting	
Peak Weight	Z Weighting	
Detector	Slow	
Preamp	PRM831	
Integration Method	Linear	
OBA Range	Low	
OBA Bandwidth	1/1 and 1/3	
OBA Freq. Weighting	Z Weighting	
OBA Max Spectrum	Bin Max	
Gain	+0	dB
Under Range Limit	26.5	dB
Under Range Peak	78.6	dB
Noise Floor	17.3	dB
Overload	144.2	dB

1/1 Spectra

Freq. (Hz):	8.0	16.0	31.5	63.0	125	250	500	1k	2k	4k	8k	16k
LZeq	63.4	64.0	61.8	58.8	53.2	48.8	53.1	59.1	53.7	45.4	36.9	28.1
LZSmax	84.7	85.0	83.0	76.9	73.1	66.9	70.3	78.1	70.7	64.3	50.8	47.8
LZSmin	43.5	50.7	49.4	47.0	38.4	37.3	38.9	36.1	34.1	30.5	22.6	14.8

1/3 Spectra

Freq. (Hz):	6.3	8.0	10.0	12.5	16.0	20.0	25.0	31.5	40.0	50.0	63.0	80.0
LZeq	59.6	59.3	56.6	54.3	58.1	62.0	58.7	54.9	55.7	56.1	54.9	50.3
LZSmax	76.3	82.0	77.8	71.8	78.7	83.4	79.3	76.2	76.0	76.5	72.5	69.3
LZSmin	36.3	38.2	35.8	38.8	41.8	45.6	41.0	41.5	43.7	44.0	39.8	36.0

Freq. (Hz):	100	125	160	200	250	315	400	500	630	800	1k	1.25k
LZeq	48.4	50.2	43.8	43.2	44.9	43.6	45.0	47.4	50.9	56.3	54.5	50.2
LZSmax	68.7	69.9	63.2	61.4	63.4	60.0	61.0	60.6	70.2	77.1	76.3	67.2
LZSmin	34.1	32.3	30.8	30.5	32.1	30.6	31.4	33.3	33.0	32.0	30.4	29.2

Freq. (Hz):	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	10k	12.5k	16k	20k
LZeq	50.8	48.6	46.6	43.5	38.9	37.2	34.4	31.6	28.0	24.9	24.4	16.7
LZSmax	69.3	67.8	68.5	64.1	52.6	56.7	50.7	45.8	44.4	41.3	47.5	31.0
LZSmin	28.7	29.0	28.3	26.7	23.9	22.7	19.4	16.6	12.7	10.4	10.2	9.6

Calibration History

Preamp	Date	dB re. 1V/Pa
PRM831	06 Oct 2019 13:06:55	-26.7
PRM831	18 Sep 2019 13:58:16	-26.8
PRM831	18 Sep 2019 11:09:07	-26.6
PRM831	07 Aug 2019 12:27:09	-27.3
PRM831	07 Aug 2019 05:49:21	-27.0
PRM831	06 Aug 2019 15:11:44	-26.3
PRM831	06 Aug 2019 12:24:00	-26.0
PRM831	22 Jul 2019 10:48:48	-26.3
PRM831	12 Jul 2019 20:18:07	-26.0
PRM831	29 May 2019 13:46:43	-25.9
PRM831	07 May 2019 12:46:08	-24.7

APPENDIX F

City Park Sound Walls Noise Reduction Calculation Printouts

Stationary Noise Calculations for Proposed City Park

Sensitive Receptors	Reference Distance	Reference Leq	Nearest Home Distance	Leq	
Nearest Home to Baseball Field	25	60.9	150	45	1 (Line Source: hard=0, soft=.5; Point Source: hard=1, soft=1.5)
Nearest Home to Soccer Fields	115	59.9	95	62	(eq. N-2141.2 of TeNS)

Stationary Noise Sources	Distance from Receptor to Wall	Distance from source to Wall	Height of Wall (feet)	Without Wall Noise Level at Residence	With Wall Noise Level at Residence	Source Height (feet)	Exterior Observer Height (feet)	Source Frequency (hz)	barrier to receiver - b (all)	source to barrier - a	source to receiver - c	path difference y =a+b-c (auto)	line of sight (slope)	fresnel	Barrier Atten
Nearest Home to B	5	145	6	45	**40.4**	40	5	800	5.0990	148.9329	154.0292	0.0027	1	0.007601	-4.9
Nearest Home to S	5	90	6	62	**53.8**	3	5	800	5.0990	90.04999	95.02105	0.1280	1	0.363962	-7.8

APPENDIX G

FHWA Model Onsite Traffic Noise Calculation Printouts

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Road Name: Interstate 210 | Project Name: Citrus Valley
Building: Lot 236 | Job Number: 19019

NOISE MODEL INPUTS

Highway Data

Average Daily Traffic:	97,000	vehicles
Peak Hour Volume:	9,700	vehicles
Vehicle Speed:	65	mph
Near/Far Lane Distance:	94	feet

Vehicle Mix

	Day	Evening	Night	Daily
Autos:	43.8%	13.3%	38.1%	95.3%
Medium Trucks:	0.5%	0.1%	0.7%	1.3%
Heavy Trucks:	1.1%	0.3%	2.0%	3.4%

Site Data

Barrier Height:	**6.0**	**feet**
Barrier Type(Wall/Berm):	Wall	
Site Conditions(Hard/Soft):	Soft	
Centerline (C.L.) Dist. to Barrier:	730	feet
C.L. Dist. To Observer (Backyard):	735	feet
Barrier Dist. To Observer (Backyard):	5	feet
C.L. Dist. To Observer (Structure):	750	feet
Barrier Dist. To Observer (Structure):	20	feet
Road Grade:	0.00	%
Left View:	-90	degrees
Right View:	90	degrees

Elevations

Barrier Base Elevation:	1,272.7	feet
Road Elevation:	1,268.5	feet
Noise Source Elevation above Road		
Autos:	0	feet
Med Trucks:	2.3	feet
Hvy Trucks:	8	feet
Pad Elevation:	1,272.7	feet
Observer Heights Above Pad Elevation		
Exterior:	5	feet
First Floor:	5.5	feet
Second Floor:	14	feet

FHWA NOISE MODEL CALCULATIONS

	REMEL	Traffic Flow	Distance	Finite Road	Grade	Barrier Attenuation Exterior	1st Flr	2nd Flr
Autos:	75.54	6.23	-17.60	-1.20	0.00	-6.94	-5.2	0
Med Trucks:	81.71	-12.42	-17.60	-1.20	0.00	-7.29	-5.3	0
Hvy Trucks:	85.21	-8.28	-17.60	-1.20	0.00	-7.15	-5.1	0

UNMITIGATED NOISE LEVELS (No sound walls)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.0	58.6	59.4	59.2	65.6	65.9
Med Trucks:	50.5	26.8	27.2	29.1	35.2	35.4
Hvy Trucks:	58.1	37.7	38.6	41.5	47.6	47.7
Traffic Noise:	**64.4**	**58.6**	**59.5**	**59.3**	**65.7**	**65.9**

MITIGATED NOISE LEVELS (Backyard)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.0	51.7	52.5	52.3	58.6	58.9
Med Trucks:	43.2	19.5	19.9	21.8	27.9	28.1
Hvy Trucks:	51.0	30.5	31.5	34.4	40.4	40.6
Traffic Noise:	**57.4**	**51.7**	**52.5**	**52.4**	**58.7**	**59.0**

MITIGATED NOISE LEVELS (First Floor)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.6	53.3	54.1	53.9	60.3	60.5
Med Trucks:	45.1	21.3	21.7	23.6	29.8	30.0
Hvy Trucks:	52.9	32.4	33.4	36.3	42.3	42.5
Traffic Noise:	**59.1**	**53.3**	**54.2**	**54.0**	**60.3**	**60.6**

MITIGATED NOISE LEVELS (Second Floor)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.8	58.5	59.3	59.1	65.4	65.7
Med Trucks:	50.4	26.6	27.0	28.9	35.1	35.3
Hvy Trucks:	58.0	37.5	38.5	41.4	47.4	47.6
Traffic Noise:	**64.2**	**58.5**	**59.4**	**59.2**	**65.5**	**65.8**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Road Name: Interstate 210 | Project Name: Citrus Valley
Building: Lot 248 | Job Number: 19019

NOISE MODEL INPUTS

Highway Data

Average Daily Traffic:	97,000	vehicles
Peak Hour Volume:	9,700	vehicles
Vehicle Speed:	65	mph
Near/Far Lane Distance:	94	feet

Vehicle Mix

	Day	Evening	Night	Daily
Autos:	43.8%	13.3%	38.1%	95.3%
Medium Trucks:	0.5%	0.1%	0.7%	1.3%
Heavy Trucks:	1.1%	0.3%	2.0%	3.4%

Site Data

Barrier Height:	**6.0**	**feet**
Barrier Type(Wall/Berm):	Wall	
Site Conditions(Hard/Soft):	Soft	
Centerline (C.L.) Dist. to Barrier:	745	feet
C.L. Dist. To Observer (Backyard):	750	feet
Barrier Dist. To Observer (Backyard):	5	feet
C.L. Dist. To Observer (Structure):	765	feet
Barrier Dist. To Observer (Structure):	20	feet
Road Grade:	0.00	%
Left View:	-90	degrees
Right View:	90	degrees

Elevations

Barrier Base Elevation:	1,269.7	feet
Road Elevation:	1,264.5	feet
Noise Source Elevation above Road		
Autos:	0	feet
Med Trucks:	2.3	feet
Hvy Trucks:	8	feet
Pad Elevation:	1,269.7	feet
Observer Heights Above Pad Elevation		
Exterior:	5	feet
First Floor:	5.5	feet
Second Floor:	14	feet

FHWA NOISE MODEL CALCULATIONS

	REMEL	Traffic Flow	Distance	Finite Road	Grade	Barrier Attenuation Exterior	1st Flr	2nd Flr
Autos:	75.54	6.23	-17.73	-1.20	0.00	-6.94	-5.3	0
Med Trucks:	81.71	-12.42	-17.73	-1.20	0.00	-7.29	-5.3	0
Hvy Trucks:	85.21	-8.28	-17.73	-1.20	0.00	-7.15	-5.2	0

UNMITIGATED NOISE LEVELS (No sound walls)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.8	58.5	59.3	59.1	65.5	65.7
Med Trucks:	50.4	26.6	27.0	28.9	35.1	35.3
Hvy Trucks:	58.0	37.5	38.5	41.4	47.4	47.6
Traffic Noise:	**64.2**	**58.5**	**59.4**	**59.2**	**65.5**	**65.8**

MITIGATED NOISE LEVELS (Backyard)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	55.9	51.5	52.4	52.2	58.5	58.8
Med Trucks:	43.1	19.4	19.7	21.7	27.8	28.0
Hvy Trucks:	50.8	30.4	31.4	34.2	40.3	40.4
Traffic Noise:	**57.2**	**51.6**	**52.4**	**52.2**	**58.6**	**58.9**

MITIGATED NOISE LEVELS (First Floor)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.4	53.0	53.9	53.7	60.0	60.3
Med Trucks:	44.9	21.2	21.6	23.5	29.7	29.8
Hvy Trucks:	52.7	32.2	33.2	36.0	42.1	42.2
Traffic Noise:	**58.8**	**53.1**	**53.9**	**53.8**	**60.1**	**60.4**

MITIGATED NOISE LEVELS (Second Floor)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.7	58.3	59.2	59.0	65.3	65.6
Med Trucks:	50.2	26.5	26.9	28.8	35.0	35.1
Hvy Trucks:	57.9	37.4	38.4	41.2	47.3	47.4
Traffic Noise:	**64.1**	**58.4**	**59.2**	**59.0**	**65.4**	**65.7**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Road Name: Interstate 210 | Project Name: Citrus Valley
Building: Lot 260 | Job Number: 19019

NOISE MODEL INPUTS

Highway Data

Average Daily Traffic:	97,000	vehicles
Peak Hour Volume:	9,700	vehicles
Vehicle Speed:	65	mph
Near/Far Lane Distance:	94	feet

Vehicle Mix

	Day	Evening	Night	Daily
Autos:	43.8%	13.3%	38.1%	95.3%
Medium Trucks:	0.5%	0.1%	0.7%	1.3%
Heavy Trucks:	1.1%	0.3%	2.0%	3.4%

Site Data

Barrier Height:	**6.0**	**feet**
Barrier Type(Wall/Berm):	Wall	
Site Conditions(Hard/Soft):	Soft	
Centerline (C.L.) Dist. to Barrier:	745	feet
C.L. Dist. To Observer (Backyard):	750	feet
Barrier Dist. To Observer (Backyard):	5	feet
C.L. Dist. To Observer (Structure):	765	feet
Barrier Dist. To Observer (Structure):	20	feet
Road Grade:	0.00	%
Left View:	-90	degrees
Right View:	90	degrees

Elevations

Barrier Base Elevation:	1,266.6	feet
Road Elevation:	1,260.0	feet
Noise Source Elevation above Road		
Autos:	0	feet
Med Trucks:	2.3	feet
Hvy Trucks:	8	feet
Pad Elevation:	1,266.6	feet
Observer Heights Above Pad Elevation		
Exterior:	5	feet
First Floor:	5.5	feet
Second Floor:	14	feet

FHWA NOISE MODEL CALCULATIONS

	REMEL	Traffic Flow	Distance	Finite Road	Grade	Barrier Attenuation Exterior	1st Flr	2nd Flr
Autos:	75.54	6.23	-17.73	-1.20	0.00	-6.94	-5.3	0
Med Trucks:	81.71	-12.42	-17.73	-1.20	0.00	-7.36	-5.3	0
Hvy Trucks:	85.21	-8.28	-17.73	-1.20	0.00	-7.22	-5.2	0

UNMITIGATED NOISE LEVELS (No sound walls)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.8	58.5	59.3	59.1	65.5	65.7
Med Trucks:	50.4	26.6	27.0	28.9	35.1	35.3
Hvy Trucks:	58.0	37.5	38.5	41.4	47.4	47.6
Traffic Noise:	**64.2**	**58.5**	**59.4**	**59.2**	**65.5**	**65.8**

MITIGATED NOISE LEVELS (Backyard)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	55.9	51.5	52.4	52.2	58.5	58.8
Med Trucks:	43.0	19.3	19.7	21.6	27.7	27.9
Hvy Trucks:	50.8	30.3	31.3	34.2	40.2	40.3
Traffic Noise:	**57.2**	**51.6**	**52.4**	**52.2**	**58.6**	**58.9**

MITIGATED NOISE LEVELS (First Floor)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.4	53.0	53.9	53.7	60.0	60.3
Med Trucks:	44.9	21.2	21.6	23.5	29.7	29.8
Hvy Trucks:	52.7	32.2	33.2	36.0	42.1	42.2
Traffic Noise:	**58.8**	**53.1**	**53.9**	**53.8**	**60.1**	**60.4**

MITIGATED NOISE LEVELS (Second Floor)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.7	58.3	59.2	59.0	65.3	65.6
Med Trucks:	50.2	26.5	26.9	28.8	35.0	35.1
Hvy Trucks:	57.9	37.4	38.4	41.2	47.3	47.4
Traffic Noise:	**64.1**	**58.4**	**59.2**	**59.0**	**65.4**	**65.7**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Road Name: Interstate 210 | Project Name: Citrus Valley
Lot Number: Lot 272 | Job Number: 19019

NOISE MODEL INPUTS

Highway Data

Average Daily Traffic:	97,000	vehicles
Peak Hour Volume:	9,700	vehicles
Vehicle Speed:	65	mph
Near/Far Lane Distance:	94	feet

Vehicle Mix

	Day	Evening	Night	Daily
Autos:	43.8%	13.3%	38.1%	95.3%
Medium Trucks:	0.5%	0.1%	0.7%	1.3%
Heavy Trucks:	1.1%	0.3%	2.0%	3.4%

Site Data

Barrier Height:	**6.0**	**feet**
Barrier Type(Wall/Berm):	Wall	
Site Conditions(Hard/Soft):	Soft	
Centerline (C.L.) Dist. to Barrier:	745	feet
C.L. Dist. To Observer (Backyard):	750	feet
Barrier Dist. To Observer (Backyard):	5	feet
C.L. Dist. To Observer (Structure):	765	feet
Barrier Dist. To Observer (Structure):	20	feet
Road Grade:	0.00	%
Left View:	-90	degrees
Right View:	90	degrees

Elevations

Barrier Base Elevation:	1,264.5	feet
Road Elevation:	1,256.5	feet
Noise Source Elevation above Road		
Autos:	0	feet
Med Trucks:	2.3	feet
Hvy Trucks:	8	feet
Pad Elevation:	1,264.5	feet
Observer Heights Above Pad Elevation		
Exterior:	5	feet
First Floor:	5.5	feet
Second Floor:	14	feet

FHWA NOISE MODEL CALCULATIONS

	REMEL	Traffic Flow	Distance	Finite Road	Grade	Barrier Attenuation Exterior	1st Flr	2nd Flr
Autos:	75.54	6.23	-17.73	-1.20	0.00	-7.01	-5.3	0
Med Trucks:	81.71	-12.42	-17.73	-1.20	0.00	-7.36	-5.4	0
Hvy Trucks:	85.21	-8.28	-17.73	-1.20	0.00	-7.22	-5.2	0

UNMITIGATED NOISE LEVELS (No sound walls)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.8	58.5	59.3	59.1	65.5	65.7
Med Trucks:	50.4	26.6	27.0	28.9	35.1	35.3
Hvy Trucks:	58.0	37.5	38.5	41.4	47.4	47.6
Traffic Noise:	**64.2**	**58.5**	**59.4**	**59.2**	**65.5**	**65.8**

MITIGATED NOISE LEVELS (Backyard)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	55.8	51.5	52.3	52.1	58.4	58.7
Med Trucks:	43.0	19.3	19.7	21.6	27.7	27.9
Hvy Trucks:	50.8	30.3	31.3	34.2	40.2	40.3
Traffic Noise:	**57.2**	**51.5**	**52.3**	**52.2**	**58.5**	**58.8**

MITIGATED NOISE LEVELS (First Floor)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.4	53.0	53.9	53.7	60.0	60.3
Med Trucks:	44.8	21.1	21.5	23.4	29.6	29.7
Hvy Trucks:	52.7	32.2	33.2	36.0	42.1	42.2
Traffic Noise:	**58.8**	**53.1**	**53.9**	**53.8**	**60.1**	**60.4**

MITIGATED NOISE LEVELS (Second Floor)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.7	58.3	59.2	59.0	65.3	65.6
Med Trucks:	50.2	26.5	26.9	28.8	35.0	35.1
Hvy Trucks:	57.9	37.4	38.4	41.2	47.3	47.4
Traffic Noise:	**64.1**	**58.4**	**59.2**	**59.0**	**65.4**	**65.7**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Road Name: Interstate 210 | Project Name: Citrus Valley
Lot Number: Lot 298 | Job Number: 19019

NOISE MODEL INPUTS

Highway Data

Average Daily Traffic:	97,000	vehicles
Peak Hour Volume:	9,700	vehicles
Vehicle Speed:	65	mph
Near/Far Lane Distance:	94	feet

Vehicle Mix

	Day	Evening	Night	Daily
Autos:	43.8%	13.3%	38.1%	95.3%
Medium Trucks:	0.5%	0.1%	0.7%	1.3%
Heavy Trucks:	1.1%	0.3%	2.0%	3.4%

Site Data

Barrier Height:	**6.0**	**feet**
Barrier Type(Wall/Berm):	Wall	
Site Conditions(Hard/Soft):	Soft	
Centerline (C.L.) Dist. to Barrier:	380	feet
C.L. Dist. To Observer (Backyard):	385	feet
Barrier Dist. To Observer (Backyard):	5	feet
C.L. Dist. To Observer (Structure):	400	feet
Barrier Dist. To Observer (Structure):	20	feet
Road Grade:	0.00	%
Left View:	-90	degrees
Right View:	90	degrees

Elevations

Barrier Base Elevation:	1,261.9	feet
Road Elevation:	1,255.0	feet
Noise Source Elevation above Road		
Autos:	0	feet
Med Trucks:	2.3	feet
Hvy Trucks:	8	feet
Pad Elevation:	1,261.9	feet
Observer Heights Above Pad Elevation		
Exterior:	5	feet
First Floor:	5.5	feet
Second Floor:	14	feet

FHWA NOISE MODEL CALCULATIONS

	REMEL	Traffic Flow	Distance	Finite Road	Grade	Barrier Attenuation Exterior	1st Flr	2nd Flr
Autos:	75.54	6.23	-13.36	-1.20	0.00	-7.22	-5.6	0
Med Trucks:	81.71	-12.42	-13.36	-1.20	0.00	-7.55	-5.6	0
Hvy Trucks:	85.21	-8.28	-13.36	-1.20	0.00	-7.29	-5.3	0

UNMITIGATED NOISE LEVELS (No sound walls)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.2	62.8	63.7	63.5	69.8	70.1
Med Trucks:	54.7	31.0	31.4	33.3	39.5	39.7
Hvy Trucks:	62.4	41.9	42.9	45.8	51.8	51.9
Traffic Noise:	**68.6**	**62.9**	**63.7**	**63.6**	**69.9**	**70.2**

MITIGATED NOISE LEVELS (Backyard)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.0	55.6	56.5	56.3	62.6	62.9
Med Trucks:	47.2	23.5	23.9	25.8	31.9	32.1
Hvy Trucks:	55.1	34.6	35.6	38.5	44.5	44.7
Traffic Noise:	**61.4**	**55.7**	**56.5**	**56.3**	**62.7**	**63.0**

MITIGATED NOISE LEVELS (First Floor)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.4	57.0	57.8	57.6	64.0	64.3
Med Trucks:	48.9	25.2	25.6	27.5	33.6	33.8
Hvy Trucks:	56.8	36.4	37.3	40.2	46.2	46.4
Traffic Noise:	**62.8**	**57.0**	**57.9**	**57.7**	**64.1**	**64.3**

MITIGATED NOISE LEVELS (Second Floor)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.0	62.6	63.4	63.2	69.6	69.8
Med Trucks:	54.5	30.8	31.2	33.1	39.2	39.4
Hvy Trucks:	62.1	41.7	42.6	45.5	51.5	51.7
Traffic Noise:	**68.4**	**62.6**	**63.5**	**63.3**	**69.6**	**69.9**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Road Name: Interstate 210 | Project Name: Citrus Valley
Lot Number: Lot 301 | Job Number: 19019

NOISE MODEL INPUTS

Highway Data

Average Daily Traffic:	97,000	vehicles
Peak Hour Volume:	9,700	vehicles
Vehicle Speed:	65	mph
Near/Far Lane Distance:	94	feet

Vehicle Mix

	Day	Evening	Night	Daily
Autos:	43.8%	13.3%	38.1%	95.3%
Medium Trucks:	0.5%	0.1%	0.7%	1.3%
Heavy Trucks:	1.1%	0.3%	2.0%	3.4%

Site Data

Barrier Height:	**6.0**	**feet**
Barrier Type(Wall/Berm):	Wall	
Site Conditions(Hard/Soft):	Soft	
Centerline (C.L.) Dist. to Barrier:	530	feet
C.L. Dist. To Observer (Backyard):	535	feet
Barrier Dist. To Observer (Backyard):	5	feet
C.L. Dist. To Observer (Structure):	550	feet
Barrier Dist. To Observer (Structure):	20	feet
Road Grade:	0.00	%
Left View:	-90	degrees
Right View:	90	degrees

Elevations

Barrier Base Elevation:	1,263.2	feet
Road Elevation:	1,253.5	feet
Noise Source Elevation above Road		
Autos:	0	feet
Med Trucks:	2.3	feet
Hvy Trucks:	8	feet
Pad Elevation:	1,263.2	feet
Observer Heights Above Pad Elevation		
Exterior:	5	feet
First Floor:	5.5	feet
Second Floor:	14	feet

FHWA NOISE MODEL CALCULATIONS

	REMEL	Traffic Flow	Distance	Finite Road	Grade	Barrier Attenuation Exterior	1st Flr	2nd Flr
Autos:	75.54	6.23	-15.52	-1.20	0.00	-7.15	-5.5	0
Med Trucks:	81.71	-12.42	-15.52	-1.20	0.00	-7.55	-5.6	0
Hvy Trucks:	85.21	-8.28	-15.52	-1.20	0.00	-7.36	-5.3	0

UNMITIGATED NOISE LEVELS (No sound walls)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.0	60.7	61.5	61.3	67.7	67.9
Med Trucks:	52.6	28.9	29.2	31.2	37.3	37.5
Hvy Trucks:	60.2	39.8	40.7	43.6	49.6	49.8
Traffic Noise:	**66.5**	**60.7**	**61.6**	**61.4**	**67.7**	**68.0**

MITIGATED NOISE LEVELS (Backyard)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.9	53.5	54.4	54.2	60.5	60.8
Med Trucks:	45.0	21.3	21.7	23.6	29.8	29.9
Hvy Trucks:	52.8	32.4	33.4	36.2	42.3	42.4
Traffic Noise:	**59.2**	**53.6**	**54.4**	**54.2**	**60.6**	**60.9**

MITIGATED NOISE LEVELS (First Floor)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.4	55.0	55.8	55.6	62.0	62.3
Med Trucks:	46.8	23.1	23.5	25.4	31.5	31.7
Hvy Trucks:	54.7	34.3	35.2	38.1	44.1	44.3
Traffic Noise:	**60.8**	**55.0**	**55.9**	**55.7**	**62.1**	**62.3**

MITIGATED NOISE LEVELS (Second Floor)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.9	60.5	61.3	61.1	67.5	67.8
Med Trucks:	52.4	28.7	29.1	31.0	37.1	37.3
Hvy Trucks:	60.0	39.6	40.5	43.4	49.4	49.6
Traffic Noise:	**66.3**	**60.5**	**61.4**	**61.2**	**67.5**	**67.8**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Road Name: Interstate 210 | Project Name: Citrus Valley
Lot Number: Lot 298 | Job Number: 19019

NOISE MODEL INPUTS

Highway Data

Average Daily Traffic:	97,000	vehicles
Peak Hour Volume:	9,700	vehicles
Vehicle Speed:	65	mph
Near/Far Lane Distance:	94	feet

Vehicle Mix

	Day	Evening	Night	Daily
Autos:	43.8%	13.3%	38.1%	95.3%
Medium Trucks:	0.5%	0.1%	0.7%	1.3%
Heavy Trucks:	1.1%	0.3%	2.0%	3.4%

Site Data

Barrier Height:	**7.5**	**feet**
Barrier Type(Wall/Berm):	Wall	
Site Conditions(Hard/Soft):	Soft	
Centerline (C.L.) Dist. to Barrier:	380	feet
C.L. Dist. To Observer (Backyard):	385	feet
Barrier Dist. To Observer (Backyard):	5	feet
C.L. Dist. To Observer (Structure):	400	feet
Barrier Dist. To Observer (Structure):	20	feet
Road Grade:	0.00	%
Left View:	-90	degrees
Right View:	90	degrees

Elevations

Barrier Base Elevation:	1,261.9	feet
Road Elevation:	1,255.0	feet
Noise Source Elevation above Road		
Autos:	0	feet
Med Trucks:	2.3	feet
Hvy Trucks:	8	feet
Pad Elevation:	1,261.9	feet
Observer Heights Above Pad Elevation		
Exterior:	5	feet
First Floor:	5.5	feet
Second Floor:	14	feet

FHWA NOISE MODEL CALCULATIONS

	REMEL	Traffic Flow	Distance	Finite Road	Grade	Barrier Attenuation Exterior	1st Flr	2nd Flr
Autos:	75.54	6.23	-13.36	-1.20	0.00	-10.94	-7.75	-0.125
Med Trucks:	81.71	-12.42	-13.36	-1.20	0.00	-11.6	-8.05	0
Hvy Trucks:	85.21	-8.28	-13.36	-1.20	0.00	-11.4	-7.6	0

UNMITIGATED NOISE LEVELS (No sound walls)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.2	62.8	63.7	63.5	69.8	70.1
Med Trucks:	54.7	31.0	31.4	33.3	39.5	39.7
Hvy Trucks:	62.4	41.9	42.9	45.8	51.8	51.9
Traffic Noise:	**68.6**	**62.9**	**63.7**	**63.6**	**69.9**	**70.2**

MITIGATED NOISE LEVELS (Backyard)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.3	51.9	52.8	52.5	58.9	59.2
Med Trucks:	43.1	19.4	19.8	21.7	27.9	28.1
Hvy Trucks:	51.0	30.5	31.5	34.4	40.4	40.5
Traffic Noise:	**57.6**	**51.9**	**52.8**	**52.6**	**59.0**	**59.2**

MITIGATED NOISE LEVELS (First Floor)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.2	54.8	55.7	55.5	61.8	62.1
Med Trucks:	46.4	22.7	23.1	25.0	31.2	31.4
Hvy Trucks:	54.5	34.1	35.0	37.9	43.9	44.1
Traffic Noise:	**60.6**	**54.9**	**55.7**	**55.6**	**61.9**	**62.2**

MITIGATED NOISE LEVELS (Second Floor)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.8	62.5	63.3	63.1	69.4	69.7
Med Trucks:	54.5	30.8	31.2	33.1	39.2	39.4
Hvy Trucks:	62.1	41.7	42.6	45.5	51.5	51.7
Traffic Noise:	**68.3**	**62.5**	**63.3**	**63.2**	**69.5**	**69.8**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Road Name: Interstate 210 | Project Name: Citrus Valley
Lot Number: Lot 301 | Job Number: 19019

NOISE MODEL INPUTS

Highway Data

Average Daily Traffic:	97,000	vehicles
Peak Hour Volume:	9,700	vehicles
Vehicle Speed:	65	mph
Near/Far Lane Distance:	94	feet

Vehicle Mix

	Day	Evening	Night	Daily
Autos:	43.8%	13.3%	38.1%	95.3%
Medium Trucks:	0.5%	0.1%	0.7%	1.3%
Heavy Trucks:	1.1%	0.3%	2.0%	3.4%

Site Data

Barrier Height:	**6.5**	**feet**
Barrier Type(Wall/Berm):	Wall	
Site Conditions(Hard/Soft):	Soft	
Centerline (C.L.) Dist. to Barrier:	530	feet
C.L. Dist. To Observer (Backyard):	535	feet
Barrier Dist. To Observer (Backyard):	5	feet
C.L. Dist. To Observer (Structure):	550	feet
Barrier Dist. To Observer (Structure):	20	feet
Road Grade:	0.00	%
Left View:	-90	degrees
Right View:	90	degrees

Elevations

Barrier Base Elevation:	1,263.2	feet
Road Elevation:	1,253.5	feet
Noise Source Elevation above Road		
Autos:	0	feet
Med Trucks:	2.3	feet
Hvy Trucks:	8	feet
Pad Elevation:	1,263.2	feet
Observer Heights Above Pad Elevation		
Exterior:	5	feet
First Floor:	5.5	feet
Second Floor:	14	feet

FHWA NOISE MODEL CALCULATIONS

	REMEL	Traffic Flow	Distance	Finite Road	Grade	Barrier Attenuation Exterior	1st Flr	2nd Flr
Autos:	75.54	6.23	-15.52	-1.20	0.00	-8.55	-6.16	0
Med Trucks:	81.71	-12.42	-15.52	-1.20	0.00	-9.12	-6.24	0
Hvy Trucks:	85.21	-8.28	-15.52	-1.20	0.00	-9	-6	0

UNMITIGATED NOISE LEVELS (No sound walls)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.0	60.7	61.5	61.3	67.7	67.9
Med Trucks:	52.6	28.9	29.2	31.2	37.3	37.5
Hvy Trucks:	60.2	39.8	40.7	43.6	49.6	49.8
Traffic Noise:	**66.5**	**60.7**	**61.6**	**61.4**	**67.7**	**68.0**

MITIGATED NOISE LEVELS (Backyard)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.5	52.1	53.0	52.8	59.1	59.4
Med Trucks:	43.4	19.7	20.1	22.0	28.2	28.4
Hvy Trucks:	51.2	30.8	31.7	34.6	40.6	40.8
Traffic Noise:	**57.8**	**52.2**	**53.0**	**52.8**	**59.2**	**59.5**

MITIGATED NOISE LEVELS (First Floor)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.7	54.3	55.2	55.0	61.3	61.6
Med Trucks:	46.1	22.4	22.8	24.7	30.9	31.1
Hvy Trucks:	54.0	33.6	34.5	37.4	43.4	43.6
Traffic Noise:	**60.2**	**54.4**	**55.2**	**55.1**	**61.4**	**61.7**

MITIGATED NOISE LEVELS (Second Floor)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.9	60.5	61.3	61.1	67.5	67.8
Med Trucks:	52.4	28.7	29.1	31.0	37.1	37.3
Hvy Trucks:	60.0	39.6	40.5	43.4	49.4	49.6
Traffic Noise:	**66.3**	**60.5**	**61.4**	**61.2**	**67.5**	**67.8**