Saddleback/Elsinore Business Park

NOISE IMPACT ANALYSIS

CITY OF LAKE ELSINORE

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LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
ANSI	American National Standards Institute
Calveno	California Vehicle Noise
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dBA	A-weighted decibels
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
Hz	Hertz
INCE	Institute of Noise Control Engineering
L_{eq}	Equivalent continuous (average) sound level
L_{max}	Maximum level measured over the time interval
L_{min}	Minimum level measured over the time interval
mph	Miles per hour
OPR	Office of Planning and Research
PPV	Peak particle velocity
Project	Saddleback/Elsinore Business Park
REMEL	Reference Energy Mean Emission Level
RMS	Root-mean-square
VdB	Vibration Decibels

EXECUTIVE SUMMARY

Urban Crossroads, Inc. has prepared this noise study to determine the potential noise impacts and the necessary noise mitigation measures, if any, for the proposed Saddleback/Elsinore Business Park development ("Project"). The Project site is located north of Riverside Drive (SR-74), east of Collier Avenue, and west of El Toro Road in the City of Lake Elsinore.

The results of this Saddleback/Elsinore Business Park Noise Impact Analysis are summarized below based on the significance criteria in Section 4 of this report consistent with Appendix G of the California Environmental Quality Act (CEQA) Guidelines (1). Table ES-1 shows the findings of significance for each potential noise and/or vibration impact under CEQA. All impacts are considered less than significant without mitigation.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
Off-Site Traffic Noise	7	*Less Than Significant*	-
Operational Noise	9	*Less Than Significant*	-
Construction Noise	10	*Less Than Significant*	-
Construction Vibration		*Less Than Significant*	-

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1 INTRODUCTION

This noise analysis has been completed to determine the noise impacts associated with the development of the proposed Saddleback/Elsinore Business Park ("Project"). This noise study briefly describes the proposed Project, provides information regarding noise fundamentals, sets out the local regulatory setting, presents the study methods and procedures for transportation related CNEL traffic noise analysis, and evaluates the future exterior noise environment. In addition, this study includes an analysis of the potential Project-related long-term stationary-source operational noise and short-term construction noise and vibration impacts.

1.1 SITE LOCATION

The proposed project is located north of north of Riverside Drive (SR-74), east of Collier Avenue, and west of El Toro Road in the City of Lake Elsinore as shown on Exhibit 1-A. The nearest residential land uses are to the northeast and southwest of the Project site. The Temescal Canyon High School is located to the north of the Project site. The project is bordered by commercial land uses and the Interstate 15 to the north.

1.2 PROJECT DESCRIPTION

The Project is to consist of the development of 93,255 square feet of general light industrial use within 12 Buildings as shown on Exhibit 1-B. It is anticipated that the Project will be developed in a single phase with an anticipated Opening Year of 2022.

The on-site Project-related noise sources are expected to include: roof-top air conditioning units, parking lot vehicle movements and trash enclosure activity. This noise analysis is intended to describe noise level impacts associated with the expected typical operational activities at the Project site. This report assumes the Project will operate 24-hours daily for seven days per week.

EXHIBIT 1-A: LOCATION MAP

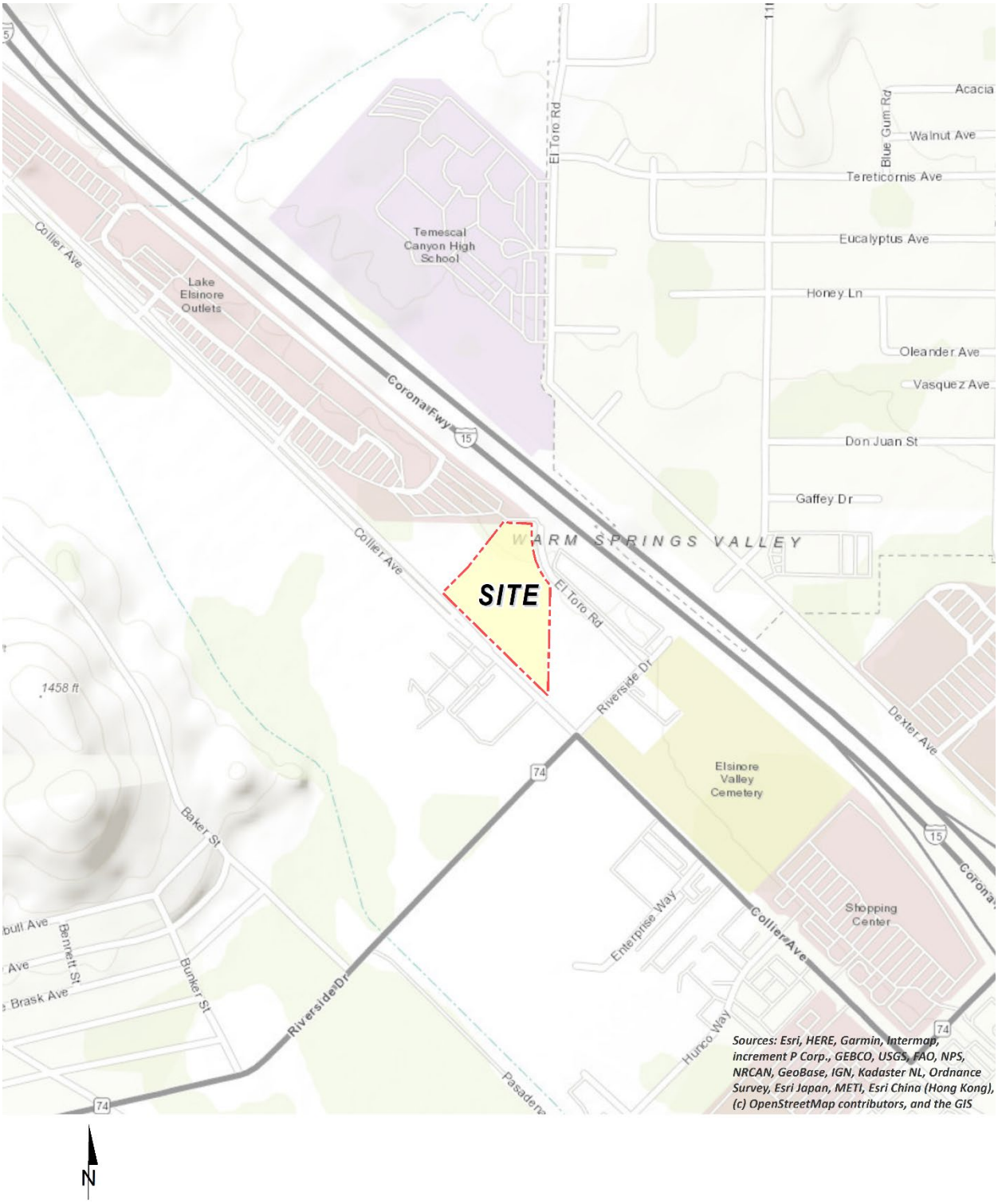
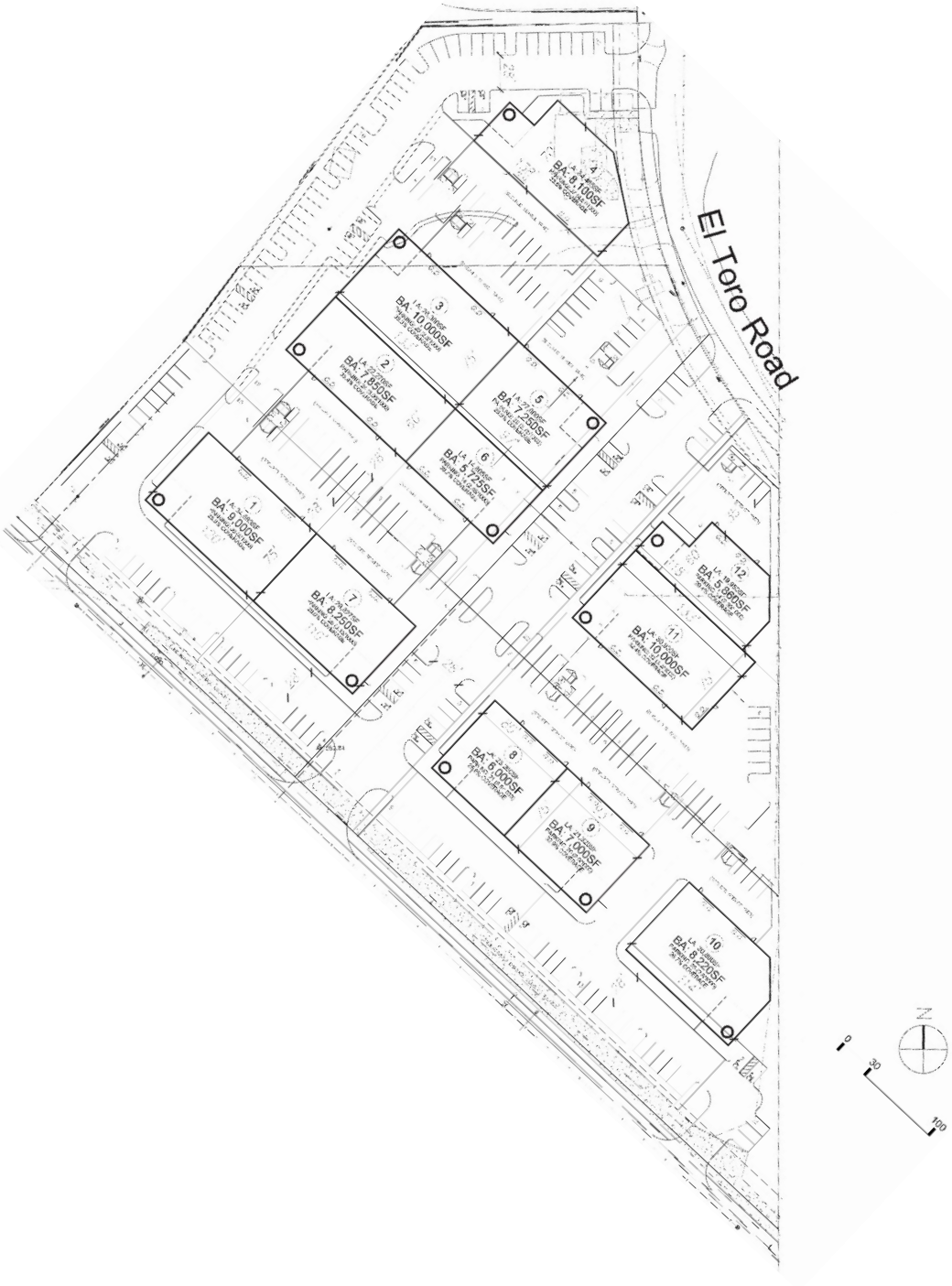


EXHIBIT 1-B: SITE PLAN



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2 FUNDAMENTALS

Noise is simply 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. Noise is measured on a logarithmic scale of sound pressure level known as a decibel (dB). A-weighted decibels (dBA) approximate the subjective response of the human ear to 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. Exhibit 2-A presents a summary of the typical noise levels and their subjective loudness and effects that are described in more detail below.

EXHIBIT 2-A: TYPICAL NOISE LEVELS

COMMON OUTDOOR ACTIVITIES	COMMON INDOOR ACTIVITIES	A - WEIGHTED SOUND LEVEL dBA	SUBJECTIVE LOUDNESS	EFFECTS OF NOISE
THRESHOLD OF PAIN		140	INTOLERABLE OR DEAFENING	HEARING LOSS
NEAR JET ENGINE		130		
		120		
JET FLY-OVER AT 300m (1000 ft)	ROCK BAND	110		
LOUD AUTO HORN		100	VERY NOISY	
GAS LAWN MOWER AT 1m (3 ft)		90		
DIESEL TRUCK AT 15m (50 ft), at 80 km/hr (50 mph)	FOOD BLENDER AT 1m (3 ft)	80		SPEECH INTERFERENCE
NOISY URBAN AREA, DAYTIME	VACUUM CLEANER AT 3m (10 ft)	70	LOUD	
HEAVY TRAFFIC AT 90m (300 ft)	NORMAL SPEECH AT 1m (3 ft)	60		
QUIET URBAN DAYTIME	LARGE BUSINESS OFFICE	50	MODERATE	SLEEP DISTURBANCE
QUIET URBAN NIGHTTIME	THEATER, LARGE CONFERENCE ROOM (BACKGROUND)	40		
QUIET SUBURBAN NIGHTTIME	LIBRARY	30	FAINT	NO EFFECT
QUIET RURAL NIGHTTIME	BEDROOM AT NIGHT, CONCERT HALL (BACKGROUND)	20		
	BROADCAST/RECORDING STUDIO	10	VERY FAINT	
LOWEST THRESHOLD OF HUMAN HEARING	LOWEST THRESHOLD OF HUMAN HEARING	0		

Source: Environmental Protection Agency Office of Noise Abatement and Control, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (EPA/ONAC 550/9-74-004) March 1974.

2.1 RANGE OF NOISE

Since the range of intensities that the human ear can detect is so large, the scale frequently used to measure intensity is a scale based on multiples of 10, the logarithmic scale. The scale for measuring intensity is the decibel scale. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud (2). The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at three feet is roughly at 60 dBA, while loud jet engine noises equate to 110 dBA

at approximately 100 feet, which can cause serious discomfort (3). Another important aspect of noise is the duration of the sound and the way it is described and distributed in time.

2.2 NOISE DESCRIPTORS

Environmental noise descriptors are generally based on averages, rather than instantaneous, noise levels. The most used figure is the equivalent level (L_{eq}). 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 (L_{eq}) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period (typically one hour) and is commonly used to describe the "average" noise levels within the environment.

Peak hour or average noise levels, while useful, do not completely describe a given noise environment, however. Noise levels lower than peak hour may be disturbing if they occur during times when quiet is most desirable, namely evening and nighttime (sleeping) hours. To account for this, the Community Noise Equivalent Level (CNEL), representing a composite 24-hour noise level is utilized. The CNEL 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 5 decibels to dBA L_{eq} sound levels in the evening from 7:00 p.m. to 10:00 p.m., and the addition of 10 decibels to dBA L_{eq} sound levels at night between 10:00 p.m. and 7:00 a.m. These additions are made to account for the noise sensitive time periods during the evening and night hours when sound appears louder. CNEL does not represent the actual sound level heard at any time, but rather represents the total sound exposure. The City of Lake Elsinore relies on the 24-hour CNEL level to assess land use compatibility with transportation related noise sources.

2.3 SOUND PROPAGATION

When sound propagates over a distance, it changes in level and frequency content. Based on guidance from the U.S. Department of Transportation, Federal Highway Administration (FHWA), Office of Environment and Planning, Noise and Air Quality Branch, the way noise reduces with distance depends on the following factors.

2.3.1 GEOMETRIC SPREADING

Sound from a localized source (i.e., a stationary point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dB for each doubling of distance from a point source. Highways consist of several localized noise sources on a defined path and hence can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source (2).

2.3.2 GROUND ABSORPTION

The propagation path of noise from a highway to a receiver is usually very close to the ground. Noise attenuation from ground absorption and reflective wave canceling adds to the attenuation

associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually sufficiently accurate for distances of less than 200 feet. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receiver such as soft dirt, grass, or scattered bushes and trees), an excess ground attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance from a line source (4).

2.3.3 ATMOSPHERIC EFFECTS

Receivers located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can be increased at large distances (e.g., more than 500 feet) due to atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also have significant effects (2).

2.3.4 SHIELDING

A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Shielding by trees and other such vegetation typically only has an "out of sight, out of mind" effect. That is, the perception of noise impact tends to decrease when vegetation blocks the line-of-sight to nearest residents. However, for vegetation to provide a substantial, or even noticeable, noise reduction, the vegetation area must be at least 15 feet in height, 100 feet wide and dense enough to completely obstruct the line-of sight between the source and the receiver. This size of vegetation may provide up to 5 dBA of noise reduction. The Federal Highway Administration (FHWA) does not consider the planting of vegetation to be a noise abatement measure (4).

2.3.5 REFLECTION

Field studies conducted by the FHWA have shown that the reflection from barriers and buildings does not substantially increase noise levels (4). If all the noise striking a structure was reflected back to a given receiving point, the increase would be theoretically limited to 3 dBA. Further, not all the acoustical energy is reflected back to same point. Some of the energy would go over the structure, some is reflected to points other than the given receiving point, some is scattered by ground coverings (e.g., grass and other plants), and some is blocked by intervening structures and/or obstacles (e.g., the noise source itself). Additionally, some of the reflected energy is lost due to the longer path that the noise must travel. FHWA measurements made to quantify reflective increases in traffic noise have not shown an increase of greater than 1-2 dBA; an increase that is not perceptible to the average human ear.

2.4 NOISE CONTROL

Noise control is the process of obtaining an acceptable noise environment for an observation point or receiver by controlling the noise source, transmission path, receiver, or all three. This concept is known as the source-path-receiver concept. In general, noise control measures can be applied to these three elements.

2.5 NOISE BARRIER ATTENUATION

Effective noise barriers can reduce noise levels by up to 10 to 15 dBA, cutting the loudness of traffic noise in half. A noise barrier is most effective when placed close to the noise source or receiver. Noise barriers, however, do have limitations. For a noise barrier to work, it must be high enough and long enough to block the path of the noise source (4).

2.6 LAND USE COMPATIBILITY WITH NOISE

Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches, and residences are more sensitive to noise intrusion than are commercial or industrial developments and related activities. Sensitive receivers are generally defined as locations where people reside or where the presence of unwanted sound could otherwise adversely affect the use of the land. Noise-sensitive land uses are generally considered to include schools, hospitals, single-family dwellings, mobile home parks, churches, libraries, recreation areas or buildings where people normally sleep. As ambient noise levels affect the perceived amenity or livability of a development, so too can the mismanagement of noise impacts impair the economic health and growth potential of a community by reducing the area's desirability as a place to live, shop and work. For this reason, land use compatibility with the noise environment is an important consideration in the planning and design process. The FHWA encourages State and Local government to regulate land development in such a way that noise-sensitive land uses are either prohibited from being located adjacent to a highway, or that the developments are planned, designed, and constructed in such a way that noise impacts are minimized (5).

2.7 COMMUNITY RESPONSE TO NOISE

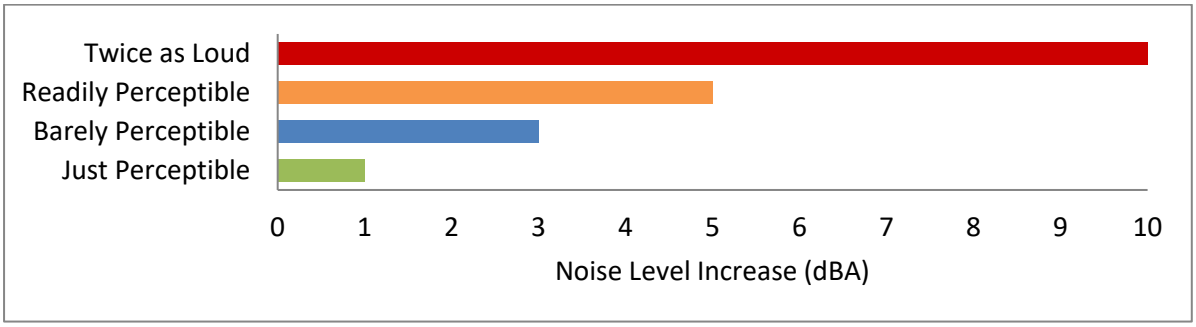
Community responses to noise varies depending upon everyone's susceptibility to noise and personal attitudes about noise. Several factors are related to the level of community annoyance including:

- Fear associated with noise producing activities;
- Socio-economic status and educational level;
- Perception that those affected are being unfairly treated;
- Attitudes regarding the usefulness of the noise-producing activity;
- Belief that the noise source can be controlled.

Approximately ten percent of the population has a very low tolerance for noise and will object to any noise not of their making. Consequently, even in the quietest environment, some complaints will occur. Twenty-five percent of the population will not complain even in very severe noise

environments. Thus, a variety of reactions can be expected from people exposed to any given noise environment (6). Surveys have shown that about ten percent of the people exposed to traffic noise of 60 dBA will report being highly annoyed with the noise, and each increase of one dBA is associated with approximately two percent more people being highly annoyed. When traffic noise exceeds 60 dBA or aircraft noise exceeds 55 dBA, people may begin to complain (6). Despite this variability in behavior on an individual level, the population can be expected to exhibit the following responses to changes in noise levels as shown on Exhibit 2-B. A change of 3 dBA are considered *barely perceptible*, and changes of 5 dBA are considered *readily perceptible*. (4)

EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION



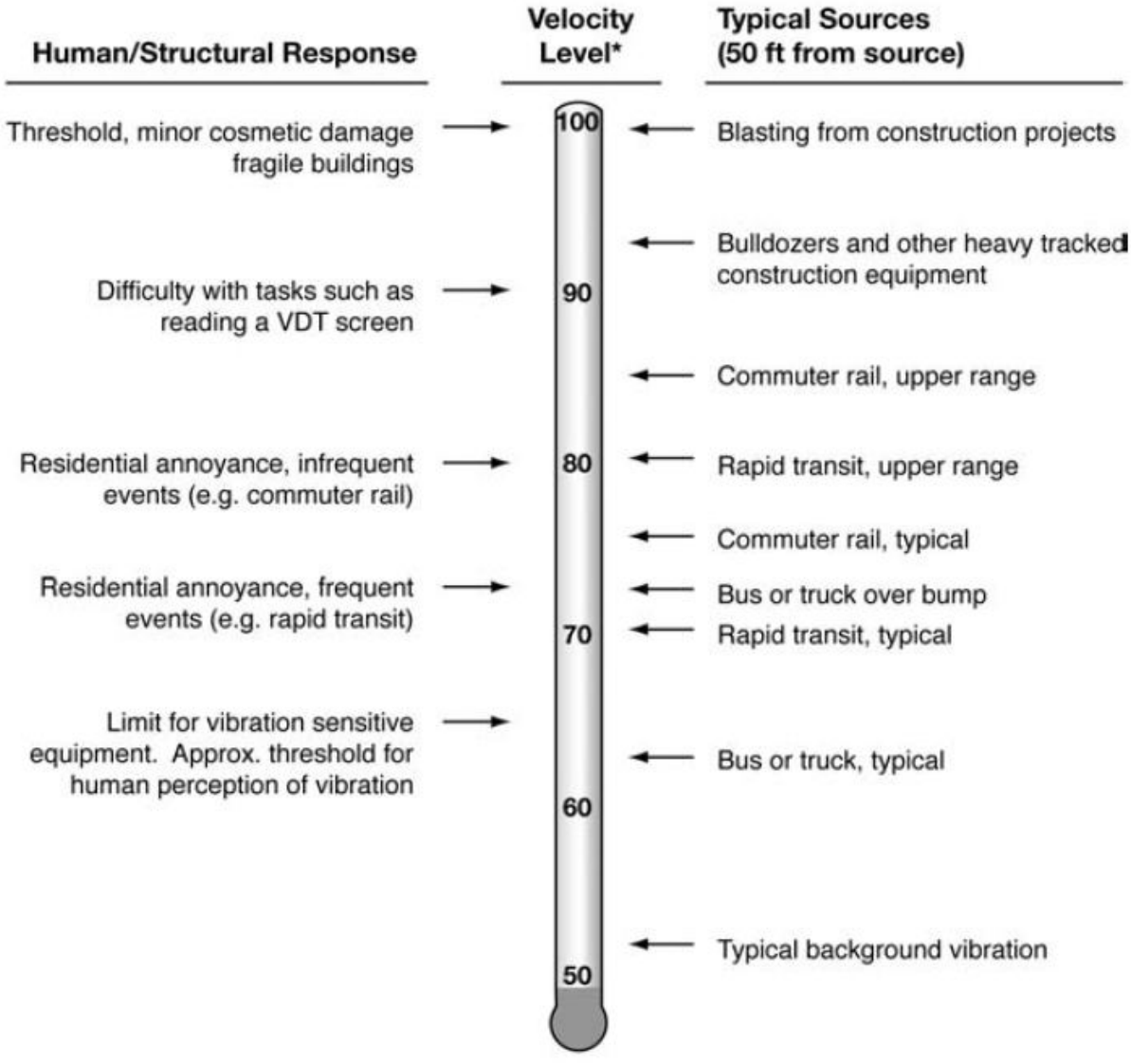
2.8 VIBRATION

Per the Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual* (7), vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure-borne noise. Sources of ground-borne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, such as factory machinery, or transient, such as explosions. As is the case with airborne sound, ground-borne vibrations may be described by amplitude and frequency.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings but is not always suitable for evaluating human response (annoyance) because it takes some time for the human body to respond to vibration signals. Instead, the human body responds to average vibration amplitude often described as the root mean square (RMS). The RMS amplitude is defined as the average of the squared amplitude of the signal and is most frequently used to describe the effect of vibration on the human body. Decibel notation (VdB) is commonly used to measure RMS. Decibel notation (VdB) serves to reduce the range of numbers used to describe human response to vibration. Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receivers for vibration include structures (especially older masonry structures), people (especially residents, the elderly, and sick), and vibration-sensitive equipment and/or activities

The background vibration-velocity level in residential areas is generally 50 VdB. Ground-borne vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground-borne vibration is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. Exhibit 2-C illustrates common vibration sources and the human and structural response to ground-borne vibration.

EXHIBIT 2-C: TYPICAL LEVELS OF GROUND-BORNE VIBRATION



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

3 REGULATORY SETTING

To limit population exposure to physically and/or psychologically damaging as well as intrusive noise levels, the federal government, the State of California, various county governments, and most municipalities in the state have established standards and ordinances to control noise. In most areas, automobile and truck traffic is the major source of environmental noise. Traffic activity generally produces an average sound level that remains constant with time. Air and rail traffic, and commercial and industrial activities are also major sources of noise in some areas. Federal, state, and local agencies regulate different aspects of environmental noise. Federal and state agencies generally set noise standards for mobile sources such as aircraft and motor vehicles, while regulation of stationary sources is left to local agencies.

3.1 STATE OF CALIFORNIA NOISE REQUIREMENTS

The State of California regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards, and provides guidance for local land use compatibility. State law requires that each county and city adopt a General Plan that includes a Noise Element which is to be prepared per guidelines adopted by the Governor's Office of Planning and Research (OPR). (8) The purpose of the Noise and Safety Element is to *limit the exposure of the community to excessive noise levels*. In addition, the California Environmental Quality Act (CEQA) requires that all known environmental effects of a project be analyzed, including environmental noise impacts.

3.2 CITY OF LAKE ELSINORE GENERAL PLAN

The City of Lake Elsinore has adopted Section 3.7, *Noise,* of the Public Safety and Welfare Element (9) of the General Plan to control and abate environmental noise, and to protect the citizens of Lake Elsinore from excessive exposure to noise. The Noise section specifies the maximum allowable exterior noise levels for new developments impacted by transportation noise sources such as arterial roads, freeways, airports, and railroads. In addition, the Noise section identifies noise polices designed to protect, create, and maintain an environment free from noise that may jeopardize the health or welfare of sensitive receivers, or degrade quality of life. To protect City of Lake Elsinore residents from excessive noise, the Noise section contains the following goal related to the Project:

Goal 7 *Maintain an environment for all City residents and visitors free of unhealthy, obtrusive, or otherwise excessive noise.*

To ensure noise-sensitive land uses are protected from excessive noise levels (Goal 7), the Noise section identifies the following policies:

7.1 Apply the noise standards set forth in the Lake Elsinore Noise and Land Use Compatibility Matrix (see Table 3-1) and Interior and Exterior Noise Standards (see Table 3-2) when considering all new development and redevelopment proposed within the City.

7.2 Require that mixed-use structures and areas be designed to prevent transfer of noise and vibration from commercial areas to residential areas.

7.3 Strive to reduce the effect of transportation noise on the I-15.

7.4 Consider estimated roadway noise contours based upon Figure 3.6, Noise Contours, when making land use design decisions along busy roadways throughout the City.

7.5 Participate and cooperate with other agencies and jurisdictions in the development of noise abatement plans for highways.

EXHIBIT 3-A: NOISE AND LAND USE COMPATIBILITY MATRIX

Land Use Categories		Day-Night Noise Level (LDN)						
Categories	Uses	≤55	60	65	70	75	80≥	
Residential	Single, Family, Duplex, Multiple Family	A	A	B	B	C	D	D
Residential	Mobile Homes	A	A	B	C	C	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 Regional 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	B	B	D	D
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	A	B	C	C	D	D
Open Space	Parks	A	A	A	B	C	D	D
Open Space	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 nose 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: City of Lake Elsinore General Plan, Public Safety and Welfare Element, Table 3-1.

3.2.1 LAND USE COMPATIBILITY

The *Noise and Land Use Compatibility Matrix* (Table 3-1) in the City of Lake Elsinore General Plan Noise section provides guidelines to evaluate the land use compatibility of transportation related noise. The compatibility criteria, shown on Exhibit 3-A, provides the City with a planning tool to gauge the compatibility of land uses relative to existing and future exterior noise levels.

The *Noise and Land Use Compatibility Matrix* describes categories of compatibility and not specific noise standards. According to these categories of compatibility, sensitive residential land use in the Project Study area is considered *clearly compatible* with exterior noise levels below 60 dBA CNEL and *normally compatible* with exterior noise levels below 70 dBA CNEL. For *normally compatible* land use, *new construction or development should be undertaken only after a detailed analysis of noise reduction requirements is made and needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.* (9)

3.3 OPERATIONAL NOISE STANDARDS

To analyze noise impacts originating from a designated fixed location or private property such as the Saddleback/Elsinore Business Park Project, stationary-source (operational) noise such as roof-top air conditioning units, parking lot vehicle movements and trash enclosure activity are typically evaluated against standards established under a City's Municipal Code.

Section 17.176.060 of the City of Lake Elsinore Municipal Code states the following: *No person shall, operate or cause to be operated, any source of sound at any location within the incorporated 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, either incorporated or unincorporated to exceed*…the maximum permissible sound levels by receiving land use. For residential land use, the Municipal Code identifies base exterior noise level limits for the daytime (7:00 a.m. to 10:00 p.m.) hours of 50 dBA L_{50} and 40 dBA L_{50} during the nighttime (10:00 p.m. to 7:00 a.m.) hours. These standards shall apply for a cumulative period of 30 minutes in any hour (L_{50}), as well as the standard plus 5 dBA cannot be exceeded for a cumulative period of more than 15 minutes in any hour (L_{25}), or the standard plus 10 dBA for a cumulative period of more than 5 minutes in any hour (L_8), or the standard plus 15 dBA for a cumulative period of more than 1 minute in any hour (L_2), or the standard plus 20 dBA for any period of time (L_{max}). (10). Table 3-1 shows the City of Lake Elsinore noise standards by land use.

TABLE 3-1: OPERATIONAL EXTERIOR NOISE LEVEL STANDARDS

Receiving Land Use	Condition	Based Exterior Noise Level Standards (dBA)[2]				
		L_{50} (30 mins)	L_{25} (15 mins)	L_8 (5 mins)	L_2 (1 min)	L_{max} (Anytime)
Single-Family Residential	Daytime	50	55	60	65	70
	Nighttime	40	45	50	55	60
Multi-Family Residential	Daytime	50	55	60	65	70
	Nighttime	45	50	55	60	65
Public Space/ Light Comm.	Daytime	60	65	70	75	80
	Nighttime	55	60	65	70	75
General Commercial	Daytime	65	70	75	80	85
	Nighttime	60	65	70	75	80
Light Industrial	Anytime	70	75	80	85	90
Heavy Industrial	Anytime	75	80	85	90	95

[1] City of Lake Elsinore Municipal Code, Section 17.176.060(A)(2) & Table 1 (Appendix 3.1).
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

The percentile noise descriptors are provided to ensure that the duration of the noise source is fully considered. However, due to the relatively constant intensity of the Project operational activities, the L_{50} or average L_{eq} noise level metrics best describe the roof-top air conditioning units, parking lot vehicle movements and trash enclosure activity. In addition, the L_{eq} noise level metric accounts for noise fluctuations over time by energy averaging the louder and quieter events and giving more weight to the louder events. In addition, due to the mathematical relationship between the median (L_{50}) and the mean (L_{eq}), the L_{eq} will always be larger than or equal to the L_{50}. The more variable the noise becomes, the larger the L_{eq} becomes in comparison to the L_{50}. Therefore, this noise study conservatively relies on the energy average L_{eq} sound level limits to describe the Project operational noise levels.

3.4 CONSTRUCTION NOISE STANDARDS

To analyze noise impacts originating from the construction of the Project, noise from construction activities is typically limited to the hours of operation established under a jurisdiction's Municipal Code. Section 17.176.080 (F), Construction/Demolition indicates that *operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration or demolition work between the weekday hours of 7:00 p.m. and 7:00 a.m., or at any time on weekends 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 or by variance issued by the City is prohibited*.

The City of Lake Elsinore Municipal Code establishes construction thresholds; however, this analysis relies on a numerical daytime construction threshold based on Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual.* According to the FTA, local noise ordinances are typically not very useful in evaluating construction noise. They usually relate to nuisance and hours of allowed activity, and sometimes specify limits in terms of

maximum levels, but are generally not practical for assessing the impact of a construction project. Project construction noise criteria should account for the existing noise environment, the absolute noise levels during construction activities, the duration of the construction, and the adjacent land use. Due to the lack of standardized construction noise thresholds, the FTA provides guidelines that can be considered reasonable criteria for construction noise assessment. The FTA considers a daytime exterior construction noise level of 80 dBA L_{eq} as a reasonable threshold for noise sensitive land use. (7 p. 179)

3.5 CONSTRUCTION VIBRATION STANDARDS

To analyze the vibration impacts originating from the construction of the Project, vibration from construction activities is typically evaluated against standards established under a City's Municipal Code. The City of Lake Elsinore Municipal Code, Section 17.176.080(G), states that *operating or permitting the operation of any device that creates a vibration which is above the vibration perception threshold of any individual at or beyond the property boundary of the source if on private property or at 150 feet (46 meters) from the source if on public space or public right-of-way* is prohibited. The Municipal Code defines the vibration perception threshold to be a motion velocity of 0.01 in/sec over the range of one to 100 Hz.

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4 SIGNIFICANCE CRITERIA

The following significance criteria are based on currently adopted guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (8) For the purposes of this report, impacts would be potentially significant if the Project results in or causes:

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

B. Generation of excessive ground-borne vibration or ground-borne noise levels?

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

While the City of Lake Elsinore General Plan Guidelines provide direction on noise compatibility and establish noise standards by land use type that are sufficient to assess the significance of noise impacts, they do not define the levels at which increases are considered substantial for use under Guideline A. CEQA Appendix G Guideline C applies to nearby public and private airports, if any, and the Project's land use compatibility.

4.1 CEQA GUIDELINES NOT FURTHER ANALYZED

The Project site is not located within two miles of a public airport or within an airport land use plan. The closest airport is the Perris Valley Airport located approximately 8.5 miles northeast of the Project site. As such, the Project site would not be exposed to excessive noise levels from airport operations, and therefore, impacts are considered *less than significant,* and no further noise analysis is conducted in relation to Guideline C.

4.2 NOISE-SENSITIVE RECEIVERS

Noise level increases resulting from the Project are evaluated based on the Appendix G CEQA Guidelines described above at the closest sensitive receiver locations. Under CEQA, consideration must be given to the magnitude of the increase, the existing ambient noise levels, and the location of noise-sensitive receivers to determine if a noise increase represents a significant adverse environmental impact. This approach recognizes *that there is no single noise increase that renders the noise impact significant.* (11)

Unfortunately, there is no completely satisfactory way to measure the subjective effects of noise or of the corresponding human reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance and differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment to which one has adapted—the so-called *ambient* environment. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will typically be judged. The Federal Interagency Committee on Noise (FICON) (12) developed guidance to be used for the assessment

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

As previously stated, the approach used in this noise study recognizes *that there is no single noise increase that renders the noise impact significant*, based on a 2008 California Court of Appeal ruling on Gray v. County of Madera. (11) For example, if the ambient noise environment is quiet (<60 dBA) and the new noise source greatly increases the noise levels, an impact may occur if the noise criteria may be exceeded. Therefore, for this analysis, FICON identifies a *readily perceptible* 5 dBA or greater project-related noise level increase is considered a significant impact when the noise criteria for a given land use is exceeded. Per the FICON, in areas where the without project noise levels range from 60 to 65 dBA, a 3 dBA *barely perceptible* noise level increase appears to be appropriate for most people. When the without project noise levels already exceed 65 dBA, any increase in community noise louder than 1.5 dBA or greater is considered a significant impact if the noise criteria for a given land use is exceeded, since it likely contributes to an existing noise exposure exceedance.

The FICON guidance provides an established source of criteria to assess the impacts of substantial temporary or permanent increase in ambient noise levels. Based on the FICON criteria, the amount to which a given noise level increase is considered acceptable is reduced when the without Project noise levels are already shown to exceed certain land-use specific exterior noise level criteria. The specific levels are based on typical responses to noise level increases of 5 dBA or *readily perceptible*, 3 dBA or *barely perceptible*, and 1.5 dBA depending on the underlying without Project noise levels for noise-sensitive uses. These levels of increases and their perceived acceptance are consistent with guidance provided by both the Federal Highway Administration (4 p. 9) and Caltrans (13 p. 2_48).

4.3 SIGNIFICANCE CRITERIA SUMMARY

Noise impacts shall be considered significant if any of the following occur as a direct result of the proposed development. Table 4-1 shows the significance criteria summary matrix.

TABLE 4-1: SIGNIFICANCE CRITERIA SUMMARY

Analysis	Condition(s)	Significance Criteria	
		Daytime	Nighttime
Off-Site[1]	If ambient is < 60 dBA CNEL	≥ 5 dBA CNEL Project increase	
	If ambient is 60 - 65 dBA CNEL	≥ 3 dBA CNEL Project increase	
	If ambient is > 65 dBA CNEL	≥ 1.5 dBA CNEL Project increase	
Operational[2]	Exterior Noise Level Standards	See Table 3-1	
Construction	Noise Level Threshold[3]	80 dBA L_{eq}	n/a
	Vibration Level Threshold[4]	0.01 in/sec RMS	

[1] FICON, 1992.
[2] City of Lake Elsinore Municipal Code, Chapter 17.176 Noise Control (Appendix 3.1).
[3] Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, 2018.
[4] City of Lake Elsinore Municipal Code, Section 17.176.080(G) (Appendix 3.1).
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

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5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, 24-hour noise level measurements were taken at four locations in the Project study area. The receiver locations were selected to describe and document the existing noise environment within the Project study area. Exhibit 5-A provides the boundaries of the Project study area and the noise level measurement locations. To fully describe the existing noise conditions, noise level measurements were collected by Urban Crossroads, Inc. on Wednesday, November 18th, 2020. Appendix 5.1 includes study area photos.

5.1 MEASUREMENT PROCEDURE AND CRITERIA

To describe the existing noise environment, the hourly noise levels were measured during typical weekday conditions over a 24-hour period. By collecting individual hourly noise level measurements, it is possible to describe the daytime and nighttime hourly noise levels and calculate the 24-hour CNEL. The long-term noise readings were recorded using Piccolo Type 2 integrating sound level meter and dataloggers. The Piccolo sound level meters were calibrated using a Larson-Davis calibrator, Model CAL 150. All noise meters were programmed in "slow" mode to record noise levels in "A" weighted form. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (14)

5.2 NOISE MEASUREMENT LOCATIONS

The long-term noise level measurements were positioned as close to the nearest sensitive receiver locations as possible to assess the existing ambient hourly noise levels surrounding the Project site. Both Caltrans and the FTA recognize that it is not reasonable to collect noise level measurements that can fully represent every part of a private yard, patio, deck, or balcony normally used for human activity when estimating impacts for new development projects. This is demonstrated in the Caltrans general site location guidelines which indicate that, *sites must be free of noise contamination by sources other than sources of interest. Avoid sites located near sources such as barking dogs, lawnmowers, pool pumps, and air conditioners unless it is the express intent of the analyst to measure these sources*. (2) Further, FTA guidance states, t*hat it is not necessary nor recommended that existing noise exposure be determined by measuring at every noise-sensitive location in the project area. Rather, the recommended approach is to characterize the noise environment for clusters of sites based on measurements or estimates at representative locations in the community*. (7)

Based on recommendations of Caltrans and the FTA, it is not necessary to collect measurements at each individual building or residence, because each receiver measurement represents a group of buildings that share acoustical equivalence. (7) In other words, the area represented by the receiver shares similar shielding, terrain, and geometric relationship to the reference noise source. Receivers represent a location of noise sensitive areas and are used to estimate the future noise level impacts. Collecting reference ambient noise level measurements at the nearby sensitive receiver locations allows for a comparison of the before and after Project noise levels

and is necessary to assess potential noise impacts due to the Project's contribution to the ambient noise levels.

5.3 NOISE MEASUREMENT RESULTS

The noise measurements presented below focus on the average or equivalent sound levels (L_{eq}). The equivalent sound level (L_{eq}) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. Table 5-1 identifies the hourly daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) noise levels at each noise level measurement location.

TABLE 5-1: 24-HOUR AMBIENT NOISE LEVEL MEASUREMENTS

Location[1]	Description	Energy Average Noise Level (dBA L_{eq})[2]		CNEL
		Daytime	Nighttime	
L1	Located north of the Project site on El Toro Road near Temescal Canyon High School at 28755 El Toro Road.	58.1	56.9	63.8
L2	Located north of the Project site on Dexter Avenue near existing single-family residential home at 18045 Dexter Avenue.	64.5	62.7	69.7
L3	Located southeast of the Project site on Collier Avenue across from Elsinore Valley Cemetery at 18170 Collier Avenue.	68.7	66.9	74.0
L4	Located southwest of the Project site on Baker Street near existing single-family residential home at 29370 Turnbull Avenue.	52.5	55.1	61.5

[1] See Exhibit 5-A for the noise level measurement locations.
[2] Energy (logarithmic) average levels. The long-term 24-hour measurement worksheets are included in Appendix 5.2.
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

Table 5-1 provides the (energy average) noise levels used to describe the daytime and nighttime ambient conditions. These daytime and nighttime energy average noise levels represent the average of all hourly noise levels observed during these time periods expressed as a single number. Appendix 5.2 provides summary worksheets of the noise levels for each hour as well as the minimum, maximum, L_1, L_2, L_5, L_8, L_{25}, L_{50}, L_{90}, L_{95}, and L_{99} percentile noise levels observed during the daytime and nighttime periods.

The background ambient noise levels in the Project study area are dominated by the transportation-related noise associated with the I-15 Freeway and nearby surface streets. This includes the auto and heavy truck activities on study area roadway segments near the noise level measurement locations.

EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS

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6 TRAFFIC NOISE PREDICTION METHODS AND PROCEDURES

The following section outlines the methods and procedures used to model and analyze the future off-site traffic noise environment. Consistent with the *Land Use Compatibility for Community Noise Exposure*, all transportation related noise levels are presented in terms of the 24-hour CNEL's.

6.1 FHWA TRAFFIC NOISE PREDICTION MODEL

The expected roadway noise level increases from vehicular traffic were calculated by Urban Crossroads, Inc. using a computer program that replicates the Federal Highway Administration (FHWA) Traffic Noise Prediction Model- FHWA-RD-77-108. (15) The FHWA Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). In California the national REMELs are substituted with the California Vehicle Noise (Calveno) Emission Levels. (16) Adjustments are then made to the REMEL to account for: the roadway classification (e.g., collector, secondary, major or arterial), 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), the travel speed, the percentages of automobiles, medium trucks, and heavy trucks in the traffic volume, the roadway grade, the angle of view (e.g., whether the roadway view is blocked), the site conditions ("hard" or "soft" relates to the absorption of the ground, pavement, or landscaping), and the percentage of total ADT which flows each hour throughout a 24-hour period. Research conducted by Caltrans has shown that the use of soft site conditions is appropriate for the application of the FHWA traffic noise prediction model used in this analysis. (17)

6.2 OFF-SITE TRAFFIC NOISE PREDICTION MODEL INPUTS

Table 6-1 presents the roadway parameters used to assess the Project's off-site dBA CNEL transportation noise impacts. Table 6-1 identifies the five study area roadway segments, the distance from the centerline to adjacent land use based on the functional roadway classifications per the City of Lake Elsinore General Plan Circulation Element, and the posted vehicle speeds. The ADT volumes used in this study area presented on Table 6-2 are based on *Saddleback/Elsinore Business Park Traffic Analysis*, prepared by Urban Crossroads, Inc. for the following traffic scenarios under both Without and With Project conditions: Existing 2020, Existing plus Ambient Growth 2022 (EA), and Existing plus Ambient Growth plus Project plus Cumulative 2022 (EAC). (18)

The ADT volumes vary for each roadway segment based on the existing traffic volumes and the combination of project traffic distributions. This analysis relies on a comparative evaluation of the off-site traffic noise impacts at the boundary of the right-of-way of the receiving adjacent land use, without and with project ADT traffic volumes from the Project traffic study.

TABLE 6-1: OFF-SITE ROADWAY PARAMETERS

ID	Roadway	Segment	Receiving Land Use[1]	Distance from Centerline to Receiving Land Use (Feet)[2]	Vehicle Speed (mph)[3]
1	Riverside Dr.	s/o El Toro Rd.	Non-Sensitive	60'	40
2	Riverside Dr.	s/o Collier Av.	Non-Sensitive	60'	40
3	El Toro Rd.	w/o Riverside Dr.	Non-Sensitive	34'	40
4	Collier Av.	w/o Dwy. 1	Non-Sensitive	50'	50
5	Collier Av.	w/o Riverside Dr.	Non-Sensitive	50'	50

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] Distance to receiving land use is based upon the right-of-way distances.
[3] Saddleback/Elsinore Business Park Traffic Analysis, Urban Crossroads, Inc.

To quantify the off-site noise levels, the Project related truck trips were added to the heavy truck category in the FHWA noise prediction model. The addition of the Project related truck trips increases the percentage of heavy trucks in the vehicle mix. This approach recognizes that the FHWA noise prediction model is significantly influenced by the number of heavy trucks in the vehicle mix.

Table 6-3 provides the time of day (daytime, evening, and nighttime) vehicle splits. The daily Project truck trip-ends were assigned to the individual off-site study area roadway segments based on the Project truck trip distribution percentages documented in the *Traffic Analysis*. Using the Project truck trips in combination with the Project trip distribution, Urban Crossroads, Inc. calculated the number of additional Project truck trips and vehicle mix percentages for each of the study area roadway segments. Table 6-4 shows the traffic flow by vehicle type (vehicle mix) used for all without Project traffic scenarios, and Tables 6-5 to 6-7 show the vehicle mixes used for the with Project traffic scenarios.

TABLE 6-2: AVERAGE DAILY TRAFFIC VOLUMES

ID	Roadway	Segment	Average Daily Traffic Volumes[1]					
			Existing 2020		Existing plus Ambient Growth 2022		Existing plus Ambient Growth plus Cumulative 2022	
			Without Project	With Project	Without Project	With Project	Without Project	With Project
1	Riverside Dr.	s/o El Toro Rd.	480	544	499	563	499	563
2	Riverside Dr.	s/o Collier Av.	26,069	26,133	27,122	27,186	29,451	29,515
3	El Toro Rd.	w/o Riverside Dr.	33	97	34	98	34	98
4	Collier Av.	w/o Dwy. 1	8,709	8,943	9,061	9,295	10,318	10,552
5	Collier Av.	w/o Riverside Dr.	8,709	8,837	9,061	9,189	10,318	10,446

[1] Saddleback/Elsinore Business Park Traffic Analysis, Urban Crossroads, Inc.

TABLE 6-3: TIME OF DAY VEHICLE SPLITS

Vehicle Type	Time of Day Splits[1]			Total of Time of Day Splits
	Daytime	Evening	Nighttime	
Autos	77.50%	12.90%	9.60%	100.00%
Medium Trucks	84.80%	4.90%	10.30%	100.00%
Heavy Trucks	86.50%	2.70%	10.80%	100.00%

[1] County of Riverside Office of Industrial Hygiene. Values rounded to the nearest one-hundredth.
"Daytime" = 7:00 a.m. to 7:00 p.m.; "Evening" = 7:00 p.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

TABLE 6-4: WITHOUT PROJECT VEHICLE MIX

Classification	Total % Traffic Flow			Total
	Autos	Medium Trucks	Heavy Trucks	
All Segments	98.92%	0.76%	0.32%	100.00%

Based on an existing vehicle count taken at Riverside Drive and Collier Avenue (Saddleback/Elsinore Business Park Traffic Analysis, Urban Crossroads, Inc.). Vehicle mix percentage values rounded to the nearest one-hundredth.

Due to the added Project truck trips, the increase in Project traffic volumes and the distributions of trucks on the study area road segments, the percentage of autos, medium trucks and heavy trucks will vary for each of the traffic scenarios. This explains why the existing and future traffic volumes and vehicle mixes vary between seemingly identical study area roadway segments.

TABLE 6-5: EXISTING (2020) WITH PROJECT VEHICLE MIX

ID	Roadway	Segment	With Project[1]			
			Autos	Medium Trucks	Heavy Trucks	Total[2]
1	Riverside Dr.	s/o El Toro Rd.	99.05%	0.67%	0.28%	100.00%
2	Riverside Dr.	s/o Collier Av.	98.92%	0.76%	0.32%	100.00%
3	El Toro Rd.	w/o Riverside Dr.	99.63%	0.26%	0.11%	100.00%
4	Collier Av.	w/o Dwy. 1	98.95%	0.74%	0.31%	100.00%
5	Collier Av.	w/o Riverside Dr.	98.93%	0.75%	0.31%	100.00%

[1] Saddleback/Elsinore Business Park Traffic Analysis, Urban Crossroads, Inc.
[2] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

TABLE 6-6: EA (2022) WITH PROJECT VEHICLE MIX

ID	Roadway	Segment	With Project[1]			
			Autos	Medium Trucks	Heavy Trucks	Total[2]
1	Riverside Dr.	s/o El Toro Rd.	99.04%	0.68%	0.28%	100.00%
2	Riverside Dr.	s/o Collier Av.	98.92%	0.76%	0.32%	100.00%
3	El Toro Rd.	w/o Riverside Dr.	99.62%	0.27%	0.11%	100.00%
4	Collier Av.	w/o Dwy. 1	98.95%	0.74%	0.31%	100.00%
5	Collier Av.	w/o Riverside Dr.	98.93%	0.75%	0.31%	100.00%

[1] Saddleback/Elsinore Business Park Traffic Analysis, Urban Crossroads, Inc.
[2] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

TABLE 6-7: EAC (2022) WITH PROJECT VEHICLE MIX

ID	Roadway	Segment	With Project[1]			
			Autos	Medium Trucks	Heavy Trucks	Total[2]
1	Riverside Dr.	s/o El Toro Rd.	99.04%	0.68%	0.28%	100.00%
2	Riverside Dr.	s/o Collier Av.	98.92%	0.76%	0.32%	100.00%
3	El Toro Rd.	w/o Riverside Dr.	99.62%	0.27%	0.11%	100.00%
4	Collier Av.	w/o Dwy. 1	98.94%	0.75%	0.31%	100.00%
5	Collier Av.	w/o Riverside Dr.	98.93%	0.75%	0.31%	100.00%

[1] Saddleback/Elsinore Business Park Traffic Analysis, Urban Crossroads, Inc.

[2] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

7 OFF-SITE TRAFFIC NOISE IMPACTS

To assess the off-site transportation CNEL noise level impacts associated with the proposed Project, noise contours were developed based on *Saddleback/Elsinore Business Park Traffic Analysis* (18). Noise contour boundaries represent the equal levels of noise exposure and are measured in CNEL from the center of the roadway.

7.1 TRAFFIC NOISE CONTOURS

Noise contours were used to assess the Project's incremental 24-hour dBA CNEL traffic-related noise impacts at land uses adjacent to roadways conveying Project traffic. The noise contours represent the distance to noise levels of a constant value and are measured from the center of the roadway for the 70, 65, and 60 dBA CNEL noise levels. The noise contours do not consider the effect of any existing noise barriers or topography that may attenuate ambient noise levels. In addition, because the noise contours reflect modeling of vehicular noise on area roadways, they appropriately do not reflect noise contributions from the surrounding stationary noise sources within the Project study area.

Tables 7-1 through 7-6 present a summary of the exterior dBA CNEL traffic noise levels without barrier attenuation. Roadway segments are analyzed from the without Project to the with Project conditions in each of the following timeframes: Existing 2020, Existing plus Ambient Growth 2022 (EA), and Existing plus Ambient Growth plus Project plus Cumulative 2022 (EAC). Appendix 7.1 includes a summary of the dBA CNEL traffic noise level contours for each of the traffic scenarios.

TABLE 7-1: EXISTING 2020 WITHOUT PROJECT NOISE CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Riverside Dr.	s/o El Toro Rd.	Non-Sensitive	51.3	RW	RW	RW
2	Riverside Dr.	s/o Collier Av.	Non-Sensitive	68.6	RW	105	226
3	El Toro Rd.	w/o Riverside Dr.	Non-Sensitive	42.3	RW	RW	RW
4	Collier Av.	w/o Dwy. 1	Non-Sensitive	67.2	RW	71	152
5	Collier Av.	w/o Riverside Dr.	Non-Sensitive	67.2	RW	71	152

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-2: EXISTING 2020 WITH PROJECT NOISE CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Riverside Dr.	s/o El Toro Rd.	Non-Sensitive	51.7	RW	RW	RW
2	Riverside Dr.	s/o Collier Av.	Non-Sensitive	68.7	RW	105	227
3	El Toro Rd.	w/o Riverside Dr.	Non-Sensitive	46.4	RW	RW	RW
4	Collier Av.	w/o Dwy. 1	Non-Sensitive	67.3	RW	72	154
5	Collier Av.	w/o Riverside Dr.	Non-Sensitive	67.3	RW	71	153

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-3: EA (2022) WITHOUT PROJECT NOISE CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Riverside Dr.	s/o El Toro Rd.	Non-Sensitive	51.5	RW	RW	RW
2	Riverside Dr.	s/o Collier Av.	Non-Sensitive	68.8	RW	108	232
3	El Toro Rd.	w/o Riverside Dr.	Non-Sensitive	42.5	RW	RW	RW
4	Collier Av.	w/o Dwy. 1	Non-Sensitive	67.4	RW	73	156
5	Collier Av.	w/o Riverside Dr.	Non-Sensitive	67.4	RW	73	156

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-4: EA (2022) WITH PROJECT NOISE CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Riverside Dr.	s/o El Toro Rd.	Non-Sensitive	51.9	RW	RW	RW
2	Riverside Dr.	s/o Collier Av.	Non-Sensitive	68.8	RW	108	233
3	El Toro Rd.	w/o Riverside Dr.	Non-Sensitive	46.5	RW	RW	RW
4	Collier Av.	w/o Dwy. 1	Non-Sensitive	67.5	RW	74	158
5	Collier Av.	w/o Riverside Dr.	Non-Sensitive	67.5	RW	73	157

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-5: EAC (2022) WITHOUT PROJECT NOISE CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Riverside Dr.	s/o El Toro Rd.	Non-Sensitive	51.5	RW	RW	RW
2	Riverside Dr.	s/o Collier Av.	Non-Sensitive	69.2	RW	114	245
3	El Toro Rd.	w/o Riverside Dr.	Non-Sensitive	42.5	RW	RW	RW
4	Collier Av.	w/o Dwy. 1	Non-Sensitive	68.0	RW	79	170
5	Collier Av.	w/o Riverside Dr.	Non-Sensitive	68.0	RW	79	170

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-6: EAC (2022) WITH PROJECT NOISE CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Riverside Dr.	s/o El Toro Rd.	Non-Sensitive	51.9	RW	RW	RW
2	Riverside Dr.	s/o Collier Av.	Non-Sensitive	69.2	RW	114	246
3	El Toro Rd.	w/o Riverside Dr.	Non-Sensitive	46.5	RW	RW	RW
4	Collier Av.	w/o Dwy. 1	Non-Sensitive	68.1	RW	80	173
5	Collier Av.	w/o Riverside Dr.	Non-Sensitive	68.0	RW	80	172

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

7.2 EXISTING PROJECT TRAFFIC NOISE LEVEL INCREASES

An analysis of existing traffic noise levels plus traffic noise generated by the proposed Project has been included in this report to fully analyze all the existing traffic scenarios identified in the *Saddleback/Elsinore Business Park Traffic Analysis*. This condition is provided solely for informational purposes and will not occur, since the Project will not be fully developed and occupied under Existing conditions. Table 7-1 shows the Existing without Project conditions CNEL noise levels. The Existing without Project exterior noise levels are expected to range from 42.3 to 68.6 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-2 shows the Existing with Project conditions will range from 46.4 to 68.7 dBA CNEL. Table 7-7 shows that the Project off-site traffic noise level impacts will range from 0.1 to 4.1 dBA CNEL. Based on the significance criteria for off-site traffic noise presented in Table 4-1, land uses adjacent to the study area roadway segments would experience *less than significant* noise level increases on receiving land uses due to the Project-related traffic.

7.3 EA (2022) PROJECT TRAFFIC NOISE LEVEL INCREASES

Table 7-3 presents the Existing plus Ambient Growth without Project conditions CNEL noise levels. The Existing plus Ambient Growth without Project exterior noise levels are expected to range from 42.5 to 68.8 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-4 shows the Existing plus Ambient Growth with Project conditions will range from 46.5 to 68.8.2 dBA CNEL. Table 7-8 shows that the Project off-site traffic noise level increases will range from 0.0 to 4.0 dBA CNEL. Based on the significance criteria for off-site traffic noise presented in Table 4-1, land uses adjacent to the study area roadway segments would experience *less than significant* noise level increases on receiving land uses due to the Project-related traffic.

7.4 EAC (2022) PROJECT TRAFFIC NOISE LEVEL INCREASES

Table 7-5 presents the Existing plus Ambient Growth plus Cumulative without Project conditions CNEL noise levels. The Existing plus Ambient Growth plus Cumulative without Project exterior noise levels are expected to range from 42.5 to 69.2 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-6 shows the Existing plus Ambient Growth plus Cumulative with Project conditions will range from 46.5 to 69.2 dBA CNEL. Table 7-9 shows that the Project off-site traffic noise level increases will range from 0.0 to 4.0 dBA CNEL. Based on the significance criteria for off-site traffic noise presented in Table 4-1, land uses adjacent to the study area roadway segments would experience *less than significant* noise level increases on receiving land uses due to the Project-related traffic.

TABLE 7-7: EXISTING WITH PROJECT TRAFFIC NOISE LEVEL INCREASES

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]			Incremental Noise Level Increase Threshold[3]	
				No Project	With Project	Project Addition	Limit	Exceeded?
1	Riverside Dr.	s/o El Toro Rd.	Non-Sensitive	51.3	51.7	0.4	n/a	No
2	Riverside Dr.	s/o Collier Av.	Non-Sensitive	68.6	68.7	0.1	n/a	No
3	El Toro Rd.	w/o Riverside Dr.	Non-Sensitive	42.3	46.4	4.1	n/a	No
4	Collier Av.	w/o Dwy. 1	Non-Sensitive	67.2	67.3	0.1	n/a	No
5	Collier Av.	w/o Riverside Dr.	Non-Sensitive	67.2	67.3	0.1	n/a	No

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
[3] Does the Project create an incremental noise level increase exceeding the significance criteria (Table 4-1)?

TABLE 7-8: EA WITH PROJECT TRAFFIC NOISE INCREASES

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]			Incremental Noise Level Increase Threshold[3]	
				No Project	With Project	Project Addition	Limit	Exceeded?
1	Riverside Dr.	s/o El Toro Rd.	Non-Sensitive	51.5	51.9	0.4	n/a	No
2	Riverside Dr.	s/o Collier Av.	Non-Sensitive	68.8	68.8	0.0	n/a	No
3	El Toro Rd.	w/o Riverside Dr.	Non-Sensitive	42.5	46.5	4.0	n/a	No
4	Collier Av.	w/o Dwy. 1	Non-Sensitive	67.4	67.5	0.1	n/a	No
5	Collier Av.	w/o Riverside Dr.	Non-Sensitive	67.4	67.5	0.1	n/a	No

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
[3] Does the Project create an incremental noise level increase exceeding the significance criteria (Table 4-1)?

TABLE 7-9: EAC WITH PROJECT TRAFFIC NOISE INCREASES

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]			Incremental Noise Level Increase Threshold[3]	
				No Project	With Project	Project Addition	Limit	Exceeded?
1	Riverside Dr.	s/o El Toro Rd.	Non-Sensitive	51.5	51.9	0.4	n/a	No
2	Riverside Dr.	s/o Collier Av.	Non-Sensitive	69.2	69.2	0.0	n/a	No
3	El Toro Rd.	w/o Riverside Dr.	Non-Sensitive	42.5	46.5	4.0	n/a	No
4	Collier Av.	w/o Dwy. 1	Non-Sensitive	68.0	68.1	0.1	n/a	No
5	Collier Av.	w/o Riverside Dr.	Non-Sensitive	68.0	68.0	0.0	n/a	No

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
[3] Does the Project create an incremental noise level increase exceeding the significance criteria (Table 4-1)?

8 SENSITIVE RECEIVER LOCATIONS

To assess the potential for long-term operational and short-term construction noise impacts, the following sensitive receiver locations, as shown on Exhibit 8-A, were identified as representative locations for analysis. Sensitive receivers are generally defined as locations where people reside or where the presence of unwanted sound could otherwise adversely affect the use of the land. Noise-sensitive land uses are generally considered to include schools, hospitals, single-family dwellings, mobile home parks, churches, libraries, and recreation areas. Moderately noise-sensitive land uses typically include multi-family dwellings, hotels, motels, dormitories, out-patient clinics, cemeteries, golf courses, country clubs, athletic/tennis clubs, and equestrian clubs. Land uses that are considered relatively insensitive to noise include business, commercial, and professional developments. Land uses that are typically not affected by noise include: industrial, manufacturing, utilities, agriculture, undeveloped land, parking lots, warehousing, liquid and solid waste facilities, salvage yards, and transit terminals.

To describe the potential off-site Project noise levels, four receiver locations in the vicinity of the Project site were identified. All distances are measured from the Project site boundary to the outdoor living areas (e.g., private backyards) or at the building façade, whichever is closer to the Project site. The selection of receiver locations is based on FHWA guidelines and is consistent with additional guidance provided by Caltrans and the FTA, as previously described in Section 5.2. Other sensitive land uses in the Project study area that are located at greater distances than those identified in this noise study will experience lower noise levels than those presented in this report due to the additional attenuation from distance and the shielding of intervening structures. Distance is measured in a straight line from the project boundary to each receiver location.

R1: Location R1 represents Temescal Canyon High School at 28755 El Toro Road, approximately 1,570 feet north of the Project site. Receiver R1 is placed at the building façade. A 24-hour noise measurement was taken near this location, L1, to describe the existing ambient noise environment.

R2: Location R2 represents the existing single-family residential home at 18065 Dexter Avenue, approximately 509 feet northeast of the Project site. Receiver R2 is placed at the outdoor living areas (backyards) facing the Project site. A 24-hour noise measurement was taken near this location, L2, to describe the existing ambient noise environment.

R3: Location R3 represents the Elsinore Valley Cemetery at 18170 Collier Avenue, approximately 939 feet southeast of the Project site. Receiver R3 is placed at the cemetery boundary. A 24-hour noise measurement was taken near this location, L3, to describe the existing ambient noise environment.

R4: Location R4 represents the existing single-family residential home on Baker Street, approximately 1,893 feet southwest of the Project site. Since there are no outdoor living areas (backyards) facing the Project site Receiver R4 is placed at the residential building façade. A 24-hour noise measurement was taken near this location, L4, to describe the existing ambient noise environment.

EXHIBIT 8-A: SENSITIVE RECEIVER LOCATIONS

9 OPERATIONAL NOISE IMPACTS

This section analyzes the potential stationary-source operational noise impacts at the nearest receiver locations, identified in Section 8, resulting from the operation of the proposed Saddleback/Elsinore Business Park Project. Exhibit 9-A identifies the representative noise source locations used to assess the operational noise levels.

9.1 OPERATIONAL NOISE SOURCES

This operational noise analysis is intended to describe noise level impacts associated with the expected typical of daytime and nighttime activities at the Project site. To present the potential worst-case noise conditions, this analysis assumes the Project would be operational 24 hours per day, seven days per week. The on-site Project-related noise sources are expected to include: roof-top air conditioning units, parking lot vehicle movements and trash enclosure activity.

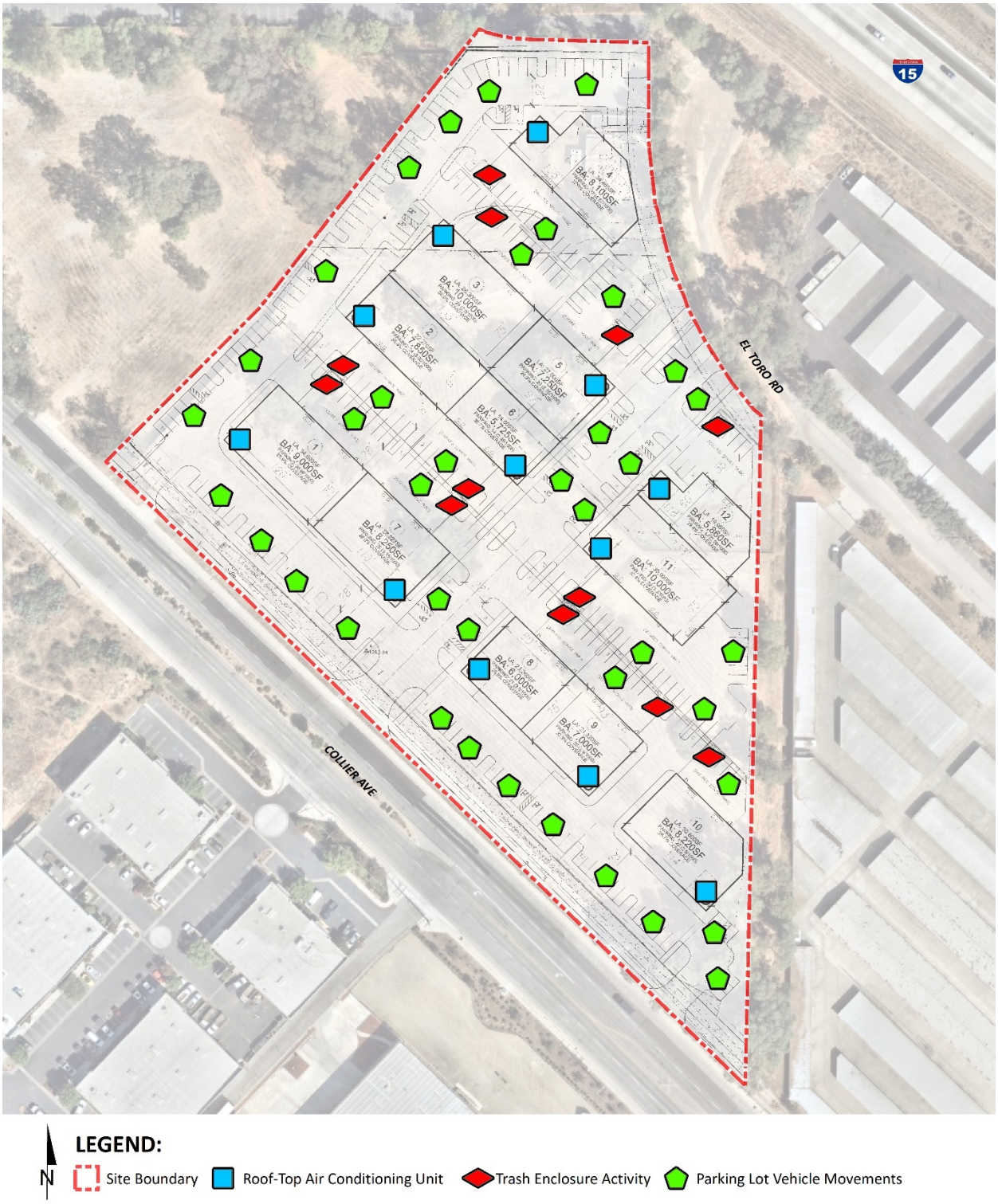
9.2 REFERENCE NOISE LEVELS

To estimate the Project operational noise impacts, reference noise level measurements were collected from similar types of activities to represent the noise levels expected with the development of the proposed Project. This section provides a detailed description of the reference noise level measurements shown on Table 9-1 used to estimate the Project operational noise impacts. It is important to note that the following projected noise levels assume the worst-case noise environment with the roof-top air conditioning units, parking lot vehicle movements and trash enclosure activity all operating continuously. These sources of noise activity will likely vary throughout the day.

9.2.1 MEASUREMENT PROCEDURES

The reference noise level measurements presented in this section were collected using a Larson Davis LxT Type 1 precisions sound level meter (serial number 01146). The LxT sound level meter was calibrated using a Larson-Davis calibrator, Model CAL 200, was programmed in "slow" mode to record noise levels in "A" weighted form and was located at approximately five feet above the ground elevation for each measurement. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (14)

EXHIBIT 9-A: OPERATIONAL NOISE SOURCE LOCATIONS



LEGEND:

N

Site Boundary | Roof-Top Air Conditioning Unit | Trash Enclosure Activity | Parking Lot Vehicle Movements

TABLE 9-1: REFERENCE NOISE LEVEL MEASUREMENTS

Noise Source[1]	Noise Source Height (Feet)	Min./Hour[2]		Reference Noise Level (dBA L_{eq}) @ 50 Feet	Sound Power Level (dBA)[3]
		Day	Night		
Roof-Top Air Conditioning Units	5'	39	28	57.2	88.9
Parking Lot Vehicle Movements	5'	60	60	56.1	87.8
Trash Enclosure Activity	5'	10	10	57.3	89.0

[1] As measured by Urban Crossroads, Inc.
[2] Anticipated duration (minutes within the hour) of noise activity during typical hourly conditions expected at the Project site. "Daytime" = 7:00 a.m. - 10:00 p.m.; "Nighttime" = 10:00 p.m. - 7:00 a.m.
[3] Sound power level represents the total amount of acoustical energy (noise level) produced by a sound source independent of distance or surroundings. Sound power levels calculated using the CadnaA noise model at the reference distance to the noise source.

9.2.2 ROOF-TOP AIR CONDITIONING UNITS

The noise level measurements describe a single mechanical roof-top air conditioning unit. The reference noise level represents a Lennox SCA120 series 10-ton model packaged air conditioning unit. At the uniform reference distance of 50 feet, the reference noise levels are 57.2 dBA L_{eq}. Based on the typical operating conditions observed over a four-day measurement period, the roof-top air conditioning units are estimated to operate for and average 39 minutes per hour during the daytime hours, and 28 minutes per hour during the nighttime hours. These operating conditions reflect peak summer cooling requirements with measured temperatures approaching 96 degrees Fahrenheit (°F) with average daytime temperatures of 82°F. For this noise analysis, the air conditioning units are expected to be located on the roof of the Project buildings.

9.2.3 PARKING LOT VEHICLE MOVEMENTS

To describe the on-site parking lot activity a reference noise level of 56.1 dBA L_{eq} at 50 feet is used. Parking activity are expected to take place during the full hour (60 minutes) throughout the daytime and evening hours. The parking lot noise levels are mainly due cars pulling in and out of parking spaces in combination with sales staff talking to customers.

9.2.4 TRASH ENCLOSURE ACTIVITY

To describe the noise levels associated with a trash enclosure activity, Urban Crossroads collected a reference noise level measurement at an existing trash enclosure containing two dumpster bins. The trash enclosure noise levels describe metal gates opening and closing, metal scraping against concrete floor sounds, dumpster movement on metal wheels, and trash dropping into the metal dumpster. The reference noise levels describe trash enclosure noise activities when trash is dropped into an empty metal dumpster, as would occur at the Project Site. The measured reference noise level at the uniform 50-foot reference distance is 57.3 dBA L_{eq} for the trash enclosure activity. The reference noise level describes the expected noise source activities associated with the trash enclosures for the Project's proposed building. Typical trash enclosure activities are estimated to occur for 10 minutes per hour.

9.3 CADNAA NOISE PREDICTION MODEL

To fully describe the exterior operational noise levels from the Project, Urban Crossroads, Inc. developed a noise prediction model using the CadnaA (Computer Aided Noise Abatement) computer program. CadnaA can analyze multiple types of noise sources using the spatially accurate Project site plan, georeferenced Nearmap aerial imagery, topography, buildings, and barriers in its calculations to predict outdoor noise levels.

Using the ISO 9613 protocol, CadnaA will calculate the distance from each noise source to the noise receiver locations, using the ground absorption, distance, and barrier/building attenuation inputs to provide a summary of noise level at each receiver and the partial noise level contributions by noise source. Consistent with the ISO 9613 protocol, the CadnaA noise prediction model relies on the reference sound power level (L_w) to describe individual noise sources. While sound pressure levels (e.g., L_{eq}) quantify in decibels the intensity of given sound sources at a reference distance, sound power levels (L_w) are connected to the sound source and are independent of distance. Sound pressure levels vary substantially with distance from the source and diminish because of intervening obstacles and barriers, air absorption, wind, and other factors. Sound power is the acoustical energy emitted by the sound source and is an absolute value that is not affected by the environment.

The operational noise level calculations provided in this noise study account for the distance attenuation provided due to geometric spreading, when sound from a localized stationary source (i.e., a point source) propagates uniformly outward in a spherical pattern. A default ground attenuation factor of 0.5 was used in the noise analysis to account for mixed ground representing a combination of hard and soft surfaces. Appendix 9.1 includes the detailed noise model inputs used to estimate the Project operational noise levels presented in this section.

9.4 PROJECT OPERATIONAL NOISE LEVELS

Using the reference noise levels to represent the proposed Project operations that include roof-top air conditioning units, parking lot vehicle movements and trash enclosure activity, Urban Crossroads, Inc. calculated the operational source noise levels that are expected to be generated at the Project site and the Project-related noise level increases that would be experienced at each of the sensitive receiver locations. Tables 9-2 shows the Project operational noise levels during the daytime hours of 7:00 a.m. to 10:00 p.m. The daytime hourly noise levels at the off-site receiver locations are expected to range from 32.7 to 41.2 dBA L_{eq}.

TABLE 9-2: DAYTIME PROJECT OPERATIONAL NOISE LEVELS

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA L_{eq})			
	R1	R2	R3	R4
Roof-Top Air Conditioning Units	28.2	35.6	30.9	28.7
Parking Lot Vehicle Movements	30.4	39.6	36.3	31.6
Trash Enclosure Activity	20.3	25.4	23.8	13.8
Total (All Noise Sources)	**32.7**	**41.2**	**37.6**	**33.4**

[1] See Exhibit 9-A for the noise source locations. CadnaA noise model calculations are included in Appendix 9.1.

Table 9-3 shows the Project operational noise levels during the nighttime hours of 10:00 p.m. to 7:00 a.m. The nighttime hourly noise levels at the off-site receiver locations are expected to range from 31.3 to 39.9 dBA L_{eq}. The differences between the daytime and nighttime noise levels are largely related to the duration of noise activity (Table 9-1).

TABLE 9-3: NIGHTTIME PROJECT OPERATIONAL NOISE LEVELS

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA L_{eq})			
	R1	R2	R3	R4
Roof-Top Air Conditioning Units	25.8	33.2	28.5	26.3
Parking Lot Vehicle Movements	29.4	38.7	35.3	30.6
Trash Enclosure Activity	19.3	24.4	22.8	12.8
Total (All Noise Sources)	**31.3**	**39.9**	**36.3**	**32.0**

[1] See Exhibit 9-A for the noise source locations. CadnaA noise model calculations are included in Appendix 9.1.

9.5 PROJECT OPERATIONAL NOISE LEVEL COMPLIANCE

To demonstrate compliance with local noise regulations, the Project-only operational noise levels are evaluated against exterior noise level thresholds based on the City of Lake Elsinore exterior noise level standards at nearby noise-sensitive receiver locations. Tables 9-4 shows the operational noise levels associated with Saddleback/Elsinore Business Park Project will satisfy the City of Lake Elsinore daytime and nighttime hourly exterior noise level standards at all nearby receiver locations. Therefore, the operational noise impacts are considered *less than significant* at the nearby noise-sensitive receiver locations.

TABLE 9-4: OPERATIONAL NOISE LEVEL COMPLIANCE

Receiver Location[1]	Project Operational Noise Levels (dBA Leq)[2]		Noise Level Standards (dBA Leq)[3]		Noise Level Standards Exceeded?[4]	
	Daytime	Nighttime	Daytime	Nighttime	Daytime	Nighttime
R1	32.7	31.3	50	40	No	No
R2	41.2	39.9	50	40	No	No
R3	37.6	36.3	50	40	No	No
R4	33.4	32.0	50	40	No	No

[1] See Exhibit 8-A for the receiver locations.
[2] Proposed Project operational noise levels as shown on Tables 9-2 and 9-3.
[3] Exterior noise level standards as shown in section 3.3.
[4] Do the estimated Project operational noise source activities exceed the noise level standards?
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

9.6 PROJECT OPERATIONAL NOISE LEVEL INCREASES

To describe the Project operational noise level increases, the Project operational noise levels are combined with the existing ambient noise levels measurements for the nearest receiver locations potentially impacted by Project operational noise sources. Since the units used to measure noise, decibels (dB), are logarithmic units, the Project-operational and existing ambient noise levels cannot be combined using standard arithmetic equations. (2) Instead, they must be logarithmically added using the following base equation:

$$SPL_{Total} = 10\log_{10}[10^{SPL1/10} + 10^{SPL2/10} + \ldots 10^{SPLn/10}]$$

Where "SPL1," "SPL2," etc. are equal to the sound pressure levels being combined, or in this case, the Project-operational and existing ambient noise levels. The difference between the combined Project and ambient noise levels describes the Project noise level increases to the existing ambient noise environment. As indicated on Tables 9-5 and 9-6, the Project will generate daytime and nighttime operational noise level increases ranging from 0.0 to 0.1 dBA L_{eq} at the nearest receiver locations. Project-related operational noise level increases will satisfy the operational noise level increase significance criteria presented on Table 3-1. Therefore, the incremental Project operational noise level increase is considered *less than significant* at all receiver locations.

TABLE 9-5: DAYTIME PROJECT OPERATIONAL NOISE LEVEL INCREASES

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Increase Criteria[7]	Increase Criteria Exceeded?
R1	32.7	L1	58.1	58.1	0.0	5.0	No
R2	41.2	L2	64.5	64.5	0.0	3.0	No
R3	37.6	L3	68.7	68.7	0.0	1.5	No
R4	33.4	L4	52.5	52.6	0.1	5.0	No

[1] See Exhibit 8-A for the receiver locations.
[2] Total Project daytime operational noise levels as shown on Table 9-2.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Observed daytime ambient noise levels as shown on Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance increase criteria as shown on Table 4-1.

TABLE 9-6: NIGHTTIME OPERATIONAL NOISE LEVEL INCREASES

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Increase Criteria[7]	Increase Criteria Exceeded?
R1	31.3	L1	56.9	56.9	0.0	5.0	No
R2	39.9	L2	62.7	62.7	0.0	3.0	No
R3	36.3	L3	66.9	66.9	0.0	1.5	No
R4	32.0	L4	55.1	55.1	0.0	5.0	No

[1] See Exhibit 8-A for the receiver locations.
[2] Total Project nighttime operational noise levels as shown on Table 9-3.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Observed nighttime ambient noise levels as shown on Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance increase criteria as shown on Table 4-1.

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10 CONSTRUCTION IMPACTS

This section analyzes potential impacts resulting from the short-term construction activities associated with the development of the Project. Exhibit 10-A shows the construction noise source locations in relation to the nearest sensitive receiver locations previously described in Section 8. To prevent high levels of construction noise from impacting noise-sensitive land uses, Section 17.176.080 of the City of Lake Elsinore Municipal Code prohibits construction activities between the hours of 7:00 p.m. and 7:00 a.m. or at any time on weekend or on holidays.

10.1 CONSTRUCTION ACTIVITIES

Noise generated by the Project construction equipment will include a combination of trucks, power tools, concrete mixers, and portable generators that when combined can reach high levels. The number and mix of construction equipment are expected to occur in the following stages:

- Demolition
- Site Preparation
- Grading
- Building Construction
- Paving
- Architectural Coating

10.2 TYPICAL CONSTRUCTION REFERENCE NOISE LEVELS

To describe peak construction noise activities, this construction noise analysis was prepared using reference noise level measurements published in the *Update of Noise Database for Prediction of Noise on Construction and Open Sites* by the Department for Environment, Food and Rural Affairs (DEFRA). (19). The DEFRA database provides the most recent and comprehensive source of reference construction noise levels. Table 9-1 provides a summary of the DEFRA construction reference noise level measurements expressed in hourly average dBA L_{eq} using the estimated FHWA Roadway Construction Noise Model (RCNM) usage factors (20) to describe the typical construction activities for each stage of Project construction.

EXHIBIT 10-A: TYPICAL CONSTRUCTION NOISE SOURCE LOCATIONS

TABLE 10-1: TYPICAL CONSTRUCTION REFERENCE NOISE LEVELS

Construction Stage	Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{eq})	Highest Reference Noise Level (dBA L_{eq})
Demolition	Demolition Equipment	69	71
	Excavators	64	
	Rubber Tired Dozers	71	
Site Preparation	Crawler Tractors	77	77
	Hauling Trucks	71	
	Rubber Tired Dozers	71	
Grading	Graders	79	79
	Excavators	64	
	Compactors	67	
Building Construction	Cranes	67	72
	Tractors	72	
	Welders	65	
Paving	Pavers	70	70
	Paving Equipment	69	
	Rollers	69	
Architectural Coating	Cranes	67	67
	Air Compressors	67	
	Generator Sets	67	

[1] Update of noise database for prediction of noise on construction and open site expressed in hourly average L_{eq} based on estimated usage factor.

10.3 TYPICAL CONSTRUCTION NOISE ANALYSIS

Using the reference construction equipment noise levels and the CadnaA noise prediction model, calculations of the Project construction noise level impacts at the nearest sensitive receiver locations were completed. To assess the worst-case construction noise levels, the Project construction noise analysis relies on the highest noise level impacts when the equipment with the highest reference noise level is operating at the closest point from the edge of primary construction activity (Project site boundary) to each receiver location. As shown on Table 10-2, the construction noise levels are expected to range from 42.8 to 63.0 dBA L_{eq}, and the highest construction levels are expected to range from 54.8 to 63.0 dBA L_{eq} at the nearest receiver locations. Appendix 10.1 includes the detailed CadnaA construction noise model inputs.

TABLE 10-2: TYPICAL CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})						
	Demolition	Site Preparation	Grading	Building Construction	Paving	Architectural Coating	Highest Levels[2]
R1	47.8	53.8	55.8	48.8	46.8	43.8	55.8
R2	55.0	61.0	63.0	56.0	54.0	51.0	63.0
R3	50.7	56.7	58.7	51.7	49.7	46.7	58.7
R4	46.8	52.8	54.8	47.8	45.8	42.8	54.8

[1] Construction noise source and receiver locations are shown on Exhibit 10-A.
[2] Construction noise level calculations based on distance from the project site boundaries (construction activity area) to nearby receiver locations. CadnaA construction noise model inputs are included in Appendix 10.1.

10.4 TYPICAL CONSTRUCTION NOISE LEVEL COMPLIANCE

To evaluate whether the Project will generate potentially significant short-term noise levels at nearest receiver locations, a construction-related daytime noise level threshold of 80 dBA L_{eq} is used as a reasonable threshold to assess the daytime construction noise level impacts. The construction noise analysis shows that the nearest receiver locations will satisfy the reasonable daytime 80 dBA L_{eq} significance threshold during Project construction activities as shown on Table 10-3. Therefore, the noise impacts due to Project construction noise is considered *less than significant* at all receiver locations.

TABLE 10-3: TYPICAL CONSTRUCTION NOISE LEVEL COMPLIANCE

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})		
	Highest Construction Noise Levels[2]	Threshold[3]	Threshold Exceeded?[4]
R1	55.8	80	No
R2	63.0	80	No
R3	58.7	80	No
R4	54.8	80	No

[1] Noise receiver locations are shown on Exhibit 10-A.
[2] Highest construction noise level operating at the Project site boundary to nearby receiver locations (Table 10-2).
[3] Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual.
[4] Do the estimated Project construction noise levels exceed the construction noise level threshold?

10.5 TYPICAL CONSTRUCTION VIBRATION IMPACTS

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods used, distance to the affected structures and soil type. It is expected that ground-borne vibration from Project construction activities would cause only intermittent, localized intrusion. Ground vibration levels associated with various types of construction equipment are summarized on Table 10-4. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the potential Project construction vibration levels using the following vibration assessment methods defined by the FTA. To describe the human response (annoyance) associated with vibration impacts the FTA provides the following equation: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$

TABLE 10-4: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

Equipment	PPV (in/sec) at 25 feet
Small bulldozer	0.003
Jackhammer	0.035
Loaded Trucks	0.076
Large bulldozer	0.089

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

Table 10-5 presents the expected typical construction equipment vibration levels at the nearest receiver locations. At distances ranging from 509 feet to 1,893 feet from typical Project construction activities (at the Project site boundary), construction vibration levels are estimated to range from 0.000 to 0.001 in/sec RMS at the nearest receiver locations. The Project construction is not expected to generate vibration levels exceeding the City of Lake Elsinore maximum acceptable vibration standard of 0.01 in/sec (RMS). Further, impacts at the site of the closest sensitive receiver are unlikely to be sustained during the entire construction period, but will occur rather only during the times that heavy construction equipment is operating proximate to the Project site perimeter.

Moreover, construction at the Project site will be restricted to daytime hours consistent with City requirements thereby eliminating potential vibration impact during the sensitive nighttime hours. On this basis the potential for the Project to result in exposure of persons to, or generation of, excessive ground-borne vibration is determined to be *less than significant*.

TABLE 10-5: TYPICAL CONSTRUCTION EQUIPMENT VIBRATION LEVELS

Receiver Location[1]	Land Use	Distance to Property Line (In Feet)	Receiver PPV Levels (in/sec)[2]					RMS Velocity Levels[3] (in/sec)	Threshold RMS (in/sec)[4]	Potential Significant Impact?[5]
			Small Bulldozer	Jack-hammer	Loaded Trucks	Large Bulldozer	Peak Vibration			
R1	School	1,570'	0.0000	0.0001	0.0002	0.0002	0.0002	0.0001	0.01	No
R2	Residential	509'	0.0000	0.0004	0.0008	0.0010	0.0010	0.0007	0.01	No
R3	Cemetery	939'	0.0000	0.0002	0.0003	0.0004	0.0004	0.0003	0.01	No
R4	Residential	1,893'	0.0000	0.0001	0.0001	0.0001	0.0001	0.0001	0.01	No

[1] Typical construction noise source and receiver locations are shown on Exhibit 10-A.
[2] Based on the Vibration Source Levels of Construction Equipment included on Table 10-4.
[3] Vibration levels in PPV are converted to RMS velocity using a 0.71 conversion factor identified in the Caltrans Transportation and Construction Vibration Guidance Manual, September 2020.
[4] City of Lake Elsinore Municipal Code, Section 17.176.080(G).
[5] Does the peak vibration exceed the maximum acceptable vibration threshold?

11 REFERENCES

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8. **Office of Planning and Research.** *State of California General Plan Guidelines.* October 2017.
9. **City of Lake Elsinore.** *City of Lake Elsinore General Plan Section 3.0: Public Safety & Welfare.* December 2011.
10. —. *Municipal Code, Chapter 17.176 Noise Control.*
11. **California Court of Appeal.** *Gray v. County of Madera, F053661.* 167 Cal.App.4th 1099; - Cal.Rptr.3d, October 2008.
12. **Federal Interagency Committee on Noise.** *Federal Agency Review of Selected Airport Noise Analysis Issues.* August 1992.
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16. **California Department of Transportation Environmental Program, Office of Environmental Engineering.** *Use of California Vehicle Noise Reference Energy Mean Emission Levels (Calveno REMELs) in FHWA Highway Traffic Noise Prediction.* September 1995. TAN 95-03.
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18. **Urban Crossroads, Inc.** *Saddleback/Elsinore Business Park Traffic Analysis.* December 2020.
19. **Department of Environment, Food and Rural Affiars (Defra).** *Update of Noise Database for Prediction of Noise on Construction and Open Sites.* 2004.
20. **FHWA.** *Roadway Construction Noise Model.* January 2006.

12 CERTIFICATION

The contents of this noise study report represent an accurate depiction of the noise environment and impacts associated with the proposed Saddleback/Elsinore Business Park Project. The information contained in this noise study report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (949) 584-3148.

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EDUCATION

Master of Science in Civil and Environmental Engineering
California Polytechnic State University, San Luis Obispo • December, 1993

Bachelor of Science in City and Regional Planning
California Polytechnic State University, San Luis Obispo • June, 1992

PROFESSIONAL REGISTRATIONS

PE – Registered Professional Traffic Engineer – TR 2537 • January, 2009
AICP – American Institute of Certified Planners – 013011 • June, 1997–January 1, 2012
PTP – Professional Transportation Planner • May, 2007 – May, 2013
INCE – Institute of Noise Control Engineering • March, 2004

PROFESSIONAL AFFILIATIONS

ASA – Acoustical Society of America
ITE – Institute of Transportation Engineers

PROFESSIONAL CERTIFICATIONS

Certified Acoustical Consultant – County of Orange • February, 2011
FHWA-NHI-142051 Highway Traffic Noise Certificate of Training • February, 2013

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APPENDIX 3.1:

CITY OF LAKE ELSINORE MUNICIPAL CODE

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Chapter 17.176

NOISE CONTROL

Sections:

17.176.010 Purpose.

In order to control unnecessary, excessive and annoying noise and vibration in the City, it is hereby declared to be the policy of the City to prohibit such noise and vibration generated from or by all sources as specified in this chapter. It shall be the policy of the City to maintain quiet in those areas which exhibit low noise levels and to implement programs aimed at reducing noise in those areas within the City where noise levels are above acceptable values.

It is determined that certain noise levels and vibrations are detrimental to the public health, welfare and safety, and are contrary to public interest. Therefore, the City Council does ordain and declare that creating, maintaining, causing or allowing to be created, caused or maintained, any noise or vibration in a manner prohibited by or not in conformity with the provisions of this chapter, is a public nuisance and shall be punishable as such. [Ord. 772 § 17.78.010, 1986. Code 1987 § 17.78.010].

17.176.020 Definitions.

All terminology used in this chapter, not defined below, shall be in conformance with applicable publications of the. American National Standards Institute (ANSI) or its successor body.

The following words, phrases and terms as used in this chapter shall have the meaning as indicated below:

"A-weighted sound level" means the sound level in decibels as measured on a sound level meter using the A-weighting network. The level so read is designated dB(A) or dBA.

"Agricultural property" means a parcel of real property of not less than 10 contiguous acres in size, which is undeveloped for any use other than agricultural purposes.

"Ambient noise level" means the composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal of existing level of environmental noise at a given location.

"Commercial area" means property which is zoned for commercial purposes, including, but not limited to, retail and wholesale businesses, personal services, and professional offices.

"Construction" means any site preparation, assembly, erection, substantial repair, alteration, or similar action, for or of public or private rights-of-way, structures, utilities or similar property.

"Cumulative period" means an additive period of time composed of individual time segments which may be continuous or interrupted.

"Decibel" means a unit for measuring the amplitude of a sound, equal to 20 times the logarithm to the ratio of the sound measured to the reference pressure, which is 20 micropascals.

“Demolition” means any dismantling, intentional destruction or removal of structures, utilities, public or private right-of-way surfaces, or similar property.

“Emergency work” means any work performed for the purpose of preventing or alleviating the physical trauma or property damage threatened or caused by an emergency.

“Fixed noise source” means a stationary device which creates sounds while fixed or motionless, including, but not limited to, residential, agricultural, industrial and commercial machinery and equipment, pumps, fans, compressors, air conditioners, and refrigeration.

“Gross vehicle weight rating (GVWR)” means the value specified by the manufacturer as the recommended maximum loaded weight of a single motor vehicle. In cases where trailers and tractors are separable, the gross combination weight rating, which is the value specified by the manufacturer as the recommended maximum loaded weight of the combination vehicle, shall be used.

“Impulsive sound” means sound of short duration, usually less than one second, with an abrupt onset and rapid decay. Examples of sources of impulsive sound include explosions, drop forge impacts, and the discharge of firearms.

“Industrial area” means property which is zoned for manufacturing and related uses.

“Intrusive noise” means that noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency and time of occurrence, and tonal or informational content as well as the prevailing ambient noise level.

“Licensed” means the possession of a formal license or a permit issued by the appropriate jurisdictional authority; or, where no permits or licenses are issued, the sanctioning of the activity by the jurisdiction as noted in public record.

“Mobile noise source” means any noise source other than a fixed source.

“Motor vehicle” shall include any and all self-propelled vehicles as defined in the California Motor Vehicle Code, including all on-highway type motor vehicles subject to registration under said code, and all off-highway type motor vehicles subject to identification under said code.

“Motorboat” means any vessel propelled by machinery, whether or not such machinery is the principal source of propulsion but shall not include a vessel which has a valid marine document issued by the Bureau of Customs of the United States government or any Federal agency successor thereto (Section 651(d), Harbors and Navigation Code).

“Muffler or sound dissipative device” means a device consisting of a series of chambers or baffle plates, or other mechanical design, for the purpose of receiving exhaust gas from an internal combustion engine, and effective in reducing noise.

“Noise Control Officer (NCO)” means a person or persons designated by the Community Development Director as responsible for enforcement of this chapter.

“Noise disturbance” means any sound which, as judged by the Noise Control Officer, (1) endangers or injures the safety or health of human beings or animals, or (2) annoys or disturbs reasonable persons of normal sensitivities, or (3) endangers or injures personal or real property, or (4) violates the factors set forth in LEMC 17.176.040. Compliance with the quantitative standards as listed herein shall constitute elimination of a noise disturbance.

“Noise sensitive zone” means any area designated pursuant to LEMC 17.176.070 for the purpose of ensuring exceptional quiet.

“Noise zone” means any defined areas or regions of a generally consistent land use wherein the ambient noise levels are within a range of five dB.

"Person" means any individual, association, partnership, or corporation, and includes any officer, employee, department, agency or instrumentality of a State or any political subdivision of a State.

"Powered model vehicle" means any self-propelled, airborne, waterborne, or land-borne plane, vessel, or vehicle, which is not designed to carry persons, including, but not limited to, any model airplane, boat, car, or rocket.

"Public right-of-way" means any street, avenue, boulevard, highway, sidewalk or alley or similar place which is owned or controlled by a governmental entity.

"Public space" means any real property or structures thereon which are owned or controlled by a governmental entity.

"Pure tone" means any sound which can be judged as audible as a single pitch or a set of single pitches by the Noise Control Officer. For the purposes of this chapter, a pure tone shall exist if the one-third octave band sound pressure level in the band with the tone exceeds the arithmetic average of the sound pressure levels of the two contiguous one-third octave bands by five dB for center frequencies of 500 Hz and above and by eight dB for center frequencies between 160 and 400 Hz and by 15 dB for center frequencies less than or equal to 125 Hz.

"Real property boundary" means an imaginary line along the ground surface, and its vertical extension, which separates the real property owned by one person from that owned by another person, but not including intrabuilding real property divisions.

"Residential area" means property which is zoned for residential uses.

"Sound amplifying equipment" means any device for the amplification of the human voice, music, or any other sound, excluding standard automobile radios when used and heard only by the occupants of the vehicle in which the radio is installed, and, as used in this chapter, warning devices on authorized emergency vehicles or horns or other warning devices on any vehicle used only for traffic safety purposes.

"Sound level meter" means an instrument, including a microphone, an amplifier, an output meter, and frequency weighting networks for the measurement of sound levels, which meets or exceeds the requirements pertinent for type S2A meters in American National Standards Institute specifications for sound level meters, S1.4-1971, or the most recent revision thereof.

"Sound truck" means any motor vehicle, or any other vehicle, regardless of motive power, whether in motion or stationary, having mounted thereon, or attached thereto, any sound amplifying equipment.

"Vibration perception threshold" means the minimum ground- or structure-borne vibrational motion necessary to cause a normal person to be aware of the vibration by such direct means as, but not limited to, sensation by touch or visual observation of moving objects. The perception threshold shall be presumed to be a motion velocity of 0.01 inches per second over the range of one to 100 Hz.

"Weekday" means any day, Monday through Friday, which is not a legal holiday. [Ord. 772 § 17.78.020, 1986. Code 1987 § 17.78.020].

17.176.030 Authority and duties of the Noise Control Office(r) (NCO).

A. Lead Agency. The noise control program established by this chapter shall be administered by the Community Development Director.

B. Powers. In order to implement and enforce this chapter and for the general purpose of noise abatement and control, the NCO shall have, in addition to any other authority vested in it, the power to:

1. Conduct, or cause to be conducted, studies, research, and monitoring related to noise, including joint cooperative investigation with public or private agencies, and the application for, and acceptance of, grants.

2. On all public and private projects which are likely to cause noise in violation of this chapter and which are subject to mandatory review or approval by other departments.

a. Review for compliance with the intent and provisions of this chapter.

b. Require sound analyses which identify existing and projected noise sources and associated noise levels.

c. Require usage of adequate measures to avoid violation of any provision of this chapter.

3. Upon presentation of proper credentials, enter and/or inspect any private property, place, report, or records at any time when granted permission by the owner or by some other person with apparent authority to act for the owner. When permission is refused or cannot be obtained, a search warrant may be obtained from a court of competent jurisdiction upon showing of probable cause to believe that a violation of this chapter may exist. Such inspection may include administration of any necessary tests.

4. Prepare recommendations, to be approved by the City Council, for the designation of noise sensitive zones which contain noise sensitive activities.

5. Prepare recommendations, based upon noise survey data and analytical studies, to be approved by the City Council, for the designation of zones of similar ambient environmental noise within regions of generally consistent land use. These zones shall be identified in terms of their day and nighttime ambient noise levels and their land use classifications as given in LEMC 17.176.060, Table 1. [Ord. 772 § 17.78.030, 1986. Code 1987 § 17.78.030].

17.176.040 General noise regulations.

Notwithstanding any other provision of this chapter, and in addition thereto, it shall be unlawful for any person to willfully or negligently make or continue, or cause to be made or continued, any loud, unnecessary, or unusual noise which disturbs the peace and quiet of any neighborhood or which causes any discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area.

The factors which shall be considered in determining whether a violation of the provisions of this section exists shall include, but not be 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 sleeping facilities.

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

E. The number of persons affected by the noise source.

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

G. The duration of the noise and its tonal, informational or musical content.

H. Whether the noise is continuous, recurrent, or intermittent.

I. Whether the noise is produced by a commercial or noncommercial activity. [Ord. 772 § 17.78.040, 1986. Code 1987 § 17.78.040].

17.176.050 Noise measurement procedure.

A. Upon receipt of a complaint from a citizen, the Noise Control Office(r) or his agent, equipped with sound level measurement equipment satisfying the requirements specified in LEMC 17.176.020, shall investigate the complaint. The investigation shall consist of a measurement and the gathering of data to adequately define the noise problem and shall include the following:

1. Nonacoustic Data.

a. Type of noise source.

b. Location of noise source relative to complainant's property.

c. Time period during which noise source is considered by complainant to be intrusive.

d. Total duration of noise produced by noise source.

e. Date and time of noise measurement survey.

B. Noise Measurement Procedure. Utilizing the A-weighting scale of the sound level meter and the "slow" meter response (use "fast" response for impulsive type sounds), the noise level shall be measured at a position or positions at any point on the receiver's property.

In general, the microphone shall be located four to five feet above the ground; 10 feet or more from the nearest reflective surface where possible. However, in those cases where another elevation is deemed appropriate, the latter shall be utilized. If the noise complaint is related to interior noise levels, interior noise measurements shall be made within the affected residential unit. The measurements shall be made at a point at least four feet from the wall, ceiling, or floor nearest the noise source, with windows in the normal seasonal configuration. Calibration of the measurement equipment, utilizing an acoustic calibration, shall be performed immediately prior to recording any noise data. [Ord. 772 § 17.78.050, 1986. Code 1987 § 17.78.050].

17.176.060 Exterior noise limits.

A. Maximum Permissible Sound Levels by Receiving Land Use.

1. The noise standards for the various categories of land use identified by the Noise Control Office(r) as presented in Table 1 shall, unless otherwise specifically indicated, apply to all such property within a designated zone.

2. No person shall operate, or cause to be operated, any source of sound at any location within the incorporated 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, either incorporated or unincorporated, to exceed:

a. The noise standard for that land use as specified in Table 1 for a cumulative period of more than 30 minutes in any hour; or

b. The noise standard plus five dB for a cumulative period of more than 15 minutes in any hour; or

c. The noise standard plus 10 dB for a cumulative period of more than five minutes in any hour; or

d. The noise standard plus 15 dB for a cumulative period of more than one minute in any hour; or

e. The noise standard plus 20 dB or the maximum measured ambient level, for any period of time.

3. If the measured ambient level differs from that permissible within any of the fast four noise limit categories above, the allowable noise exposure standard shall be adjusted in five 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

4. If the measurement location is on a boundary between two different zones, the noise level limit applicable to the lower noise zone plus six dB shall apply.

5. If possible, the ambient noise shall be measured at the same location along the property line utilized in subsection (A)(2) of this section with the alleged offending noise source inoperative. If, for any reason, the alleged offending noise source cannot be shut down, the ambient noise must be estimated by performing a measurement in the same general area of the source but at a sufficient distance such that the noise from the source is at least 10 dB below the ambient in order that only the ambient level be measured. If the difference

between the ambient and the noise source is five to 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.

B. Correction for Character of Sound. In the event the alleged offensive noise, as judged by the Noise Control Officer, contains a steady, audible tone such as a whine, screech, or hum, or is a repetitive noise such as hammering or riveting, or contains music or speech conveying informational content, the standard limits set forth in Table 1 shall be reduced by five dB.

TABLE 1
EXTERIOR NOISE LIMITS
(Levels Not to Be Exceeded More Than 30 Minutes in Any Hour)

Receiving Land Use Category	Time Period	Noise Level (dBA)
Single-Family Residential	10:00 p.m. – 7:00 a.m. 7:00 a.m. – 10:00 p.m.	40 50
Multiple Dwelling Residential	10:00 p.m. – 7:00 a.m. 7:00 a.m. – 10:00 p.m.	45 50
Public Space		
Limited Commercial and Office	10:00 p.m. – 7:00 a.m. 7:00 a.m. – 10:00 p.m.	55 60
General Commercial	10:00 p.m. – 7:00 a.m. 7:00 a.m. – 10:00 p.m.	60 65
Light Industrial	Anytime	70
Heavy Industrial	Anytime	75

[Ord. 772 § 17.78.060, 1986. Code 1987 § 17.78.060].

17.176.070 Interior noise standards.

A. Maximum Permissible Dwelling Interior Sound Levels.

1. The interior noise standards for multifamily residential dwellings as presented in Table 2 shall apply, unless otherwise specifically indicated, within all such dwellings with windows in their normal seasonal configuration.

TABLE 2

Noise Zone	Type of Land Use	Time Internal	Allowable Interior Noise Level (dBA)
All	Multifamily Residential	10:00 p.m. – 7:00 a.m. 7:00 a.m. – 10:00 p.m.	35 45

2. No person shall operate or cause to be operated within a dwelling unit, any source of sound or allow the creation of any noise which causes the noise level when measured inside a neighboring receiving dwelling unit to exceed:

a. The noise standard as specified in Table 2 for a cumulative period of more than five minutes in any hour; or

b. The noise standard plus five dB for a cumulative period of more than one minute in any hour; or

c. The noise standard plus 10 dB or the maximum measured ambient, for any period of time.

3. If the measured ambient level differs from that permissible within any of the noise limit categories above, the allowable noise exposure standard shall be adjusted in five dB increments in each category as appropriate to reflect said ambient noise level.

B. Correction for Character of Sound. In the event the alleged offensive noise, as judged by the Noise Control Officer, contains a steady, audible tone such as a whine, screech, or hum, or is a repetitive noise such as hammering or riveting, or contains music or speech conveying informational content, the standard limits set forth in Table 2 shall be reduced by five dB. [Ord. 772 § 17.78.070, 1986. Code 1987 § 17.78.070].

17.176.080 Prohibited acts.

No person shall unnecessarily make, continue, or cause to be made or continued, any noise disturbance. The following acts, and the causing or permitting thereof, are declared to be in violation of this chapter:

A. Operating, playing or permitting the operation or playing of any radio, television set, phonograph, drum, musical instrument, or similar device which produces or reproduces sound:

1. Between the hours of 10:00 p.m. and 7:00 a.m. in such a manner as to create a noise disturbance across a residential or commercial real property line or at any time to violate the provisions of LEMC 17.176.060(A), except for which a variance has been issued by the City.

2. In such a manner as to exceed the levels set forth for public space in Table 1, measured at a distance of at least 50 feet (15 meters) from such device operating on a public right-of-way or public space.

B. Using or operating for any purpose any loudspeaker, loudspeaker system, or similar device between the hours of 10:00 p.m. and 7:00 a.m., such that the sound therefrom creates a noise disturbance across a residential real property line, or at any time violates the provisions of LEMC 17.176.060(A), except for any noncommercial public speaking, public assembly or other activity for which a variance has been issued by the City.

C. Offering for sale, selling anything, or advertising by shouting or outcry within any residential or commercial area or noise sensitive zone of the City except by variance issued by the City. The provisions of this section shall not be construed to prohibit the selling by outcry of merchandise, food, and beverages at licensed sporting events, parades, fairs, circuses, or other similar licensed public entertainment events.

D. Owning, possessing or harboring any animal or bird which frequently or for long duration, howls, barks, meows, squawks, or makes other sounds which create a noise disturbance across a residential or commercial real property line or within a noise sensitive zone. This provision shall not apply to public zoos.

E. Loading, unloading, opening, closing or other handling of boxes, crates, containers, building materials, garbage cans, or similar objects between the hours of 10:00 p.m. and 7:00 a.m. in such a manner as to cause a noise disturbance across a residential real property line or at any time to violate the provisions of LEMC 17.176.060(A).

F. Construction/Demolition.

1. Operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration, or demolition work between weekday hours of 7:00 p.m. and 7:00 a.m., or at any time on weekends or holidays, such that the sound therefrom creates a noise disturbance across a residential or commercial real property line, except for emergency work of public service utilities or by variance issued by the City.

2. Noise Restrictions at Affected Properties. Where technically and economically feasible, construction activities shall be conducted in such a manner that the maximum noise levels at affected properties will not exceed those listed in the following schedule:

AT RESIDENTIAL PROPERTIES:

Mobile Equipment

Maximum noise levels for nonscheduled, intermittent, short-term operation (less than 10 days) of mobile equipment:

	Type I Areas Single-Family Residential	Type II Areas Multifamily Residential	Type III Areas Semi-Residential/Commercial

Daily, except Sundays and Legal Holidays 7:00 a.m. to 7:00 p.m.	75 dBA	80 dBA	85 dBA
Daily, 7:00 p.m. to 7:00 a.m. and all day Sunday and Legal Holidays	60 dBA	65 dBA	70 dBA

Stationary Equipment

Maximum noise levels for repetitively scheduled and relatively long-term operation (period of 10 days or more) of stationary equipment:

	Type I Areas Single-Family Residential	Type II Areas Multifamily Residential	Type III Areas Semi-Residential/Commercial
Daily, except Sundays and Legal Holidays 7:00 a.m. to 7:00 p.m.	60 dBA	65 dBA	70 dBA
Daily, 7:00 p.m. to 7:00 a.m. and all day Sunday and Legal Holidays	50 dBA	55 dBA	60 dBA

AT BUSINESS PROPERTIES:

Mobile Equipment

Maximum noise levels for nonscheduled, intermittent, short-term operation of mobile equipment:

Daily, including Sundays and Legal Holidays, all hours: maximum of 85 dBA.

Stationary Equipment

Maximum noise levels for repetitively scheduled and relatively long-term operation of stationary equipment:

Daily, including Sundays and Legal Holidays, all hours: maximum of 75 dBA.

3. All mobile or stationary internal combustion engine powered equipment or machinery shall be equipped with suitable exhaust and air intake silencers in proper working order.

G. Operating or permitting the operation of any device that creates a vibration which is above the vibration perception threshold of any individual at or beyond the property boundary of the source if on private property or at 150 feet (46 meters) from the source if on a public space or public right-of-way.

H. Powered Model Vehicles. Operating or permitting the operation of powered model vehicles:

1. Between the hours of 7:00 p.m. and 7:00 a.m. so as to create a noise disturbance across a residential or commercial real property line or at any time to violate the provisions of LEMC 17.176.060(A).

2. In such a manner as to exceed the levels set forth for public space land use in Table 1, measured at a distance not less than 100 feet (30 meters) from any point on the path of a vehicle operating on public space or public right-of-way.

I. Stationary Nonemergency Signaling Devices.

1. Sounding or permitting the sounding of any electronically amplified signal from any stationary bell, chime, siren, whistle, or similar device, intended primarily for nonemergency purposes, from any place, for more than 10 seconds in any hourly period.

2. Houses of religious worship shall be exempt from the operation of this provision.

3. Sound sources covered by this provision and not exempted under subsection (I)(2) of this section shall be exempted by a variance issued by the City.

J. Emergency Signaling Devices.

1. The intentional sounding or permitting the sounding outdoors of any fire, burglar, or civil defense alarm, siren, whistle, or similar stationary emergency signaling device, except for emergency purposes or for testing, as provided in subsection (J)(2) of this section.

2. a. Testing of a stationary emergency signaling system shall not occur before 7:00 a.m. or after 7:00 p.m. Any such testing shall use only the minimum cycle test time. In no case shall such test time exceed 60 seconds.

b. Testing of the complete emergency signaling system, including the functioning of the signaling device and the personnel response to the signaling device, shall not occur more than once in each calendar month. Such testing shall not occur before 7:00 a.m., or after 10:00 p.m. The time limit specified in subsection (J)(2)(a) of this section shall not apply to such complete system testing.

3. Sounding or permitting the sounding of any exterior burglar or fire alarm or any motor vehicle burglar alarm unless such alarm is terminated within 15 minutes of activation.

K. Noise Sensitive Zones.

1. Creating or causing the creation of any sound within any noise sensitive zone, so as to exceed the specified land use noise standards set forth in LEMC 17.176.060(A); provided, that conspicuous signs are displayed indicating the zone; or

2. Creating or causing the creation of any sound within or adjacent to any noise sensitive zone, containing a hospital, nursing home, school, court or other designated area, so as to interfere with the functions of such activity or annoy the occupants in the activity; provided, that conspicuous signs are displayed indicating the presence of the zone.

L. Domestic Power Tools and Machinery.

1. Operating or permitting the operation of any mechanically powered saw, sander, drill, grinder, lawn or garden tool, or similar tool between 10:00 p.m. and 7:00 a.m., so as to create a noise disturbance across a residential or commercial real property line.

2. Any motor, machinery, pump, such as swimming pool equipment, etc., shall be sufficiently enclosed or muffled and maintained so as not to create a noise disturbance in accordance with LEMC 17.176.060.

M. Residential Air-Conditioning or Air-Handling Equipment. Operating or permitting the operation of any air-conditioning or air-handling equipment in such a manner as to exceed any of the following sound levels:

Measurement Location	Units Installed before 1-1-80 dB(A)	Units Installed on or after 1-1-80 dB(A)
Any point on neighboring property line, 5 feet above grade level, no closer than 3 feet from any wall.	60	55
Center of neighboring patio, 5 feet above grade level, no closer than 3 feet from any wall.	55	50
Outside the neighboring living area window nearest the equipment location, not more than 3 feet from the window opening, but at least 3 feet from any other surface.	55	50

N. Places of Public Entertainment. Operating or permitting the operation or playing of any loudspeaker, musical instrument, motorized racing vehicle, or other source of sound in any place of public entertainment that exceeds 95

dBA as read on the slow response of a sound level meter at any point normally occupied by a customer, without a conspicuous and legible sign stating:

WARNING! SOUND LEVELS WITHIN MAY CAUSE HEARING IMPAIRMENT.

[Ord. 772 § 17.78.080, 1986. Code 1987 § 17.78.080].

17.176.090 Motor vehicles operating on public right-of-way.
Motor vehicles noise limits on a public right-of-way are regulated as set forth in the California Motor Vehicle Code, Sections 23130 and 23130.5. Equipment violations which create noise problems are covered under Sections 27150 and 27151. Any peace officer of any jurisdiction in California may enforce these provisions. Therefore, it shall be the policy of the City to enforce these sections of the California Motor Vehicle Code.

A. Refuse Collection Vehicles.

1. No person shall collect refuse with a refuse collection vehicle between the hours of 7:00 p.m. and 7:00 a.m. within or adjacent to a residential area or noise sensitive zone.

2. No person authorized to engage in waste disposal service or garbage collection shall operate any truck-mounted waste or garbage loading and/or compacting equipment or similar device in any manner so as to create any noise exceeding the following levels, measured at a distance of 50 feet from the equipment in an open area:

a. New equipment purchased or leased on or after a date six months from the effective date of the ordinance codified in this chapter: 80 dBA.

b. New equipment purchased or leased on or after 36 months from the effective date of the ordinance codified in this chapter: 75 dBA.

c. Existing equipment, on or after five years from the effective date of the ordinance codified in this chapter: 80 dBA.

B. Motor Vehicle Horns. It is unlawful for any person to sound a vehicular horn except as a warning signal (Motor Vehicle Code, Section 27001).

C. Motorized Recreational Vehicles Operating off Public Right-of-Way. No person shall operate or cause to be operated any motorized recreational vehicle off a public right-of-way in such a manner that the sound levels emitted therefrom violate the provisions of LEMC 17.176.060(A). This section shall apply to all motorized recreational vehicles whether or not duly licensed and registered, including, but not limited to, commercial or noncommercial racing vehicles, motorcycles, go carts, amphibious craft, campers, snowmobiles and dune buggies, but not including motorboats.

D. *Reserved*.

E. Vehicle, Motorboat, or Aircraft Repair and Testing.

1. Repairing, rebuilding, modifying, or testing any motor vehicle, motorboat, or aircraft in such a manner as to create a noise disturbance across a residential real property line, or at any time to violate the provisions of LEMC 17.176.060(A).

2. Nothing in this section shall be construed to prohibit, restrict, penalize, enjoin, or in any manner regulate the movement of aircraft which are in all respects conducted in accordance with, or pursuant to, applicable Federal laws or regulations.

F. Standing Motor Vehicles. No person shall operate or permit the operation of any motor vehicle with a gross vehicle weight rating (GVWR) in excess of 10,000 pounds, or any auxiliary equipment attached to such a vehicle, for a period longer than 15 minutes in any hour while the vehicle is stationary, for reasons other than traffic congestion, on a public right-of-way or public space within 150 feet (46 meters) of a residential area or designated

noise sensitive zone, between the hours of 10:00 p.m. and 7:00 a.m. [Ord. 984, 1994; Ord. 772 § 17.78.090, 1986. Code 1987 § 17.78.090].

17.176.100 Special provisions – Exemptions.
The following activities shall be exempted from the provisions of this chapter:

A. The emission of sound for the purpose of alerting persons to the existence of an emergency.

B. The emission of sound in the performance of emergency work.

C. Warning devices necessary for the protection of public safety, as for example, police, fire and ambulance sirens, and train horns.

D. Regularly scheduled school bands, school athletic and school entertainment events between the hours of 8:45 a.m. and 10:00 p.m., provided a special events permit is also required for band activities on City streets.

E. Regularly scheduled activities conducted on public parks, public playgrounds, and public or private school grounds. However, the use of public address or amplified music systems is not permitted to exceed the exterior noise standard of adjacent property at the property line.

F. All mechanical devices, apparatus or equipment which are utilized for the protection or salvage of agricultural crops during periods of potential or actual frost damage or other adverse weather conditions.

G. Mobile noise sources associated with agricultural pest control through pesticide application; provided, that the application is made in accordance with restricted material permits issued by or regulations enforced by the Agricultural Commissioner.

H. Mobile noise sources associated with agricultural operations, provided such operations take place on Monday through Friday, excepting legal holidays, between the hours of 7:00 a.m. and 6:00 p.m. All other operations shall comply with this chapter.

I. Noise sources associated with the maintenance of real property, provided such operations take place on Monday through Friday, excepting legal holidays, between the hours of 7:00 a.m. and 6:00 p.m., or on holidays and weekends between the hours of 9:00 a.m. and 6:00 p.m. All other operations shall comply with this chapter.

J. Any activity to the extent that regulation thereof has been preempted by State or Federal law. [Ord. 772 § 17.78.100, 1986. Code 1987 § 17.78.100].

17.176.110 Special variances.
A. The NCO is authorized to grant variances for exemption from any provision of this chapter, subject to limitations as to area, noise levels, time limits, and other terms and conditions as the NCO determines are appropriate to protect the public health, safety, and welfare from the noise emanating therefrom. This section shall in no way affect the duty to obtain any permit or license required by law for such activities.

B. Any person seeking a variance pursuant to this section shall file an application with the NCO. The application shall contain information which demonstrates that bringing the source of sound or activity for which the variance is sought into compliance with this chapter would constitute an unreasonable hardship on the applicant, on the community, or on other persons. The application shall be accompanied by a fee. A separate application shall be filed for each noise source; provided, however, that several mobile sources under common ownership, or several fixed sources on a single property may be combined into one application. Notice of an application for a variance shall be published according to City code. Any individual who claims to be adversely affected by allowance of the variance may file a statement with the NCO containing any information to support his claim. If at any time the NCO finds that a sufficient controversy exists regarding an application, a public hearing will be held.

C. In determining whether to grant or deny the application, the NCO shall balance the hardship on the applicant, the community, and other persons of not granting the variance against the adverse impact on the health, safety, and welfare of persons affected, the adverse impact on property affected, and any other adverse impacts of granting the variance. Applicants for variances and persons contesting variances may be required to submit such information as

the NCO may reasonably require. In granting or denying an application, the NCO shall keep on public file a copy of the decision and the reasons for denying or granting the variance.

D. Variances shall be granted by notice to the applicant containing all necessary conditions, including a time limit on the permitted activity. The variance shall not become effective until all conditions are agreed to by the applicant. Noncompliance with any condition of the variance shall terminate the variance and subject the person holding it to those provisions of this chapter for which the variance was granted.

E. A variance will not exceed 365 days from the date on which it was granted. Application for extension of time limits specified in variances or for modification of other substantial conditions shall be treated like applications for initial variances under subsection (B) of this section. [Ord. 772 § 17.78.110, 1986. Code 1987 § 17.78.110].

APPENDIX 5.1:

STUDY AREA PHOTOS

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JN: 13772 Study Area Photos

L1_E
33, 42' 8.450000", 117, 20' 48.600000"

L1_N
33, 42' 8.420000", 117, 20' 48.600000"

L1_S
33, 42' 8.450000", 117, 20' 48.600000"

L1_W
33, 42' 8.430000", 117, 20' 48.600000"

L2_E
33, 41' 59.710000", 117, 20' 45.030000"

L2_N
33, 41' 59.740000", 117, 20' 45.000000"

JN: 13772 Study Area Photos

L2_S
33, 41' 59.700000", 117, 20' 45.000000"

L2_W
33, 41' 59.700000", 117, 20' 45.000000"

L3_E
33, 41' 37.040000", 117, 20' 40.660000"

L3_N
33, 41' 37.010000", 117, 20' 40.600000"

L3_S
33, 41' 37.060000", 117, 20' 40.690000"

L3_W
33, 41' 37.040000", 117, 20' 40.710000"

JN: 13772 Study Area Photos

L4_E
33, 41' 34.950000", 117, 21' 10.070000"

L4_N
33, 41' 34.970000", 117, 21' 10.350000"

L4_S
33, 41' 34.930000", 117, 21' 9.940000"

L4_W
33, 41' 34.900000", 117, 21' 9.850000"

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APPENDIX 5.2:

NOISE LEVEL MEASUREMENT WORKSHEETS

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24-Hour Noise Level Measurement Summary

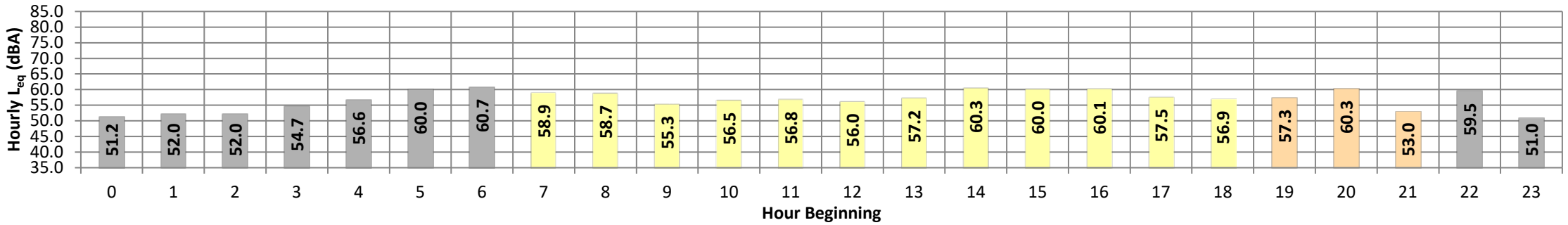
Date: Wednesday, November 18, 2020
Project: SADDLEBACK/ELSINORE BUSINESS PARK

Location: L1 - Located north of the Project site on El Toro Road near Temescal Canyon High School at 28755 El Toro Road.

Meter: Piccolo II

JN: 13772
Analyst: P. Mara

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	51.2	57.9	47.6	57.4	56.8	54.8	53.5	51.6	50.4	48.5	48.1	47.7	51.2	10.0	61.2
	1	52.0	58.7	48.0	58.4	57.6	56.4	54.9	52.2	51.0	48.9	48.6	48.1	52.0	10.0	62.0
	2	52.0	58.7	48.3	58.4	57.9	56.0	54.8	52.1	50.9	49.2	48.8	48.4	52.0	10.0	62.0
	3	54.7	59.7	52.0	59.2	58.9	57.5	56.6	54.9	54.1	52.8	52.5	52.1	54.7	10.0	64.7
	4	56.6	61.7	54.4	61.5	61.0	59.6	58.6	56.8	56.0	54.9	54.7	54.5	56.6	10.0	66.6
	5	60.0	62.8	58.2	62.6	62.3	61.7	61.2	60.3	59.8	58.8	58.6	58.3	60.0	10.0	70.0
	6	60.7	65.9	58.5	65.6	65.0	63.4	62.5	60.9	60.1	59.1	58.9	58.6	60.7	10.0	70.7
Day	7	58.9	66.3	56.3	65.9	65.1	62.8	61.3	58.7	57.7	56.8	56.7	56.4	58.9	0.0	58.9
	8	58.7	70.0	49.6	69.5	68.7	65.8	63.7	56.6	52.9	50.3	50.0	49.7	58.7	0.0	58.7
	9	55.3	66.2	48.3	65.7	64.8	61.8	59.4	53.9	51.4	49.2	48.8	48.4	55.3	0.0	55.3
	10	56.5	67.6	47.2	67.2	66.3	63.5	61.0	55.3	51.2	48.0	47.6	47.3	56.5	0.0	56.5
	11	56.8	67.9	48.1	67.5	66.7	63.8	61.6	55.0	51.9	48.7	48.5	48.2	56.8	0.0	56.8
	12	56.0	66.9	47.6	66.4	65.6	62.8	60.8	54.7	51.2	48.5	48.2	47.8	56.0	0.0	56.0
	13	57.2	67.0	50.7	66.4	65.4	62.8	61.0	57.0	54.6	51.5	51.2	50.8	57.2	0.0	57.2
	14	60.3	72.9	51.6	72.5	71.4	66.5	61.9	57.3	54.5	52.3	52.0	51.7	60.3	0.0	60.3
	15	60.0	71.5	53.3	70.9	69.9	66.7	64.1	59.0	56.3	54.0	53.7	53.4	60.0	0.0	60.0
	16	60.1	70.2	54.1	69.7	68.9	66.1	64.0	59.4	56.8	54.8	54.5	54.2	60.1	0.0	60.1
	17	57.5	66.6	52.3	66.1	65.4	63.1	61.7	57.2	54.7	52.9	52.7	52.4	57.5	0.0	57.5
	18	56.9	68.0	48.9	67.6	66.8	64.0	61.8	54.8	51.5	49.6	49.4	49.0	56.9	0.0	56.9
Evening	19	57.3	66.6	51.8	66.1	65.4	63.4	61.7	56.9	54.1	52.4	52.2	51.9	57.3	5.0	62.3
	20	60.3	72.6	51.2	72.2	71.5	68.8	64.3	54.9	53.2	51.9	51.6	51.3	60.3	5.0	65.3
	21	53.0	61.5	48.9	61.0	60.2	57.9	56.1	52.6	51.4	49.7	49.4	49.0	53.0	5.0	58.0
Night	22	59.5	62.1	58.6	61.8	61.5	60.9	60.6	59.6	59.5	58.8	58.7	58.7	59.5	10.0	69.5
	23	51.0	58.0	47.1	57.6	56.9	55.0	53.9	51.2	49.7	47.9	47.6	47.2	51.0	10.0	61.0

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	55.3	66.2	47.2	65.7	64.8	61.8	59.4	53.9	51.2	48.0	47.6	47.3
	Max	60.3	72.9	56.3	72.5	71.4	66.7	64.1	59.4	57.7	56.8	56.7	56.4
Energy Average		58.2	Average:		68.0	67.1	64.1	61.9	56.6	53.7	51.4	51.1	50.8
Evening	Min	53.0	61.5	48.9	61.0	60.2	57.9	56.1	52.6	51.4	49.7	49.4	49.0
	Max	60.3	72.6	51.8	72.2	71.5	68.8	64.3	56.9	54.1	52.4	52.2	51.9
Energy Average		57.8	Average:		66.4	65.7	63.3	60.7	54.8	52.9	51.3	51.1	50.7
Night	Min	51.0	57.9	47.1	57.4	56.8	54.8	53.5	51.2	49.7	47.9	47.6	47.2
	Max	60.7	65.9	58.6	65.6	65.0	63.4	62.5	60.9	60.1	59.1	58.9	58.7
Energy Average		56.9	Average:		60.3	59.8	58.4	57.4	55.5	54.6	53.2	52.9	52.6

L_{eq} (dBA)		
24-Hour	Daytime	Nighttime
57.7	58.1	56.9

24-Hour CNEL (dBA)
63.8

24-Hour Noise Level Measurement Summary

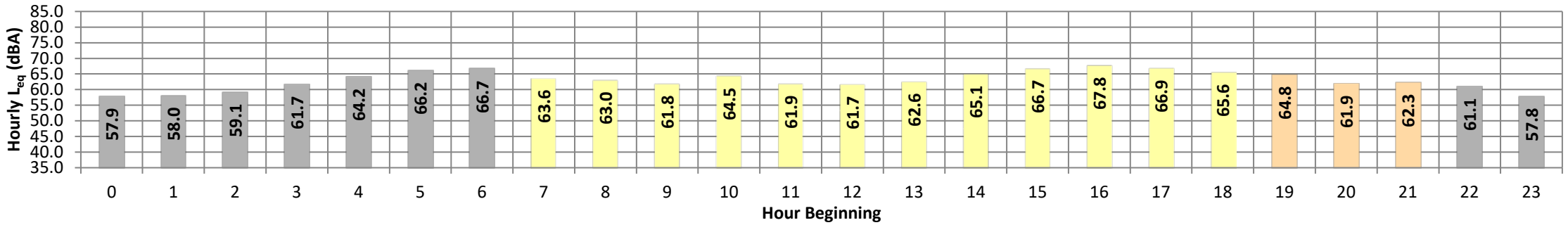
Date: Wednesday, November 18, 2020
Project: SADDLEBACK/ELSINORE BUSINESS PARK

Location: L2 - Located north of the Project site on Dexter Avenue near existing single-famil residential home at 18045 Dexter Avenue.

Meter: Piccolo II

JN: 13772
Analyst: P. Mara

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	57.9	63.8	54.0	63.5	62.9	61.5	60.5	58.3	57.1	55.0	54.6	54.2	57.9	10.0	67.9
	1	58.0	63.1	54.1	62.7	62.2	60.9	60.3	58.7	57.4	55.1	54.7	54.2	58.0	10.0	68.0
	2	59.1	67.2	55.0	66.6	65.7	63.3	61.7	59.1	57.9	55.9	55.5	55.1	59.1	10.0	69.1
	3	61.7	67.5	58.1	67.2	66.7	65.1	64.0	62.1	61.0	58.9	58.6	58.3	61.7	10.0	71.7
	4	64.2	68.9	61.8	68.5	68.0	66.7	66.0	64.6	63.8	62.5	62.2	61.9	64.2	10.0	74.2
	5	66.2	71.7	63.7	71.3	70.7	69.0	68.0	66.5	65.6	64.4	64.1	63.8	66.2	10.0	76.2
	6	66.7	72.5	64.2	72.1	71.5	69.9	68.8	66.8	65.9	64.8	64.6	64.3	66.7	10.0	76.7
Day	7	63.6	72.1	60.2	71.7	70.9	68.3	66.8	63.2	61.7	60.7	60.5	60.3	63.6	0.0	63.6
	8	63.0	74.3	55.6	73.7	72.7	69.9	67.8	61.2	57.9	56.2	55.9	55.7	63.0	0.0	63.0
	9	61.8	72.1	54.9	71.7	70.8	68.4	66.5	60.6	57.7	55.6	55.3	55.1	61.8	0.0	61.8
	10	64.5	75.6	54.0	75.0	74.0	71.4	69.4	63.3	59.0	54.7	54.4	54.1	64.5	0.0	64.5
	11	61.9	72.7	52.7	72.2	71.5	68.9	67.0	60.6	56.2	53.4	53.1	52.8	61.9	0.0	61.9
	12	61.7	72.1	53.0	71.6	70.7	68.3	66.7	60.9	56.7	53.8	53.4	53.1	61.7	0.0	61.7
	13	62.6	72.2	56.0	71.8	71.1	69.0	67.3	61.8	58.9	56.7	56.4	56.1	62.6	0.0	62.6
	14	65.1	73.4	59.6	73.0	72.4	70.4	69.1	65.2	62.6	60.4	60.0	59.7	65.1	0.0	65.1
	15	66.7	75.7	61.1	75.2	74.3	72.0	70.7	66.8	64.3	61.9	61.5	61.2	66.7	0.0	66.7
	16	67.8	78.6	61.6	78.0	76.9	73.3	71.1	67.0	64.7	62.4	62.1	61.7	67.8	0.0	67.8
	17	66.9	74.6	61.5	74.2	73.6	71.9	70.7	67.2	64.9	62.6	62.2	61.7	66.9	0.0	66.9
	18	65.6	77.1	58.7	76.5	75.5	72.2	69.3	63.6	61.4	59.4	59.1	58.8	65.6	0.0	65.6
Evening	19	64.8	73.5	60.3	72.9	72.0	69.7	68.3	64.6	62.8	61.0	60.8	60.4	64.8	5.0	69.8
	20	61.9	71.0	57.7	70.5	69.7	67.0	65.4	61.3	59.7	58.3	58.1	57.8	61.9	5.0	66.9
	21	62.3	69.6	58.1	69.1	68.6	66.5	65.2	62.5	61.1	59.2	58.8	58.3	62.3	5.0	67.3
Night	22	61.1	69.4	56.8	68.5	67.9	65.2	63.6	61.1	59.9	57.8	57.4	56.9	61.1	10.0	71.1
	23	57.8	65.1	54.2	64.6	64.0	61.9	60.5	57.8	56.6	54.9	54.6	54.3	57.8	10.0	67.8

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	61.7	72.1	52.7	71.6	70.7	68.3	66.5	60.6	56.2	53.4	53.1	52.8
	Max	67.8	78.6	61.6	78.0	76.9	73.3	71.1	67.2	64.9	62.6	62.2	61.7
Energy Average		64.8	Average:		73.7	72.9	70.3	68.5	63.4	60.5	58.2	57.8	57.5
Evening	Min	61.9	69.6	57.7	69.1	68.6	66.5	65.2	61.3	59.7	58.3	58.1	57.8
	Max	64.8	73.5	60.3	72.9	72.0	69.7	68.3	64.6	62.8	61.0	60.8	60.4
Energy Average		63.2	Average:		70.8	70.1	67.7	66.3	62.8	61.2	59.5	59.2	58.8
Night	Min	57.8	63.1	54.0	62.7	62.2	60.9	60.3	57.8	56.6	54.9	54.6	54.2
	Max	66.7	72.5	64.2	72.1	71.5	69.9	68.8	66.8	65.9	64.8	64.6	64.3
Energy Average		62.7	Average:		67.2	66.6	64.9	63.7	61.7	60.6	58.8	58.5	58.1

L_{eq} (dBA)		
24-Hour	Daytime	Nighttime
63.9	64.5	62.7

24-Hour CNEL (dBA)
69.7

24-Hour Noise Level Measurement Summary

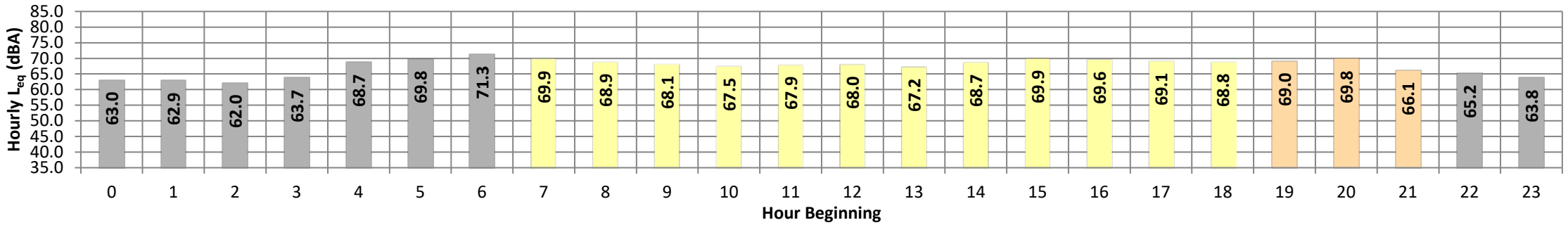
Date: Wednesday, November 18, 2020
Project: SADDLEBACK/ELSINORE BUSINESS PARK

Location: L3 - Located southeast of the Project site on Collier Avenue across from Elsinore Valley Cemetery at 18170 Collier Avenue.

Meter: Piccolo II

JN: 13772
Analyst: P. Mara

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	63.0	72.8	55.2	72.2	71.5	69.0	67.6	62.5	59.1	56.3	55.8	55.3	63.0	10.0	73.0
	1	62.9	73.9	54.0	73.5	72.7	69.9	67.4	61.0	57.9	54.9	54.6	54.1	62.9	10.0	72.9
	2	62.0	71.8	55.6	71.4	70.6	68.0	66.1	61.4	59.0	56.5	56.2	55.8	62.0	10.0	72.0
	3	63.7	73.4	56.9	73.0	72.2	69.8	68.2	63.3	60.2	57.8	57.4	57.0	63.7	10.0	73.7
	4	68.7	78.2	62.3	77.8	77.1	74.3	72.6	68.6	65.7	63.0	62.7	62.3	68.7	10.0	78.7
	5	69.8	77.2	63.9	76.8	76.0	74.2	73.1	70.8	68.3	64.6	64.2	63.9	69.8	10.0	79.8
	6	71.3	78.5	66.0	78.2	77.6	75.6	74.4	72.1	70.0	66.8	66.4	66.0	71.3	10.0	81.3
Day	7	69.9	77.6	61.7	77.2	76.5	74.5	73.2	70.8	68.5	63.4	62.5	61.8	69.9	0.0	69.9
	8	68.9	77.9	57.6	77.5	76.7	73.8	72.1	69.4	67.2	60.7	59.1	57.8	68.9	0.0	68.9
	9	68.1	77.6	57.4	76.6	75.5	72.7	71.3	68.8	66.6	60.3	58.7	57.5	68.1	0.0	68.1
	10	67.5	75.3	57.0	74.9	74.3	72.2	70.9	68.4	66.1	60.2	58.6	57.2	67.5	0.0	67.5
	11	67.9	76.9	57.2	76.6	75.9	73.3	71.3	68.3	66.0	60.0	58.8	57.4	67.9	0.0	67.9
	12	68.0	77.3	57.2	77.0	76.4	73.9	71.6	68.2	65.8	60.4	58.7	57.4	68.0	0.0	68.0
	13	67.2	75.3	57.1	74.9	74.1	71.9	70.6	68.1	65.9	60.5	59.0	57.3	67.2	0.0	67.2
	14	68.7	77.9	60.1	77.4	76.5	73.7	72.1	69.0	66.8	62.2	61.3	60.2	68.7	0.0	68.7
	15	69.9	80.6	61.6	80.0	79.0	75.2	72.9	69.5	67.4	63.5	62.6	61.7	69.9	0.0	69.9
	16	69.6	78.9	62.4	78.5	77.7	74.8	72.9	69.5	67.8	64.1	63.3	62.6	69.6	0.0	69.6
	17	69.1	77.2	62.4	76.6	75.7	73.3	72.1	69.7	68.1	64.1	63.2	62.5	69.1	0.0	69.1
	18	68.8	75.5	61.8	75.2	74.6	72.9	71.9	69.7	67.8	63.7	62.8	61.9	68.8	0.0	68.8
Evening	19	69.0	77.4	61.0	77.0	76.0	73.7	72.7	69.5	67.3	62.8	61.8	61.1	69.0	5.0	74.0
	20	69.8	81.0	59.4	80.6	79.7	76.4	73.5	68.8	66.0	60.9	60.3	59.6	69.8	5.0	74.8
	21	66.1	73.6	58.1	73.3	72.8	71.3	70.3	67.3	63.8	59.1	58.6	58.2	66.1	5.0	71.1
Night	22	65.2	75.2	56.0	74.6	73.7	71.1	69.6	65.5	61.2	57.0	56.5	56.1	65.2	10.0	75.2
	23	63.8	73.1	54.3	72.8	72.2	69.8	68.6	64.1	59.3	55.5	54.9	54.4	63.8	10.0	73.8

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	67.2	75.3	57.0	74.9	74.1	71.9	70.6	68.1	65.8	60.0	58.6	57.2
	Max	69.9	80.6	62.4	80.0	79.0	75.2	73.2	70.8	68.5	64.1	63.3	62.6
Energy Average		68.7	Average:		76.9	76.1	73.5	71.9	69.1	67.0	61.9	60.7	59.6
Evening	Min	66.1	73.6	58.1	73.3	72.8	71.3	70.3	67.3	63.8	59.1	58.6	58.2
	Max	69.8	81.0	61.0	80.6	79.7	76.4	73.5	69.5	67.3	62.8	61.8	61.1
Energy Average		68.6	Average:		77.0	76.1	73.8	72.2	68.5	65.7	61.0	60.2	59.6
Night	Min	62.0	71.8	54.0	71.4	70.6	68.0	66.1	61.0	57.9	54.9	54.6	54.1
	Max	71.3	78.5	66.0	78.2	77.6	75.6	74.4	72.1	70.0	66.8	66.4	66.0
Energy Average		66.9	Average:		74.5	73.7	71.3	69.7	65.5	62.3	59.2	58.7	58.3

L_{eq} (dBA)		
24-Hour	Daytime	Nighttime
68.1	68.7	66.9

24-Hour CNEL (dBA)

74.0

24-Hour Noise Level Measurement Summary

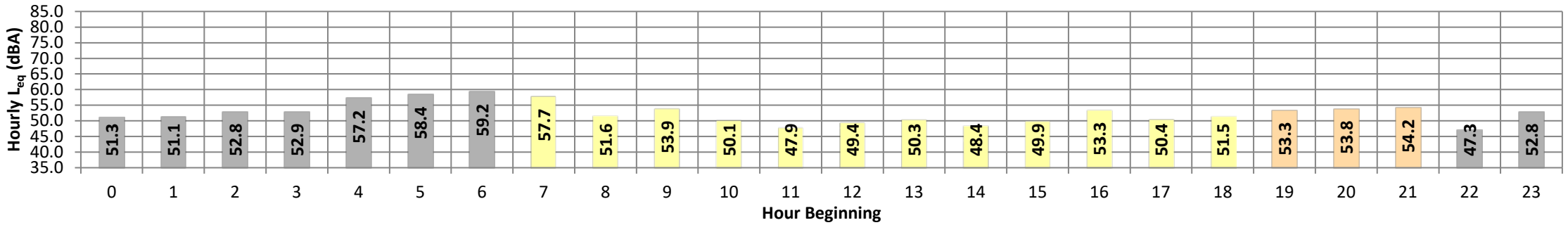
Date: Wednesday, November 18, 2020
Project: SADDLEBACK/ELSINORE BUSINESS PARK

Location: L4 - Located southwest of the Project site on Baker Street near existing single-family residential home at 29370 Turnbull Avenue.

Meter: Piccolo II

JN: 13772
Analyst: P. Mara

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	51.3	56.0	48.0	55.8	55.5	54.5	53.8	52.0	50.6	48.7	48.4	48.1	51.3	10.0	61.3
	1	51.1	56.3	47.5	56.0	55.6	54.3	53.7	52.0	50.3	48.3	48.0	47.6	51.1	10.0	61.1
	2	52.8	59.7	49.0	59.3	58.7	57.4	55.8	52.8	51.7	49.9	49.5	49.1	52.8	10.0	62.8
	3	52.9	56.8	50.5	56.4	56.1	55.3	54.7	53.5	52.4	51.1	50.8	50.6	52.9	10.0	62.9
	4	57.2	61.3	55.0	61.0	60.7	59.8	59.0	57.6	56.7	55.5	55.3	55.1	57.2	10.0	67.2
	5	58.4	61.1	56.4	61.0	60.7	60.1	59.7	58.9	58.1	57.0	56.8	56.5	58.4	10.0	68.4
	6	59.2	61.6	57.7	61.5	61.3	60.8	60.5	59.6	59.0	58.1	57.9	57.8	59.2	10.0	69.2
Day	7	57.7	60.1	56.1	59.9	59.7	59.3	59.0	58.2	57.5	56.5	56.4	56.1	57.7	0.0	57.7
	8	51.6	58.3	47.9	57.9	57.5	56.8	55.3	51.6	50.1	48.5	48.3	48.0	51.6	0.0	51.6
	9	53.9	66.9	42.7	65.6	64.9	62.0	57.0	50.0	46.7	44.1	43.6	42.9	53.9	0.0	53.9
	10	50.1	58.3	42.1	58.0	57.7	56.1	55.2	50.0	46.2	43.0	42.6	42.2	50.1	0.0	50.1
	11	47.9	56.0	42.4	55.7	55.3	53.8	52.3	47.7	45.0	43.0	42.8	42.5	47.9	0.0	47.9
	12	49.4	58.1	39.3	57.7	57.2	55.6	55.0	50.8	44.7	40.3	39.9	39.4	49.4	0.0	49.4
	13	50.3	59.2	40.6	58.6	57.9	56.3	55.0	51.2	46.9	42.3	41.5	40.8	50.3	0.0	50.3
	14	48.4	60.0	39.2	59.6	58.9	56.6	54.0	43.8	41.7	39.9	39.6	39.3	48.4	0.0	48.4
	15	49.9	60.1	41.3	59.6	59.1	57.8	55.6	48.4	44.3	42.1	41.8	41.4	49.9	0.0	49.9
	16	53.3	66.5	44.1	65.8	64.4	61.4	57.5	48.6	46.5	44.8	44.5	44.2	53.3	0.0	53.3
	17	50.4	59.6	46.6	59.2	58.5	55.9	53.8	49.4	48.4	47.2	46.9	46.7	50.4	0.0	50.4
	18	51.5	57.1	49.0	56.6	56.0	54.3	53.3	51.8	50.8	49.6	49.4	49.1	51.5	0.0	51.5
Evening	19	53.3	60.5	50.0	60.1	59.5	58.1	56.5	53.0	51.8	50.6	50.4	50.1	53.3	5.0	58.3
	20	53.8	60.1	50.0	59.8	59.5	58.4	57.0	53.9	52.3	50.6	50.3	50.1	53.8	5.0	58.8
	21	54.2	65.1	47.1	64.8	64.1	61.9	59.0	50.9	49.2	47.8	47.5	47.2	54.2	5.0	59.2
Night	22	47.3	52.8	43.9	52.1	51.7	50.3	49.4	47.9	46.7	44.7	44.4	44.1	47.3	10.0	57.3
	23	52.8	58.5	48.7	58.3	58.1	57.4	56.5	53.0	51.4	49.6	49.2	48.8	52.8	10.0	62.8

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	47.9	56.0	39.2	55.7	55.3	53.8	52.3	43.8	41.7	39.9	39.6	39.3
	Max	57.7	66.9	56.1	65.8	64.9	62.0	59.0	58.2	57.5	56.5	56.4	56.1
Energy Average		52.2	Average:		59.5	58.9	57.2	55.2	50.1	47.4	45.1	44.8	44.4
Evening	Min	53.3	60.1	47.1	59.8	59.5	58.1	56.5	50.9	49.2	47.8	47.5	47.2
	Max	54.2	65.1	50.0	64.8	64.1	61.9	59.0	53.9	52.3	50.6	50.4	50.1
Energy Average		53.8	Average:		61.5	61.0	59.5	57.5	52.6	51.1	49.7	49.4	49.1
Night	Min	47.3	52.8	43.9	52.1	51.7	50.3	49.4	47.9	46.7	44.7	44.4	44.1
	Max	59.2	61.6	57.7	61.5	61.3	60.8	60.5	59.6	59.0	58.1	57.9	57.8
Energy Average		55.1	Average:		57.9	57.6	56.7	55.9	54.1	53.0	51.4	51.1	50.8

L_{eq} (dBA)		
24-Hour	Daytime	Nighttime
53.7	52.5	55.1

24-Hour CNEL (dBA)
61.5

APPENDIX 7.1:

OFF-SITE TRAFFIC NOISE CONTOURS

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Riverside Dr.
Road Segment: s/o El Toro Rd.
Project Name: Saddleback/Elsinore Bussi
Job Number: 13772

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	480 vehicles
Peak Hour Percentage:	7.29%
Peak Hour Volume:	35 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	98.92%
Medium Trucks:	84.8%	4.9%	10.3%	0.76%
Heavy Trucks:	86.5%	2.7%	10.8%	0.32%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	48.260
Medium Trucks:	48.076
Heavy Trucks:	48.094

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-15.94	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-37.06	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-40.86	0.15	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.5	49.0	47.2	41.2	49.8	50.4
Medium Trucks:	39.6	39.5	33.1	31.6	40.0	40.3
Heavy Trucks:	41.1	41.0	32.0	33.2	41.6	41.7
Vehicle Noise:	50.5	50.0	47.5	42.2	50.8	51.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	7	15	31
CNEL:	3	7	16	34

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: El Toro Rd.
Road Segment: w/o Riverside Dr.
Project Name: Saddleback/Elsinore Bussi
Job Number: 13772

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	33 vehicles
Peak Hour Percentage:	7.29%
Peak Hour Volume:	2 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	98.92%
Medium Trucks:	84.8%	4.9%	10.3%	0.76%
Heavy Trucks:	86.5%	2.7%	10.8%	0.32%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	32.202
Medium Trucks:	31.927
Heavy Trucks:	31.953

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-27.55	2.76	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-48.68	2.82	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-52.48	2.81	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	40.5	40.0	38.2	32.2	40.8	41.4
Medium Trucks:	30.7	30.5	24.2	22.6	31.1	31.3
Heavy Trucks:	32.1	32.1	23.0	24.3	32.6	32.8
Vehicle Noise:	41.5	41.1	38.5	33.2	41.8	42.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	0	1	2	4
CNEL:	0	1	2	5

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Riverside Dr.
Road Segment: s/o Collier Av.
Project Name: Saddleback/Elsinore Bussi
Job Number: 13772

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,069 vehicles
Peak Hour Percentage:	7.29%
Peak Hour Volume:	1,900 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	98.92%
Medium Trucks:	84.8%	4.9%	10.3%	0.76%
Heavy Trucks:	86.5%	2.7%	10.8%	0.32%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	48.260
Medium Trucks:	48.076
Heavy Trucks:	48.094

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	1.42	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-19.71	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-23.51	0.15	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.9	66.3	64.6	58.5	67.1	67.7
Medium Trucks:	57.0	56.8	50.5	48.9	57.4	57.6
Heavy Trucks:	58.4	58.4	49.3	50.6	59.0	59.1
Vehicle Noise:	67.8	67.4	64.9	59.6	68.1	68.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	45	97	209	450
CNEL:	49	105	226	487

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Collier Av.
Road Segment: w/o Dwy. 1
Project Name: Saddleback/Elsinore Bussi
Job Number: 13772

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,709 vehicles
Peak Hour Percentage:	7.29%
Peak Hour Volume:	635 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	53 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	98.92%
Medium Trucks:	84.8%	4.9%	10.3%	0.76%
Heavy Trucks:	86.5%	2.7%	10.8%	0.32%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	42.694
Medium Trucks:	42.486
Heavy Trucks:	42.506

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-4.32	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-25.44	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-29.24	0.95	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.6	65.1	63.3	57.3	65.9	66.5
Medium Trucks:	55.3	55.2	48.8	47.3	55.7	56.0
Heavy Trucks:	55.9	55.8	46.8	48.1	56.4	56.5
Vehicle Noise:	66.4	66.0	63.6	58.1	66.7	67.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	65	140	302
CNEL:	33	71	152	328

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Collier Av.
Road Segment: w/o Riverside Dr.
Project Name: Saddleback/Elsinore Bussi
Job Number: 13772

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,709 vehicles
Peak Hour Percentage:	7.29%
Peak Hour Volume:	635 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	53 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	98.92%
Medium Trucks:	84.8%	4.9%	10.3%	0.76%
Heavy Trucks:	86.5%	2.7%	10.8%	0.32%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	42.694
Medium Trucks:	42.486
Heavy Trucks:	42.506

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-4.32	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-25.44	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-29.24	0.95	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.6	65.1	63.3	57.3	65.9	66.5
Medium Trucks:	55.3	55.2	48.8	47.3	55.7	56.0
Heavy Trucks:	55.9	55.8	46.8	48.1	56.4	56.5
Vehicle Noise:	66.4	66.0	63.6	58.1	66.7	67.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	65	140	302
CNEL:	33	71	152	328

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Riverside Dr.
Road Segment: s/o Collier Av.
Project Name: Saddleback/Elsinore Bussi
Job Number: 13772

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,133 vehicles
Peak Hour Percentage:	7.29%
Peak Hour Volume:	1,905 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	98.92%
Medium Trucks:	84.8%	4.9%	10.3%	0.76%
Heavy Trucks:	86.5%	2.7%	10.8%	0.32%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	48.260
Medium Trucks:	48.076
Heavy Trucks:	48.094

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	1.43	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-19.71	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-23.51	0.15	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.9	66.3	64.6	58.5	67.1	67.7
Medium Trucks:	57.0	56.8	50.5	48.9	57.4	57.6
Heavy Trucks:	58.4	58.4	49.3	50.6	59.0	59.1
Vehicle Noise:	67.8	67.4	64.9	59.6	68.1	68.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	45	97	209	451
CNEL:	49	105	227	488

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Riverside Dr.
Road Segment: s/o El Toro Rd.
Project Name: Saddleback/Elsinore Bussi
Job Number: 13772

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	544 vehicles
Peak Hour Percentage:	7.29%
Peak Hour Volume:	40 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	99.05%
Medium Trucks:	84.8%	4.9%	10.3%	0.67%
Heavy Trucks:	86.5%	2.7%	10.8%	0.28%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	48.260
Medium Trucks:	48.076
Heavy Trucks:	48.094

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-15.39	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-37.06	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-40.86	0.15	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	50.1	49.5	47.8	41.7	50.3	50.9
Medium Trucks:	39.6	39.5	33.1	31.6	40.0	40.3
Heavy Trucks:	41.1	41.0	32.0	33.2	41.6	41.7
Vehicle Noise:	50.9	50.5	48.0	42.6	51.2	51.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	7	16	34
CNEL:	4	8	17	36

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: El Toro Rd.
Road Segment: w/o Riverside Dr.
Project Name: Saddleback/Elsinore Bussi
Job Number: 13772

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	97 vehicles
Peak Hour Percentage:	7.29%
Peak Hour Volume:	7 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	99.63%
Medium Trucks:	84.8%	4.9%	10.3%	0.26%
Heavy Trucks:	86.5%	2.7%	10.8%	0.11%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	32.202
Medium Trucks:	31.927
Heavy Trucks:	31.953

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-22.85	2.76	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-48.68	2.82	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-52.48	2.81	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	45.2	44.7	42.9	36.9	45.5	46.1
Medium Trucks:	30.7	30.5	24.2	22.6	31.1	31.3
Heavy Trucks:	32.1	32.1	23.0	24.3	32.6	32.8
Vehicle Noise:	45.6	45.1	43.0	37.3	45.9	46.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	1	2	4	8
CNEL:	1	2	4	9

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Collier Av.
Road Segment: w/o Dwy. 1

Project Name: Saddleback/Elsinore Bussi
Job Number: 13772

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,943 vehicles
Peak Hour Percentage:	7.29%
Peak Hour Volume:	652 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	53 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	98.95%
Medium Trucks:	84.8%	4.9%	10.3%	0.74%
Heavy Trucks:	86.5%	2.7%	10.8%	0.31%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	42.694
Medium Trucks:	42.486
Heavy Trucks:	42.506

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-4.20	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-25.44	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-29.24	0.95	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.7	65.2	63.4	57.4	66.0	66.6
Medium Trucks:	55.3	55.2	48.8	47.3	55.7	56.0
Heavy Trucks:	55.9	55.8	46.8	48.1	56.4	56.5
Vehicle Noise:	66.5	66.1	63.7	58.2	66.8	67.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	31	66	142	306
CNEL:	33	72	154	333

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA Without Project
Road Name: Riverside Dr.
Road Segment: s/o El Toro Rd.

Project Name: Saddleback/Elsinore Bussi
Job Number: 13772

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	499 vehicles
Peak Hour Percentage:	7.29%
Peak Hour Volume:	36 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	98.92%
Medium Trucks:	84.8%	4.9%	10.3%	0.76%
Heavy Trucks:	86.5%	2.7%	10.8%	0.32%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	48.260
Medium Trucks:	48.076
Heavy Trucks:	48.094

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-15.76	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-36.89	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-40.69	0.15	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.7	49.1	47.4	41.3	50.0	50.6
Medium Trucks:	39.8	39.6	33.3	31.7	40.2	40.4
Heavy Trucks:	41.3	41.2	32.2	33.4	41.8	41.9
Vehicle Noise:	50.6	50.2	47.7	42.4	50.9	51.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	7	15	32
CNEL:	3	8	16	35

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Collier Av.
Road Segment: w/o Riverside Dr.

Project Name: Saddleback/Elsinore Bussi
Job Number: 13772

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,837 vehicles
Peak Hour Percentage:	7.29%
Peak Hour Volume:	644 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	53 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	98.93%
Medium Trucks:	84.8%	4.9%	10.3%	0.75%
Heavy Trucks:	86.5%	2.7%	10.8%	0.31%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	42.694
Medium Trucks:	42.486
Heavy Trucks:	42.506

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-4.25	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-25.44	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-29.24	0.95	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.7	65.2	63.4	57.3	66.0	66.6
Medium Trucks:	55.3	55.2	48.8	47.3	55.7	56.0
Heavy Trucks:	55.9	55.8	46.8	48.1	56.4	56.5
Vehicle Noise:	66.5	66.0	63.6	58.2	66.8	67.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	66	141	304
CNEL:	33	71	153	330

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA Without Project
Road Name: Riverside Dr.
Road Segment: s/o Collier Av.

Project Name: Saddleback/Elsinore Bussi
Job Number: 13772

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,122 vehicles
Peak Hour Percentage:	7.29%
Peak Hour Volume:	1,977 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	98.92%
Medium Trucks:	84.8%	4.9%	10.3%	0.76%
Heavy Trucks:	86.5%	2.7%	10.8%	0.32%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	48.260
Medium Trucks:	48.076
Heavy Trucks:	48.094

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	1.59	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-19.54	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-23.34	0.15	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.0	66.5	64.7	58.7	67.3	67.9
Medium Trucks:	57.1	57.0	50.6	49.1	57.5	57.8
Heavy Trucks:	58.6	58.6	49.5	50.8	59.1	59.2
Vehicle Noise:	68.0	67.5	65.0	59.7	68.3	68.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	46	100	214	462
CNEL:	50	108	232	500

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA Without Project
Road Name: El Toro Rd.
Road Segment: w/o Riverside Dr.
Project Name: Saddleback/Elsinore Bussi
Job Number: 13772

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	34 vehicles
Peak Hour Percentage:	7.29%
Peak Hour Volume:	3 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	98.92%
Medium Trucks:	84.8%	4.9%	10.3%	0.76%
Heavy Trucks:	86.5%	2.7%	10.8%	0.32%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	32.202
Medium Trucks:	31.927
Heavy Trucks:	31.953

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-27.38	2.76	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-48.50	2.82	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-52.31	2.81	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	40.7	40.2	38.4	32.4	41.0	41.6
Medium Trucks:	30.8	30.7	24.3	22.8	31.2	31.5
Heavy Trucks:	32.3	32.3	23.2	24.5	32.8	32.9
Vehicle Noise:	41.7	41.2	38.7	33.4	42.0	42.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	0	1	2	5
CNEL:	0	1	2	5

Wednesday, February 10, 2021

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA Without Project
Road Name: Collier Av.
Road Segment: w/o Riverside Dr.
Project Name: Saddleback/Elsinore Bussi
Job Number: 13772

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,061 vehicles
Peak Hour Percentage:	7.29%
Peak Hour Volume:	661 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	53 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	98.92%
Medium Trucks:	84.8%	4.9%	10.3%	0.76%
Heavy Trucks:	86.5%	2.7%	10.8%	0.32%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	42.694
Medium Trucks:	42.486
Heavy Trucks:	42.506

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-4.14	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-25.27	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-29.07	0.95	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.8	65.3	63.5	57.4	66.1	66.7
Medium Trucks:	55.5	55.4	49.0	47.4	55.9	56.1
Heavy Trucks:	56.1	56.0	47.0	48.2	56.6	56.7
Vehicle Noise:	66.6	66.1	63.7	58.3	66.9	67.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	31	67	144	310
CNEL:	34	73	156	337

Wednesday, February 10, 2021

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA Without Project
Road Name: Collier Av.
Road Segment: w/o Dwy. 1
Project Name: Saddleback/Elsinore Bussi
Job Number: 13772

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,061 vehicles
Peak Hour Percentage:	7.29%
Peak Hour Volume:	661 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	53 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	98.92%
Medium Trucks:	84.8%	4.9%	10.3%	0.76%
Heavy Trucks:	86.5%	2.7%	10.8%	0.32%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	42.694
Medium Trucks:	42.486
Heavy Trucks:	42.506

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-4.14	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-25.27	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-29.07	0.95	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.8	65.3	63.5	57.4	66.1	66.7
Medium Trucks:	55.5	55.4	49.0	47.4	55.9	56.1
Heavy Trucks:	56.1	56.0	47.0	48.2	56.6	56.7
Vehicle Noise:	66.6	66.1	63.7	58.3	66.9	67.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	31	67	144	310
CNEL:	34	73	156	337

Wednesday, February 10, 2021

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA With Project
Road Name: Riverside Dr.
Road Segment: s/o El Toro Rd.
Project Name: Saddleback/Elsinore Bussi
Job Number: 13772

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	563 vehicles
Peak Hour Percentage:	7.29%
Peak Hour Volume:	41 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	99.04%
Medium Trucks:	84.8%	4.9%	10.3%	0.68%
Heavy Trucks:	86.5%	2.7%	10.8%	0.28%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	48.260
Medium Trucks:	48.076
Heavy Trucks:	48.094

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-15.24	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-36.89	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-40.69	0.15	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	50.2	49.7	47.9	41.9	50.5	51.1
Medium Trucks:	39.8	39.6	33.3	31.7	40.2	40.4
Heavy Trucks:	41.3	41.2	32.2	33.4	41.8	41.9
Vehicle Noise:	51.1	50.6	48.2	42.8	51.4	51.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	7	16	34
CNEL:	4	8	17	37

Wednesday, February 10, 2021

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA With Project
Road Name: Riverside Dr.
Road Segment: s/o Collier Av.
Project Name: Saddleback/Elsinore Bussi
Job Number: 13772

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,186	vehicles
Peak Hour Percentage:	7.29%	
Peak Hour Volume:	1,982	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	60.0	feet
Centerline Dist. to Observer:	60.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	98.92%
Medium Trucks:	84.8%	4.9%	10.3%	0.76%
Heavy Trucks:	86.5%	2.7%	10.8%	0.32%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	48.260
Medium Trucks:	48.076
Heavy Trucks:	48.094

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	1.60	0.13	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	77.72	-19.54	0.15	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-23.34	0.15	-1.20	*-5.34*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.0	66.5	64.7	58.7	67.3	67.9
Medium Trucks:	57.1	57.0	50.6	49.1	57.5	57.8
Heavy Trucks:	58.6	58.6	49.5	50.8	59.1	59.2
Vehicle Noise:	68.0	67.6	65.0	59.7	68.3	68.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	46	100	215	463
CNEL:	50	108	233	501

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA With Project
Road Name: Collier Av.
Road Segment: w/o Dwy. 1
Project Name: Saddleback/Elsinore Bussi
Job Number: 13772

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,295	vehicles
Peak Hour Percentage:	7.29%	
Peak Hour Volume:	678	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	53	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	98.95%
Medium Trucks:	84.8%	4.9%	10.3%	0.74%
Heavy Trucks:	86.5%	2.7%	10.8%	0.31%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	42.694
Medium Trucks:	42.486
Heavy Trucks:	42.506

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-4.03	0.93	-1.20	*-4.65*	0.000	0.000
Medium Trucks:	81.00	-25.27	0.96	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	85.38	-29.07	0.95	-1.20	*-5.43*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.9	65.4	63.6	57.6	66.2	66.8
Medium Trucks:	55.5	55.4	49.0	47.4	55.9	56.1
Heavy Trucks:	56.1	56.0	47.0	48.2	56.6	56.7
Vehicle Noise:	66.7	66.2	63.8	58.4	67.0	67.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	31	68	146	314
CNEL:	34	74	158	341

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA With Project
Road Name: El Toro Rd.
Road Segment: w/o Riverside Dr.
Project Name: Saddleback/Elsinore Bussi
Job Number: 13772

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	98	vehicles
Peak Hour Percentage:	7.29%	
Peak Hour Volume:	7	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	24	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	34.0	feet
Centerline Dist. to Observer:	34.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	99.62%
Medium Trucks:	84.8%	4.9%	10.3%	0.27%
Heavy Trucks:	86.5%	2.7%	10.8%	0.11%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	32.202
Medium Trucks:	31.927
Heavy Trucks:	31.953

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-22.79	2.76	-1.20	*-4.53*	0.000	0.000
Medium Trucks:	77.72	-48.50	2.82	-1.20	*-4.86*	0.000	0.000
Heavy Trucks:	82.99	-52.31	2.81	-1.20	*-5.67*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	45.3	44.8	43.0	36.9	45.6	46.2
Medium Trucks:	30.8	30.7	24.3	22.8	31.2	31.5
Heavy Trucks:	32.3	32.3	23.2	24.5	32.8	32.9
Vehicle Noise:	45.6	45.2	43.1	37.3	45.9	46.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	1	2	4	8
CNEL:	1	2	4	9

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA With Project
Road Name: Collier Av.
Road Segment: w/o Riverside Dr.
Project Name: Saddleback/Elsinore Bussi
Job Number: 13772

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,189	vehicles
Peak Hour Percentage:	7.29%	
Peak Hour Volume:	670	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	53	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	98.93%
Medium Trucks:	84.8%	4.9%	10.3%	0.75%
Heavy Trucks:	86.5%	2.7%	10.8%	0.31%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	42.694
Medium Trucks:	42.486
Heavy Trucks:	42.506

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-4.08	0.93	-1.20	*-4.65*	0.000	0.000
Medium Trucks:	81.00	-25.27	0.96	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	85.38	-29.07	0.95	-1.20	*-5.43*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.8	65.3	63.6	57.5	66.1	66.7
Medium Trucks:	55.5	55.4	49.0	47.4	55.9	56.1
Heavy Trucks:	56.1	56.0	47.0	48.2	56.6	56.7
Vehicle Noise:	66.6	66.2	63.8	58.4	66.9	67.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	31	67	145	312
CNEL:	34	73	157	339

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC Without Project
Road Name: Riverside Dr.
Road Segment: s/o El Toro Rd.
Project Name: Saddleback/Elsinore Bussi
Job Number: 13772

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	499 vehicles
Peak Hour Percentage:	7.29%
Peak Hour Volume:	36 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	98.92%
Medium Trucks:	84.8%	4.9%	10.3%	0.76%
Heavy Trucks:	86.5%	2.7%	10.8%	0.32%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	48.260
Medium Trucks:	48.076
Heavy Trucks:	48.094

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-15.76	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-36.89	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-40.69	0.15	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.7	49.1	47.4	41.3	50.0	50.6
Medium Trucks:	39.8	39.6	33.3	31.7	40.2	40.4
Heavy Trucks:	41.3	41.2	32.2	33.4	41.8	41.9
Vehicle Noise:	50.6	50.2	47.7	42.4	50.9	51.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	7	15	32
CNEL:	3	8	16	35

Wednesday, February 10, 2021

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC Without Project
Road Name: El Toro Rd.
Road Segment: w/o Riverside Dr.
Project Name: Saddleback/Elsinore Bussi
Job Number: 13772

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	34 vehicles
Peak Hour Percentage:	7.29%
Peak Hour Volume:	3 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	34.0 feet
Centerline Dist. to Observer:	34.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	98.92%
Medium Trucks:	84.8%	4.9%	10.3%	0.76%
Heavy Trucks:	86.5%	2.7%	10.8%	0.32%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	32.202
Medium Trucks:	31.927
Heavy Trucks:	31.953

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-27.38	2.76	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-48.50	2.82	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-52.31	2.81	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	40.7	40.2	38.4	32.4	41.0	41.6
Medium Trucks:	30.8	30.7	24.3	22.8	31.2	31.5
Heavy Trucks:	32.3	32.3	23.2	24.5	32.8	32.9
Vehicle Noise:	41.7	41.2	38.7	33.4	42.0	42.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	0	1	2	5
CNEL:	0	1	2	5

Wednesday, February 10, 2021

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC Without Project
Road Name: Riverside Dr.
Road Segment: s/o Collier Av.
Project Name: Saddleback/Elsinore Bussi
Job Number: 13772

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	29,451 vehicles
Peak Hour Percentage:	7.29%
Peak Hour Volume:	2,147 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	72 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	98.92%
Medium Trucks:	84.8%	4.9%	10.3%	0.76%
Heavy Trucks:	86.5%	2.7%	10.8%	0.32%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	48.260
Medium Trucks:	48.076
Heavy Trucks:	48.094

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	1.95	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-19.18	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-22.98	0.15	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.4	66.9	65.1	59.0	67.7	68.3
Medium Trucks:	57.5	57.4	51.0	49.4	57.9	58.1
Heavy Trucks:	59.0	58.9	49.9	51.1	59.5	59.6
Vehicle Noise:	68.3	67.9	65.4	60.1	68.7	69.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	49	105	227	488
CNEL:	53	114	245	529

Wednesday, February 10, 2021

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC Without Project
Road Name: Collier Av.
Road Segment: w/o Dwy. 1
Project Name: Saddleback/Elsinore Bussi
Job Number: 13772

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,318 vehicles
Peak Hour Percentage:	7.29%
Peak Hour Volume:	752 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	53 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	98.92%
Medium Trucks:	84.8%	4.9%	10.3%	0.76%
Heavy Trucks:	86.5%	2.7%	10.8%	0.32%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	42.694
Medium Trucks:	42.486
Heavy Trucks:	42.506

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-3.58	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-24.71	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-28.51	0.95	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.4	65.8	64.1	58.0	66.6	67.2
Medium Trucks:	56.1	55.9	49.6	48.0	56.5	56.7
Heavy Trucks:	56.6	56.6	47.5	48.8	57.1	57.3
Vehicle Noise:	67.1	66.7	64.3	58.9	67.5	68.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	34	73	157	338
CNEL:	37	79	170	367

Wednesday, February 10, 2021

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC Without Project
Road Name: Collier Av.
Road Segment: w/o Riverside Dr.
Project Name: Saddleback/Elsinore Bussi
Job Number: 13772

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,318	vehicles
Peak Hour Percentage:	7.29%	
Peak Hour Volume:	752	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	53	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	98.92%
Medium Trucks:	84.8%	4.9%	10.3%	0.76%
Heavy Trucks:	86.5%	2.7%	10.8%	0.32%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	42.694
Medium Trucks:	42.486
Heavy Trucks:	42.506

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-3.58	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-24.71	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-28.51	0.95	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.4	65.8	64.1	58.0	66.6	67.2
Medium Trucks:	56.1	55.9	49.6	48.0	56.5	56.7
Heavy Trucks:	56.6	56.6	47.5	48.8	57.1	57.3
Vehicle Noise:	67.1	66.7	64.3	58.9	67.5	68.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	34	73	157	338
CNEL:	37	79	170	367

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC With Project
Road Name: Riverside Dr.
Road Segment: s/o Collier Av.
Project Name: Saddleback/Elsinore Bussi
Job Number: 13772

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	29,515	vehicles
Peak Hour Percentage:	7.29%	
Peak Hour Volume:	2,152	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	60.0	feet
Centerline Dist. to Observer:	60.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	98.92%
Medium Trucks:	84.8%	4.9%	10.3%	0.76%
Heavy Trucks:	86.5%	2.7%	10.8%	0.32%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	48.260
Medium Trucks:	48.076
Heavy Trucks:	48.094

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	1.95	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-19.18	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-22.98	0.15	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.4	66.9	65.1	59.0	67.7	68.3
Medium Trucks:	57.5	57.4	51.0	49.4	57.9	58.1
Heavy Trucks:	59.0	58.9	49.9	51.1	59.5	59.6
Vehicle Noise:	68.3	67.9	65.4	60.1	68.7	69.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	49	105	227	489
CNEL:	53	114	246	529

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC With Project
Road Name: Riverside Dr.
Road Segment: s/o El Toro Rd.
Project Name: Saddleback/Elsinore Bussi
Job Number: 13772

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	563	vehicles
Peak Hour Percentage:	7.29%	
Peak Hour Volume:	41	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	72	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	60.0	feet
Centerline Dist. to Observer:	60.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	99.04%
Medium Trucks:	84.8%	4.9%	10.3%	0.68%
Heavy Trucks:	86.5%	2.7%	10.8%	0.28%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	48.260
Medium Trucks:	48.076
Heavy Trucks:	48.094

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-15.24	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-36.89	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-40.69	0.15	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	50.2	49.7	47.9	41.9	50.5	51.1
Medium Trucks:	39.8	39.6	33.3	31.7	40.2	40.4
Heavy Trucks:	41.3	41.2	32.2	33.4	41.8	41.9
Vehicle Noise:	51.1	50.6	48.2	42.8	51.4	51.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	7	16	34
CNEL:	4	8	17	37

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC With Project
Road Name: El Toro Rd.
Road Segment: w/o Riverside Dr.
Project Name: Saddleback/Elsinore Bussi
Job Number: 13772

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	98	vehicles
Peak Hour Percentage:	7.29%	
Peak Hour Volume:	7	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	24	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	34.0	feet
Centerline Dist. to Observer:	34.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	99.62%
Medium Trucks:	84.8%	4.9%	10.3%	0.27%
Heavy Trucks:	86.5%	2.7%	10.8%	0.11%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	32.202
Medium Trucks:	31.927
Heavy Trucks:	31.953

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-22.79	2.76	-1.20	-4.53	0.000	0.000
Medium Trucks:	77.72	-48.50	2.82	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-52.31	2.81	-1.20	-5.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	45.3	44.8	43.0	36.9	45.6	46.2
Medium Trucks:	30.8	30.7	24.3	22.8	31.2	31.5
Heavy Trucks:	32.3	32.3	23.2	24.5	32.8	32.9
Vehicle Noise:	45.6	45.2	43.1	37.3	45.9	46.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	1	2	4	8
CNEL:	1	2	4	9

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC With Project
Road Name: Collier Av.
Road Segment: w/o Dwy. 1

Project Name: Saddleback/Elsinore Bussi
Job Number: 13772

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,552	vehicles
Peak Hour Percentage:	7.29%	
Peak Hour Volume:	769	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	53	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	98.94%
Medium Trucks:	84.8%	4.9%	10.3%	0.75%
Heavy Trucks:	86.5%	2.7%	10.8%	0.31%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	42.694
Medium Trucks:	42.486
Heavy Trucks:	42.506

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-3.48	0.93	-1.20	*-4.65*	0.000	0.000
Medium Trucks:	81.00	-24.71	0.96	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	85.38	-28.51	0.95	-1.20	*-5.43*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	66.4	65.9	64.2	58.1	66.7	67.3
Medium Trucks:	56.1	55.9	49.6	48.0	56.5	56.7
Heavy Trucks:	56.6	56.6	47.5	48.8	57.1	57.3
Vehicle Noise:	67.2	66.8	64.4	58.9	67.5	68.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	34	74	159	342
CNEL:	37	80	173	372

Wednesday, February 10, 2021

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC With Project
Road Name: Collier Av.
Road Segment: w/o Riverside Dr.

Project Name: Saddleback/Elsinore Bussi
Job Number: 13772

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,446	vehicles
Peak Hour Percentage:	7.29%	
Peak Hour Volume:	761	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	53	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	50.0	feet
Centerline Dist. to Observer:	50.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	98.93%
Medium Trucks:	84.8%	4.9%	10.3%	0.75%
Heavy Trucks:	86.5%	2.7%	10.8%	0.31%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	42.694
Medium Trucks:	42.486
Heavy Trucks:	42.506

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-3.53	0.93	-1.20	*-4.65*	0.000	0.000
Medium Trucks:	81.00	-24.71	0.96	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	85.38	-28.51	0.95	-1.20	*-5.43*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	66.4	65.9	64.1	58.1	66.7	67.3
Medium Trucks:	56.1	55.9	49.6	48.0	56.5	56.7
Heavy Trucks:	56.6	56.6	47.5	48.8	57.1	57.3
Vehicle Noise:	67.2	66.7	64.4	58.9	67.5	68.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	34	73	158	340
CNEL:	37	80	172	370

Wednesday, February 10, 2021

APPENDIX 9.1:

CADNAA OPERATIONAL NOISE MODEL INPUTS

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13772 - Saddleback/Elsinore Business Park

CadnaA Noise Prediction Model: 13772.cna
Date: 17.02.21
Analyst: S. Shami

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.01
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	999.99
Min. Length of Section (#(Unit,LEN))	1.01
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	5.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	2
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Incl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.50
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (RLS-90)	
Strictly acc. to RLS-90	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
RECEIVERS		R1	32.7	31.3	37.8	50.0	40.0	0.0				5.00	a	6227447.60	2201033.03	5.00
RECEIVERS		R2	41.2	39.9	46.3	50.0	40.0	0.0				5.00	a	6228346.18	2199857.97	5.00
RECEIVERS		R3	37.6	36.4	42.8	50.0	40.0	0.0				5.00	a	6228765.45	2197884.40	5.00
RECEIVERS		R4	33.4	32.0	38.5	50.0	40.0	0.0				5.00	a	6225856.60	2198123.55	5.00

Point Source(s)

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			K0	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night				X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(dB)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		TRASH12	89.0	89.0	89.0	Lw	89.0		150.00	0.00	90.00	0.0	5.00	a	6227834.53	2199375.62	5.00
POINTSOURCE		TRASH11	89.0	89.0	89.0	Lw	89.0		150.00	0.00	90.00	0.0	5.00	a	6227954.62	2199225.18	5.00
POINTSOURCE		TRASH10	89.0	89.0	89.0	Lw	89.0		150.00	0.00	90.00	0.0	5.00	a	6227697.05	2199196.65	5.00
POINTSOURCE		TRASH09	89.0	89.0	89.0	Lw	89.0		150.00	0.00	90.00	0.0	5.00	a	6227681.49	2199179.01	5.00
POINTSOURCE		TRASH08	89.0	89.0	89.0	Lw	89.0		150.00	0.00	90.00	0.0	5.00	a	6227814.81	2199081.22	5.00
POINTSOURCE		TRASH07	89.0	89.0	89.0	Lw	89.0		150.00	0.00	90.00	0.0	5.00	a	6227798.99	2199065.40	5.00
POINTSOURCE		TRASH06	89.0	89.0	89.0	Lw	89.0		150.00	0.00	90.00	0.0	5.00	a	6227919.08	2198979.02	5.00
POINTSOURCE		TRASH05	89.0	89.0	89.0	Lw	89.0		150.00	0.00	90.00	0.0	5.00	a	6227903.78	2198962.94	5.00
POINTSOURCE		TRASH04	89.0	89.0	89.0	Lw	89.0		150.00	0.00	90.00	0.0	5.00	a	6227992.49	2198876.05	5.00
POINTSOURCE		TRASH03	89.0	89.0	89.0	Lw	89.0		150.00	0.00	90.00	0.0	5.00	a	6228040.73	2198829.10	5.00
POINTSOURCE		TRASH02	89.0	89.0	89.0	Lw	89.0		150.00	0.00	90.00	0.0	5.00	a	6228049.03	2199139.32	5.00
POINTSOURCE		TRASH01	89.0	89.0	89.0	Lw	89.0		150.00	0.00	90.00	0.0	5.00	a	6227836.60	2199335.94	5.00

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			K0	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night				X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(dB)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		AC01	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6228038.14	2198702.66	50.00
POINTSOURCE		AC02	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6227927.30	2198810.96	50.00
POINTSOURCE		AC03	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6227994.14	2199080.86	50.00
POINTSOURCE		AC04	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6227939.15	2199025.02	50.00
POINTSOURCE		AC05	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6227824.92	2198911.64	50.00
POINTSOURCE		AC06	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6227745.39	2198986.10	50.00
POINTSOURCE		AC07	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6227879.92	2199415.91	50.00
POINTSOURCE		AC08	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6227934.07	2199178.16	50.00
POINTSOURCE		AC09	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6227858.77	2199102.86	50.00
POINTSOURCE		AC10	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6227716.63	2199243.30	50.00
POINTSOURCE		AC11	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6227599.87	2199127.39	50.00
POINTSOURCE		AC12	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6227791.08	2199318.61	50.00
POINTSOURCE		PARKING01	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6227925.76	2199461.01	5.00
POINTSOURCE		PARKING02	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6227834.23	2199454.83	5.00
POINTSOURCE		PARKING03	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6227758.93	2199382.91	5.00
POINTSOURCE		PARKING04	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6227681.09	2199285.61	5.00
POINTSOURCE		PARKING05	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6227610.02	2199201.85	5.00
POINTSOURCE		PARKING06	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6227556.72	2199150.24	5.00
POINTSOURCE		PARKING07	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6227707.32	2199146.85	5.00
POINTSOURCE		PARKING08	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6227733.55	2199167.16	5.00
POINTSOURCE		PARKING09	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6227864.69	2199301.68	5.00
POINTSOURCE		PARKING10	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6227887.54	2199325.37	5.00
POINTSOURCE		PARKING11	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6227950.99	2199261.92	5.00
POINTSOURCE		PARKING12	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6228009.37	2199191.69	5.00
POINTSOURCE		PARKING13	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6228030.52	2199165.47	5.00
POINTSOURCE		PARKING14	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6227967.07	2199105.39	5.00
POINTSOURCE		PARKING15	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6227938.30	2199134.16	5.00
POINTSOURCE		PARKING16	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6227901.92	2199089.32	5.00
POINTSOURCE		PARKING17	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6227923.92	2199061.40	5.00
POINTSOURCE		PARKING18	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6227814.77	2198948.87	5.00
POINTSOURCE		PARKING19	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6227786.85	2198977.63	5.00
POINTSOURCE		PARKING20	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6227582.10	2199074.93	5.00
POINTSOURCE		PARKING21	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6227620.17	2199032.63	5.00
POINTSOURCE		PARKING22	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6227653.17	2198994.56	5.00
POINTSOURCE		PARKING23	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6227701.40	2198950.56	5.00
POINTSOURCE		PARKING24	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6227789.39	2198865.95	5.00
POINTSOURCE		PARKING25	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6227815.62	2198838.03	5.00
POINTSOURCE		PARKING26	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6227852.85	2198802.50	5.00
POINTSOURCE		PARKING27	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6227894.30	2198766.11	5.00
POINTSOURCE		PARKING28	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6227988.22	2198674.74	5.00
POINTSOURCE		PARKING29	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6227944.22	2198717.89	5.00
POINTSOURCE		PARKING30	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6228059.29	2198804.19	5.00
POINTSOURCE		PARKING31	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6228063.52	2198928.56	5.00
POINTSOURCE		PARKING32	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6228036.45	2198874.41	5.00
POINTSOURCE		PARKING33	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6227978.07	2198927.72	5.00
POINTSOURCE		PARKING34	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6227952.68	2198904.03	5.00
POINTSOURCE		PARKING35	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6228049.14	2198621.43	5.00
POINTSOURCE		PARKING36	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6228045.75	2198664.58	5.00
POINTSOURCE		PARKING37	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6227797.85	2199426.06	5.00
POINTSOURCE		PARKING38	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6227793.62	2199107.09	5.00
POINTSOURCE		PARKING39	87.8	87.8	87.8	Lw	87.8		900.00	0.00	540.00	0.0	5.00	a	6227769.93	2199085.09	5.00

Building(s)

Name	M.	ID	RB	Residents	Absorption	Height		Coordinates			
						Begin		x	y	z	Ground
						(ft)		(ft)	(ft)	(ft)	(ft)
BUILDING		BUILDING00001	x	0		45.00	a	6227881.87	2199431.16	45.00	0.00
								6227900.97	2199412.47	45.00	0.00
								6227919.94	2199431.43	45.00	0.00
								6227963.92	2199388.83	45.00	0.00
								6227974.36	2199333.31	45.00	0.00
								6227948.94	2199307.61	45.00	0.00
								6227852.73	2199402.30	45.00	0.00
BUILDING		BUILDING00002	x	0		45.00	a	6227791.58	2199334.27	45.00	0.00
								6227952.37	2199177.05	45.00	0.00
								6227860.57	2199084.55	45.00	0.00
								6227699.36	2199242.05	45.00	0.00
BUILDING		BUILDING00003	x	0		45.00	a	6227584.86	2199126.84	45.00	0.00
								6227636.33	2199178.71	45.00	0.00
								6227797.84	2199021.27	45.00	0.00
								6227745.97	2198969.19	45.00	0.00
BUILDING		BUILDING00004	x	0		45.00	a	6227807.40	2198909.59	45.00	0.00
								6227858.86	2198961.05	45.00	0.00
								6227979.28	2198843.48	45.00	0.00
								6227927.82	2198792.02	45.00	0.00
BUILDING		BUILDING00005	x	0		45.00	a	6228009.79	2198813.99	45.00	0.00

Name	M.	ID	RB	Residents	Absorption	Height		Coordinates			
						Begin		x	y	z	Ground
						(ft)		(ft)	(ft)	(ft)	(ft)
								6228072.85	2198752.35	45.00	0.00
								6228072.24	2198718.99	45.00	0.00
								6228038.07	2198684.41	45.00	0.00
								6227958.33	2198762.52	45.00	0.00
BUILDING		BUILDING00006	x	0		45.00	a	6227922.33	2199024.93	45.00	0.00
								6227995.56	2199098.36	45.00	0.00
								6228016.71	2199077.61	45.00	0.00
								6228035.02	2199096.33	45.00	0.00
								6228079.77	2199053.00	45.00	0.00
								6228078.75	2199016.59	45.00	0.00
								6228056.99	2198995.03	45.00	0.00
								6228066.95	2198984.85	45.00	0.00
								6228015.29	2198933.19	45.00	0.00

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APPENDIX 10.1:

CADNAA CONSTRUCTION NOISE MODEL INPUTS

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13772 - Saddleback/Elsinore Business Park

CadnaA Noise Prediction Model: 13772_Construction.cna
Date: 18.02.21
Analyst: S. Shami

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.01
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	999.99
Min. Length of Section (#(Unit,LEN))	1.01
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	5.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	2
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Incl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.50
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (RLS-90)	
Strictly acc. to RLS-90	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
RECEIVERS		R1	55.8	55.8	62.5	50.0	40.0	0.0				5.00	a	6227447.60	2201033.03	5.00
RECEIVERS		R2	63.0	63.0	69.7	50.0	40.0	0.0				5.00	a	6228346.18	2199857.97	5.00
RECEIVERS		R3	58.7	58.7	65.4	50.0	40.0	0.0				5.00	a	6228765.45	2197884.40	5.00
RECEIVERS		R4	54.8	54.8	61.5	50.0	40.0	0.0				5.00	a	6225856.60	2198123.55	5.00

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Operating Time			Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	
SITEBOUNDARY		CONSTRUCTION	123.8	123.8	123.8	79.0	79.0	79.0	Lw''	79					8

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
SITEBOUNDARY	8.00	a			6228074.60	2198520.92	8.00	0.00
					6227474.19	2199106.54	8.00	0.00
					6227619.16	2199251.50	8.00	0.00
					6227664.73	2199310.10	8.00	0.00
					6227824.89	2199512.79	8.00	0.00
					6227831.40	2199509.75	8.00	0.00
					6227846.15	2199505.84	8.00	0.00

Name	Height		Coordinates			
	Begin	End	x	y	z	Ground
	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
			6227858.31	2199503.67	8.00	0.00
			6227874.37	2199502.80	8.00	0.00
			6227984.17	2199499.77	8.00	0.00
			6227984.17	2199407.32	8.00	0.00
			6227987.65	2199373.90	8.00	0.00
			6227988.95	2199361.31	8.00	0.00
			6227990.25	2199348.29	8.00	0.00
			6227992.42	2199342.65	8.00	0.00
			6227995.46	2199328.76	8.00	0.00
			6228002.84	2199299.68	8.00	0.00
			6228007.61	2199284.05	8.00	0.00
			6228011.52	2199275.37	8.00	0.00
			6228016.73	2199263.22	8.00	0.00
			6228019.76	2199254.54	8.00	0.00
			6228023.24	2199246.29	8.00	0.00
			6228030.62	2199232.40	8.00	0.00
			6228036.26	2199221.55	8.00	0.00
			6228045.37	2199207.23	8.00	0.00
			6228052.75	2199195.08	8.00	0.00
			6228062.76	2199180.22	8.00	0.00
			6228074.73	2199165.64	8.00	0.00
			6228082.55	2199155.74	8.00	0.00
			6228089.64	2199149.94	8.00	0.00