Nichols Ranch

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
EA	Existing plus Ambient Growth
EAC	EA plus Cumulative
EAP	EA plus Project
EAPC	EA plus Project plus Cumulative
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
I-15	Interstate 15
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
PPV	Peak Particle Velocity
Project	Nichols Ranch
REMEL	Reference Energy Mean Emission Level
RMS	Root-mean-square
Sf	Square foot/feet
VdB	Vibration Decibels

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EXECUTIVE SUMMARY

Urban Crossroads, Inc. has prepared this noise study to determine the noise exposure and the necessary noise mitigation measures for the proposed Nichols Ranch development ("Project"). The Project site is located south of Nichols Road and east of Interstate 15 (I-15) in the City of Lake Elsinore. The Project will consist of 168 low-medium density residential dwelling units, an 8.3-acre park, 6,000 square feet (sf) of fast-food restaurant with drive-through window use, 9,400 sf of high turnover (sit-down) restaurant use, 8,000 sf of health and fitness club use, 43,000 sf of office use, 5,500 sf of fast food without drive-through, a 16 vehicle fueling position gas station with convenience store and car wash, and a 130-room hotel. This study has been prepared to satisfy applicable City of Lake Elsinore noise standards and significance criteria based on guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1)

OFF-SITE TRAFFIC NOISE ANALYSIS

Traffic generated by the operation of the proposed Project will influence the traffic noise levels in surrounding off-site areas. To quantify the traffic noise increases on the surrounding off-site areas, the changes in traffic noise levels on 21 roadway segments surrounding the Project site were calculated based on the change in the average daily traffic (ADT) volumes. The traffic noise levels provided in this analysis are based on the traffic forecasts found in the *Nichols Ranch Traffic Impact Analysis* prepared by Urban Crossroads, Inc. (2) To assess the off-site noise level impacts associated with the proposed Project, noise contour boundaries were developed for Existing, Existing plus Ambient (EA) 2020, EA 2021, EA 2024, EA plus Cumulative (EAC) 2020, EAC 2021, and EAC 2024 traffic conditions. The analysis shows that the Project-related traffic noise level increases under all traffic scenarios will be *less than significant*.

ON-SITE TRAFFIC NOISE ANALYSIS

An on-site exterior noise impact analysis has been completed to determine the transportation-related noise levels and to identify potential necessary abatement measures for the proposed Nichols Ranch Project. It is expected that the primary source of noise impacts to the Project site will be transportation-related noise from Interstate 15 (I-15) and Nichols Road.

EXTERIOR NOISE ANALYSIS

To satisfy the City of Lake Elsinore 60 dBA CNEL exterior noise level standards for residential land use, the construction of 8-foot high noise barriers for the outdoor living areas (backyards) of lots 35 to 60, and 80 to 81 adjacent to Nichols Road is required. Moreover, a 6-foot high noise barrier is required for lots 82 and 83. With the recommended noise barriers shown on Exhibit ES-A, the future exterior noise levels will range from 54.8 to 59.9 dBA CNEL at the outdoor living areas of single-family residential homes. This noise analysis shows that the recommended noise barriers will satisfy the City of Lake Elsinore 60 dBA CNEL exterior noise level standards for residential land use. The effective noise barrier height recommendations represent the minimum wall and/or berm combination height required to satisfy the City of Lake Elsinore exterior noise level standards.

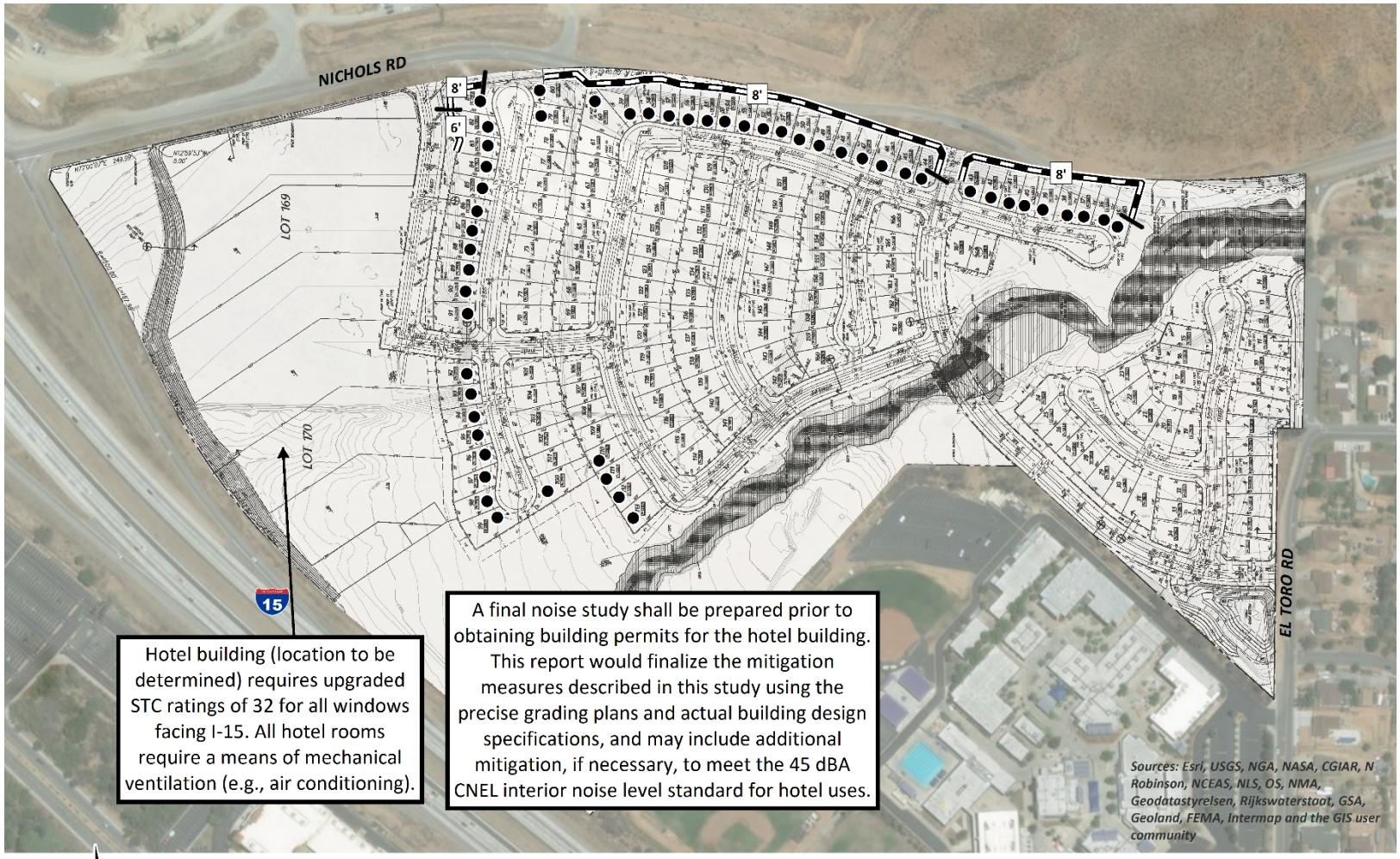
The future hotel use within the Project site will experience on-site traffic noise levels approaching 63.0 dBA CNEL. Based on the City of Lake Elsinore General Plan Public Safety and Welfare Element, Table 3-1, hotel uses experiencing unmitigated exterior noise levels ranging from 60 to 70 dBA CNEL are considered *normally compatible*, and detailed analysis of interior noise reduction measures is required.

The recommended noise control barriers shall be constructed so that the top of each wall and /or berm combination extends to the recommended height above the pad elevation of the lot it is shielding. When the road is elevated above the pad elevation, the barrier shall extend to the recommended height above the highest point between the residential home and the road. The barrier shall provide a weight of at least 4 pounds per square foot of face area with no decorative cutouts or line-of-sight openings between shielded areas and the roadways, and a minimum transmission loss of 20 dBA. (3) The noise barrier shall be constructed using the following materials:

- Masonry block
- Stucco veneer over wood framing (or foam core), or 1-inch-thick tongue and groove wood of sufficient weight per square foot
- Glass (1/4-inch-thick), or other transparent material with sufficient weight per square foot capable of providing a minimum transmission loss of 20 dBA.
- Earthen berm
- Any combination of these construction materials

The barrier shall consist of a solid face from top to bottom. Unnecessary openings or decorative cutouts shall not be made. All gaps (except for weep holes) should be filled with grout or caulking.

EXHIBIT ES-A: SUMMARY OF ON-SITE TRAFFIC NOISE MITIGATION MEASURES



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LEGEND:

8' Recommended Noise Barrier Height (in feet)

Recommended Noise Barrier

● Lots requiring standard windows and glass doors with a minimum STC rating of 27 and a means of mechanical ventilation (e.g. air conditioning).

INTERIOR NOISE ANALYSIS

To satisfy the City of Lake Elsinore General Plan 45 dBA CNEL interior noise level standard for residential and hotel buildings, a windows-closed condition including a means of mechanical ventilation (e.g. air conditioning) is required. To meet the 45 dBA CNEL interior noise standards the Project shall provide the following noise abatement measures for lots 35 to 60, 79 to 100, and 110 to 113 and the hotel building:

- Windows & Glass Doors: All windows and/or glass doors shall be well-fitted, well weather-stripped assemblies and shall have a minimum, standard sound transmission class (STC) ratings as follows:
    - Minimum STC ratings of 27 for all windows and/or glass doors at residential lots 35 to 60, 79 to 100, and 110 to 113.
    - Minimum upgraded STC ratings of 32 for all hotel building windows and/or glass doors facing I-15.
- Doors: All exterior doors shall be well weather-stripped and have minimum STC ratings of 27. Well-sealed perimeter gaps around the doors are essential to achieve the optimal STC rating. (4)
- Walls: At any penetrations of exterior walls by pipes, ducts, or conduits, the space between the wall and pipes, ducts, or conduits shall be caulked or filled with mortar to form an airtight seal.
- Residential Roofs: Roof sheathing of wood construction shall be per manufacturer's specifications or caulked plywood of at least one-half inch thick. Ceilings shall be per manufacturer's specifications or well-sealed gypsum board of at least one-half inch thick. Insulation with at least a rating of R-19 shall be used in the attic space.
- Ventilation: Arrangements for any habitable room shall be such that any exterior door or window can be kept closed when the room is in use and still receive circulated air. A forced air circulation system (e.g. air conditioning) or active ventilation system (e.g. fresh air supply) shall be provided which satisfies the requirements of the Uniform Building Code.
- Final Noise Study (Hotel): A final noise study shall be prepared prior to obtaining building permits for the hotel building. This report would finalize the mitigation measures described in this study using the precise grading plans and actual building design specifications, and may include additional mitigation, if necessary, to meet the City of Lake Elsinore 45 dBA CNEL interior noise level standard for hotel uses.

OPERATIONAL NOISE ANALYSIS

Using reference noise levels to represent the potential noise sources within the Nichols Ranch site, this analysis estimates the Project-related operational (stationary-source) noise levels at the nearby noise-sensitive receiver locations. The Project-related operational noise sources are expected to include: roof-top air conditioning units, parking lot vehicle movements, a drive-through speakerphone, gas station activity, a car wash, and park activity. The analysis shows that the Project-related operational noise levels will exceed the City of Lake Elsinore nighttime exterior noise level standards at three of six off-site receiver locations (R1 to R3) in the Project study area, and therefore, the unmitigated Project operational noise levels result in *potentially significant* noise impacts. With operational noise mitigation in the form of daytime-only operational hours for the car wash within the Project site, Project operational noise levels would

be reduced to satisfy the daytime and nighttime City of Lake Elsinore exterior noise level standards at all receiver locations.

Further, this analysis demonstrates that the Project will contribute a *less than significant* operational noise level increase over the existing ambient noise environment at all nearby sensitive receiver locations. Therefore, the operational noise level impacts associated with the proposed Project activities, such as the roof-top air conditioning units, parking lot vehicle movements, a drive-through speakerphone, gas station activity, a car wash, and park activity will be *less than significant*.

OPERATIONAL NOISE MITIGATION MEASURES

The following mitigation measures are required to reduce the operational noise level impacts at the nearby sensitive receiver locations:

- Car wash activity shall be restricted to between the daytime hours established in the City of Lake Elsinore Municipal Code (7:00 a.m. to 10:00 p.m.). (5) No nighttime (10:00 p.m. to 7:00 a.m.) car wash activity shall be permitted.

CONSTRUCTION NOISE ANALYSIS

Construction-related noise impacts are expected to create temporary and intermittent high-level noise conditions at receivers surrounding the Project site. Using sample reference noise levels to represent the planned construction activities of the Nichols Ranch site, this analysis estimates the Project-related construction noise levels at nearby sensitive receiver locations. The Project-related short-term construction noise levels are expected to approach 80.1 dBA L_{max} and will exceed the City of Lake Elsinore Municipal Code 60 dBA L_{max} residential and 70 dBA L_{max} semi-residential (school) thresholds at receiver locations R1 to R6. Therefore, based on the results of this analysis, all nearby sensitive receiver locations will experience *potentially significant* impacts due to Project construction noise levels.

Therefore, construction noise mitigation is required to reduce the short-term construction noise levels at receiver locations R1 to R6. With the mitigation measures identified in this noise study, all nearby sensitive receiver locations will experience *less than significant* impacts due to temporary Project construction noise levels. The construction noise analysis presents a conservative approach with the highest noise-level-producing equipment for each stage of Project construction operating at the closest point from construction activity to the nearby sensitive receiver locations. This scenario is unlikely to occur during typical construction activities and likely overstates the construction noise levels which will be experienced at each receiver location.

CONSTRUCTION VIBRATION ANALYSIS

Based on the reference vibration levels provided by the Federal Transit Administration (FTA), Project-related construction vibration velocity levels are expected to approach 0.015 in/sec root-mean-square (RMS) at the nearby receiver locations at distances ranging from 66 to 203 feet. Based on the City of Lake Elsinore vibration threshold of 0.01 in/sec RMS, the construction-

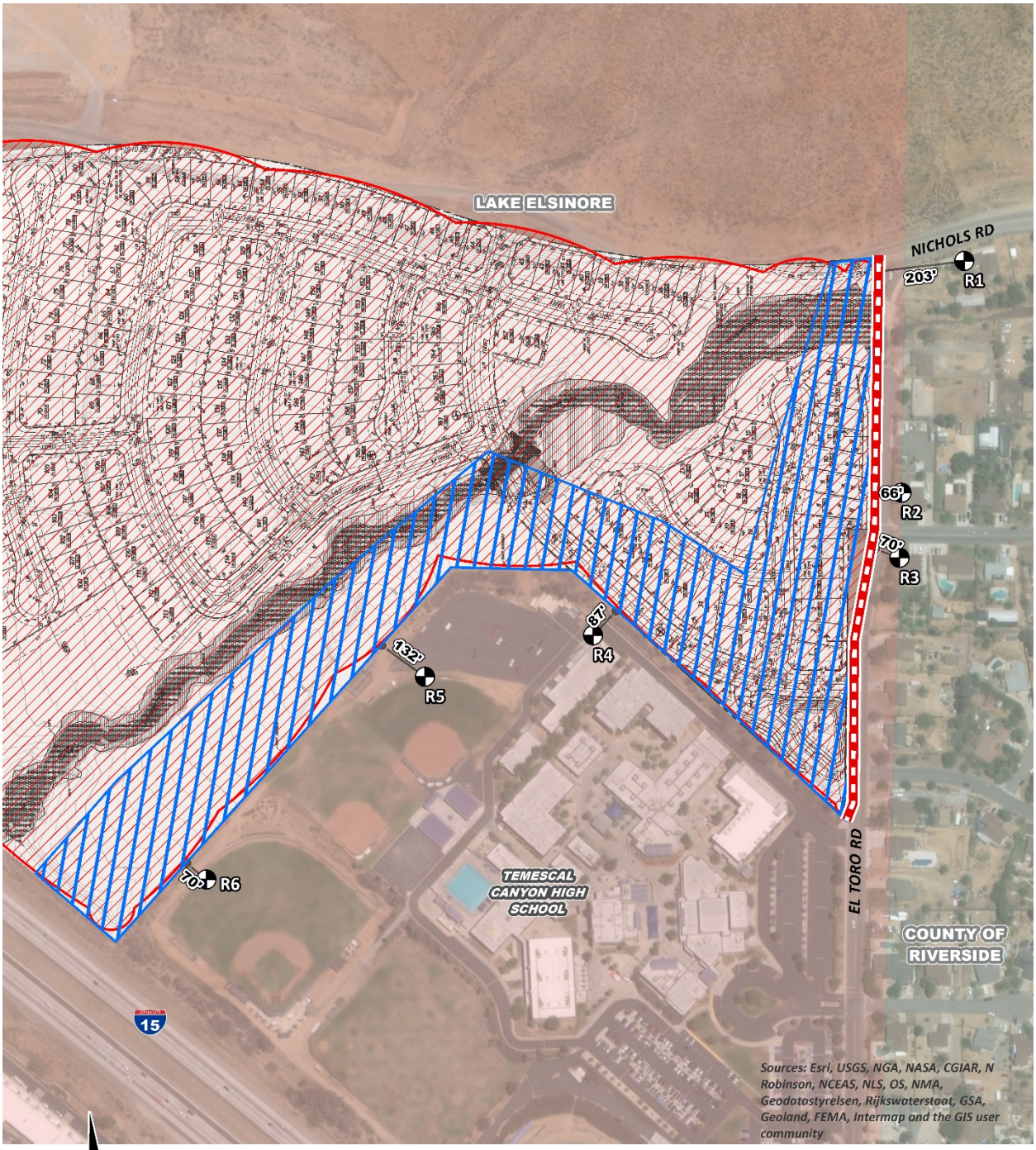
related vibration impacts are considered *potentially significant.* With the mitigation measures identified in this noise study, all nearby sensitive receiver locations will experience *less than significant* impacts due to temporary Project construction vibration levels. Further, vibration levels at 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 at the Project site perimeter. Moreover, construction at the Project site will be restricted to daytime hours consistent with City of Lake Elsinore requirements thereby eliminating potential vibration impacts during the sensitive nighttime hours.

CONSTRUCTION NOISE AND VIBRATION MITIGATION MEASURES

Though construction noise is temporary, intermittent and of short duration, and will not present any long-term impacts, the following mitigation measures would reduce noise and vibration levels produced by the construction equipment to the nearby noise-sensitive residential land uses.

- Large loaded trucks and mobile equipment (greater than or equal to 80,000 pounds) (6) shall not be used within 300 feet of receiver locations R1 to R6 if occupied at the time of Project construction, as shown on Exhibit ES-B. Instead, smaller, rubber-tired mobile equipment (less than 80,000 pounds) or equivalent alternative equipment shall be used within this area during Project construction to reduce vibration effects.
- Install minimum 10-foot high temporary construction noise barriers at the Project's construction activity limits adjacent to sensitive receivers east of El Toro Road, as shown on Exhibit ES-B. The noise control barriers must have a solid face from top to bottom. The noise control barriers must meet the minimum height and be constructed as follows:
    - The temporary noise barriers shall provide a minimum transmission loss of 20 dBA (Federal Highway Administration, Noise Barrier Design Handbook). The noise barrier shall be constructed using an acoustical blanket (e.g. vinyl acoustic curtains or quilted blankets) attached to the construction site perimeter fence or equivalent temporary fence posts;
    - The noise barrier must be maintained and any damage promptly repaired. Gaps, holes, or weaknesses in the barrier or openings between the barrier and the ground shall be promptly repaired;
    - The noise control barrier and associated elements shall be completely removed and the site appropriately restored upon the conclusion of the construction activity.
- During all Project site construction, the construction contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturers' standards. The construction contractor shall place all stationary construction equipment so that emitted noise is directed away from the noise sensitive receivers nearest the Project site.
- The construction contractor shall locate equipment staging in areas that will create the greatest distance between construction-related noise sources and noise-sensitive receivers nearest the Project site (i.e., to the northwest or northern center) during all Project construction.
- The construction contractor shall design delivery routes to minimize the exposure of sensitive land uses or residential dwellings to delivery truck-related noise.

EXHIBIT ES-A: SUMMARY OF ON-SITE TRAFFIC NOISE MITIGATION MEASURES



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LEGEND:

- Receiver Locations
- Construction Activity
- Distance from receiver to construction activity (in feet)
- Minimum 10-foot high temporary noise barrier
- 300-foot buffer for large mobile equipment (> 80,000 lbs)

SUMMARY OF SIGNIFICANCE FINDINGS

The results of this Nichols Ranch Noise Impact Analysis are summarized below based on the significance criteria in Section 4 of this report. Table ES-1 shows the findings of significance for each potential noise and/or vibration impact before and after any required mitigation measures.

TABLE ES-1: SUMMARY OF SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
Off-Site Traffic Noise	7	*Less Than Significant*	*n/a*
On-Site Traffic Noise	8	*Potentially Significant*	*Less Than Significant*
Operational Noise	9	*Potentially Significant*	*Less Than Significant*
Construction Noise	10	*Potentially Significant*	*Less Than Significant*
Construction Vibration		*Potentially Significant*	*Less Than Significant*

"n/a" = No mitigation is required.

1 INTRODUCTION

This noise analysis has been completed to determine the noise impacts associated with the development of the proposed Nichols Ranch ("Project"). This noise study briefly describes the proposed Project, provides information regarding noise fundamentals, describes the local regulatory setting, provides the study methods and procedures for traffic noise analysis, and evaluates the future exterior noise environment. In addition, this study includes an analysis of the potential Project-related long-term operational and short-term construction noise impacts.

1.1 SITE LOCATION

The proposed Nichols Ranch Project is located south of Nichols Road and east of Interstate 15 (I-15) in the City of Lake Elsinore, as shown on Exhibit 1-A. The Project site is currently vacant other than on-going reclamation activities related to the Nichols Road Partners, LLC site located north of Nichols Road. Existing residential homes are located east of the Project site at roughly 56 feet and Temescal Canyon High School is located adjacent to the southern Project site boundary.

1.2 PROJECT DESCRIPTION

The proposed Project is located within the Alberhill Ranch Specific Plan and a portion (southern parcel) lies outside of the Specific Plan. It is anticipated that the Project will be evaluated in 3 phases, with Phase 1 having a projected Opening Year of 2020, Phase 2 having a project Opening Year of 2021, and Project Buildout anticipated to occur in 2024. The Project site plan is shown on Exhibit 1-B.

- Phase 1 (2020): 34 low-medium density residential dwelling units
- Phase 2 (2021): Phase 1 (2020) development plus 134 additional low-medium density residential dwelling units (buildout of residential) and an 8.3-acre park
- Phase 3 (2024): Phase 1 (2020) and Phase 2 (2021) development plus 6,000 square feet (sf) of fast-food restaurant with drive-through window use, 9,400 sf of high turnover (sit-down) restaurant use, 8,000 sf of health and fitness club use, 43,000 sf of office use, 5,500 sf of fast food without drive-through, a 16 vehicle fueling position gas station with convenience store and car wash, and 130 room hotel

The on-site Project-related operational noise sources are expected to include: roof-top air conditioning units, parking lot vehicle movements, a drive-through speakerphone, gas station activity, a car wash, and park activity.

EXHIBIT 1-A: LOCATION MAP

EXHIBIT 1-B: SITE PLAN

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2 FUNDAMENTALS

Noise has been 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	
QUIET URBAN NIGHTTIME	THEATER, LARGE CONFERENCE ROOM (BACKGROUND)	40		SLEEP DISTURBANCE
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. (7) 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. (8) 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 commonly used figure is the equivalent level (Leq). Equivalent sound levels are not measured directly but are calculated from sound pressure levels typically measured in A-weighted decibels (dBA). The equivalent sound level (Leq) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period 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. 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 Leq sound levels in the evening from 7:00 p.m. to 10:00 p.m., and the addition of 10 decibels to dBA Leq 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. 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. (7)

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 ft. 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. (9)

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. (7)

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 nearby resident. 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 FHWA does not consider the planting of vegetation to be a noise abatement measure. (9)

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 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. (9)

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. 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. (10)

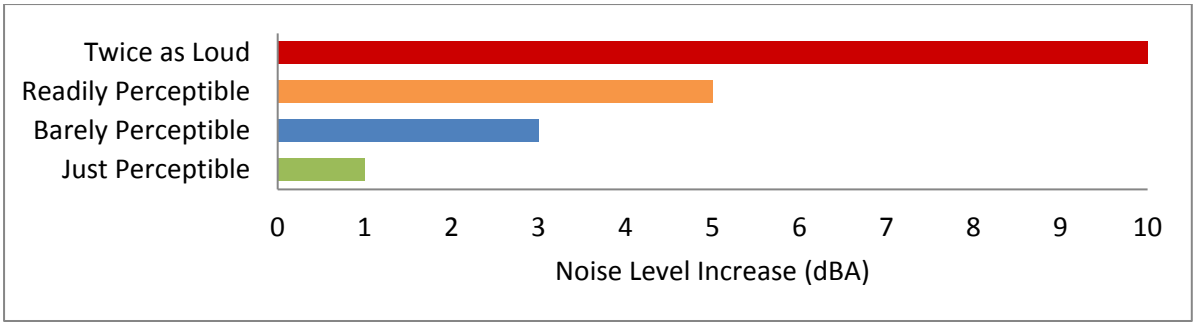
2.7 COMMUNITY RESPONSE TO NOISE

Community responses to noise may range from registering a complaint by telephone or letter, to initiating court action, 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. Another 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. (11) 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. (11) 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. An increase or decrease of 1 dBA cannot be perceived except in carefully controlled laboratory experiments, a change of 3 dBA are considered *barely perceptible*, and changes of 5 dBA are considered *readily perceptible*. (9)

EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION



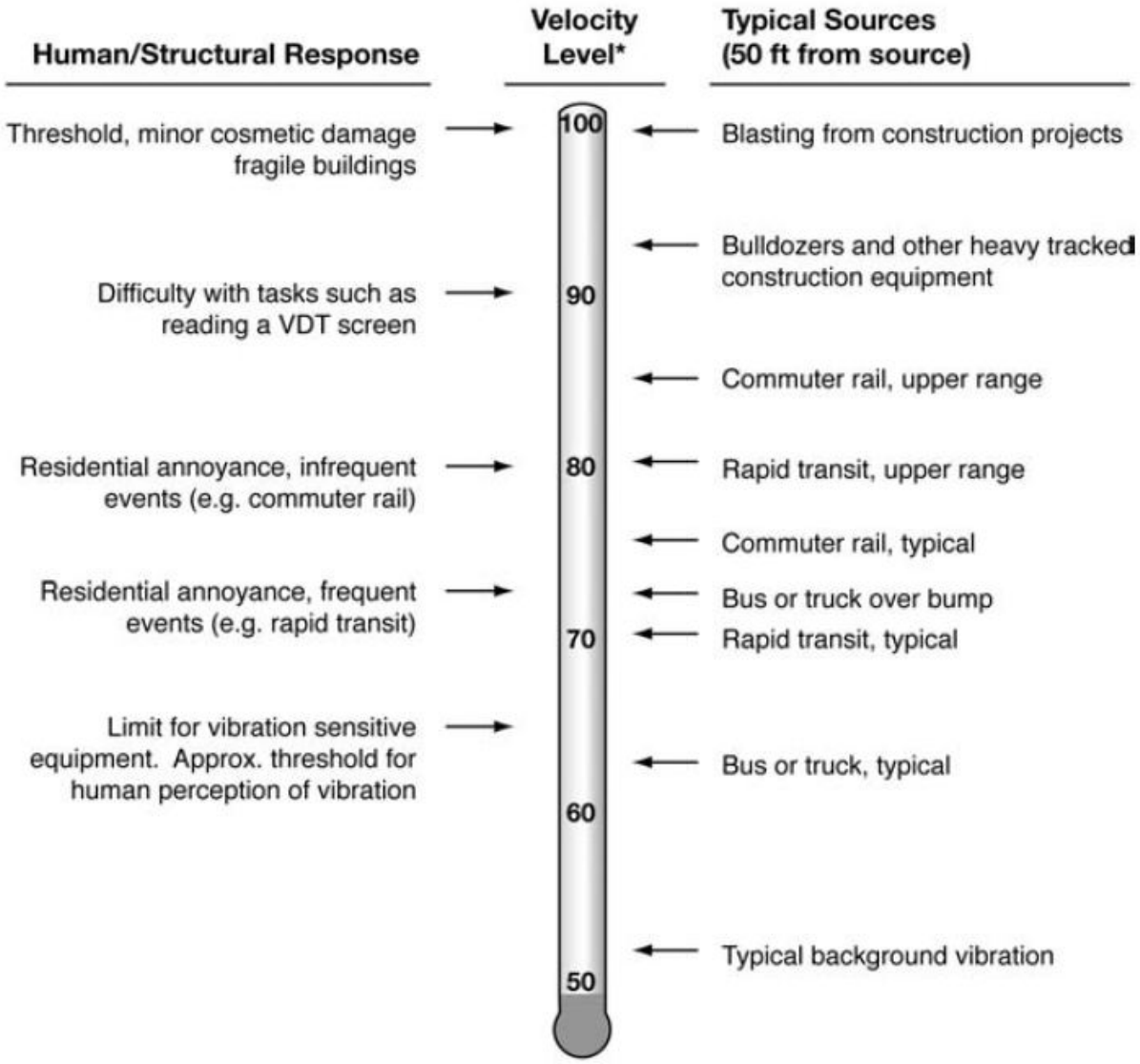
2.8 VIBRATION

Per the Federal Transit Administration (FTA) *Transit Noise Impact and Vibration Assessment* (12), 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.

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



** RMS Vibration Velocity Level in VdB relative to 10^{-6} inches/second*

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

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. (13) The purpose of the Noise 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 STATE OF CALIFORNIA BUILDING STANDARDS

The State of California's noise insulation standards are codified in the California Code of Regulations, Title 24, Building Standards Administrative Code, Part 2, and the California Building Code. These noise standards are applied to new construction in California for controlling interior noise levels resulting from exterior noise sources. The regulations specify that acoustical studies must be prepared when noise-sensitive structures, such as residential buildings, schools, or hospitals, are developed near major transportation noise sources, and where such noise sources create an exterior noise level of 60 dBA CNEL or higher. Acoustical studies that accompany building plans for noise-sensitive land uses must demonstrate that the structure has been designed to limit interior noise in habitable rooms to acceptable noise levels. For new residential buildings, schools, and hospitals, the acceptable interior noise limit for new construction is 45 dBA CNEL.

The 2016 State of California's Green Building Standards Code contains mandatory measures for non-residential building construction in Section 5.507 on Environmental Comfort. (14) These noise standards are applied to new construction in California for the purpose of controlling interior noise levels resulting from exterior noise sources. The regulations specify that acoustical studies must be prepared when non-residential structures are developed in areas where the exterior noise levels exceed 65 dBA CNEL, such as within a noise contour of an airport, freeway, railroad, and other areas where noise contours are not readily available. If the development falls within an airport or freeway 65 dBA CNEL noise contour, the combined sound transmission class

(STC) rating of the wall and roof-ceiling assemblies must be at least 50. For those developments in areas where noise contours are not readily available, and the noise level exceeds 65 dBA L_{eq} for any hour of operation, a wall and roof-ceiling combined STC rating of 45, and exterior windows with a minimum STC rating of 40 are required (Section 5.507.4.1).

3.3 CITY OF LAKE ELSINORE GENERAL PLAN

The City of Lake Elsinore has adopted Section 3.7, *Noise,* of the Public Safety and Welfare Element (15) 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 exterior noise levels allowable 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.

3.3.1 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, the Nichols Ranch residential land use is considered *clearly compatible* with exterior noise levels below 60 dBA CNEL and *normally compatible* with exterior noise levels below 70 dBA CNEL. Commercial land use is considered *clearly compatible* with exterior noise levels below 70 dBA CNEL and *normally compatible* with noise levels below 80 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.* (15)

3.3.2 TRANSPORTATION NOISE STANDARDS

The City of Lake Elsinore General Plan Noise section specifies the noise levels allowable for new developments. The *Interior and Exterior Noise Standards* (Table 3-2) identify an exterior noise level of 60 dBA CNEL for noise-sensitive residential land uses, and no exterior noise level standards for commercial and hotel land uses. In addition, the City requires that all land uses achieve an indoor noise standard of 45 dBA CNEL with windows closed consistent with the California Building Code requirements. The City of Lake Elsinore General Plan Noise section standards are shown on Exhibit 3-B. These standards typically apply to transportation-related (mobile) noise sources, while the City's Municipal Code, discussed in Section 3.4, identifies the noise level limits for stationary sources of noise.

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.

EXHIBIT 3-B: INTERIOR AND EXTERIOR NOISE STANDARDS

Land Use Categories		Energy Average LDN	
Categories	**Uses**	**Interior**	**Exterior**
Residential	Single Family, Duplex, Multiple Family	45 [3, 5]	60
	Mobile Homes	–	60 [4]
Commercial, Institutional	Hotel, Motel, Transient Lodging	45 [5]	–
	Hospital, School's classroom	45	–
	Church, Library	45	–

Interpretation

1. Indoor environment excluding: Bathrooms, toilets, closets, corridors.

2. Outdoor environment limited to: Private yard of single family, multi-family private patio or balcony which is served by a means of exit from inside, Mobile Home Park.

3. Noise level requirement with closed windows. Mechanical ventilating system or other means of natural ventilation shall be provided as of Chapter 12, Section 1205 of UBC.

4. Exterior noise level should be such that interior noise level will not exceed 45 CNEL.

5. As per California Administrative Code, Title 24, Part 6, Division T25, Chapter 1, Subchapter 1, Article 4, Section T25-28.

Source: City of Lake Elsinore General Plan, Public Safety and Welfare Element, Table 3-2.

3.4 OPERATIONAL NOISE STANDARDS

To analyze noise impacts originating from a designated fixed location or private property such as the Nichols Ranch Project, stationary-source (operational) noise such as roof-top air conditioning units, parking lot vehicle movements, a drive-through speakerphone, gas station activity, a car wash, and park 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 noise-sensitive residential properties, 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}). (5). Table 3-1 shows the City of Lake Elsinore noise standards by land use.

TABLE 3-1: OPERATIONAL EXTERIOR NOISE LEVEL STANDARDS

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] Source: 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.

3.5 CONSTRUCTION NOISE STANDARDS

To analyze noise impacts originating from the construction of the Nichols Ranch Project, noise from construction activities are typically limited to the hours of operation established under a City's Municipal Code. The Municipal Code noise standards for construction are described below for the City of Lake Elsinore. The construction-related noise standards are summarized in Tables 3-2 and 3-3.

The City of Lake Elsinore has set restrictions to control noise impacts associated with the construction of the proposed Project. 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 Municipal code further requires construction activities to be conducted in such a manner that the maximum (L_{max}) noise levels at affected residential and commercial properties will not exceed the mobile (less than 10-day duration) and stationary equipment (greater than 10-day duration) noise standards provided below on Tables 3-2 and 3-3, respectively. (5)

TABLE 3-2: MOBILE EQUIPMENT NOISE LEVEL LIMITS

Type	Receiving Land Use Category	Time Period	Maximum Noise Levels (dBA L_{max})[1]
I	Single-Family Residential	Daytime (7:00 a.m. - 7:00 p.m.)	75
		Nighttime (7:00 p.m. - 7:00 a.m.)	60
II	Multi-Family Residential	Daytime (7:00 a.m. - 7:00 p.m.)	80
		Nighttime (7:00 p.m. - 7:00 a.m.)	65
III	Semi-Residential/ Commercial	Daytime (7:00 a.m. - 7:00 p.m.)	85
		Nighttime (7:00 p.m. - 7:00 a.m.)	70

[1] Maximum noise levels for nonscheduled, intermittent, short-term operation (less than 10 days) of mobile equipment, City of Lake Elsinore Municipal Code 17.176.080 (F) (Appendix 3.1).

TABLE 3-3: STATIONARY EQUIPMENT NOISE LEVEL LIMITS

Type	Receiving Land Use Category	Time Period	Maximum Noise Levels (dBA L_{max})[1]
I	Single-Family Residential	Daytime (7:00 a.m. - 7:00 p.m.)	60
		Nighttime (7:00 p.m. - 7:00 a.m.)	50
II	Multi-Family Residential	Daytime (7:00 a.m. - 7:00 p.m.)	65
		Nighttime (7:00 p.m. - 7:00 a.m.)	55
III	Semi-Residential/ Commercial	Daytime (7:00 a.m. - 7:00 p.m.)	70
		Nighttime (7:00 p.m. - 7:00 a.m.)	60

[1] Maximum noise levels for repetitively scheduled and relatively long-term operation (period of 10 days or more) of stationary equipment, City of Lake Elsinore Municipal Code 17.176.080 (F) (Appendix 3.1).

In addition to the construction noise level standards identified on Tables 3-2 and 3-3, the City of Lake Elsinore Municipal Code establishes standards for the noise levels received at business properties. Both the mobile equipment noise level limit of 85 dBA L_{max} and stationary equipment noise level limit of 75 dBA L_{max} shall apply at nearby business properties during all hours on a daily basis, including Sundays and legal holidays. (5)

3.6 CONSTRUCTION VIBRATION STANDARDS

To analyze the vibration impacts originating from the construction of the Project, vibration from construction activities are typically evaluated against standards established under a City's Municipal Code. The Municipal Code vibration standards for construction are described below for the City of Lake Elsinore to determine the potential vibration impacts at sensitive receiver locations. The construction-related vibration standards for each jurisdiction are summarized in Table 3-4.

3.6.1 CITY OF LAKE ELSINORE CONSTRUCTION VIBRATION STANDARDS

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, as shown on Table 3-4. (5)

3.6.2 HUMAN PERCEPTION OF VIBRATION

Typically, the human response at the perception threshold for vibration includes annoyance in residential areas as previously shown on Exhibit 2-B, when vibration levels expressed in vibration decibels (VdB) approach 75 VdB. The City of Lake Elsinore, however, identifies a vibration perception threshold of 0.01 in/sec. For vibration levels expressed in velocity, the human body responds to the average vibration amplitude often described as the root-mean-square (RMS). The RMS of a signal is the average of the squared amplitude of the signal, typically calculated over a one-second period. As with airborne sound, the RMS velocity is often expressed in decibel notation as vibration decibels (VdB), which serves to reduce the range of numbers used to describe human response to vibration. Therefore, the City of Lake Elsinore vibration standard of 0.01 in/sec in RMS velocity levels is used in this analysis to assess the human perception of vibration levels due to Project-related construction activities.

TABLE 3-4: CONSTRUCTION VIBRATION STANDARDS

Jurisdiction	Root-Mean-Square (RMS) Velocity (in/sec)
City of Lake Elsinore[1]	0.01

[1] Source: City of Lake Elsinore Municipal Code, Section 17.176.080(G) (Appendix 3.1).

4 SIGNIFICANCE CRITERIA

The following significance criteria are based on guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1) For the purposes of this report, impacts would be potentially significant if the Project results in or causes:

A. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

B. Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels.

C. A substantial permanent increase in ambient noise levels in the Project vicinity above existing levels without the proposed Project; or

D. A substantial temporary or periodic increase in ambient noise levels in the Project vicinity above noise levels existing without the proposed Project.

E. For a project located within 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, expose people residing or working in the Project area to excessive noise levels.

F. For a project within the vicinity of a private airstrip, expose people residing or working in the Project area to excessive noise levels.

While the CEQA Guidelines and 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 under CEQA Guideline A, they do not define the levels at which increases are considered substantial for use under Guidelines B, C, and D. CEQA Guidelines E and F apply to nearby public and private airports, if any, and the Project's land use compatibility. The closest airport is Skylark Field which is located approximately 5.7miles southeast of the Project site. The Project site is not located within the Airport Influence Area of the closest airport, Skylark Airport, and is not subject to substantial noise levels associated with airport operations. Further, the Project site is not located within an airport land use plan or within 2 miles of a public airport. Therefore, the Project would not result in potential noise impacts for people residing or working at the Project site. Further, a review of Google Earth aerial imagery indicates that there are no private airstrips located near the Project site. Therefore, the Project does not have the potential to expose people residing or working in the Project area to excessive noise levels and no impact would occur. No further analysis of CEQA Guidelines E and F is required.

4.1 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.* (16) 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) (17) 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 (i.e., CNEL).

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 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. Table 4-1 below provides a summary of the potential noise impact significance criteria, based on guidance from FICON.

TABLE 4-1: SIGNIFICANCE OF NOISE IMPACTS AT NOISE-SENSITIVE RECEIVERS

Without Project Noise Level	Potential Significant Impact
< 60 dBA	5 dBA or more
60 - 65 dBA	3 dBA or more
> 65 dBA	1.5 dBA or more

Federal Interagency Committee on Noise (FICON), 1992.

4.2 NON-NOISE-SENSITIVE RECEIVERS

The City of Lake Elsinore General Plan, Table 3-1, *Noise and Land Use Compatibility Matrix* is used to establish the satisfactory noise levels of significance for non-noise-sensitive land uses in the Project study area. As previously shown on Exhibit 3-A, the *normally compatible* exterior noise levels for non-noise-sensitive land uses (e.g., commercial, industrial) is 70 dBA CNEL. Noise levels greater than 70 dBA CNEL are considered *normally incompatible*. (15)

To determine if Project-related traffic noise level increases are significant at off-site non-noise-sensitive land uses, a *readily perceptible* 5 dBA and *barely perceptible* 3 dBA criteria were used. When the without Project noise levels at the non-noise-sensitive land uses are below the *normally acceptable* 70 dBA CNEL compatibility criteria, a *readily perceptible* 5 dBA or greater noise level increase is considered a significant impact. When the without Project noise levels are greater than the *normally acceptable* 70 dBA CNEL land use compatibility criteria, a *barely perceptible* 3 dBA or greater noise level increase is considered a significant impact since the noise level criteria is already exceeded. The noise level increases used to determine significant impacts for non-noise-sensitive land uses is generally consistent with the FICON noise level increase thresholds s for noise-sensitive land uses but instead rely on the City of Lake Elsinore General Plan 70 dBA CNEL exterior noise level criteria.

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 4-2 shows the significance criteria summary matrix.

OFF-SITE TRAFFIC NOISE

- When the noise levels at existing and future noise-sensitive land uses (e.g. residential, school, etc.):
    - are less than 60 dBA and the Project creates a *readily perceptible* 5 dBA or greater Project-related noise level increase; or
    - range from 60 to 65 dBA and the Project creates a *barely perceptible* 3 dBA or greater Project-related noise level increase; or
    - already exceed 65 dBA, and the Project creates a community noise level impact of greater than 1.5 dBA (FICON, 1992).
- When the noise levels at existing and future non-noise-sensitive land uses (e.g., commercial, industrial):
    - are less than the 70 dBA CNEL criteria and the Project creates a *readily perceptible* 5 dBA CNEL or greater Project related noise level increase; or
    - are greater than the 70 dBA CNEL criteria and the Project creates a *barely perceptible* 3 dBA CNEL or greater Project noise level increase.

ON-SITE TRAFFIC NOISE

- If the on-site traffic noise levels exceed:
  - the exterior 60 dBA CNEL noise level standard for single-family residential outdoor areas of frequent human use (e.g., backyards); or
  - the interior 45 dBA CNEL noise level standard for residential and hotel uses (City of Lake Elsinore General Plan, Public Health and Safety Element, Section 3.7 Noise, Table 3-2).

OPERATIONAL NOISE

- If Project-related operational (stationary-source) noise levels exceed the exterior noise level standard at nearby sensitive receiver locations identified on Table 3-1 by land use category (City of Lake Elsinore Municipal Code, Chapter 17.176 Noise Control);
- If the existing ambient noise levels at the nearby noise-sensitive receivers near the Project site:
  - are less than 60 dBA L_{50} and the Project creates a *readily perceptible* 5 dBA L_{50} or greater Project-related noise level increase; or
  - range from 60 to 65 dBA L_{50} and the Project creates a *barely perceptible* 3 dBA L_{50} or greater Project-related noise level increase; or
  - already exceed 65 dBA L_{50}, and the Project creates a community noise level impact of greater than 1.5 dBA L_{50} (FICON, 1992).

CONSTRUCTION NOISE AND VIBRATION

- If Project-related construction activities generate noise levels which exceed the mobile or stationary equipment noise level limits described on Tables 3-2 and 3-3 (City of Lake Elsinore Municipal Code, Section 17.176.080(F)).
- If short-term Project generated construction vibration levels exceed the City of Lake Elsinore maximum acceptable vibration standard of 0.01 in/sec (RMS) at sensitive receiver locations (City of Lake Elsinore Municipal Code, Section 17.176.080(G)).

TABLE 4-2: SIGNIFICANCE CRITERIA SUMMARY

Analysis	Receiving Land Use	Condition(s)	Significance Criteria	
			Daytime	Nighttime
Off-Site	Noise-Sensitive[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	
	Non-Noise-Sensitive[2]	If ambient is < 70 dBA CNEL	≥ 5 dBA CNEL Project increase	
		If ambient is > 70 dBA CNEL	≥ 3 dBA CNEL Project increase	
On-Site[2]	Residential	Exterior Noise Level Standard	60 dBA CNEL	
		Interior Noise Level Standard	45 dBA CNEL	
	Hotel	Interior Noise Level Standard	45 dBA CNEL	
Operational	Varied[3]	≥ 30 Minutes L_{50}	See Table 3-1 for the Exterior Noise Level Standards by Land Use	
		≥ 15 Minutes L_{25}		
		≥ 5 Minutes L_8		
		≥ 1 Minute L_2		
		Anytime L_{max}		
	Noise-Sensitive[1]	if ambient is < 60 dBA	≥ 5 dBA Project increase	
		if ambient is 60 - 65 dBA	≥ 3 dBA Project increase	
		if ambient is > 65 dBA	≥ 1.5 dBA Project increase	
Construction	Noise-Sensitive	Permitted hours of 7:00 a.m. to 7:00 p.m. weekdays; with no activity allowed on weekends or holidays.[4]		
		Noise Level Threshold (<10 Days)[4]	See Table 3-2	
		Noise Level Threshold (>10 Days)[4]	See Table 3-3	
		Vibration Level Threshold[5]	0.01 in/sec RMS	n/a

[1] Source: FICON, 1992.
[2] Source: City of Lake Elsinore General Plan, Public Health and Safety Element, Section 3.7 Noise, Tables 3-1 & 3-2.
[3] Source: City of Lake Elsinore Municipal Code, Chapter 17.176 Noise Control (Appendix 3.1).
[4] Source: City of Lake Elsinore Municipal Code, Section 17.176.080(F) (Appendix 3.1).
[5] Source: 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.; "n/a" = No nighttime construction activity is permitted, so no nighttime construction noise level limits are identified.

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5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, six 24-hour noise level measurements were taken at sensitive receiver 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 Friday, May 12th, 2017.

The 24-hour noise level measurements were taken in coordination with the Project Applicant so that no on-site reclamation activities occurred at the Project site related to the Nichols Road Partners, LLC site north of Nichols Road. 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. (18)

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 any 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*. (7) 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*. (12)

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. (12) 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. Appendix 5.2 provides a summary of the existing hourly ambient noise levels described below:

- Location L1 represents the noise levels on Nichols Road adjacent to the northern Project site boundary, south of existing Nichols Road Partners, LLC activity. The noise level measurements collected show an overall 24-hour exterior noise level of 68.0 dBA CNEL. The energy (logarithmic) average daytime noise level was calculated at 61.4 dBA L_{eq} with an average nighttime noise level of 61.4 dBA L_{eq}.
- Location L2 represents the noise levels on Nichols Road at the northern Project site boundary. The noise level measurements collected show an overall 24-hour exterior noise level of 63.4 dBA CNEL. The energy (logarithmic) average daytime noise level was calculated at 58.3 dBA L_{eq} with an average nighttime noise level of 56.5 dBA L_{eq}.
- Location L3 represents the noise levels east of the Project site, north of Nichols Road, near existing residential homes. The 24-hour CNEL indicates that the overall exterior noise level is 72.3 dBA CNEL. The energy (logarithmic) average daytime noise level was calculated at 68.4 dBA L_{eq} with an average nighttime noise level of 65.1 dBA L L_{eq} eq.
- Location L4 represents the noise levels at the eastern Project site boundary on Wood Mesa Court near existing residential homes. The noise level measurements collected show an overall 24-hour exterior noise level of 60.9 dBA CNEL. The energy (logarithmic) average daytime noise level was calculated at 56.0 dBA L_{eq} with an average nighttime noise level of 53.9 dBA L_{eq}.
- Location L5 represents the noise levels southeast of the Project site on El Toro Road near existing residential homes and Temescal Canyon High School. The noise level measurements collected show an overall 24-hour exterior noise level of 69.8 dBA CNEL. The energy (logarithmic) average daytime noise level was calculated at 64.8 dBA L_{eq} with an average nighttime noise level of 62.3 dBA L_{eq}.
- Location L6 represents the noise levels south of the Project site on El Toro Road near existing residential homes and Temescal Canyon High School. The 24-hour CNEL indicates that the overall exterior noise level is 76.1 dBA CNEL. The energy (logarithmic) average daytime noise level was calculated at 71.9 dBA L_{eq} with an average nighttime noise level of 68.9 dBA L_{eq}.

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 arterial roadway network. This includes the auto and heavy truck activities on I-15 near the noise level measurement locations. Additional background noise sources include activities at the existing Nichols Road Partners, LLC site north of the Project site. The 24-hour existing noise level measurements shown on Table 5-1 present the existing ambient noise conditions.

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

Location[1]	Distance to Project Boundary (Feet)	Description	Energy Average Noise Level (dBA L_{eq})[2]		Median Noise Level (dBA L_{50})[2]		CNEL
			Daytime	Nighttime	Daytime	Nighttime	
L1	0'	Located on Nichols Road adjacent to the northern Project site boundary, south of existing Chandler Aggregates activity.	61.4	61.4	50.6	46.2	68.0
L2	0'	Located on Nichols Road at the northern Project site boundary.	58.3	56.5	49.1	45.7	63.4
L3	600'	Located east of the Project site, north of Nichols Road, near existing residential homes.	68.4	65.1	62.7	59.2	72.3
L4	0'	Located at the eastern Project site boundary on Wood Mesa Court near existing residential homes.	56.0	53.9	50.9	49.9	60.9
L5	130'	Located southeast of the Project site on El Toro Road near existing residential homes and Temescal Canyon High School.	64.8	62.3	54.7	53.7	69.8
L6	610'	Located south of the Project site on El Toro Road near existing residential homes and Temescal Canyon High School.	71.9	68.9	61.5	57.8	76.1

[1] See Exhibit 5-A for the noise level measurement locations.
[2] The long-term 24-hour measurement printouts 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.

EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS

LEGEND:

Noise Measurement Locations

6 METHODS AND PROCEDURES

The following section outlines the methods and procedures used to model and analyze the future traffic noise environment.

6.1 FHWA TRAFFIC NOISE PREDICTION MODEL

The estimated roadway noise impacts from vehicular traffic were calculated using a computer program that replicates the Federal Highway Administration (FHWA) Traffic Noise Prediction Model- FHWA-RD-77-108. (19) 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. (20) 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.

6.1.1 OFF-SITE TRAFFIC NOISE PREDICTION MODEL INPUTS

Table 6-1 presents the roadway parameters used to assess the Project's off-site transportation noise impacts. Table 6-1 identifies the 21 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 Community Form Element, and the posted vehicle speeds. For this analysis, soft site conditions are used to analyze the traffic noise impacts within the Project study area. Soft site conditions account for the sound propagation loss over natural surfaces such as normal earth and ground vegetation. 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 noise study. (21)

The average daily traffic volumes used for this study are presented on Tables 6-2 to 6-4, and are provided by the *Nichols Ranch Traffic Impact Analysis* prepared by Urban Crossroads, Inc. for the following scenarios: (2)

1. Existing (2018) Conditions (Baseline)
2. Existing plus Phase 1 Project (E+P) Conditions
3. Existing plus Phase 2 Project (E+P) Conditions
4. Existing plus Project Buildout (E+P) Conditions
5. Existing plus Ambient Growth (EA) (2020) Conditions
6. EA plus Project (EAP) (2020) Conditions
7. EA (2021) Conditions

8. EAP (2021) Conditions
9. EA (2024) Conditions
10. EAP (2024) Conditions
11. Existing plus Ambient Growth plus Cumulative (EAC) (2020) Conditions
12. EAC plus Project (EAPC) (2020) Conditions
13. EAC (2021) Conditions
14. EAPC (2021) Conditions
15. EAC (2024) Conditions
16. EAPC (2024) Conditions

TABLE 6-1: OFF-SITE ROADWAY PARAMETERS

ID	Roadway	Segment	Adjacent Planned (Existing) Land Use[1]	Distance from Centerline to Nearest Adjacent Land Use (Feet)[2]	Vehicle Speed (mph)[3]
1	Lake St.	n/o Nichols Rd.	Residential	60'	50
2	Lake St.	s/o Nichols Rd.	Residential	60'	50
3	Lake St.	s/o Alberhill Ranch Rd.	Residential	60'	50
4	Alberhill Ranch Rd.	s/o Nichols Rd.	Residential	39'	35
5	Strickland Av.	s/o Riverside Dr.	Residential	45'	40
6	Collier Av.	s/o Nichols Rd.	Commercial	50'	50
7	Collier Av.	s/o Riverside Dr.	Industrial/Institutional	60'	45
8	Collier Av.	s/o Central Av.	Commercial	50'	45
9	El Toro Rd.	s/o Tereticornis Av.	Residential/School	26'	25
10	Dexter Av.	n/o Central Av.	Commercial	26'	45
11	Nichols Rd.	e/o Lake St.	Residential	60'	50
12	Nichols Rd.	e/o Alberhill Ranch Rd.	Residential	60'	50
13	Nichols Rd.	w/o Collier Av.	Residential/Industrial	60'	50
14	Tereticornis Av.	e/o El Toro Rd.	Residential	26'	25
15	Riverside Dr.	w/o Lakeshore Dr.	Commercial	60'	40
16	Riverside Dr.	e/o Lakeshore Dr.	Commercial	60'	40
17	Riverside Dr.	e/o Strickland Av.	Residential	60'	40
18	Riverside Dr.	w/o Collier Av.	Industrial	60'	40
19	Central Av.	w/o Collier Av.	Industrial	50'	30
20	Central Av.	e/o Dexter Av.	Commercial	67'	55
21	Central Av.	e/o Cambern Av.	Commercial/Residential	67'	55

[1] Sources: City of Lake Elsinore General Plan, Community Form Element, Figure 2.1A Land Use Plan and Google Earth aerial imagery.
[2] Distance to adjacent land use is based upon the right-of-way distances for each functional roadway classification provided in the City of Lake Elsinore General Plan.
[3] Source: Nichols Ranch Traffic Impact Analysis, Urban Crossroads, Inc.

TABLE 6-2: AVERAGE DAILY TRAFFIC VOLUMES (1 OF 3)

ID	Roadway	Segment	Average Daily Traffic (1,000's)[1]					
			Existing (2018)				Existing + Ambient (EA) 2020	
			Without Project	With Phase 1	With Phase 2	With Buildout	Without Project	With Project
1	Lake St.	n/o Nichols Rd.	14.0	14.1	14.1	14.3	14.6	14.6
2	Lake St.	s/o Nichols Rd.	17.9	17.9	18.0	18.4	18.6	18.6
3	Lake St.	s/o Alberhill Ranch Rd.	17.4	17.4	17.5	17.8	18.1	18.1
4	Alberhill Ranch Rd.	s/o Nichols Rd.	1.8	1.8	1.8	2.0	1.9	1.9
5	Strickland Av.	s/o Riverside Dr.	0.2	0.2	0.2	0.4	0.2	0.2
6	Collier Av.	s/o Nichols Rd.	6.8	6.9	7.1	8.3	7.1	7.1
7	Collier Av.	s/o Riverside Dr.	23.1	23.1	23.2	23.7	24.0	24.0
8	Collier Av.	s/o Central Av.	9.9	9.9	10.0	10.2	10.3	10.3
9	El Toro Rd.	s/o Tereticornis Av.	3.5	3.5	3.7	4.7	3.6	3.7
10	Dexter Av.	n/o Central Av.	11.3	11.3	11.4	11.8	11.7	11.7
11	Nichols Rd.	e/o Lake St.	5.0	5.0	5.1	5.8	5.2	5.2
12	Nichols Rd.	e/o Alberhill Ranch Rd.	6.2	6.2	6.3	7.2	6.5	6.5
13	Nichols Rd.	w/o Collier Av.	6.4	6.4	6.5	7.4	6.6	6.6
14	Tereticornis Av.	e/o El Toro Rd.	1.1	1.1	1.1	1.3	1.1	1.2
15	Riverside Dr.	w/o Lakeshore Dr.	17.6	17.6	17.7	17.9	18.3	18.3
16	Riverside Dr.	e/o Lakeshore Dr.	21.3	21.3	21.5	21.9	22.2	22.2
17	Riverside Dr.	e/o Strickland Av.	20.6	20.6	20.8	21.6	21.4	21.5
18	Riverside Dr.	w/o Collier Av.	20.6	20.6	20.8	21.6	21.4	21.5
19	Central Av.	w/o Collier Av.	9.2	9.2	9.4	9.5	9.6	9.6
20	Central Av.	e/o Dexter Av.	35.7	35.7	35.7	36.2	37.1	37.1
21	Central Av.	e/o Cambern Av.	36.1	36.1	36.2	36.5	37.6	37.6

[1] Source: Nichols Ranch Traffic Impact Analysis, Urban Crossroads, Inc.

TABLE 6-3: AVERAGE DAILY TRAFFIC VOLUMES (2 OF 3)

ID	Roadway	Segment	Average Daily Traffic (1,000's)[1]					
			EA 2021		EA 2024		EA + Cumulative (EAC) 2020	
			Without Project	With Project	Without Project	With Project	Without Project	With Project
1	Lake St.	n/o Nichols Rd.	14.9	14.9	15.8	16.1	16.5	16.5
2	Lake St.	s/o Nichols Rd.	19.0	19.1	20.1	20.7	20.4	20.4
3	Lake St.	s/o Alberhill Ranch Rd.	18.5	18.6	19.6	20.0	19.9	19.9
4	Alberhill Ranch Rd.	s/o Nichols Rd.	1.9	1.9	2.0	2.3	1.9	1.9
5	Strickland Av.	s/o Riverside Dr.	0.2	0.2	0.2	0.4	0.3	0.3
6	Collier Av.	s/o Nichols Rd.	7.2	7.5	7.7	9.2	7.6	7.6
7	Collier Av.	s/o Riverside Dr.	24.5	24.6	26.0	26.6	25.5	25.5
8	Collier Av.	s/o Central Av.	10.5	10.6	11.2	11.5	11.1	11.1
9	El Toro Rd.	s/o Tereticornis Av.	3.7	3.9	3.9	4.9	3.6	3.7
10	Dexter Av.	n/o Central Av.	12.0	12.0	12.7	13.2	11.7	11.7
11	Nichols Rd.	e/o Lake St.	5.3	5.4	5.6	6.4	7.5	7.5
12	Nichols Rd.	e/o Alberhill Ranch Rd.	6.6	6.7	7.0	8.0	8.8	8.8
13	Nichols Rd.	w/o Collier Av.	6.7	6.9	7.2	8.2	9.0	9.0
14	Tereticornis Av.	e/o El Toro Rd.	1.1	1.2	1.4	1.5	1.1	1.2
15	Riverside Dr.	w/o Lakeshore Dr.	18.6	18.7	19.8	20.1	18.9	18.9
16	Riverside Dr.	e/o Lakeshore Dr.	22.6	22.8	24.0	24.6	23.1	23.1
17	Riverside Dr.	e/o Strickland Av.	21.9	22.0	23.2	24.2	22.3	22.4
18	Riverside Dr.	w/o Collier Av.	21.9	22.0	23.2	24.2	22.4	22.5
19	Central Av.	w/o Collier Av.	9.8	9.9	10.4	10.7	9.8	9.8
20	Central Av.	e/o Dexter Av.	37.9	37.9	40.2	40.7	37.1	37.1
21	Central Av.	e/o Cambern Av.	38.3	38.4	40.7	41.1	37.6	37.6

[1] Source: Nichols Ranch Traffic Impact Analysis, Urban Crossroads, Inc.

TABLE 6-4: AVERAGE DAILY TRAFFIC VOLUMES (3 OF 3)

ID	Roadway	Segment	Average Daily Traffic (1,000's)[1]			
			EAC 2021		EAC 2024	
			Without Project	With Project	Without Project	With Project
1	Lake St.	n/o Nichols Rd.	17.6	17.7	21.6	21.7
2	Lake St.	s/o Nichols Rd.	21.6	21.7	25.8	25.9
3	Lake St.	s/o Alberhill Ranch Rd.	21.1	21.2	25.1	25.2
4	Alberhill Ranch Rd.	s/o Nichols Rd.	2.0	2.0	2.4	2.4
5	Strickland Av.	s/o Riverside Dr.	0.3	0.3	0.6	0.6
6	Collier Av.	s/o Nichols Rd.	7.9	8.2	10.3	10.6
7	Collier Av.	s/o Riverside Dr.	26.7	26.8	30.8	30.9
8	Collier Av.	s/o Central Av.	11.7	11.8	13.8	13.9
9	El Toro Rd.	s/o Tereticornis Av.	3.7	3.9	4.8	5.0
10	Dexter Av.	n/o Central Av.	12.0	12.1	13.1	13.2
11	Nichols Rd.	e/o Lake St.	8.7	8.8	13.2	13.3
12	Nichols Rd.	e/o Alberhill Ranch Rd.	10.1	10.2	14.9	15.0
13	Nichols Rd.	w/o Collier Av.	10.3	10.4	15.2	15.3
14	Tereticornis Av.	e/o El Toro Rd.	1.2	1.2	1.5	1.5
15	Riverside Dr.	w/o Lakeshore Dr.	19.6	19.7	21.8	21.9
16	Riverside Dr.	e/o Lakeshore Dr.	23.9	24.1	27.0	27.2
17	Riverside Dr.	e/o Strickland Av.	23.3	23.5	26.8	27.0
18	Riverside Dr.	w/o Collier Av.	23.4	23.6	27.1	27.3
19	Central Av.	w/o Collier Av.	10.0	10.2	11.0	11.2
20	Central Av.	e/o Dexter Av.	37.9	37.9	40.7	40.7
21	Central Av.	e/o Cambern Av.	38.3	38.4	41.0	41.1

[1] Source: Nichols Ranch Traffic Impact Analysis, Urban Crossroads, Inc.

Table 6-5 presents the time of day vehicle splits and Table 6-6 presents the traffic flow distributions (vehicle mix) used for this analysis. The vehicle mix provides the hourly distribution percentages of automobile, medium trucks, and heavy trucks for input into the FHWA noise prediction model.

TABLE 6-5: TIME OF DAY VEHICLE SPLITS

Time Period	Vehicle Type		
	Autos	Medium Trucks	Heavy Trucks
Daytime (7:00 a.m. - 7:00 p.m.)	77.5%	84.8%	86.5%
Evening (7:00 p.m. - 10:00 p.m.)	12.9%	4.9%	2.7%
Nighttime (10:00 p.m. - 7:00 a.m.)	9.6%	10.3%	10.8%
Total:	100.0%	100.0%	100.0%

Source: Typical Southern California vehicle mix.

TABLE 6-6: DISTRIBUTION OF TRAFFIC FLOW BY VEHICLE TYPE (VEHICLE MIX)

Roadway	Total % Traffic Flow			Total
	Autos	Medium Trucks	Heavy Trucks	
I-15 Fwy.[1]	89.50%	4.72%	5.78%	100.00%
All Roadways[2]	97.42%	1.84%	0.74%	100.00%

[1] Source: Caltrans Traffic Data Branch Annual Average Daily Truck Traffic on the California Highways System, 2016.
[2] Source: County of Riverside Office of Industrial Hygiene.

6.1.2 ON-SITE TRAFFIC NOISE PREDICTION MODEL INPUTS

The on-site roadway parameters including the average daily traffic (ADT) volumes used for this study are presented on Table 6-1. Based on the City of Lake Elsinore General Plan Community Form Element, Nichols Road is classified as a 6-lane Urban Arterial. To predict the future on-site noise environment at the Project site, average daily volumes were obtained from the County of Riverside Office of Industrial Hygiene requirements for noise studies. (2) Future traffic volumes for I-15 were based on an assumed 10-percent growth over 2016 conditions found in the Caltrans Traffic Data Branch *Annual Average Daily Truck Traffic on the California Highways System*. (22) The traffic volumes shown on Table 6-1 reflect future long-range traffic conditions needed to assess the future on-site traffic noise environment and to identify the appropriate noise mitigation measures, if any, that address the worst-case future conditions. Soft site conditions were used to analyze the traffic noise impacts within the Project study area which account for the sound propagation loss over natural surfaces such as normal earth and ground vegetation. 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 noise study. (21)

TABLE 6-5: ON-SITE ROADWAY PARAMETERS

Roadway Segment	Lanes	Classification[1]	Average Daily Traffic Volume[2]	Speed Limit (mph)[3]	Site Conditions
I-15 Fwy.	6	Freeway	128,700	70	Soft
Nichols Rd.	6	Urban Arterial	43,100	50	Soft

[1] Road classifications based upon the City of Lake Elsinore General Plan Community Form Element.
[2] Source: County of Riverside Office of Industrial Hygiene requirements for noise studies. I-15 traffic volume is based on 10-percent growth over 2016 count data from Caltrans Traffic Data Branch Annual Average Daily Truck Traffic.
[3] Source: Nichols Ranch Traffic Impact Analysis, Urban Crossroads, Inc., and posted speed limits.

Table 6-5 presents the time of day vehicle splits by vehicle type, and Table 6-6 presents the total traffic flow distributions (vehicle mixes) used for this analysis. The vehicle mix provides the hourly distribution percentages of automobile, medium trucks, and heavy trucks for input into the FHWA Model based on roadway types. To predict the future noise environment at each building within the Project site, coordinate information was collected to identify the noise transmission path between the noise source and receiver. The coordinate information is based on the Project site plan showing the plotting of each Project building in relationship to I-15 and Nichols Road, as previously shown on Exhibit 1-B.

6.2 CONSTRUCTION VIBRATION ASSESSMENT METHODOLOGY

This analysis focuses on the potential ground-borne vibration associated with vehicular traffic and construction activities. Ground-borne vibration levels from automobile traffic are generally overshadowed by vibration generated by heavy trucks that roll over the same uneven roadway surfaces. However, due to the rapid drop-off rate of ground-borne vibration and the short duration of the associated events, vehicular traffic-induced ground-borne vibration is rarely perceptible beyond the roadway right-of-way, and rarely results in vibration levels that cause damage to buildings in the vicinity.

While vehicular traffic is rarely perceptible, construction has the potential to result in varying degrees of temporary ground vibration, depending on the specific construction activities and equipment used. Ground vibration levels associated with various types of construction equipment are summarized on Table 6-8. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the human response (annoyance) 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 6-8: 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

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, May 2006.

7 OFF-SITE TRANSPORTATION NOISE IMPACTS

To assess the off-site transportation CNEL noise level impacts associated with development of the proposed Project, noise contours were developed based on the *Nichols Ranch Traffic Impact Analysis*. (2) Noise contour boundaries represent the equal levels of noise exposure and are measured in CNEL from the center of the roadway. Noise contours were developed for the following traffic scenarios:

- Existing Without / With Phase 1: This scenario refers to the existing present-day noise conditions, without and with Phase 1 of the proposed Project.
- Existing Without / With Phase 2: This scenario refers to the existing present-day noise conditions, without and with Phase 2 of the proposed Project.
- Existing Without / With Project Buildout: This scenario refers to the existing present-day noise conditions, without and with Project Buildout.
- Existing plus Ambient Growth (EA) 2020 Without / With Phase 1: This scenario refers to the background noise conditions at future Year 2020 without and with Phase 1 of the proposed Project plus ambient growth.
- EA 2021 Without / With Phase 2: This scenario refers to the background noise conditions at future Year 2021 without and with Phase 2 of the proposed Project plus ambient growth.
- EA 2024 Without / With Project Buildout: This scenario refers to the background noise conditions at future Year 2024 without and with Project buildout plus ambient growth.
- EA plus Cumulative (EAC) 2020 Without / With Phase 1: This scenario refers to the background noise conditions at future Year 2020 without and with Phase 1 of the proposed Project plus ambient growth. This scenario corresponds to 2020 conditions, and includes all cumulative projects identified in the Traffic Impact Analysis.
- EAC 2021 Without / With Phase 2: This scenario refers to the background noise conditions at future Year 2021 without and with Phase 2 of the proposed Project plus ambient growth. This scenario corresponds to 2021 conditions, and includes all cumulative projects identified in the Traffic Impact Analysis.
- EAC 2024 Without / With Project Buildout: This scenario refers to the background noise conditions at future Year 2024 without and with Project Buildout plus ambient growth. This scenario corresponds to 2024 conditions, and includes all cumulative projects identified in the Traffic Impact Analysis.

7.1 TRAFFIC NOISE CONTOURS

Noise contours were used to assess the Project's incremental 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 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 7-16 present a summary of the exterior traffic noise levels, without barrier

attenuation, for the study area roadway segments analyzed from the without Project to the with Project conditions in each traffic scenarios. Appendix 7.1 includes a summary of the traffic noise level contours for each of the 16 traffic scenarios.

TABLE 7-1: EXISTING WITHOUT PROJECT NOISE CONTOURS

ID	Road	Segment	Adjacent Planned (Existing) Land Use[1]	dBA CNEL			
				@ Adj. Land Use	70	65	60
					CL to Contour Distance (Feet)[2]		
1	Lake St.	n/o Nichols Rd.	Residential	69.3	RW	116	251
2	Lake St.	s/o Nichols Rd.	Residential	70.4	64	137	296
3	Lake St.	s/o Alberhill Ranch Rd.	Residential	70.3	62	135	290
4	Alberhill Ranch Rd.	s/o Nichols Rd.	Residential	58.2	RW	RW	RW
5	Strickland Av.	s/o Riverside Dr.	Residential	49.9	RW	RW	RW
6	Collier Av.	s/o Nichols Rd.	Commercial	67.0	RW	68	146
7	Collier Av.	s/o Riverside Dr.	Industrial/Institutional	70.3	63	136	294
8	Collier Av.	s/o Central Av.	Commercial	67.5	RW	73	157
9	El Toro Rd.	s/o Tereticornis Av.	Residential/School	60.1	RW	RW	26
10	Dexter Av.	n/o Central Av.	Commercial	71.3	32	69	148
11	Nichols Rd.	e/o Lake St.	Residential	64.8	RW	RW	126
12	Nichols Rd.	e/o Alberhill Ranch Rd.	Residential	65.8	RW	68	146
13	Nichols Rd.	w/o Collier Av.	Residential/Industrial	65.9	RW	69	149
14	Tereticornis Av.	e/o El Toro Rd.	Residential	55.1	RW	RW	RW
15	Riverside Dr.	w/o Lakeshore Dr.	Commercial	67.9	RW	94	202
16	Riverside Dr.	e/o Lakeshore Dr.	Commercial	68.7	RW	106	229
17	Riverside Dr.	e/o Strickland Av.	Residential	68.6	RW	104	224
18	Riverside Dr.	w/o Collier Av.	Industrial	68.6	RW	104	224
19	Central Av.	w/o Collier Av.	Industrial	62.8	RW	RW	77
17	Central Av.	e/o Dexter Av.	Commercial	74.6	136	293	631
18	Central Av.	e/o Cambern Av.	Commercial/Residential	74.7	137	295	635

[1] Sources: City of Lake Elsinore General Plan, Community Form Element, Figure 2.1A Land Use Plan and Google Earth aerial imagery.
[2] "RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-2: EXISTING WITH PHASE 1 NOISE CONTOURS

ID	Road	Segment	Adjacent Planned (Existing) Land Use[1]	dBA CNEL			
				@ Adj. Land Use	70	65	60
					CL to Contour Distance (Feet)[2]		
1	Lake St.	n/o Nichols Rd.	Residential	69.4	RW	117	252
2	Lake St.	s/o Nichols Rd.	Residential	70.4	64	137	296
3	Lake St.	s/o Alberhill Ranch Rd.	Residential	70.3	62	135	290
4	Alberhill Ranch Rd.	s/o Nichols Rd.	Residential	58.2	RW	RW	RW
5	Strickland Av.	s/o Riverside Dr.	Residential	49.9	RW	RW	RW
6	Collier Av.	s/o Nichols Rd.	Commercial	67.0	RW	68	147
7	Collier Av.	s/o Riverside Dr.	Industrial/Institutional	70.3	63	136	294
8	Collier Av.	s/o Central Av.	Commercial	67.5	RW	73	157
9	El Toro Rd.	s/o Tereticornis Av.	Residential/School	60.1	RW	RW	26
10	Dexter Av.	n/o Central Av.	Commercial	71.3	32	69	148
11	Nichols Rd.	e/o Lake St.	Residential	64.8	RW	RW	126
12	Nichols Rd.	e/o Alberhill Ranch Rd.	Residential	65.8	RW	68	146
13	Nichols Rd.	w/o Collier Av.	Residential/Industrial	65.9	RW	69	149
14	Tereticornis Av.	e/o El Toro Rd.	Residential	55.1	RW	RW	RW
15	Riverside Dr.	w/o Lakeshore Dr.	Commercial	67.9	RW	94	202
16	Riverside Dr.	e/o Lakeshore Dr.	Commercial	68.7	RW	106	229
17	Riverside Dr.	e/o Strickland Av.	Residential	68.6	RW	104	224
18	Riverside Dr.	w/o Collier Av.	Industrial	68.6	RW	104	224
19	Central Av.	w/o Collier Av.	Industrial	62.8	RW	RW	77
17	Central Av.	e/o Dexter Av.	Commercial	74.6	136	293	631
18	Central Av.	e/o Cambern Av.	Commercial/Residential	74.7	137	295	635

[1] Sources: City of Lake Elsinore General Plan, Community Form Element, Figure 2.1A Land Use Plan and Google Earth aerial imagery.
[2] "RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-3: EXISTING WITH PHASE 2 NOISE CONTOURS

ID	Road	Segment	Adjacent Planned (Existing) Land Use[1]	dBA CNEL			
				@ Adj. Land Use	70	65	60
					CL to Contour Distance (Feet)[2]		
1	Lake St.	n/o Nichols Rd.	Residential	69.4	RW	117	252
2	Lake St.	s/o Nichols Rd.	Residential	70.4	64	138	297
3	Lake St.	s/o Alberhill Ranch Rd.	Residential	70.3	63	135	291
4	Alberhill Ranch Rd.	s/o Nichols Rd.	Residential	58.2	RW	RW	RW
5	Strickland Av.	s/o Riverside Dr.	Residential	49.9	RW	RW	RW
6	Collier Av.	s/o Nichols Rd.	Commercial	67.2	RW	70	150
7	Collier Av.	s/o Riverside Dr.	Industrial/Institutional	70.4	63	137	294
8	Collier Av.	s/o Central Av.	Commercial	67.5	RW	73	158
9	El Toro Rd.	s/o Tereticornis Av.	Residential/School	60.3	RW	RW	27
10	Dexter Av.	n/o Central Av.	Commercial	71.4	32	69	149
11	Nichols Rd.	e/o Lake St.	Residential	64.9	RW	RW	128
12	Nichols Rd.	e/o Alberhill Ranch Rd.	Residential	65.9	RW	68	147
13	Nichols Rd.	w/o Collier Av.	Residential/Industrial	66.0	RW	70	150
14	Tereticornis Av.	e/o El Toro Rd.	Residential	55.1	RW	RW	RW
15	Riverside Dr.	w/o Lakeshore Dr.	Commercial	67.9	RW	94	202
16	Riverside Dr.	e/o Lakeshore Dr.	Commercial	68.8	RW	107	230
17	Riverside Dr.	e/o Strickland Av.	Residential	68.6	RW	105	225
18	Riverside Dr.	w/o Collier Av.	Industrial	68.6	RW	105	225
19	Central Av.	w/o Collier Av.	Industrial	62.9	RW	RW	79
17	Central Av.	e/o Dexter Av.	Commercial	74.6	136	293	631
18	Central Av.	e/o Cambern Av.	Commercial/Residential	74.7	137	295	637

[1] Sources: City of Lake Elsinore General Plan, Community Form Element, Figure 2.1A Land Use Plan and Google Earth aerial imagery.
[2] "RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-4: EXISTING WITH PROJECT BUILDOUT NOISE CONTOURS

ID	Road	Segment	Adjacent Planned (Existing) Land Use[1]	dBA CNEL			
				@ Adj. Land Use	70	65	60
					CL to Contour Distance (Feet)[2]		
1	Lake St.	n/o Nichols Rd.	Residential	69.4	RW	118	254
2	Lake St.	s/o Nichols Rd.	Residential	70.5	65	140	301
3	Lake St.	s/o Alberhill Ranch Rd.	Residential	70.4	63	137	294
4	Alberhill Ranch Rd.	s/o Nichols Rd.	Residential	58.7	RW	RW	RW
5	Strickland Av.	s/o Riverside Dr.	Residential	52.9	RW	RW	RW
6	Collier Av.	s/o Nichols Rd.	Commercial	67.8	RW	77	167
7	Collier Av.	s/o Riverside Dr.	Industrial/Institutional	70.5	64	139	299
8	Collier Av.	s/o Central Av.	Commercial	67.6	RW	74	160
9	El Toro Rd.	s/o Tereticornis Av.	Residential/School	61.4	RW	RW	32
10	Dexter Av.	n/o Central Av.	Commercial	71.5	33	71	153
11	Nichols Rd.	e/o Lake St.	Residential	65.5	RW	65	139
12	Nichols Rd.	e/o Alberhill Ranch Rd.	Residential	66.4	RW	75	161
13	Nichols Rd.	w/o Collier Av.	Residential/Industrial	66.6	RW	76	164
14	Tereticornis Av.	e/o El Toro Rd.	Residential	55.8	RW	RW	RW
15	Riverside Dr.	w/o Lakeshore Dr.	Commercial	68.0	RW	95	204
16	Riverside Dr.	e/o Lakeshore Dr.	Commercial	68.8	RW	108	233
17	Riverside Dr.	e/o Strickland Av.	Residential	68.8	RW	107	231
18	Riverside Dr.	w/o Collier Av.	Industrial	68.8	RW	107	231
19	Central Av.	w/o Collier Av.	Industrial	63.0	RW	RW	79
17	Central Av.	e/o Dexter Av.	Commercial	74.7	137	295	637
18	Central Av.	e/o Cambern Av.	Commercial/Residential	74.7	138	297	640

[1] Sources: City of Lake Elsinore General Plan, Community Form Element, Figure 2.1A Land Use Plan and Google Earth aerial imagery.
[2] "RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-5: EA 2020 WITHOUT PROJECT NOISE CONTOURS

ID	Road	Segment	Adjacent Planned (Existing) Land Use[1]	dBA CNEL			
				@ Adj. Land Use	70	65	60
					CL to Contour Distance (Feet)[2]		
1	Lake St.	n/o Nichols Rd.	Residential	69.5	RW	120	258
2	Lake St.	s/o Nichols Rd.	Residential	70.6	65	141	303
3	Lake St.	s/o Alberhill Ranch Rd.	Residential	70.4	64	138	298
4	Alberhill Ranch Rd.	s/o Nichols Rd.	Residential	58.5	RW	RW	RW
5	Strickland Av.	s/o Riverside Dr.	Residential	49.9	RW	RW	RW
6	Collier Av.	s/o Nichols Rd.	Commercial	67.2	RW	70	150
7	Collier Av.	s/o Riverside Dr.	Industrial/Institutional	70.5	65	140	301
8	Collier Av.	s/o Central Av.	Commercial	67.6	RW	75	161
9	El Toro Rd.	s/o Tereticornis Av.	Residential/School	60.2	RW	RW	27
10	Dexter Av.	n/o Central Av.	Commercial	71.5	33	70	152
11	Nichols Rd.	e/o Lake St.	Residential	65.0	RW	60	130
12	Nichols Rd.	e/o Alberhill Ranch Rd.	Residential	66.0	RW	70	150
13	Nichols Rd.	w/o Collier Av.	Residential/Industrial	66.1	RW	71	152
14	Tereticornis Av.	e/o El Toro Rd.	Residential	55.1	RW	RW	RW
15	Riverside Dr.	w/o Lakeshore Dr.	Commercial	68.1	RW	96	207
16	Riverside Dr.	e/o Lakeshore Dr.	Commercial	68.9	RW	109	235
17	Riverside Dr.	e/o Strickland Av.	Residential	68.7	RW	107	230
18	Riverside Dr.	w/o Collier Av.	Industrial	68.7	RW	107	230
19	Central Av.	w/o Collier Av.	Industrial	63.0	RW	RW	80
17	Central Av.	e/o Dexter Av.	Commercial	74.8	139	300	647
18	Central Av.	e/o Cambern Av.	Commercial/Residential	74.8	141	303	653

[1] Sources: City of Lake Elsinore General Plan, Community Form Element, Figure 2.1A Land Use Plan and Google Earth aerial imagery.
[2] "RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-6: EA 2020 WITH PROJECT NOISE CONTOURS

ID	Road	Segment	Adjacent Planned (Existing) Land Use[1]	dBA CNEL			
				@ Adj. Land Use	70	65	60
					CL to Contour Distance (Feet)[2]		
1	Lake St.	n/o Nichols Rd.	Residential	69.5	RW	120	258
2	Lake St.	s/o Nichols Rd.	Residential	70.6	65	141	303
3	Lake St.	s/o Alberhill Ranch Rd.	Residential	70.4	64	138	298
4	Alberhill Ranch Rd.	s/o Nichols Rd.	Residential	58.5	RW	RW	RW
5	Strickland Av.	s/o Riverside Dr.	Residential	49.9	RW	RW	RW
6	Collier Av.	s/o Nichols Rd.	Commercial	67.2	RW	70	150
7	Collier Av.	s/o Riverside Dr.	Industrial/Institutional	70.5	65	140	301
8	Collier Av.	s/o Central Av.	Commercial	67.6	RW	75	161
9	El Toro Rd.	s/o Tereticornis Av.	Residential/School	60.3	RW	RW	27
10	Dexter Av.	n/o Central Av.	Commercial	71.5	33	70	152
11	Nichols Rd.	e/o Lake St.	Residential	65.0	RW	60	130
12	Nichols Rd.	e/o Alberhill Ranch Rd.	Residential	66.0	RW	70	150
13	Nichols Rd.	w/o Collier Av.	Residential/Industrial	66.1	RW	71	152
14	Tereticornis Av.	e/o El Toro Rd.	Residential	55.5	RW	RW	RW
15	Riverside Dr.	w/o Lakeshore Dr.	Commercial	68.1	RW	96	207
16	Riverside Dr.	e/o Lakeshore Dr.	Commercial	68.9	RW	109	235
17	Riverside Dr.	e/o Strickland Av.	Residential	68.8	RW	107	230
18	Riverside Dr.	w/o Collier Av.	Industrial	68.8	RW	107	230
19	Central Av.	w/o Collier Av.	Industrial	63.0	RW	RW	80
17	Central Av.	e/o Dexter Av.	Commercial	74.8	139	300	647
18	Central Av.	e/o Cambern Av.	Commercial/Residential	74.8	141	303	653

[1] Sources: City of Lake Elsinore General Plan, Community Form Element, Figure 2.1A Land Use Plan and Google Earth aerial imagery.
[2] "RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-7: EA 2021 WITHOUT PROJECT NOISE CONTOURS

ID	Road	Segment	Adjacent Planned (Existing) Land Use[1]	dBA CNEL			
				@ Adj. Land Use	70	65	60
					CL to Contour Distance (Feet)[2]		
1	Lake St.	n/o Nichols Rd.	Residential	69.6	RW	121	262
2	Lake St.	s/o Nichols Rd.	Residential	70.6	66	143	308
3	Lake St.	s/o Alberhill Ranch Rd.	Residential	70.5	65	140	302
4	Alberhill Ranch Rd.	s/o Nichols Rd.	Residential	58.5	RW	RW	RW
5	Strickland Av.	s/o Riverside Dr.	Residential	49.9	RW	RW	RW
6	Collier Av.	s/o Nichols Rd.	Commercial	67.2	RW	70	152
7	Collier Av.	s/o Riverside Dr.	Industrial/Institutional	70.6	66	142	305
8	Collier Av.	s/o Central Av.	Commercial	67.7	RW	76	164
9	El Toro Rd.	s/o Tereticornis Av.	Residential/School	60.3	RW	RW	27
10	Dexter Av.	n/o Central Av.	Commercial	71.6	33	72	154
11	Nichols Rd.	e/o Lake St.	Residential	65.1	RW	61	131
12	Nichols Rd.	e/o Alberhill Ranch Rd.	Residential	66.1	RW	71	152
13	Nichols Rd.	w/o Collier Av.	Residential/Industrial	66.1	RW	71	153
14	Tereticornis Av.	e/o El Toro Rd.	Residential	55.1	RW	RW	RW
15	Riverside Dr.	w/o Lakeshore Dr.	Commercial	68.1	RW	97	209
16	Riverside Dr.	e/o Lakeshore Dr.	Commercial	69.0	RW	111	238
17	Riverside Dr.	e/o Strickland Av.	Residential	68.8	RW	108	233
18	Riverside Dr.	w/o Collier Av.	Industrial	68.8	RW	108	233
19	Central Av.	w/o Collier Av.	Industrial	63.1	RW	RW	81
17	Central Av.	e/o Dexter Av.	Commercial	74.9	141	305	656
18	Central Av.	e/o Cambern Av.	Commercial/Residential	74.9	142	307	661

[1] Sources: City of Lake Elsinore General Plan, Community Form Element, Figure 2.1A Land Use Plan and Google Earth aerial imagery.
[2] "RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-8: EA 2021 WITH PROJECT NOISE CONTOURS

ID	Road	Segment	Adjacent Planned (Existing) Land Use[1]	dBA CNEL			
				@ Adj. Land Use	70	65	60
					CL to Contour Distance (Feet)[2]		
1	Lake St.	n/o Nichols Rd.	Residential	69.6	RW	121	262
2	Lake St.	s/o Nichols Rd.	Residential	70.7	66	143	309
3	Lake St.	s/o Alberhill Ranch Rd.	Residential	70.6	65	141	303
4	Alberhill Ranch Rd.	s/o Nichols Rd.	Residential	58.5	RW	RW	RW
5	Strickland Av.	s/o Riverside Dr.	Residential	49.9	RW	RW	RW
6	Collier Av.	s/o Nichols Rd.	Commercial	67.4	RW	72	156
7	Collier Av.	s/o Riverside Dr.	Industrial/Institutional	70.6	66	142	306
8	Collier Av.	s/o Central Av.	Commercial	67.8	RW	76	165
9	El Toro Rd.	s/o Tereticornis Av.	Residential/School	60.6	RW	RW	28
10	Dexter Av.	n/o Central Av.	Commercial	71.6	33	72	154
11	Nichols Rd.	e/o Lake St.	Residential	65.2	RW	62	133
12	Nichols Rd.	e/o Alberhill Ranch Rd.	Residential	66.1	RW	71	153
13	Nichols Rd.	w/o Collier Av.	Residential/Industrial	66.2	RW	73	157
14	Tereticornis Av.	e/o El Toro Rd.	Residential	55.5	RW	RW	RW
15	Riverside Dr.	w/o Lakeshore Dr.	Commercial	68.2	RW	97	210
16	Riverside Dr.	e/o Lakeshore Dr.	Commercial	69.0	RW	111	239
17	Riverside Dr.	e/o Strickland Av.	Residential	68.9	RW	109	234
18	Riverside Dr.	w/o Collier Av.	Industrial	68.9	RW	109	234
19	Central Av.	w/o Collier Av.	Industrial	63.2	RW	RW	81
17	Central Av.	e/o Dexter Av.	Commercial	74.9	141	305	656
18	Central Av.	e/o Cambern Av.	Commercial/Residential	74.9	143	307	662

[1] Sources: City of Lake Elsinore General Plan, Community Form Element, Figure 2.1A Land Use Plan and Google Earth aerial imagery.
[2] "RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-9: EA 2024 WITHOUT PROJECT NOISE CONTOURS

ID	Road	Segment	Adjacent Planned (Existing) Land Use[1]	dBA CNEL			
				@ Adj. Land Use	70	65	60
					CL to Contour Distance (Feet)[2]		
1	Lake St.	n/o Nichols Rd.	Residential	69.8	RW	126	272
2	Lake St.	s/o Nichols Rd.	Residential	70.9	69	148	319
3	Lake St.	s/o Alberhill Ranch Rd.	Residential	70.8	68	146	314
4	Alberhill Ranch Rd.	s/o Nichols Rd.	Residential	58.7	RW	RW	RW
5	Strickland Av.	s/o Riverside Dr.	Residential	49.9	RW	RW	RW
6	Collier Av.	s/o Nichols Rd.	Commercial	67.5	RW	74	159
7	Collier Av.	s/o Riverside Dr.	Industrial/Institutional	70.9	68	147	318
8	Collier Av.	s/o Central Av.	Commercial	68.0	RW	79	171
9	El Toro Rd.	s/o Tereticornis Av.	Residential/School	60.6	RW	RW	28
10	Dexter Av.	n/o Central Av.	Commercial	71.8	35	74	160
11	Nichols Rd.	e/o Lake St.	Residential	65.3	RW	63	136
12	Nichols Rd.	e/o Alberhill Ranch Rd.	Residential	66.3	RW	73	158
13	Nichols Rd.	w/o Collier Av.	Residential/Industrial	66.4	RW	75	161
14	Tereticornis Av.	e/o El Toro Rd.	Residential	56.1	RW	RW	RW
15	Riverside Dr.	w/o Lakeshore Dr.	Commercial	68.4	RW	101	218
16	Riverside Dr.	e/o Lakeshore Dr.	Commercial	69.2	RW	115	248
17	Riverside Dr.	e/o Strickland Av.	Residential	69.1	RW	112	242
18	Riverside Dr.	w/o Collier Av.	Industrial	69.1	RW	112	242
19	Central Av.	w/o Collier Av.	Industrial	63.4	RW	RW	84
17	Central Av.	e/o Dexter Av.	Commercial	75.1	147	317	683
18	Central Av.	e/o Cambern Av.	Commercial/Residential	75.2	148	319	688

[1] Sources: City of Lake Elsinore General Plan, Community Form Element, Figure 2.1A Land Use Plan and Google Earth aerial imagery.
[2] "RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-10: EA 2024 WITH PROJECT NOISE CONTOURS

ID	Road	Segment	Adjacent Planned (Existing) Land Use[1]	dBA CNEL			
				@ Adj. Land Use	70	65	60
					CL to Contour Distance (Feet)[2]		
1	Lake St.	n/o Nichols Rd.	Residential	69.9	RW	128	275
2	Lake St.	s/o Nichols Rd.	Residential	71.0	70	151	326
3	Lake St.	s/o Alberhill Ranch Rd.	Residential	70.9	69	148	318
4	Alberhill Ranch Rd.	s/o Nichols Rd.	Residential	59.3	RW	RW	RW
5	Strickland Av.	s/o Riverside Dr.	Residential	52.9	RW	RW	RW
6	Collier Av.	s/o Nichols Rd.	Commercial	68.3	RW	83	179
7	Collier Av.	s/o Riverside Dr.	Industrial/Institutional	71.0	69	150	323
8	Collier Av.	s/o Central Av.	Commercial	68.1	RW	81	174
9	El Toro Rd.	s/o Tereticornis Av.	Residential/School	61.6	RW	RW	33
10	Dexter Av.	n/o Central Av.	Commercial	72.0	35	76	164
11	Nichols Rd.	e/o Lake St.	Residential	65.9	RW	69	149
12	Nichols Rd.	e/o Alberhill Ranch Rd.	Residential	66.9	RW	80	173
13	Nichols Rd.	w/o Collier Av.	Residential/Industrial	67.0	RW	82	176
14	Tereticornis Av.	e/o El Toro Rd.	Residential	56.4	RW	RW	RW
15	Riverside Dr.	w/o Lakeshore Dr.	Commercial	68.5	RW	102	220
16	Riverside Dr.	e/o Lakeshore Dr.	Commercial	69.3	RW	117	252
17	Riverside Dr.	e/o Strickland Av.	Residential	69.3	RW	116	249
18	Riverside Dr.	w/o Collier Av.	Industrial	69.3	RW	116	249
19	Central Av.	w/o Collier Av.	Industrial	63.5	RW	RW	86
17	Central Av.	e/o Dexter Av.	Commercial	75.2	148	319	688
18	Central Av.	e/o Cambern Av.	Commercial/Residential	75.2	149	322	693

[1] Sources: City of Lake Elsinore General Plan, Community Form Element, Figure 2.1A Land Use Plan and Google Earth aerial imagery.
[2] "RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-11: EAC 2020 WITHOUT PROJECT NOISE CONTOURS

ID	Road	Segment	Adjacent Planned (Existing) Land Use[1]	dBA CNEL			
				@ Adj. Land Use	70	65	60
					CL to Contour Distance (Feet)[2]		
1	Lake St.	n/o Nichols Rd.	Residential	70.0	60	130	280
2	Lake St.	s/o Nichols Rd.	Residential	71.0	69	150	322
3	Lake St.	s/o Alberhill Ranch Rd.	Residential	70.8	68	147	317
4	Alberhill Ranch Rd.	s/o Nichols Rd.	Residential	58.5	RW	RW	RW
5	Strickland Av.	s/o Riverside Dr.	Residential	51.7	RW	RW	RW
6	Collier Av.	s/o Nichols Rd.	Commercial	67.5	RW	73	157
7	Collier Av.	s/o Riverside Dr.	Industrial/Institutional	70.8	68	146	314
8	Collier Av.	s/o Central Av.	Commercial	68.0	RW	79	170
9	El Toro Rd.	s/o Tereticornis Av.	Residential/School	60.2	RW	RW	27
10	Dexter Av.	n/o Central Av.	Commercial	71.5	33	70	152
11	Nichols Rd.	e/o Lake St.	Residential	66.6	RW	77	165
12	Nichols Rd.	e/o Alberhill Ranch Rd.	Residential	67.3	RW	85	184
13	Nichols Rd.	w/o Collier Av.	Residential/Industrial	67.4	RW	87	187
14	Tereticornis Av.	e/o El Toro Rd.	Residential	55.1	RW	RW	RW
15	Riverside Dr.	w/o Lakeshore Dr.	Commercial	68.2	RW	98	211
16	Riverside Dr.	e/o Lakeshore Dr.	Commercial	69.1	RW	112	242
17	Riverside Dr.	e/o Strickland Av.	Residential	68.9	RW	110	236
18	Riverside Dr.	w/o Collier Av.	Industrial	68.9	RW	110	237
19	Central Av.	w/o Collier Av.	Industrial	63.1	RW	RW	81
17	Central Av.	e/o Dexter Av.	Commercial	74.8	139	300	647
18	Central Av.	e/o Cambern Av.	Commercial/Residential	74.8	141	303	653

[1] Sources: City of Lake Elsinore General Plan, Community Form Element, Figure 2.1A Land Use Plan and Google Earth aerial imagery.
[2] "RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-12: EAC 2020 WITH PROJECT NOISE CONTOURS

ID	Road	Segment	Adjacent Planned (Existing) Land Use[1]	dBA CNEL			
				@ Adj. Land Use	70	65	60
					CL to Contour Distance (Feet)[2]		
1	Lake St.	n/o Nichols Rd.	Residential	70.0	60	130	280
2	Lake St.	s/o Nichols Rd.	Residential	71.0	69	150	322
3	Lake St.	s/o Alberhill Ranch Rd.	Residential	70.8	68	147	317
4	Alberhill Ranch Rd.	s/o Nichols Rd.	Residential	58.5	RW	RW	RW
5	Strickland Av.	s/o Riverside Dr.	Residential	51.7	RW	RW	RW
6	Collier Av.	s/o Nichols Rd.	Commercial	67.5	RW	73	157
7	Collier Av.	s/o Riverside Dr.	Industrial/Institutional	70.8	68	146	314
8	Collier Av.	s/o Central Av.	Commercial	68.0	RW	79	170
9	El Toro Rd.	s/o Tereticornis Av.	Residential/School	60.3	RW	RW	27
10	Dexter Av.	n/o Central Av.	Commercial	71.5	33	70	152
11	Nichols Rd.	e/o Lake St.	Residential	66.6	RW	77	165
12	Nichols Rd.	e/o Alberhill Ranch Rd.	Residential	67.3	RW	85	184
13	Nichols Rd.	w/o Collier Av.	Residential/Industrial	67.4	RW	87	187
14	Tereticornis Av.	e/o El Toro Rd.	Residential	55.5	RW	RW	RW
15	Riverside Dr.	w/o Lakeshore Dr.	Commercial	68.2	RW	98	211
16	Riverside Dr.	e/o Lakeshore Dr.	Commercial	69.1	RW	112	242
17	Riverside Dr.	e/o Strickland Av.	Residential	68.9	RW	110	237
18	Riverside Dr.	w/o Collier Av.	Industrial	69.0	RW	110	237
19	Central Av.	w/o Collier Av.	Industrial	63.1	RW	RW	81
17	Central Av.	e/o Dexter Av.	Commercial	74.8	139	300	647
18	Central Av.	e/o Cambern Av.	Commercial/Residential	74.8	141	303	653

[1] Sources: City of Lake Elsinore General Plan, Community Form Element, Figure 2.1A Land Use Plan and Google Earth aerial imagery.
[2] "RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-13: EAC 2021 WITHOUT PROJECT NOISE CONTOURS

ID	Road	Segment	Adjacent Planned (Existing) Land Use[1]	dBA CNEL			
				@ Adj. Land Use	70	65	60
					CL to Contour Distance (Feet)[2]		
1	Lake St.	n/o Nichols Rd.	Residential	70.3	63	136	292
2	Lake St.	s/o Nichols Rd.	Residential	71.2	72	155	335
3	Lake St.	s/o Alberhill Ranch Rd.	Residential	71.1	71	153	330
4	Alberhill Ranch Rd.	s/o Nichols Rd.	Residential	58.7	RW	RW	RW
5	Strickland Av.	s/o Riverside Dr.	Residential	51.7	RW	RW	RW
6	Collier Av.	s/o Nichols Rd.	Commercial	67.6	RW	75	161
7	Collier Av.	s/o Riverside Dr.	Industrial/Institutional	71.0	70	150	323
8	Collier Av.	s/o Central Av.	Commercial	68.2	RW	82	176
9	El Toro Rd.	s/o Tereticornis Av.	Residential/School	60.3	RW	RW	27
10	Dexter Av.	n/o Central Av.	Commercial	71.6	33	72	154
11	Nichols Rd.	e/o Lake St.	Residential	67.3	RW	85	183
12	Nichols Rd.	e/o Alberhill Ranch Rd.	Residential	67.9	RW	94	202
13	Nichols Rd.	w/o Collier Av.	Residential/Industrial	68.0	RW	95	204
14	Tereticornis Av.	e/o El Toro Rd.	Residential	55.5	RW	RW	RW
15	Riverside Dr.	w/o Lakeshore Dr.	Commercial	68.4	RW	101	217
16	Riverside Dr.	e/o Lakeshore Dr.	Commercial	69.2	RW	115	247
17	Riverside Dr.	e/o Strickland Av.	Residential	69.1	RW	113	243
18	Riverside Dr.	w/o Collier Av.	Industrial	69.1	RW	113	244
19	Central Av.	w/o Collier Av.	Industrial	63.2	RW	RW	82
17	Central Av.	e/o Dexter Av.	Commercial	74.9	141	305	656
18	Central Av.	e/o Cambern Av.	Commercial/Residential	74.9	142	307	661

[1] Sources: City of Lake Elsinore General Plan, Community Form Element, Figure 2.1A Land Use Plan and Google Earth aerial imagery.
[2] "RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-14: EAC 2021 WITH PROJECT NOISE CONTOURS

ID	Road	Segment	Adjacent Planned (Existing) Land Use[1]	dBA CNEL			
				@ Adj. Land Use	70	65	60
					CL to Contour Distance (Feet)[2]		
1	Lake St.	n/o Nichols Rd.	Residential	70.3	63	136	293
2	Lake St.	s/o Nichols Rd.	Residential	71.2	72	156	336
3	Lake St.	s/o Alberhill Ranch Rd.	Residential	71.1	71	154	331
4	Alberhill Ranch Rd.	s/o Nichols Rd.	Residential	58.7	RW	RW	RW
5	Strickland Av.	s/o Riverside Dr.	Residential	51.7	RW	RW	RW
6	Collier Av.	s/o Nichols Rd.	Commercial	67.8	RW	77	165
7	Collier Av.	s/o Riverside Dr.	Industrial/Institutional	71.0	70	150	324
8	Collier Av.	s/o Central Av.	Commercial	68.2	RW	82	177
9	El Toro Rd.	s/o Tereticornis Av.	Residential/School	60.6	RW	RW	28
10	Dexter Av.	n/o Central Av.	Commercial	71.6	33	72	155
11	Nichols Rd.	e/o Lake St.	Residential	67.3	RW	85	184
12	Nichols Rd.	e/o Alberhill Ranch Rd.	Residential	67.9	RW	94	203
13	Nichols Rd.	w/o Collier Av.	Residential/Industrial	68.0	RW	96	206
14	Tereticornis Av.	e/o El Toro Rd.	Residential	55.5	RW	RW	RW
15	Riverside Dr.	w/o Lakeshore Dr.	Commercial	68.4	RW	101	217
16	Riverside Dr.	e/o Lakeshore Dr.	Commercial	69.3	RW	115	249
17	Riverside Dr.	e/o Strickland Av.	Residential	69.1	RW	113	244
18	Riverside Dr.	w/o Collier Av.	Industrial	69.2	RW	114	245
19	Central Av.	w/o Collier Av.	Industrial	63.3	RW	RW	83
17	Central Av.	e/o Dexter Av.	Commercial	74.9	141	305	656
18	Central Av.	e/o Cambern Av.	Commercial/Residential	74.9	143	307	662

[1] Sources: City of Lake Elsinore General Plan, Community Form Element, Figure 2.1A Land Use Plan and Google Earth aerial imagery.
[2] "RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-15: EAC 2024 WITHOUT PROJECT NOISE CONTOURS

ID	Road	Segment	Adjacent Planned (Existing) Land Use[1]	dBA CNEL			
				@ Adj. Land Use	70	65	60
					CL to Contour Distance (Feet)[2]		
1	Lake St.	n/o Nichols Rd.	Residential	71.2	72	155	335
2	Lake St.	s/o Nichols Rd.	Residential	72.0	81	175	377
3	Lake St.	s/o Alberhill Ranch Rd.	Residential	71.9	80	172	370
4	Alberhill Ranch Rd.	s/o Nichols Rd.	Residential	59.5	RW	RW	RW
5	Strickland Av.	s/o Riverside Dr.	Residential	54.7	RW	RW	RW
6	Collier Av.	s/o Nichols Rd.	Commercial	68.8	RW	89	193
7	Collier Av.	s/o Riverside Dr.	Industrial/Institutional	71.6	77	165	356
8	Collier Av.	s/o Central Av.	Commercial	68.9	RW	91	196
9	El Toro Rd.	s/o Tereticornis Av.	Residential/School	61.5	RW	RW	33
10	Dexter Av.	n/o Central Av.	Commercial	72.0	35	76	164
11	Nichols Rd.	e/o Lake St.	Residential	69.1	RW	112	241
12	Nichols Rd.	e/o Alberhill Ranch Rd.	Residential	69.6	RW	121	262
13	Nichols Rd.	w/o Collier Av.	Residential/Industrial	69.7	RW	123	265
14	Tereticornis Av.	e/o El Toro Rd.	Residential	56.4	RW	RW	RW
15	Riverside Dr.	w/o Lakeshore Dr.	Commercial	68.8	RW	108	232
16	Riverside Dr.	e/o Lakeshore Dr.	Commercial	69.8	RW	124	268
17	Riverside Dr.	e/o Strickland Av.	Residential	69.7	RW	124	267
18	Riverside Dr.	w/o Collier Av.	Industrial	69.8	RW	125	269
19	Central Av.	w/o Collier Av.	Industrial	63.6	RW	RW	87
17	Central Av.	e/o Dexter Av.	Commercial	75.2	148	319	688
18	Central Av.	e/o Cambern Av.	Commercial/Residential	75.2	149	321	692

[1] Sources: City of Lake Elsinore General Plan, Community Form Element, Figure 2.1A Land Use Plan and Google Earth aerial imagery.
[2] "RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-16: EAC 2024 WITH PROJECT NOISE CONTOURS

ID	Road	Segment	Adjacent Planned (Existing) Land Use[1]	dBA CNEL			
				@ Adj. Land Use	70	65	60
					CL to Contour Distance (Feet)[2]		
1	Lake St.	n/o Nichols Rd.	Residential	71.2	72	156	336
2	Lake St.	s/o Nichols Rd.	Residential	72.0	81	175	378
3	Lake St.	s/o Alberhill Ranch Rd.	Residential	71.9	80	172	371
4	Alberhill Ranch Rd.	s/o Nichols Rd.	Residential	59.5	RW	RW	RW
5	Strickland Av.	s/o Riverside Dr.	Residential	54.7	RW	RW	RW
6	Collier Av.	s/o Nichols Rd.	Commercial	68.9	RW	91	196
7	Collier Av.	s/o Riverside Dr.	Industrial/Institutional	71.6	77	165	356
8	Collier Av.	s/o Central Av.	Commercial	68.9	RW	92	197
9	El Toro Rd.	s/o Tereticornis Av.	Residential/School	61.7	RW	RW	34
10	Dexter Av.	n/o Central Av.	Commercial	72.0	35	76	164
11	Nichols Rd.	e/o Lake St.	Residential	69.1	RW	113	242
12	Nichols Rd.	e/o Alberhill Ranch Rd.	Residential	69.6	RW	122	263
13	Nichols Rd.	w/o Collier Av.	Residential/Industrial	69.7	RW	124	266
14	Tereticornis Av.	e/o El Toro Rd.	Residential	56.4	RW	RW	RW
15	Riverside Dr.	w/o Lakeshore Dr.	Commercial	68.8	RW	108	233
16	Riverside Dr.	e/o Lakeshore Dr.	Commercial	69.8	RW	125	269
17	Riverside Dr.	e/o Strickland Av.	Residential	69.8	RW	124	268
18	Riverside Dr.	w/o Collier Av.	Industrial	69.8	RW	125	270
19	Central Av.	w/o Collier Av.	Industrial	63.7	RW	RW	88
17	Central Av.	e/o Dexter Av.	Commercial	75.2	148	319	688
18	Central Av.	e/o Cambern Av.	Commercial/Residential	75.2	149	322	693

[1] Sources: City of Lake Elsinore General Plan, Community Form Element, Figure 2.1A Land Use Plan and Google Earth aerial imagery.
[2] "RW" = Location of the respective noise contour falls within the right-of-way of the road.

7.2 EXISTING CONDITION PROJECT TRAFFIC NOISE LEVELS

This section describes the Project-related off-site traffic noise level increases with and without Phase 1, Phase 2, and Project buildout. Table 7-1 presents the Existing without Project conditions CNEL noise levels. From this the exterior noise levels are shown to range from 49.9 to 74.7 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography.

7.2.1 WITH PHASE 1 TRAFFIC NOISE LEVELS

Table 7-2 shows the Existing with Phase 1 Project conditions will range from 49.9 to 74.7 dBA CNEL. As shown on Table 7-17 the Project will generate a noise level increase of up to 0.1 dBA CNEL on the study area roadway segments. Based on the significance criteria in Section 4, the Project-related noise level increases are considered *less than significant* under Existing with Phase 1 conditions at the land uses adjacent to roadways conveying Project traffic.

7.2.2 WITH PHASE 2 TRAFFIC NOISE LEVELS

Table 7-3 shows the Existing with Phase 2 Project conditions will range from 49.9 to 74.7 dBA CNEL. As shown on Table 7-18 the Project will generate a noise level increase of up to 0.2 dBA CNEL on the study area roadway segments. Based on the significance criteria in Section 4, the Project-related noise level increases are considered *less than significant* under Existing with Phase 2 conditions at the land uses adjacent to roadways conveying Project traffic.

7.2.3 WITH PROJECT BUILDOUT TRAFFIC NOISE LEVELS

Table 7-4 shows the Existing with Project Buildout conditions will range from 52.9 to 74.7 dBA CNEL. As shown on Table 7-19 the Project will generate a noise level increase of up to 3.0 dBA CNEL on the study area roadway segments. Based on the significance criteria in Section 4, the Project-related noise level increases are considered *less than significant* under Existing with Project Buildout conditions at the land uses adjacent to roadways conveying Project traffic.

TABLE 7-17: EXISTING OFF-SITE PHASE 1-RELATED TRAFFIC NOISE IMPACTS

ID	Road	Segment	CNEL at Adjacent Land Use (dBA)[2]			Noise-Sensitive?	Threshold Exceeded?[3]
			No Project	With Project	Project Addition		
1	Lake St.	n/o Nichols Rd.	69.3	69.4	0.1	Yes	No
2	Lake St.	s/o Nichols Rd.	70.4	70.4	0.0	Yes	No
3	Lake St.	s/o Alberhill Ranch Rd.	70.3	70.3	0.0	Yes	No
4	Alberhill Ranch Rd.	s/o Nichols Rd.	58.2	58.2	0.0	Yes	No
5	Strickland Av.	s/o Riverside Dr.	49.9	49.9	0.0	Yes	No
6	Collier Av.	s/o Nichols Rd.	67.0	67.0	0.0	No	No
7	Collier Av.	s/o Riverside Dr.	70.3	70.3	0.0	Yes	No
8	Collier Av.	s/o Central Av.	67.5	67.5	0.0	No	No
9	El Toro Rd.	s/o Tereticornis Av.	60.1	60.1	0.0	Yes	No
10	Dexter Av.	n/o Central Av.	71.3	71.3	0.0	No	No
11	Nichols Rd.	e/o Lake St.	64.8	64.8	0.0	Yes	No
12	Nichols Rd.	e/o Alberhill Ranch Rd.	65.8	65.8	0.0	Yes	No
13	Nichols Rd.	w/o Collier Av.	65.9	65.9	0.0	Yes	No
14	Tereticornis Av.	e/o El Toro Rd.	55.1	55.1	0.0	Yes	No
15	Riverside Dr.	w/o Lakeshore Dr.	67.9	67.9	0.0	No	No
16	Riverside Dr.	e/o Lakeshore Dr.	68.7	68.7	0.0	No	No
17	Riverside Dr.	e/o Strickland Av.	68.6	68.6	0.0	Yes	No
18	Riverside Dr.	w/o Collier Av.	68.6	68.6	0.0	No	No
19	Central Av.	w/o Collier Av.	62.8	62.8	0.0	No	No
20	Central Av.	e/o Dexter Av.	74.6	74.6	0.0	No	No
21	Central Av.	e/o Cambern Av.	74.7	74.7	0.0	Yes	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
[2] Significance Criteria (Section 4).

TABLE 7-18: EXISTING OFF-SITE PHASE 2-RELATED TRAFFIC NOISE IMPACTS

ID	Road	Segment	CNEL at Adjacent Land Use (dBA)[2]			Noise-Sensitive?	Threshold Exceeded?[3]
			No Project	With Project	Project Addition		
1	Lake St.	n/o Nichols Rd.	69.3	69.4	0.1	Yes	No
2	Lake St.	s/o Nichols Rd.	70.4	70.4	0.0	Yes	No
3	Lake St.	s/o Alberhill Ranch Rd.	70.3	70.3	0.0	Yes	No
4	Alberhill Ranch Rd.	s/o Nichols Rd.	58.2	58.2	0.0	Yes	No
5	Strickland Av.	s/o Riverside Dr.	49.9	49.9	0.0	Yes	No
6	Collier Av.	s/o Nichols Rd.	67.0	67.2	0.2	No	No
7	Collier Av.	s/o Riverside Dr.	70.3	70.4	0.1	Yes	No
8	Collier Av.	s/o Central Av.	67.5	67.5	0.0	No	No
9	El Toro Rd.	s/o Tereticornis Av.	60.1	60.3	0.2	Yes	No
10	Dexter Av.	n/o Central Av.	71.3	71.4	0.1	No	No
11	Nichols Rd.	e/o Lake St.	64.8	64.9	0.1	Yes	No
12	Nichols Rd.	e/o Alberhill Ranch Rd.	65.8	65.9	0.1	Yes	No
13	Nichols Rd.	w/o Collier Av.	65.9	66.0	0.1	Yes	No
14	Tereticornis Av.	e/o El Toro Rd.	55.1	55.1	0.0	Yes	No
15	Riverside Dr.	w/o Lakeshore Dr.	67.9	67.9	0.0	No	No
16	Riverside Dr.	e/o Lakeshore Dr.	68.7	68.8	0.1	No	No
17	Riverside Dr.	e/o Strickland Av.	68.6	68.6	0.0	Yes	No
18	Riverside Dr.	w/o Collier Av.	68.6	68.6	0.0	No	No
19	Central Av.	w/o Collier Av.	62.8	62.9	0.1	No	No
20	Central Av.	e/o Dexter Av.	74.6	74.6	0.0	No	No
21	Central Av.	e/o Cambern Av.	74.7	74.7	0.0	Yes	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
[2] Significance Criteria (Section 4).

TABLE 7-19: EXISTING OFF-SITE PROJECT BUILDOUT-RELATED TRAFFIC NOISE IMPACTS

ID	Road	Segment	CNEL at Adjacent Land Use (dBA)[2]			Noise-Sensitive?	Threshold Exceeded?[3]
			No Project	With Project	Project Addition		
1	Lake St.	n/o Nichols Rd.	69.3	69.4	0.1	Yes	No
2	Lake St.	s/o Nichols Rd.	70.4	70.5	0.1	Yes	No
3	Lake St.	s/o Alberhill Ranch Rd.	70.3	70.4	0.1	Yes	No
4	Alberhill Ranch Rd.	s/o Nichols Rd.	58.2	58.7	0.5	Yes	No
5	Strickland Av.	s/o Riverside Dr.	49.9	52.9	3.0	Yes	No
6	Collier Av.	s/o Nichols Rd.	67.0	67.8	0.8	No	No
7	Collier Av.	s/o Riverside Dr.	70.3	70.5	0.2	Yes	No
8	Collier Av.	s/o Central Av.	67.5	67.6	0.1	No	No
9	El Toro Rd.	s/o Tereticornis Av.	60.1	61.4	1.3	Yes	No
10	Dexter Av.	n/o Central Av.	71.3	71.5	0.2	No	No
11	Nichols Rd.	e/o Lake St.	64.8	65.5	0.7	Yes	No
12	Nichols Rd.	e/o Alberhill Ranch Rd.	65.8	66.4	0.6	Yes	No
13	Nichols Rd.	w/o Collier Av.	65.9	66.6	0.7	Yes	No
14	Tereticornis Av.	e/o El Toro Rd.	55.1	55.8	0.7	Yes	No
15	Riverside Dr.	w/o Lakeshore Dr.	67.9	68.0	0.1	No	No
16	Riverside Dr.	e/o Lakeshore Dr.	68.7	68.8	0.1	No	No
17	Riverside Dr.	e/o Strickland Av.	68.6	68.8	0.2	Yes	No
18	Riverside Dr.	w/o Collier Av.	68.6	68.8	0.2	No	No
19	Central Av.	w/o Collier Av.	62.8	63.0	0.2	No	No
20	Central Av.	e/o Dexter Av.	74.6	74.7	0.1	No	No
21	Central Av.	e/o Cambern Av.	74.7	74.7	0.0	Yes	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
[2] Significance Criteria (Section 4).

7.3 EXISTING PLUS AMBIENT CONDITION PROJECT TRAFFIC NOISE LEVELS

This section describes the Project-related off-site traffic noise level increases with and without Phase 1, Phase 2, and Project Buildout under Existing plus Ambient conditions.

7.3.1 EA 2020 WITH PHASE 1 TRAFFIC NOISE LEVELS

Table 7-5 presents the EA 2020 without Project conditions CNEL noise levels which are expected to range from 49.9 to 74.8 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-6 shows the EA 2020 with Phase 1 Project conditions will range from 49.9 to 74.8 dBA CNEL. As shown on Table 7-20 the Project will generate a noise level increase of up to 0.4 dBA CNEL on the study area roadway segments. Based on the significance criteria in Section 4, the Project-related noise level increases are considered *less than significant* under EA 2020 with Phase 1 conditions at the land uses adjacent to roadways conveying Project traffic.

7.3.2 EA 2021 WITH PHASE 2 TRAFFIC NOISE LEVELS

Table 7-7 presents the EA 2021 without Project conditions CNEL noise levels which are expected to range from 49.9 to 74.9 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-8 shows the EA 2021 with Phase 2 Project conditions will range from 49.9 to 74.9 dBA CNEL. As shown on Table 7-21 the Project will generate a noise level increase of up to 0.4 dBA CNEL on the study area roadway segments. Based on the significance criteria in Section 4, the Project-related noise level increases are considered *less than significant* under EA 2021 with Phase 2 conditions at the land uses adjacent to roadways conveying Project traffic.

7.3.3 EA 2024 WITH PROJECT BUILDOUT TRAFFIC NOISE LEVELS

Table 7-9 presents the EA 2024 without Project conditions CNEL noise levels which are expected to range from 49.9 to 75.2 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-10 shows the EA 2024 with Project Buildout conditions will range from 52.9 to 75.2 dBA CNEL. As shown on Table 7-22 the Project will generate a noise level increase of up to 3.0 dBA CNEL on the study area roadway segments. Based on the significance criteria in Section 4, the Project-related noise level increases are considered *less than significant* under EA 2024 with Project Buildout conditions at the land uses adjacent to roadways conveying Project traffic.

TABLE 7-20: EA 2020 OFF-SITE PHASE 1-RELATED TRAFFIC NOISE IMPACTS

ID	Road	Segment	CNEL at Adjacent Land Use (dBA)[2]			Noise-Sensitive?	Threshold Exceeded?[3]
			No Project	With Project	Project Addition		
1	Lake St.	n/o Nichols Rd.	69.5	69.5	0.0	Yes	No
2	Lake St.	s/o Nichols Rd.	70.6	70.6	0.0	Yes	No
3	Lake St.	s/o Alberhill Ranch Rd.	70.4	70.4	0.0	Yes	No
4	Alberhill Ranch Rd.	s/o Nichols Rd.	58.5	58.5	0.0	Yes	No
5	Strickland Av.	s/o Riverside Dr.	49.9	49.9	0.0	Yes	No
6	Collier Av.	s/o Nichols Rd.	67.2	67.2	0.0	No	No
7	Collier Av.	s/o Riverside Dr.	70.5	70.5	0.0	Yes	No
8	Collier Av.	s/o Central Av.	67.6	67.6	0.0	No	No
9	El Toro Rd.	s/o Tereticornis Av.	60.2	60.3	0.1	Yes	No
10	Dexter Av.	n/o Central Av.	71.5	71.5	0.0	No	No
11	Nichols Rd.	e/o Lake St.	65.0	65.0	0.0	Yes	No
12	Nichols Rd.	e/o Alberhill Ranch Rd.	66.0	66.0	0.0	Yes	No
13	Nichols Rd.	w/o Collier Av.	66.1	66.1	0.0	Yes	No
14	Tereticornis Av.	e/o El Toro Rd.	55.1	55.5	0.4	Yes	No
15	Riverside Dr.	w/o Lakeshore Dr.	68.1	68.1	0.0	No	No
16	Riverside Dr.	e/o Lakeshore Dr.	68.9	68.9	0.0	No	No
17	Riverside Dr.	e/o Strickland Av.	68.7	68.8	0.1	Yes	No
18	Riverside Dr.	w/o Collier Av.	68.7	68.8	0.1	No	No
19	Central Av.	w/o Collier Av.	63.0	63.0	0.0	No	No
20	Central Av.	e/o Dexter Av.	74.8	74.8	0.0	No	No
21	Central Av.	e/o Cambern Av.	74.8	74.8	0.0	Yes	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
[2] Significance Criteria (Section 4).

TABLE 7-21: EA 2021 OFF-SITE PHASE 2-RELATED TRAFFIC NOISE IMPACTS

ID	Road	Segment	CNEL at Adjacent Land Use (dBA)[2]			Noise-Sensitive?	Threshold Exceeded?[3]
			No Project	With Project	Project Addition		
1	Lake St.	n/o Nichols Rd.	69.6	69.6	0.0	Yes	No
2	Lake St.	s/o Nichols Rd.	70.6	70.7	0.1	Yes	No
3	Lake St.	s/o Alberhill Ranch Rd.	70.5	70.6	0.1	Yes	No
4	Alberhill Ranch Rd.	s/o Nichols Rd.	58.5	58.5	0.0	Yes	No
5	Strickland Av.	s/o Riverside Dr.	49.9	49.9	0.0	Yes	No
6	Collier Av.	s/o Nichols Rd.	67.2	67.4	0.2	No	No
7	Collier Av.	s/o Riverside Dr.	70.6	70.6	0.0	Yes	No
8	Collier Av.	s/o Central Av.	67.7	67.8	0.1	No	No
9	El Toro Rd.	s/o Tereticornis Av.	60.3	60.6	0.3	Yes	No
10	Dexter Av.	n/o Central Av.	71.6	71.6	0.0	No	No
11	Nichols Rd.	e/o Lake St.	65.1	65.2	0.1	Yes	No
12	Nichols Rd.	e/o Alberhill Ranch Rd.	66.1	66.1	0.0	Yes	No
13	Nichols Rd.	w/o Collier Av.	66.1	66.2	0.1	Yes	No
14	Tereticornis Av.	e/o El Toro Rd.	55.1	55.5	0.4	Yes	No
15	Riverside Dr.	w/o Lakeshore Dr.	68.1	68.2	0.1	No	No
16	Riverside Dr.	e/o Lakeshore Dr.	69.0	69.0	0.0	No	No
17	Riverside Dr.	e/o Strickland Av.	68.8	68.9	0.1	Yes	No
18	Riverside Dr.	w/o Collier Av.	68.8	68.9	0.1	No	No
19	Central Av.	w/o Collier Av.	63.1	63.2	0.1	No	No
20	Central Av.	e/o Dexter Av.	74.9	74.9	0.0	No	No
21	Central Av.	e/o Cambern Av.	74.9	74.9	0.0	Yes	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
[2] Significance Criteria (Section 4).

TABLE 7-22: EA 2024 OFF-SITE PROJECT BUILDOUT-RELATED TRAFFIC NOISE IMPACTS

ID	Road	Segment	CNEL at Adjacent Land Use (dBA)[2]			Noise-Sensitive?	Threshold Exceeded?[3]
			No Project	With Project	Project Addition		
1	Lake St.	n/o Nichols Rd.	69.8	69.9	0.1	Yes	No
2	Lake St.	s/o Nichols Rd.	70.9	71.0	0.1	Yes	No
3	Lake St.	s/o Alberhill Ranch Rd.	70.8	70.9	0.1	Yes	No
4	Alberhill Ranch Rd.	s/o Nichols Rd.	58.7	59.3	0.6	Yes	No
5	Strickland Av.	s/o Riverside Dr.	49.9	52.9	3.0	Yes	No
6	Collier Av.	s/o Nichols Rd.	67.5	68.3	0.8	No	No
7	Collier Av.	s/o Riverside Dr.	70.9	71.0	0.1	Yes	No
8	Collier Av.	s/o Central Av.	68.0	68.1	0.1	No	No
9	El Toro Rd.	s/o Tereticornis Av.	60.6	61.6	1.0	Yes	No
10	Dexter Av.	n/o Central Av.	71.8	72.0	0.2	No	No
11	Nichols Rd.	e/o Lake St.	65.3	65.9	0.6	Yes	No
12	Nichols Rd.	e/o Alberhill Ranch Rd.	66.3	66.9	0.6	Yes	No
13	Nichols Rd.	w/o Collier Av.	66.4	67.0	0.6	Yes	No
14	Tereticornis Av.	e/o El Toro Rd.	56.1	56.4	0.3	Yes	No
15	Riverside Dr.	w/o Lakeshore Dr.	68.4	68.5	0.1	No	No
16	Riverside Dr.	e/o Lakeshore Dr.	69.2	69.3	0.1	No	No
17	Riverside Dr.	e/o Strickland Av.	69.1	69.3	0.2	Yes	No
18	Riverside Dr.	w/o Collier Av.	69.1	69.3	0.2	No	No
19	Central Av.	w/o Collier Av.	63.4	63.5	0.1	No	No
20	Central Av.	e/o Dexter Av.	75.1	75.2	0.1	No	No
21	Central Av.	e/o Cambern Av.	75.2	75.2	0.0	Yes	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
[2] Significance Criteria (Section 4).

7.4 EA PLUS CUMULATIVE CONDITION PROJECT TRAFFIC NOISE LEVELS

This section describes the Project-related off-site traffic noise level increases with and without Phase 1, Phase 2, and Project Buildout under EA plus Cumulative (EAC) conditions.

7.4.1 EAC 2020 WITH PHASE 1 TRAFFIC NOISE LEVELS

Table 7-11 presents the EAC 2020 without Project conditions CNEL noise levels which are expected to range from 51.7 to 74.8 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-12 shows the EAC 2020 with Phase 1 Project conditions will range from 51.7 to 74.8 dBA CNEL. As shown on Table 7-16 the Project will generate a noise level increase of up to 0.4 dBA CNEL on the study area roadway segments. Based on the significance criteria in Section 4, the Project-related noise level increases are considered *less than significant* under EAC 2020 with Phase 1 conditions at the land uses adjacent to roadways conveying Project traffic.

7.4.2 EAC 2021 WITH PHASE 2 TRAFFIC NOISE LEVELS

Table 7-13 presents the EAC 2021 without Project conditions CNEL noise levels which are expected to range from 51.7 to 74.9 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-14 shows the EAC 2021 with Phase 2 Project conditions will range from 51.7 to 74.9 dBA CNEL. As shown on Table 7-17 the Project will generate a noise level increase of up to 0.3 dBA CNEL on the study area roadway segments. Based on the significance criteria in Section 4, the Project-related noise level increases are considered *less than significant* under EAC 2021 with Phase 2 conditions at the land uses adjacent to roadways conveying Project traffic.

7.4.3 EAC 2024 WITH PROJECT BUILDOUT TRAFFIC NOISE LEVELS

Table 7-15 presents the EAC 2024 without Project conditions CNEL noise levels which are expected to range from 54.7 to 75.2 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-16 shows the EAC 2024 with Project Buildout conditions will range from 54.7 to 75.2 dBA CNEL. As shown on Table 7-25 the Project will generate a noise level increase of up to 0.2 dBA CNEL on the study area roadway segments. Based on the significance criteria in Section 4, the Project-related noise level increases are considered *less than significant* under EAC 2024 with Project Buildout conditions at the land uses adjacent to roadways conveying Project traffic.

TABLE 7-23: EAC 2020 OFF-SITE PHASE 1-RELATED TRAFFIC NOISE IMPACTS

ID	Road	Segment	CNEL at Adjacent Land Use (dBA)[2]			Noise-Sensitive?	Threshold Exceeded?[3]
			No Project	With Project	Project Addition		
1	Lake St.	n/o Nichols Rd.	70.0	70.0	0.0	Yes	No
2	Lake St.	s/o Nichols Rd.	71.0	71.0	0.0	Yes	No
3	Lake St.	s/o Alberhill Ranch Rd.	70.8	70.8	0.0	Yes	No
4	Alberhill Ranch Rd.	s/o Nichols Rd.	58.5	58.5	0.0	Yes	No
5	Strickland Av.	s/o Riverside Dr.	51.7	51.7	0.0	Yes	No
6	Collier Av.	s/o Nichols Rd.	67.5	67.5	0.0	No	No
7	Collier Av.	s/o Riverside Dr.	70.8	70.8	0.0	Yes	No
8	Collier Av.	s/o Central Av.	68.0	68.0	0.0	No	No
9	El Toro Rd.	s/o Tereticornis Av.	60.2	60.3	0.1	Yes	No
10	Dexter Av.	n/o Central Av.	71.5	71.5	0.0	No	No
11	Nichols Rd.	e/o Lake St.	66.6	66.6	0.0	Yes	No
12	Nichols Rd.	e/o Alberhill Ranch Rd.	67.3	67.3	0.0	Yes	No
13	Nichols Rd.	w/o Collier Av.	67.4	67.4	0.0	Yes	No
14	Tereticornis Av.	e/o El Toro Rd.	55.1	55.5	0.4	Yes	No
15	Riverside Dr.	w/o Lakeshore Dr.	68.2	68.2	0.0	No	No
16	Riverside Dr.	e/o Lakeshore Dr.	69.1	69.1	0.0	No	No
17	Riverside Dr.	e/o Strickland Av.	68.9	68.9	0.0	Yes	No
18	Riverside Dr.	w/o Collier Av.	68.9	69.0	0.1	No	No
19	Central Av.	w/o Collier Av.	63.1	63.1	0.0	No	No
20	Central Av.	e/o Dexter Av.	74.8	74.8	0.0	No	No
21	Central Av.	e/o Cambern Av.	74.8	74.8	0.0	Yes	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
[2] Significance Criteria (Section 4).

TABLE 7-24: EAC 2021 OFF-SITE PHASE 1-RELATED TRAFFIC NOISE IMPACTS

ID	Road	Segment	CNEL at Adjacent Land Use (dBA)[2]			Noise-Sensitive?	Threshold Exceeded?[3]
			No Project	With Project	Project Addition		
1	Lake St.	n/o Nichols Rd.	70.3	70.3	0.0	Yes	No
2	Lake St.	s/o Nichols Rd.	71.2	71.2	0.0	Yes	No
3	Lake St.	s/o Alberhill Ranch Rd.	71.1	71.1	0.0	Yes	No
4	Alberhill Ranch Rd.	s/o Nichols Rd.	58.7	58.7	0.0	Yes	No
5	Strickland Av.	s/o Riverside Dr.	51.7	51.7	0.0	Yes	No
6	Collier Av.	s/o Nichols Rd.	67.6	67.8	0.2	No	No
7	Collier Av.	s/o Riverside Dr.	71.0	71.0	0.0	Yes	No
8	Collier Av.	s/o Central Av.	68.2	68.2	0.0	No	No
9	El Toro Rd.	s/o Tereticornis Av.	60.3	60.6	0.3	Yes	No
10	Dexter Av.	n/o Central Av.	71.6	71.6	0.0	No	No
11	Nichols Rd.	e/o Lake St.	67.3	67.3	0.0	Yes	No
12	Nichols Rd.	e/o Alberhill Ranch Rd.	67.9	67.9	0.0	Yes	No
13	Nichols Rd.	w/o Collier Av.	68.0	68.0	0.0	Yes	No
14	Tereticornis Av.	e/o El Toro Rd.	55.5	55.5	0.0	Yes	No
15	Riverside Dr.	w/o Lakeshore Dr.	68.4	68.4	0.0	No	No
16	Riverside Dr.	e/o Lakeshore Dr.	69.2	69.3	0.1	No	No
17	Riverside Dr.	e/o Strickland Av.	69.1	69.1	0.0	Yes	No
18	Riverside Dr.	w/o Collier Av.	69.1	69.2	0.1	No	No
19	Central Av.	w/o Collier Av.	63.2	63.3	0.1	No	No
20	Central Av.	e/o Dexter Av.	74.9	74.9	0.0	No	No
21	Central Av.	e/o Cambern Av.	74.9	74.9	0.0	Yes	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
[2] Significance Criteria (Section 4).

TABLE 7-25: EAC 2024 OFF-SITE PROJECT BUILDOUT-RELATED TRAFFIC NOISE IMPACTS

ID	Road	Segment	CNEL at Adjacent Land Use (dBA)[2]			Noise-Sensitive?	Threshold Exceeded?[3]
			No Project	With Project	Project Addition		
1	Lake St.	n/o Nichols Rd.	71.2	71.2	0.0	Yes	No
2	Lake St.	s/o Nichols Rd.	72.0	72.0	0.0	Yes	No
3	Lake St.	s/o Alberhill Ranch Rd.	71.9	71.9	0.0	Yes	No
4	Alberhill Ranch Rd.	s/o Nichols Rd.	59.5	59.5	0.0	Yes	No
5	Strickland Av.	s/o Riverside Dr.	54.7	54.7	0.0	Yes	No
6	Collier Av.	s/o Nichols Rd.	68.8	68.9	0.1	No	No
7	Collier Av.	s/o Riverside Dr.	71.6	71.6	0.0	Yes	No
8	Collier Av.	s/o Central Av.	68.9	68.9	0.0	No	No
9	El Toro Rd.	s/o Tereticornis Av.	61.5	61.7	0.2	Yes	No
10	Dexter Av.	n/o Central Av.	72.0	72.0	0.0	No	No
11	Nichols Rd.	e/o Lake St.	69.1	69.1	0.0	Yes	No
12	Nichols Rd.	e/o Alberhill Ranch Rd.	69.6	69.6	0.0	Yes	No
13	Nichols Rd.	w/o Collier Av.	69.7	69.7	0.0	Yes	No
14	Tereticornis Av.	e/o El Toro Rd.	56.4	56.4	0.0	Yes	No
15	Riverside Dr.	w/o Lakeshore Dr.	68.8	68.8	0.0	No	No
16	Riverside Dr.	e/o Lakeshore Dr.	69.8	69.8	0.0	No	No
17	Riverside Dr.	e/o Strickland Av.	69.7	69.8	0.1	Yes	No
18	Riverside Dr.	w/o Collier Av.	69.8	69.8	0.0	No	No
19	Central Av.	w/o Collier Av.	63.6	63.7	0.1	No	No
20	Central Av.	e/o Dexter Av.	75.2	75.2	0.0	No	No
21	Central Av.	e/o Cambern Av.	75.2	75.2	0.0	Yes	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
[2] Significance Criteria (Section 4).

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8 ON-SITE TRAFFIC NOISE IMPACTS

An on-site exterior noise impact analysis has been completed to determine the transportation-related noise levels and to identify potential necessary abatement measures for the proposed Nichols Ranch Project. It is expected that the primary source of noise impacts to the Project site will be transportation-related noise from Interstate 15 (I-15) and Nichols Road.

8.1 ON-SITE EXTERIOR NOISE ANALYSIS

Using the FHWA noise prediction model and the parameters outlined in Tables 6-5 to 6-7, the expected future exterior noise levels for the Project's residential and hotel uses were calculated. Table 8-1 presents a summary of future exterior noise level impacts at the single-family residential outdoor living areas (backyards) and first-floor building façade of the hotel building. The on-site transportation noise level impacts indicate that the uses adjacent to I-15 and Nichols Road will experience unmitigated exterior noise levels ranging from 54.8 to 70.1 dBA CNEL. The on-site traffic noise analysis calculations are provided in Appendix 8.1.

To satisfy the City of Lake Elsinore 60 dBA CNEL exterior noise level standards for residential land use, the construction of 8-foot high noise barriers for the outdoor living areas (backyards) of lots 35 to 60, and 80 to 81 adjacent to Nichols Road is required. Moreover, a 6-foot high noise barrier is required for lots 82 and 83. With the recommended noise barriers shown on Exhibit ES-A, the future exterior noise levels will range from 54.8 to 59.9 dBA CNEL at the outdoor living areas of single-family residential homes. This noise analysis shows that the recommended noise barriers will satisfy the City of Lake Elsinore 60 dBA CNEL exterior noise level standards for residential land use. The effective noise barrier height recommendations represent the minimum wall and/or berm combination height required to satisfy the City of Lake Elsinore exterior noise level standards.

The future hotel use within the Project site will experience on-site traffic noise levels approaching 63.0 dBA CNEL. Based on the City of Lake Elsinore General Plan Public Safety and Welfare Element, Table 3-1, hotel uses experiencing unmitigated exterior noise levels ranging from 60 to 70 dBA CNEL are considered *normally compatible*, and detailed analysis of interior noise reduction measures should be provided. At the time of this analysis, the location and detailed building plans for the hotel building were not available. Therefore, a final noise study shall be prepared prior to obtaining building permits for the hotel building. This report would finalize the mitigation measures described in this study using the precise grading plans and actual building design specifications, and may include additional mitigation, if necessary, to meet the City of Lake Elsinore 45 dBA CNEL interior noise level standard for hotel uses.

TABLE 8-1: ON-SITE EXTERIOR TRAFFIC NOISE LEVELS (CNEL)

Receiver Location	Roadway	Unmitigated Exterior Noise Levels (dBA CNEL)	Mitigated Exterior Noise Levels (dBA CNEL)	Barrier Height (Feet)	Residential Threshold Exceeded? (60 dBA CNEL)
Hotel	I-15 Fwy.	63.0	–[1]	–[1]	–[1]
91	I-15 Fwy.	54.8	–[2]	–[2]	No
99	I-15 Fwy.	59.7	–[2]	–[2]	No
80	Nichols Rd.	70.1	59.9	8.0	No
45	Nichols Rd.	69.8	59.8	8.0	No
35	Nichols Rd.	68.1	58.0	8.0	No

[1] The City of Lake Elsinore does not identify exterior noise level limits for hotel uses. No exterior noise mitigation is required. Unmitigated exterior noise levels at the hotel building include the attenuation provided by the elevation changes and earthen berm between the I-15 Freeway and the Project site.
[2] The exterior noise level satisfies the City of Lake Elsinore 60 dBA CNEL exterior noise level standard for residential uses without any exterior noise mitigation. Unmitigated exterior noise levels at lots 91 and 99 include the attenuation provided by the elevation changes and earthen berm between the I-15 Freeway and the Project site.

8.2 ON-SITE INTERIOR NOISE ANALYSIS

To ensure that the interior noise levels comply with the City of Lake Elsinore interior noise level standards, future noise levels were calculated at the first, second, third, and fourth floor and above building facades.

8.2.1 NOISE REDUCTION METHODOLOGY

The interior noise level is the difference between the predicted exterior noise level at the building facade and the noise reduction of the structure. Typical building construction will provide a Noise Reduction (NR) of approximately 12 dBA with "windows open" and a minimum 25 dBA noise reduction with "windows closed." However, sound leaks, cracks and openings within the window assembly can greatly diminish its effectiveness in reducing noise. Several methods are used to improve interior noise reduction, including: (1) weather-stripped solid core exterior doors; (2) upgraded dual glazed windows; (3) mechanical ventilation/air conditioning; and (4) exterior wall/roof assembles free of cut outs or openings.

8.2.2 INTERIOR NOISE LEVEL ASSESSMENT

To provide the necessary interior noise level reduction, Tables 8-2 to 8-5 indicate that buildings facing I-15 and Nichols Road will require a windows-closed condition and a means of mechanical ventilation (e.g. air conditioning). Table 8-2 shows that the future unmitigated noise levels at the first-floor building façade are expected to range from 54.6 to 63.0 dBA CNEL. Table 8-3 shows that the future noise levels at the second-floor building façade are expected to range from 55.5 to 72.8 dBA CNEL, and Table 8-4 shows that the third-floor noise levels will approach 72.8 dBA CNEL. Fourth floor and above building façades of the hotel building will experience noise levels approaching 67.5 dBA CNEL, as shown on Table 8-5. With standard windows and/or glass doors

with a minimum sound transmission class (SRC) rating of 27, the interior noise levels for residential lots 35 to 60, 79 to 100, and 110 to 113 facing I-15 and Nichols Road are shown to satisfy the City of Lake Elsinore 45 dBA CNEL interior noise level standard. Hotel first through fourth floor windows will require upgraded STC ratings of 32 for all windows and/or glass doors facing I-15. The interior noise analysis shows that with the recommended interior noise mitigation measures described in the Executive Summary the Project will satisfy the City of Lake Elsinore 45dBA CNEL interior noise level standard.

As previously indicated, a final noise study shall be prepared prior to obtaining building permits for the hotel building. This report would finalize the mitigation measures described in this study using the precise grading plans and actual building design specifications, and may include additional mitigation, if necessary, to meet the City of Lake Elsinore 45 dBA CNEL interior noise level standard for hotel uses.

TABLE 8-2: FIRST FLOOR INTERIOR NOISE IMPACTS (DBA CNEL)

Receiver Location	Noise Level at Façade[1]	Required Interior NR[2]	Estimated Interior NR[3]	Upgraded Windows[4]	Interior Noise Level[5]
Hotel	63.0	18.0	30	Yes	33.0
91	54.6	9.6	25	No	29.6
99	59.5	14.5	25	No	34.5
80	59.7	14.7	25	No	34.7
45	59.7	14.7	25	No	34.7
35	59.0	14.0	25	No	34.0

[1] Exterior noise level at the facade with a windows closed condition requiring a means of mechanical ventilation (e.g. air conditioning).
[2] Noise reduction required to satisfy the 45 dBA CNEL interior noise standards.
[3] A minimum of 25 dBA noise reduction is assumed with standard building construction.
[4] Does the required interior noise reduction trigger upgraded windows with a minimum STC rating of greater than 27?
[5] Estimated interior noise level with minimum STC rating for all windows.
"NR" = Noise Reduction

TABLE 8-3: SECOND FLOOR INTERIOR NOISE IMPACTS (DBA CNEL)

Receiver Location	Noise Level at Façade[1]	Required Interior NR[2]	Estimated Interior NR[3]	Upgraded Windows[4]	Interior Noise Level[5]
Hotel	72.8	27.8	30	Yes	42.8
91	55.5	10.5	25	No	30.5
99	60.9	15.9	25	No	35.9
80	69.3	24.3	25	No	44.3
45	69.0	24.0	25	No	44.0
35	66.6	21.6	25	No	41.6

[1] Exterior noise level at the facade with a windows closed condition requiring a means of mechanical ventilation (e.g. air conditioning).
[2] Noise reduction required to satisfy the 45 dBA CNEL interior noise standards.
[3] A minimum of 25 dBA noise reduction is assumed with standard building construction.
[4] Does the required interior noise reduction trigger upgraded windows with a minimum STC rating of greater than 27?
[5] Estimated interior noise level with minimum STC rating for all windows.
"NR" = Noise Reduction

TABLE 8-4: THIRD FLOOR INTERIOR NOISE IMPACTS (DBA CNEL)

Receiver Location	Noise Level at Façade[1]	Required Interior NR[2]	Estimated Interior NR[3]	Upgraded Windows[4]	Interior Noise Level[5]
Hotel	72.8	27.8	30	Yes	42.8
91	–[6]	–[6]	–[6]	–[6]	–[6]
99	–[6]	–[6]	–[6]	–[6]	–[6]
80	–[6]	–[6]	–[6]	–[6]	–[6]
45	–[6]	–[6]	–[6]	–[6]	–[6]
35	–[6]	–[6]	–[6]	–[6]	–[6]

[1] Exterior noise level at the facade with a windows closed condition requiring a means of mechanical ventilation (e.g. air conditioning).
[2] Noise reduction required to satisfy the 45 dBA CNEL interior noise standards.
[3] A minimum of 25 dBA noise reduction is assumed with standard building construction.
[4] Does the required interior noise reduction trigger upgraded windows with a minimum STC rating of greater than 27?
[5] Estimated interior noise level with minimum STC rating for all windows.
[6] The given receiver location is not anticipated to have third floor interior areas.
"NR" = Noise Reduction

TABLE 8-5: FOURTH FLOOR AND ABOVE INTERIOR NOISE IMPACTS (DBA CNEL)

Receiver Location	Noise Level at Façade[1]	Required Interior NR[2]	Estimated Interior NR[3]	Upgraded Windows[4]	Interior Noise Level[5]
Hotel	72.8	27.8	30	Yes	42.8
91	–[6]	–[6]	–[6]	–[6]	–[6]
99	–[6]	–[6]	–[6]	–[6]	–[6]
80	–[6]	–[6]	–[6]	–[6]	–[6]
45	–[6]	–[6]	–[6]	–[6]	–[6]
35	–[6]	–[6]	–[6]	–[6]	–[6]

[1] Exterior noise level at the facade with a windows closed condition requiring a means of mechanical ventilation (e.g. air conditioning).
[2] Noise reduction required to satisfy the 45 dBA CNEL interior noise standards.
[3] A minimum of 25 dBA noise reduction is assumed with standard building construction.
[4] Does the required interior noise reduction trigger upgraded windows with a minimum STC rating of greater than 27?
[5] Estimated interior noise level with minimum STC rating for all windows.
[6] The given receiver location is not anticipated to have fourth floor interior areas.
"NR" = Noise Reduction

9 RECEIVER LOCATIONS

To assess the potential for long-term operational and short-term construction noise impacts, the following six receiver locations as shown on Exhibit 9-A were identified as representative locations for focused 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, natural open space, undeveloped land, parking lots, warehousing, liquid and solid waste facilities, salvage yards, and transit terminals.

Sensitive receivers near the Project site include existing residential homes and Temescal Canyon High School, as described below. 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.

R1: Located approximately 191 feet east of the Project site, R1 represents an existing residential home south of Nichols Road. A 24-hour noise level measurement was taken near this location, L4, to describe the existing ambient noise environment.

R2: Location R2 represents existing residential homes located approximately 56 feet east of the Project site on Wood Mesa Court. A 24-hour noise level measurement was taken near this location, L4, to describe the existing ambient noise environment.

R3: Location R3 represents the existing residential home located southeast across El Toro Road at roughly 85 feet. A 24-hour noise level measurement was taken near this location, L5, to describe the existing ambient noise environment.

R4: Location R4 represents the closest existing Temescal Canyon High School building to the Project site located roughly 76 feet south. A 24-hour noise level measurement was taken near this location, L6, to describe the existing ambient noise environment.

R5: Location R5 represents the existing baseball field south of the Project site within Temescal Canyon High School at roughly 122 feet. A 24-hour noise level measurement was taken near this location, L6, to describe the existing ambient noise environment.

R6: Location R6 represents an existing baseball field south of the Project site within Temescal Canyon High School at roughly 60 feet. A 24-hour noise level measurement was taken near this location, L6, to describe the existing ambient noise environment.

EXHIBIT 9-A: RECEIVER LOCATIONS

N

LEGEND:

- Receiver Locations
- Distance from receiver to Project site boundary (in feet)

10 OPERATIONAL IMPACTS

This section analyzes the potential operational noise impacts due to the Project's stationary noise sources on the off-site sensitive receiver locations identified in Section 9. Exhibit 10-A identifies the receiver locations and noise source locations used to assess the Project-related operational noise levels.

10.1 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 10-1 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, a drive-through speakerphone, gas station activity, a car wash, and park activity all operating simultaneously. These noise level impacts will vary throughout the day.

TABLE 10-1: REFERENCE NOISE LEVEL MEASUREMENTS

Noise Source	Measurement Duration (hh:mm:ss)	Distance From Source (Feet)	Noise Source Height (Feet)	Reference Noise Levels (dBA L_{50})	
				@ Ref. Dist.	@ 50 Feet
Roof-Top Air Conditioning Units[1]	96:00:00	5'	5'	74.4	54.4
Parking Lot Vehicle Movements[2]	00:15:00	5'	4'	56.7	41.7
Drive-Through Speakerphone[3]	02:00:00	15'	3'	60.9	50.4
Gas Station Activity[4]	00:03:00	5'	5'	65.6	45.6
Car Wash[5]	00:01:05	50'	6'	77.6	77.6
Park Activity[6]	00:15:00	5'	4'	61.7	41.7

[1] As measured by Urban Crossroads, Inc. on 7/27/2015 at the Santee Walmart located at 170 Town Center Parkway.
[2] As measured by Urban Crossroads, Inc. on 5/30/2012 at the Laguna Niguel Walmart located at 27470 Alicia Parkway.
[3] As measured by Urban Crossroads, Inc. on 12/19/2014 at the Panera Bread located at 423 Associated Road in Brea.
[4] As measured by Urban Crossroads, Inc. on 4/26/2016 at the ARCO gas station located at 6501 Quail Hill Parkway in Irvine.
[5] As measured by Urban Crossroads, Inc. on 5/16/2017 at the Shell gas station with drive-through car wash on Rancho Parkway in the City of Lake Forest.
[6] As measured by Urban Crossroads, Inc. on 10/8/2014 at the Founders Park in the unincorporated community of Ladera Ranch in the County of Orange.

10.1.1 ROOF-TOP AIR CONDITIONING UNITS

To assess the noise levels created by the roof-top air conditioning units at the Project site, reference noise levels measurements were taken at the Santee Walmart on July 27th, 2015. Located at 170 Town Center Parkway in the City of Santee, the noise level measurements describe a single mechanical roof-top air conditioning unit on the roof of an existing Walmart store with additional background units. The reference noise level represents a Lennox SCA120 series 10-ton model packaged air conditioning unit. Using a uniform reference distance of 50 feet, the reference noise level noise level is 54.4 dBA L_{50}. The operating conditions of the reference noise level measurement reflect peak summer cooling requirements with measured temperatures approaching 96 degrees Fahrenheit (°F) with average daytime temperatures of 82°F. The roof-top air condition units were observed to operate the most during the daytime hours for a total of 39 minutes per hour.

10.1.2 PARKING LOT VEHICLE MOVEMENT ACTIVITIES

To determine the noise levels associated with parking lot vehicle movements, Urban Crossroads collected reference noise level measurements at the Laguna Niguel Walmart located at 27470 Alicia Parkway on May 30th, 2012. The 15-minute noise level measurement indicates that the parking lot vehicle movements generates noise levels of 41.7 dBA L_{50} at a normalized distance of 50 feet. The parking lot noise levels are mainly due to cars pulling in and out of spaces, car alarms sounding, and customers moving shopping carts. Noise associated with parking lot vehicle movements is expected during the typical daytime, and nighttime conditions for the entire hour (60 minutes).

10.1.3 DRIVE-THROUGH SPEAKERPHONE

To describe the potential noise level impacts associated with potential drive-through speakerphones and vehicle activities, a reference noise level measurement was collected on Friday, December 19th, 2014 at a Panera Bread restaurant located at 423 South Associated Road in the City of Brea. The reference noise levels collected at the Panera Bread restaurant are expected to reflect potential drive-through speakerphone noise level activities at the Project site, since the reference measurement includes both drive-through speakerphone and vehicle activity noise. The noise sources included in the reference noise level measurement consist of voices of the Panera Bread employees over the speakerphone, customers' voices ordering food, car engines idling, car radios playing music, and cars queuing in the drive-through lane. At 50 feet from the speakerphone, a reference noise level of 50.4 dBA L_{50} was measured. This reference noise level measurement overstates the actual average noise levels since it represents the average of 28 speakerphone menu board ordering events observed over a two-hour period. In other words, the Panera Bread speakerphone menu board reference noise level describes continuous drive-through operations and does not include any periods of inactivity.

10.1.4 GAS STATION ACTIVITIES

To describe the potential noise level impacts created by the gas station of the Project, a reference noise level measurement was collected on Tuesday, April 26th, 2016 at an ARCO gas station located at 6501 Quail Hill Parkway in the City of Irvine. The reference noise level measurement includes six cars fueling at once, car doors closing, engines starting, fuel pump TV sounds and background car pass-by events within a 3-minute period. At 50 feet from the gas station, a reference noise level of 45.6 dBA L_{50} was measured.

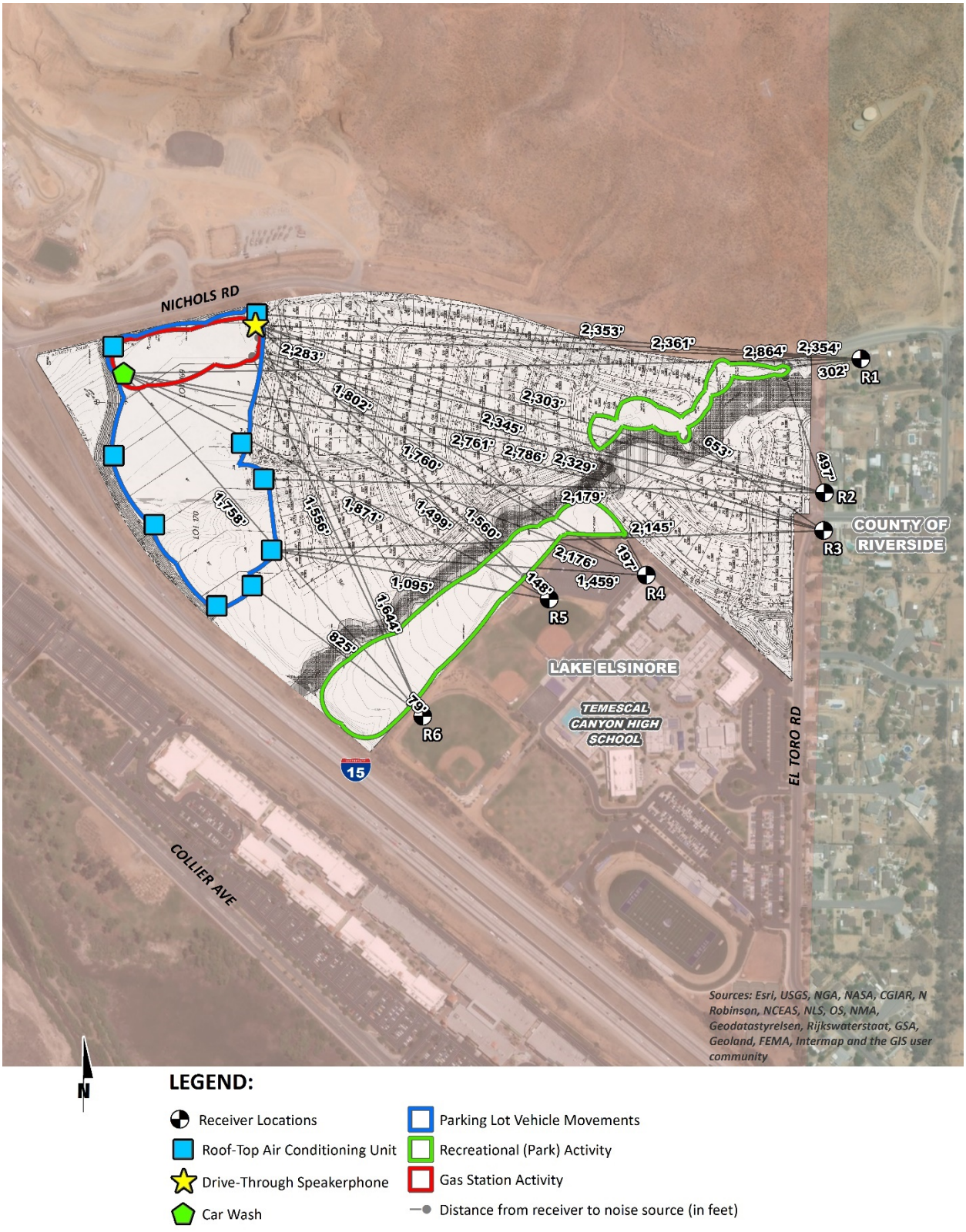
10.1.5 CAR WASH

To describe the potential noise level impacts associated with a car wash, a reference noise level measurement was collected on May 16th, 2017 at the Shell gas station on Rancho Parkway in the City of Lake Forest. The reference noise level measurement includes background fuel pump activity, a drive-through car wash rinse cycle, and the lowering and running of the air blowers at the end of the car wash tunnel. Using the uniform reference distance of 50 feet, the reference gas station with car wash activity noise level is 77.6 dBA L_{50}. The gas station activities are estimated to occur for 60 minutes during the peak hour conditions.

10.1.6 PARK ACTIVITY

To represent the potential noise level impacts associated with the Project's park activities, a reference noise level measurement was collected on Wednesday, October 8th, 2014 at the Founders Park in the unincorporated community of Ladera Ranch in the County of Orange. The reference noise levels collected at the Founders Park are expected to reflect the noise level activities within the recreation area of the Project site, since the reference noise level measurement includes girls' youth soccer games, coaches shouting instructions, parents speaking on cell phones, and background noise levels from kids playing on swing sets and people cheering and clapping. Using the uniform reference distance of 50 feet, the reference park activity noise level is 41.7 dBA L_{50}. The soccer field activities are estimated to occur for 60 minutes during the peak hour conditions.

EXHIBIT 10-A: OPERATIONAL NOISE SOURCE AND RECEIVER LOCATIONS



LEGEND:

- Receiver Locations
- Roof-Top Air Conditioning Unit
- Drive-Through Speakerphone
- Car Wash
- Parking Lot Vehicle Movements
- Recreational (Park) Activity
- Gas Station Activity
- Distance from receiver to noise source (in feet)

10.2 OPERATIONAL NOISE LEVELS

Based upon the reference noise levels, it is possible to estimate the Project operational stationary-source noise levels at each of the sensitive receiver locations. The operational noise level calculations shown on Table 10-2 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. Hard site conditions are used in the operational noise analysis which result in noise levels that attenuate (or decrease) at a rate of 6 dBA for each doubling of distance from a point source. The basic noise attenuation equation shown below is used to calculate the distance attenuation based on a reference noise level (SPL_1):

$$SPL_2 = SPL_1 - 20\log(D_2/D_1)$$

Where SPL_2 is the resulting noise level after attenuation, SPL_1 is the source noise level, D_2 is the distance to the reference sound pressure level (SPL_1), and D_1 is the distance to the receiver location. Table 10-2 indicates that the noise levels associated with the roof-top air conditioning units, parking lot vehicle movements, a drive-through speakerphone, gas station activity, a car wash, and park activity are expected to range from 42.6 to 47.3 dBA L_{50} at the sensitive off-site receiver locations. The operational noise level calculation worksheets are included in Appendix 10.1.

TABLE 10-2: UNMITIGATED PROJECT OPERATIONAL NOISE LEVELS

Receiver Location[1]	Land Use	Noise Sources[2]	Operational Noise Levels (dBA)[3]				
			L_{50} (30 mins)	L_{25} (15 mins)	L_8 (5 mins)	L_2 (1 min)	L_{max} (Anytime)
R1	SFR	Roof-Top Air Conditioning Units	20.9	22.6	23.9	24.2	24.7
		Parking Lot Vehicle Movements	16.6	20.6	23.6	27.0	39.4
		Drive-Through Speakerphone	17.0	18.2	19.7	21.4	22.5
		Gas Station Activity	12.1	13.4	16.0	20.9	28.9
		Car Wash	42.4	43.1	43.7	44.0	44.2
		Park Activity	26.1	28.5	31.4	34.1	38.3
		Combined Noise Level:	42.6	43.3	44.1	44.6	46.3
R2	SFR	Roof-Top Air Conditioning Units	21.6	23.3	24.6	24.9	25.4
		Parking Lot Vehicle Movements	17.1	21.1	24.1	27.5	39.9
		Drive-Through Speakerphone	17.2	18.4	19.9	21.6	22.7
		Gas Station Activity	12.4	13.7	16.3	21.2	29.2
		Car Wash	42.8	43.5	44.1	44.4	44.6
		Park Activity	21.8	24.2	27.1	29.8	34.0
		Combined Noise Level:	42.9	43.6	44.3	44.7	46.3
R3	SFR	Roof-Top Air Conditioning Units	21.8	23.5	24.8	25.1	25.6
		Parking Lot Vehicle Movements	17.2	21.2	24.2	27.6	40.0
		Drive-Through Speakerphone	17.0	18.2	19.7	21.4	22.5
		Gas Station Activity	12.2	13.5	16.1	21.0	29.0
		Car Wash	42.7	43.4	44.0	44.3	44.5
		Park Activity	19.4	21.8	24.7	27.4	31.6
		Combined Noise Level:	42.8	43.5	44.2	44.6	46.1
R4	School	Roof-Top Air Conditioning Units	25.1	26.8	28.1	28.4	28.9
		Parking Lot Vehicle Movements	19.7	23.7	26.7	30.1	42.5
		Drive-Through Speakerphone	19.3	20.5	22.0	23.7	24.8
		Gas Station Activity	14.7	16.0	18.6	23.5	31.5
		Car Wash	44.8	45.5	46.1	46.4	46.6
		Park Activity	29.8	32.2	35.1	37.8	42.0
		Combined Noise Level:	45.0	45.8	46.6	47.1	49.1
R5	School	Roof-Top Air Conditioning Units	27.6	29.3	30.6	30.9	31.4
		Parking Lot Vehicle Movements	21.6	25.6	28.6	32.0	44.4
		Drive-Through Speakerphone	20.6	21.8	23.3	25.0	26.1
		Gas Station Activity	16.1	17.4	20.0	24.9	32.9
		Car Wash	46.1	46.8	47.4	47.7	47.9
		Park Activity	32.3	34.7	37.6	40.3	44.5
		Combined Noise Level:	46.4	47.2	48.0	48.6	50.8

Receiver Location[1]	Land Use	Noise Sources[2]	Operational Noise Levels (dBA)[3]				
			L_{50} (30 mins)	L_{25} (15 mins)	L_8 (5 mins)	L_2 (1 min)	L_{max} (Anytime)
R6	School	Roof-Top Air Conditioning Units	30.1	31.8	33.1	33.4	33.9
		Parking Lot Vehicle Movements	23.4	27.4	30.4	33.8	46.2
		Drive-Through Speakerphone	20.1	21.3	22.8	24.5	25.6
		Gas Station Activity	15.7	17.0	19.6	24.5	32.5
		Car Wash	46.7	47.4	48.0	48.3	48.5
		Park Activity	37.7	40.1	43.0	45.7	49.9
		Combined Noise Level:	47.3	48.3	49.4	50.4	53.3

[1] See Exhibit 10-A for the receiver and noise source locations.
[2] Reference noise sources as shown on Table 10-1.
[3] Stationary source noise level calculations are provided in Appendix 10.1.
"SFR" = Single-Family Residential

10.3 OPERATIONAL NOISE LEVEL COMPLIANCE

To demonstrate compliance with local noise regulations, the Project-only operational noise levels are evaluated against exterior noise level threshold based on the City of Lake Elsinore. Table 10-3 shows the operational noise levels associated with the Nichols Ranch Project will exceed the nighttime exterior noise level standards at receiver locations R1 to R3. All other receiver locations are shown to experience operational noise levels below the daytime and nighttime exterior noise level standards. Therefore, operational noise mitigation is required.

TABLE 10-3: UNMITIGATED OPERATIONAL NOISE LEVEL COMPLIANCE

Receiver Location[1]	Land Use	Noise Level at Receiver Locations (dBA)[2]					Threshold Exceeded?[3]	
		L_{50} (30 mins)	L_{25} (15 mins)	L_8 (5 mins)	L_2 (1 min)	L_{max} (Anytime)	Daytime	Nighttime
Exterior Noise Level Standards	**Single-Family Residential**	**50**	**55**	**60**	**65**	**70**	**-**	**-**
		40	**45**	**50**	**55**	**60**	**-**	**-**
	Public Space/ Commercial	**60**	**65**	**70**	**75**	**80**	**-**	**-**
		55	**60**	**65**	**70**	**75**	**-**	**-**
R1	SFR	42.6	43.3	44.1	44.6	46.3	No	Yes
R2	SFR	42.9	43.6	44.3	44.7	46.3	No	Yes
R3	SFR	42.8	43.5	44.2	44.6	46.1	No	Yes
R4	School	45.0	45.8	46.6	47.1	49.1	No	No
R5	School	46.4	47.2	48.0	48.6	50.8	No	No
R6	School	47.3	48.3	49.4	50.4	53.3	No	No

[1] See Exhibit 10-A for the receiver and noise source locations.
[2] Estimated Project operational noise levels as shown on Table 10-2.
[3] Do the Project operational noise levels satisfy the operational noise level standards (Table 3-1)?
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.; "SFR" = Single-Family Residential

10.4 OPERATIONAL NOISE LEVEL MITIGATION

To reduce the *potentially significant* Project operational noise levels at the nearby receiver locations, no nighttime car wash activities shall be permitted. Table 10-4 shows the mitigated Project operational noise levels range from 25.5 to 38.6 dBA L_{eq} without the car wash activities.

TABLE 10-4: MITIGATED PROJECT OPERATIONAL NOISE LEVELS

Receiver Location[1]	Land Use	Noise Sources[2]	Operational Noise Levels (dBA)[3]				
			L_{50} (30 mins)	L_{25} (15 mins)	L_8 (5 mins)	L_2 (1 min)	L_{max} (Anytime)
R1	SFR	Roof-Top Air Conditioning Units	20.9	22.6	23.9	24.2	24.7
		Parking Lot Vehicle Movements	16.6	20.6	23.6	27.0	39.4
		Drive-Through Speakerphones	17.0	18.2	19.7	21.4	22.5
		Gas Station Activity	12.1	13.4	16.0	20.9	28.9
		Car Wash	-[4]	-[4]	-[4]	-[4]	-[4]
		Park Activity	26.1	28.5	31.4	34.1	38.3
		Combined Noise Level:	28.1	30.4	33.0	35.6	42.2
R2	SFR	Roof-Top Air Conditioning Units	21.5	23.2	24.5	24.8	25.3
		Parking Lot Vehicle Movements	16.9	20.9	23.9	27.3	39.7
		Drive-Through Speakerphones	17.3	18.5	20.0	21.7	22.8
		Gas Station Activity	12.5	13.8	16.4	21.3	29.3
		Car Wash	-[4]	-[4]	-[4]	-[4]	-[4]
		Park Activity	27.5	29.9	32.8	35.5	39.7
		Combined Noise Level:	29.2	31.5	34.1	36.7	43.0
R3	SFR	Roof-Top Air Conditioning Units	21.8	23.5	24.8	25.1	25.6
		Parking Lot Vehicle Movements	17.2	21.2	24.2	27.6	40.0
		Drive-Through Speakerphones	17.0	18.2	19.7	21.4	22.5
		Gas Station Activity	12.2	13.5	16.1	21.0	29.0
		Car Wash	-[4]	-[4]	-[4]	-[4]	-[4]
		Park Activity	19.4	21.8	24.7	27.4	31.6
		Combined Noise Level:	25.5	27.8	30.0	32.3	41.1
R4	School	Roof-Top Air Conditioning Units	25.1	26.8	28.1	28.4	28.9
		Parking Lot Vehicle Movements	19.7	23.7	26.7	30.1	42.5
		Drive-Through Speakerphones	19.3	20.5	22.0	23.7	24.8
		Gas Station Activity	14.7	16.0	18.6	23.5	31.5
		Car Wash	-[4]	-[4]	-[4]	-[4]	-[4]
		Park Activity	29.8	32.2	35.1	37.8	42.0
		Combined Noise Level:	31.7	34.0	36.6	39.1	45.6
R5	School	Roof-Top Air Conditioning Units	27.6	29.3	30.6	30.9	31.4
		Parking Lot Vehicle Movements	21.6	25.6	28.6	32.0	44.4

Receiver Location[1]	Land Use	Noise Sources[2]	Operational Noise Levels (dBA)[3]				
			L_{50} (30 mins)	L_{25} (15 mins)	L_8 (5 mins)	L_2 (1 min)	L_{max} (Anytime)
		Drive-Through Speakerphones	20.6	21.8	23.3	25.0	26.1
		Gas Station Activity	16.1	17.4	20.0	24.9	32.9
		Car Wash	-[4]	-[4]	-[4]	-[4]	-[4]
		Park Activity	32.3	34.7	37.6	40.3	44.5
		Combined Noise Level:	34.1	36.4	39.0	41.5	47.7
R6	School	Roof-Top Air Conditioning Units	30.1	31.8	33.1	33.4	33.9
		Parking Lot Vehicle Movements	23.4	27.4	30.4	33.8	46.2
		Drive-Through Speakerphones	20.1	21.3	22.8	24.5	25.6
		Gas Station Activity	15.7	17.0	19.6	24.5	32.5
		Car Wash	-[4]	-[4]	-[4]	-[4]	-[4]
		Park Activity	37.7	40.1	43.0	45.7	49.9
		Combined Noise Level:	38.6	41.0	43.7	46.3	51.6

[1] See Exhibit 10-A for the receiver and noise source locations.
[2] Reference noise sources as shown on Table 10-1.
[3] Stationary source noise level calculations are provided in Appendix 10.1.
[4] Car wash activities shall be restricted to the daytime hours to reduce Project nighttime operational noise levels.
"SFR" = Single-Family Residential

Table 10-5 shows the mitigated operational noise levels associated with the Project will satisfy the exterior noise level standards at all nearby sensitive receiver locations with the mitigation measures outlined in the Executive Summary. Therefore, the mitigated Project operational noise impacts are considered *less than significant* impacts at the nearby sensitive uses.

TABLE 10-5: MITIGATED OPERATIONAL NOISE LEVEL COMPLIANCE

Receiver Location[1]	Land Use	Mitigated Noise Level at Receiver Locations (dBA)[2]					Threshold Exceeded?[3]	
		L_{50} (30 mins)	L_{25} (15 mins)	L_8 (5 mins)	L_2 (1 min)	L_{max} (Anytime)	Daytime	Nighttime
Exterior Noise Level Standards	**Single-Family Residential**	**50**	**55**	**60**	**65**	**70**	**-**	**-**
		40	**45**	**50**	**55**	**60**	**-**	**-**
	Public Space/ Commercial	**60**	**65**	**70**	**75**	**80**	**-**	**-**
		55	**60**	**65**	**70**	**75**	**-**	**-**
R1	SFR	28.1	30.4	33.0	35.6	42.2	No	No
R2	SFR	29.2	31.5	34.1	36.7	43.0	No	No
R3	SFR	25.5	27.8	30.0	32.3	41.1	No	No
R4	School	31.7	34.0	36.6	39.1	45.6	No	No
R5	School	34.1	36.4	39.0	41.5	47.7	No	No
R6	School	38.6	41.0	43.7	46.3	51.6	No	No

[1] See Exhibit 10-A for the receiver and noise source locations.
[2] Estimated Project operational noise levels as shown on Table 10-2.
[3] Do the Project operational noise levels satisfy the operational noise level standards (Table 3-1)?
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.; "SFR" = Single-Family Residential

10.5 PROJECT OPERATIONAL NOISE CONTRIBUTION

To describe the Project operational noise level contributions, the Project operational noise levels were combined with the existing ambient noise levels measurements for the off-site 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. (7) 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 describe the Project noise level contributions. Noise levels that would be experienced at receiver locations when unmitigated Project-source noise is added to the ambient daytime and nighttime conditions are presented on Tables 10-6 and 10-7, respectively.

As indicated on Tables 10-6 and 10-7, the Project will contribute operational noise level increases over the existing ambient noise levels which ranging from 0.1 to 0.8 dBA L_{50} during the daytime hours and nighttime hours. Since the Project-related operational noise level contributions will satisfy the significance criteria discussed in Section 4, the increases at the sensitive receiver locations will be *less than significant*.

TABLE 10-6: UNMITIGATED DAYTIME OPERATIONAL NOISE LEVEL CONTRIBUTIONS

Receiver Location[1]	Unmitigated Project Operational Noise Level (dBA L_{50})[2]	Measurement Location[3]	Reference Ambient Noise Levels (dBA L_{50})[4]	Combined Project and Ambient (dBA L_{50})[5]	Project Increase (dBA L_{50})[6]	Threshold[7]	Threshold Exceeded?[7]
R1	42.6	L4	50.9	51.5	0.6	5.0	No
R2	42.9	L4	50.9	51.5	0.6	5.0	No
R3	42.8	L5	54.7	55.0	0.3	5.0	No
R4	45.0	L6	61.5	61.6	0.1	3.0	No
R3	46.4	L6	61.5	61.6	0.1	3.0	No
R4	47.3	L6	61.5	61.7	0.2	3.0	No

[1] See Exhibit 9-A for the sensitive receiver locations.
[2] Total Project operational noise levels as shown on Table 9-3.
[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] FICON significance criteria as defined in Section 4, Table 4-1, based on the ambient noise level without the Project.

TABLE 10-7: UNMITIGATED NIGHTTIME OPERATIONAL NOISE LEVEL CONTRIBUTIONS

Receiver Location[1]	Unmitigated Project Operational Noise Level (dBA L_{50})[2]	Measurement Location[3]	Reference Ambient Noise Levels (dBA L_{50})[4]	Combined Project and Ambient (dBA L_{50})[5]	Project Increase (dBA L_{50})[6]	Threshold[7]	Threshold Exceeded?[7]
R1	42.6	L4	49.9	50.6	0.7	5.0	No
R2	42.9	L4	49.9	50.7	0.8	5.0	No
R3	42.8	L5	53.7	54.0	0.3	5.0	No
R4	45.0	L6	57.8	58.0	0.2	5.0	No
R3	46.4	L6	57.8	58.1	0.3	5.0	No
R4	47.3	L6	57.8	58.2	0.4	5.0	No

[1] See Exhibit 9-A for the sensitive receiver locations.
[2] Total Project 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] FICON significance criteria as defined in Section 4, Table 4-1, based on the ambient noise level without the Project.

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11 CONSTRUCTION IMPACTS

This section analyzes potential impacts resulting from the short-term construction activities associated with the development of the Project. Exhibit 11-A shows the construction activity boundaries in relation to the nearby sensitive receiver locations.

11.1 CONSTRUCTION NOISE LEVELS

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 is expected to occur in the following stages:

- Site Preparation
- Mass & Fine Grading
- Building Construction
- Paving
- Architectural Coating

This construction noise analysis was prepared using reference noise level measurements taken by Urban Crossroads, Inc. to describe the typical construction activity noise levels for each stage of Project construction. The construction reference noise level measurements represent a list of typical construction activity noise levels. Noise levels generated by heavy construction equipment can range from approximately 68 dBA to in excess of 80 dBA when measured at 50 feet. Hard site conditions are used in the construction noise analysis which result in noise levels that attenuate (or decrease) at a rate of 6 dBA for each doubling of distance from a point source (i.e. construction equipment). For example, a noise level of 80 dBA measured at 50 feet from the noise source to the receiver would be reduced to 74 dBA at 100 feet from the source to the receiver, and would be further reduced to 68 dBA at 200 feet from the source to the receiver. The construction stages used in this analysis are consistent with the data used to support the construction emissions in the *Nichols Ranch Air Quality Impact Analysis* prepared by Urban Crossroads, Inc. (23)

11.2 CONSTRUCTION REFERENCE NOISE LEVELS

To describe the Project construction noise levels, measurements were collected for similar activities at several construction sites. Table 11-1 provides a summary of the construction reference noise level measurements. Since the reference noise levels were collected at varying distances, all construction noise level measurements presented on Table 11-1 have been adjusted to describe a common reference distance of 50 feet.

TABLE 11-1: CONSTRUCTION REFERENCE NOISE LEVELS

ID	Noise Source	Reference Distance From Source (Feet)	Reference Noise Levels @ Reference Distance (dBA L_{max})	Reference Noise Levels @ 50 Feet (dBA L_{max})[6]
1	Truck Pass-Bys & Dozer Activity[1]	30'	68.1	63.7
2	Dozer Activity[1]	30'	76.4	72.0
3	Construction Vehicle Maintenance Activities[2]	30'	74.8	70.4
4	Foundation Trenching[2]	30'	74.9	70.5
5	Rough Grading Activities[2]	30'	84.8	80.4
6	Framing[3]	30'	76.7	72.3
7	Two Scrapers Pass-By[4]	30'	86.9	82.5
8	Concrete Mixer Truck Movements[5]	50'	73.1	73.1
9	Concrete Paver Activities[5]	30'	75.7	71.3
10	Concrete Mixer Pour & Paving Activities[5]	30'	76.3	71.9
11	Concrete Mixer Backup Alarms & Air Brakes[5]	50'	78.8	78.8
12	Concrete Mixer Pour Activities[5]	50'	79.2	79.2

[1] As measured by Urban Crossroads, Inc. on 10/14/15 at a business park construction site located at the northwest corner of Barranca Parkway and Alton Parkway in the City of Irvine.
[2] As measured by Urban Crossroads, Inc. on 10/20/15 at a construction site located in Rancho Mission Viejo.
[3] As measured by Urban Crossroads, Inc. on 10/20/15 at a residential construction site located in Rancho Mission Viejo.
[4] As measured by Urban Crossroads, Inc. on 10/30/15 during grading operations within an industrial construction site located in the City of Ontario.
[5] Reference noise level measurements were collected from a nighttime concrete pour at an industrial construction site, located at 27334 San Bernardino Avenue in the City of Redlands, between 1:00 a.m. to 2:00 a.m. on 7/1/15.
[6] Reference noise levels are calculated at 50 feet using a drop off rate of 6 dBA per doubling of distance (point source).

EXHIBIT 11-A: CONSTRUCTION ACTIVITY AND RECEIVER LOCATIONS

N

LEGEND:

- Receiver Locations
- Construction Activity
- Distance from receiver to construction activity (in feet)

11.3 CONSTRUCTION NOISE ANALYSIS

Tables 11-2 to 11-6 show the Project construction stages and the reference construction noise levels used for each stage. Table 11-7 provides a summary of the noise levels from each stage of construction at each of the sensitive receiver locations. Based on the reference construction noise levels, the Project-related construction noise levels when the highest reference noise level is operating at a single point nearest the sensitive receiver location will range from 59.8 to 80.1 dBA L_{max}, as shown on Table 11-7.

TABLE 11-2: SITE PREPARATION EQUIPMENT NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{max})
Truck Pass-Bys & Dozer Activity	63.7
Dozer Activity	72.0
Peak Reference Noise Level at 50 Feet:	72.0

Receiver Location	Distance to Construction Activity (Feet)[2]	Distance Attenuation (dBA)[3]	Estimated Noise Barrier Attenuation (dBA)[4]	Construction Noise Level (dBA L_{max})
R1	203'	-12.2	0.0	59.8
R2	66'	-2.4	0.0	69.6
R3	70'	-2.9	0.0	69.0
R4	87'	-4.8	0.0	67.2
R5	132'	-8.4	0.0	63.5
R6	70'	-2.9	0.0	69.0

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.
[2] Distance from the nearest point of construction activity to the nearest receiver.
[3] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[4] Estimated barrier attenuation from existing barriers in the Project study area.

TABLE 11-3: MASS & FINE GRADING EQUIPMENT NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{max})
Truck Pass-Bys & Dozer Activity	63.7
Dozer Activity	72.0
Rough Grading Activities	80.4
Two Scrapers Pass-By	82.5
Peak Reference Noise Level at 50 Feet:	82.5

Receiver Location	Distance to Construction Activity (Feet)[2]	Distance Attenuation (dBA)[3]	Estimated Noise Barrier Attenuation (dBA)[4]	Construction Noise Level (dBA L_{max})
R1	203'	-12.2	0.0	70.3
R2	66'	-2.4	0.0	80.1
R3	70'	-2.9	0.0	79.5
R4	87'	-4.8	0.0	77.7
R5	132'	-8.4	0.0	74.0
R6	70'	-2.9	0.0	79.5

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.
[2] Distance from the nearest point of construction activity to the nearest receiver.
[3] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[4] Estimated barrier attenuation from existing barriers in the Project study area.

TABLE 11-4: BUILDING CONSTRUCTION EQUIPMENT NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{max})
Construction Vehicle Maintenance Activities	70.4
Foundation Trenching	70.5
Framing	72.3
Peak Reference Noise Level at 50 Feet:	72.3

Receiver Location	Distance to Construction Activity (Feet)[2]	Distance Attenuation (dBA)[3]	Estimated Noise Barrier Attenuation (dBA)[4]	Construction Noise Level (dBA L_{max})
R1	203'	-12.2	0.0	60.1
R2	66'	-2.4	0.0	69.9
R3	70'	-2.9	0.0	69.3
R4	87'	-4.8	0.0	67.5
R5	132'	-8.4	0.0	63.8
R6	70'	-2.9	0.0	69.3

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.
[2] Distance from the nearest point of construction activity to the nearest receiver.
[3] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[4] Estimated barrier attenuation from existing barriers in the Project study area.

TABLE 11-5: PAVING EQUIPMENT NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{max})
Concrete Mixer Truck Movements	73.1
Concrete Paver Activities	71.3
Concrete Mixer Pour & Paving Activities	71.9
Concrete Mixer Backup Alarms & Air Brakes	78.8
Concrete Mixer Pour Activities	79.2
Peak Reference Noise Level at 50 Feet:	79.2

Receiver Location	Distance to Construction Activity (Feet)[2]	Distance Attenuation (dBA)[3]	Estimated Noise Barrier Attenuation (dBA)[4]	Construction Noise Level (dBA L_{max})
R1	203'	-12.2	0.0	67.0
R2	66'	-2.4	0.0	76.8
R3	70'	-2.9	0.0	76.3
R4	87'	-4.8	0.0	74.4
R5	132'	-8.4	0.0	70.8
R6	70'	-2.9	0.0	76.3

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.
[2] Distance from the nearest point of construction activity to the nearest receiver.
[3] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[4] Estimated barrier attenuation from existing barriers in the Project study area.

TABLE 11-6: ARCHITECTURAL COATING EQUIPMENT NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{max})
Construction Vehicle Maintenance Activities	70.4
Framing	72.3
Peak Reference Noise Level at 50 Feet:	72.3

Receiver Location	Distance to Construction Activity (Feet)[2]	Distance Attenuation (dBA)[3]	Estimated Noise Barrier Attenuation (dBA)[4]	Construction Noise Level (dBA L_{max})
R1	203'	-12.2	0.0	60.1
R2	66'	-2.4	0.0	69.9
R3	70'	-2.9	0.0	69.3
R4	87'	-4.8	0.0	67.5
R5	132'	-8.4	0.0	63.8
R6	70'	-2.9	0.0	69.3

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.
[2] Distance from the nearest point of construction activity to the nearest receiver.
[3] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[4] Estimated barrier attenuation from existing barriers in the Project study area.

11.4 CONSTRUCTION NOISE THRESHOLDS OF SIGNIFICANCE

The construction noise analysis shows that the highest construction noise levels will occur when construction activities take place at the closest point from primary Project construction activity to each of the nearby receiver locations. As shown on Table 11-7, the unmitigated construction noise levels are expected to range from 59.8 to 80.1 dBA L_{max} at the receiver locations. To evaluate whether the Project will generate potentially significant short-term noise levels at off-site sensitive receiver locations the City of Lake Elsinore stationary construction equipment noise level standard of 60 dBA L_{max}, previously described in Section 3, is used as the acceptable construction noise threshold at the nearby sensitive receiver locations since Project construction will occur for greater than 10 consecutive days.

TABLE 11-7: UNMITIGATED CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY

Receiver Location[1]	Construction Stage Hourly Noise Level (dBA Lmax)					
	Site Preparation	Mass & Fine Grading	Building Construction	Paving	Architectural Coating	Peak Activity[2]
R1	59.8	70.3	60.1	67.0	60.1	70.3
R2	69.6	80.1	69.9	76.8	69.9	80.1
R3	69.0	79.5	69.3	76.3	69.3	79.5
R4	67.2	77.7	67.5	74.4	67.5	77.7
R5	63.5	74.0	63.8	70.8	63.8	74.0
R6	69.0	79.5	69.3	76.3	69.3	79.5

[1] Noise receiver locations are shown on Exhibit 11-A.
[2] Estimated construction noise levels during peak operating conditions.

Table 11-8 shows the highest construction noise levels at the potentially impacted receiver locations are expected to approach 80.1 dBA L_{max} and will exceed the City of Lake Elsinore stationary construction equipment noise level standards for residential and semi-residential (school) uses during temporary Project construction activities at receiver locations R1 to R6. The noise impact due to unmitigated Project construction noise levels is, therefore, considered a *potentially significant* impact at receiver locations R1 to R6.

TABLE 11-8: UNMITIGATED CONSTRUCTION EQUIPMENT NOISE LEVEL COMPLIANCE

Receiver Location[1]	Land Use Category	Peak Construction Activity Noise Levels[2]	Threshold[3]	Threshold Exceeded?[4]
R1	Single-Family Residential	70.3	60	Yes
R2	Single-Family Residential	80.1	60	Yes
R3	Single-Family Residential	79.5	60	Yes
R4	Semi-Residential/ Commercial	77.7	70	Yes
R5	Semi-Residential/ Commercial	74.0	70	Yes
R5	Semi-Residential/ Commercial	79.5	70	Yes

[1] Noise receiver locations are shown on Exhibit 11-A.
[2] Estimated construction noise levels during peak operating conditions, as shown on Tables 11-7.
[3] Construction noise standards as shown on Table 3-3 for construction lasting greater than 10 days.
[4] Do the estimated Project construction noise levels meet the construction noise level thresholds?

Therefore, temporary construction noise mitigation measures are required to reduce these impacts at receiver locations R1 to R6. This includes the use of temporary construction noise barriers and a 300-foot buffer zone for large mobile equipment greater than 80,000 pounds from the impacted receiver locations, as shown on Exhibit 11-B. The construction noise analysis presents a conservative approach with the highest noise-level-producing equipment for each stage of Project construction operating at the closest point from primary construction activity to the nearby sensitive receiver locations. This scenario is unlikely to occur during typical construction activities and likely overstates the construction noise levels which will be experienced at each receiver location. With the construction noise mitigation measures identified in this noise study, shown on Exhibit 11-B, the worst-case construction noise level increases at the nearby residential receivers would be reduced.

The noise attenuation provided through temporary noise barriers depends on many factors including cost, wind loading, the location of the receiver, and the ability to place barriers such that the line-of-sight of the receiver is blocked to the noise source, among others. This analysis assumes a temporary noise barrier constructed using frame-mounted materials such as vinyl acoustic curtains or quilted blankets attached to the construction site perimeter fence.

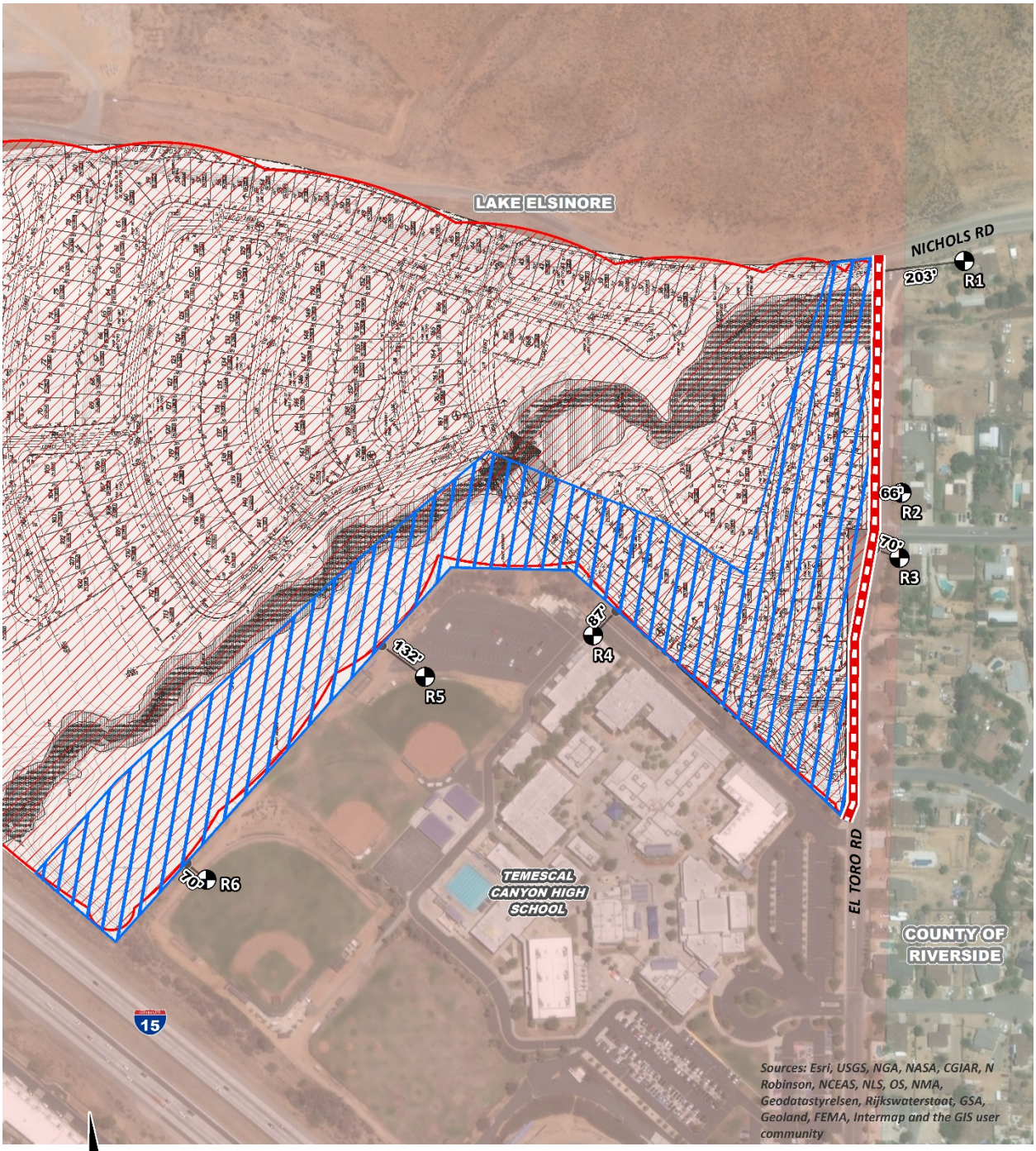
Table 11-9 shows the highest construction noise levels at the potentially impacted receiver locations will be reduced to range from 59.2 to 66.9 dBA L_{max} with the attenuation provided by the temporary construction noise barriers and the 300-foot buffer. As shown on Table 11-9, the temporary construction noise mitigation measures will reduce the construction noise levels at the impacted receiver locations to satisfy the 60 dBA L_{max} residential and 70 dBA L_{max} semi-residential significance thresholds during temporary Project construction activities. Therefore, the noise impact due to Project construction is considered a *less than significant* impact after mitigation. The temporary construction noise barrier attenuation calculations are provided in Appendix 11.1. Appendix 11.2 includes example photographs of temporary noise barrier installations for reference.

TABLE 11-9: MITIGATED CONSTRUCTION EQUIPMENT NOISE LEVEL COMPLIANCE

Receiver Location[1]	Land Use Category	Unmitigated Construction Noise Levels (dBA L_{max})[2]	Large Mobile Equipment (> 80,000 lbs) Buffer Attenuation	Temporary Noise Barrier Attenuation	Mitigated Construction Noise Levels (dBA L_{max})	Threshold[3]	Threshold Exceeded?[4]
R1	Single-Family Residential	70.3	-3.4	-7.1	59.8	60	No
R2	Single-Family Residential	80.1	-13.2	-7.7	59.2	60	No
R3	Single-Family Residential	79.5	-12.6	-7.6	59.3	60	No
R4	Semi-Residential/ Commercial	77.7	-10.8	0.0	66.9	70	No
R5	Semi-Residential/ Commercial	74.0	-7.1	0.0	66.9	70	No
R5	Semi-Residential/ Commercial	79.5	-12.6	0.0	66.9	70	No

[1] Noise receiver locations are shown on Exhibit 11-A.
[2] Estimated construction noise levels during peak operating conditions, as shown on Tables 11-7.
[3] Construction noise standards as shown on Table 3-3 for construction lasting greater than 10 days.
[4] Do the estimated Project construction noise levels meet the construction noise level thresholds?

EXHIBIT 11-B: CONSTRUCTION NOISE MITIGATION MEASURES



N

LEGEND:

- Receiver Locations
- Construction Activity
- Distance from receiver to construction activity (in feet)
- Minimum 10-foot high temporary noise barrier
- 300-foot buffer for large mobile equipment (> 80,000 lbs)

11.5 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. The proposed Project's construction activities most likely to cause vibration impacts are:

- Heavy Construction Equipment: Although all heavy mobile construction equipment has the potential of causing at least some perceptible vibration while operating close to buildings, the vibration is usually short-term and is not of sufficient magnitude to cause building damage.
- Trucks: Trucks hauling building materials to construction sites can be sources of vibration intrusion if the haul routes pass through residential neighborhoods on streets with bumps or potholes. Repairing the bumps and potholes generally eliminates the problem.

Ground-borne vibration levels resulting from construction activities occurring within the Project site were estimated by data published by the Federal Transit Administration (FTA). Construction activities that would have the potential to generate low levels of ground-borne vibration within the Project site include grading. Using the vibration source level of construction equipment provided on Table 6-8 and the construction vibration assessment methodology published by the FTA, it is possible to estimate the Project vibration impacts. Table 11-10 presents the expected Project related vibration levels at each of the sensitive receiver locations.

Based on the reference vibration levels provided by the FTA, a large bulldozer represents the peak source of vibration with a reference velocity of 0.089 in/sec (PPV) at 25 feet. At distances ranging from 66 to 203 feet from the Project construction activities, construction vibration velocity levels are expected to approach 0.021 in/sec (PPV), as shown on Table 11-10. To assess the human perception of vibration levels in PPV, the velocities are converted to RMS vibration levels based on the Caltrans *Transportation and Construction Vibration Guidance Manual* conversion factor of 0.71. Table 11-10 shows the construction vibration levels in RMS are expected to approach 0.015 in/sec (RMS) at the nearby receiver locations. Based on the vibration threshold of 0.01 in/sec, the construction-related vibration impacts are considered *potentially significant* at receiver locations R2, R3, and R6.

TABLE 11-10: UNMITIGATED CONSTRUCTION EQUIPMENT VIBRATION LEVELS

Receiver Location[1]	Distance to Const. Activity (Feet)	Receiver PPV Levels (in/sec)[2]					RMS Velocity Levels (in/sec)[3]	Threshold (RMS)	Threshold Exceeded?[4]
		Small Bulldozer (<80k lbs)	Jack-hammer	Loaded Trucks	Large Bulldozer (>80k lbs)	Peak Vibration (PPV)			
R1	203'	0.000	0.002	0.003	0.004	0.004	0.003	0.01	No
R2	66'	0.001	0.008	0.018	0.021	0.021	0.015	0.01	Yes
R3	70'	0.001	0.007	0.016	0.019	0.019	0.013	0.01	Yes
R4	87'	0.000	0.005	0.012	0.014	0.014	0.010	0.01	No
R5	132'	0.000	0.003	0.006	0.007	0.007	0.005	0.01	No
R6	70'	0.001	0.007	0.016	0.019	0.019	0.013	0.01	Yes

[1] Receiver locations are shown on Exhibit 11-A.
[2] Based on the Vibration Source Levels of Construction Equipment included on Table 6-8.
[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 2013.
[4] Does the peak vibration exceed the maximum acceptable vibration threshold shown on Table 3-4?

Therefore, the 300-foot buffer for loaded trucks and large mobile equipment (greater than 80,000 pounds) mitigation previously identified to reduce Project construction noise levels shall be required to reduce vibration levels at the potentially impacted receiver locations. Table 11-1 shows the mitigated vibration levels for loaded trucks and large mobile equipment will be reduce to approach 0.002 in/sec RMS and will remain below the 0.01 in/sec RMS threshold at all receiver locations. As such, Project construction-related vibration levels are considered *less than significant* impacts with mitigation.

TABLE 11-11: MITIGATED CONSTRUCTION EQUIPMENT VIBRATION LEVELS

Receiver Location[1]	Distance to Const. Activity (Feet)	Mitigated Receiver PPV Levels (in/sec)[2]			Mitigated RMS Levels (in/sec)[3]	Threshold (RMS)	Threshold Exceeded?[4]
		Loaded Trucks	Large Bulldozer (>80k lbs)	Peak Vibration (PPV)			
R1	300'	0.002	0.002	0.002	0.002	0.01	No
R2	300'	0.002	0.002	0.002	0.002	0.01	No
R3	300'	0.002	0.002	0.002	0.002	0.01	No
R4	300'	0.002	0.002	0.002	0.002	0.01	No
R5	300'	0.002	0.002	0.002	0.002	0.01	No
R6	300'	0.002	0.002	0.002	0.002	0.01	No

[1] Receiver locations are shown on Exhibit 11-A.
[2] Based on the Vibration Source Levels of Construction Equipment included on Table 6-8.
[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 2013.
[4] Does the peak vibration exceed the maximum acceptable vibration threshold shown on Table 3-4?

Further, vibration levels 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 at the Project site perimeter. Moreover, construction at the Project site will be restricted to daytime hours consistent with City of Lake Elsinore requirements thereby eliminating potential vibration impacts during the sensitive nighttime hours.

SOIL IMPORT TRUCK HAUL TRIPS

The Project site will require up to 19,000cubic yards of import during the construction process which is anticipated to be moved north of the site across Nichols Road to the Nichols Road Partners, LLC facility. To assess the potential vibration impacts from truck haul trips associated with import activities, the City of Lake Elsinore vibration threshold of 0.01 in/sec RMS is used. Truck vibration levels are dependent on vehicle characteristics, load, speed, and pavement conditions. Typical vibration levels for the Nichols Ranch heavy truck activity at normal traffic speeds will approach 0.001 in/sec RMS based on the FTA *Transit Noise Impact and Vibration Assessment.* Truck deliveries transiting on site will be travelling at very low speeds so it is expected that delivery truck vibration levels at nearby homes will be below the vibration threshold of 0.01 in/sec RMS.

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12 REFERENCES

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13 CERTIFICATION

The contents of this noise study report represent an accurate depiction of the noise environment and impacts associated with the proposed Nichols Ranch 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) 336-5979.

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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.

17.176.020 Definitions.

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

17.176.040 General noise regulations.

17.176.050 Noise measurement procedure.

17.176.060 Exterior noise limits.

17.176.070 Interior noise standards.

17.176.080 Prohibited acts.

17.176.090 Motor vehicles operating on public right-of-way.

17.176.100 Special provisions – Exemptions.

17.176.110 Special variances.

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.	40
	7:00 a.m. – 10:00 p.m.	50
Multiple Dwelling Residential	10:00 p.m. – 7:00 a.m.	45
	7:00 a.m. – 10:00 p.m.	50
Public Space		
Limited Commercial and Office	10:00 p.m. – 7:00 a.m.	55
	7:00 a.m. – 10:00 p.m.	60
General Commercial	10:00 p.m. – 7:00 a.m.	60
	7:00 a.m. – 10:00 p.m.	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].

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APPENDIX 5.1:

STUDY AREA PHOTOS

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L1_E
33, 42' 27.890000", 117, 21' 15.900000"

L1_N
33, 42' 27.890000", 117, 21' 15.870000"

L1_S
33, 42' 27.870000", 117, 21' 15.870000"

L1_SW
33, 42' 28.090000", 117, 21' 15.870000"

L1_W
33, 42' 27.870000", 117, 21' 15.870000"

L2_E
33, 42' 28.470000", 117, 21' 9.690000"

L2_N
33, 42' 28.470000", 117, 21' 9.690000"

L2_S
33, 42' 28.460000", 117, 21' 8.870000"

L2_W
33, 42' 28.470000", 117, 21' 9.690000"

L3
33, 42' 28.440000", 117, 20' 41.950000"

L3_E
33, 42' 28.570000", 117, 20' 41.650000"

L3_N
33, 42' 28.590000", 117, 20' 41.620000"

L3_W
33, 42' 28.590000", 117, 20' 41.620000"

L4_E
33, 42' 23.580000", 117, 20' 48.180000"

L4_N
33, 42' 23.580000", 117, 20' 48.180000"

L4_S
33, 42' 23.580000", 117, 20' 48.180000"

L4_W
33, 42' 23.540000", 117, 20' 48.160000"

L5_E
33, 42' 19.120000", 117, 20' 47.660000"

L5_N
33, 42' 19.130000", 117, 20' 47.830000"

L5_S
33, 42' 19.130000", 117, 20' 47.740000"

L5_W
33, 42' 19.120000", 117, 20' 47.660000"

L6_E
33, 42' 14.630000", 117, 20' 47.280000"

L6_N
33, 42' 14.600000", 117, 20' 47.280000"

L6_W
33, 42' 14.630000", 117, 20' 47.280000"

APPENDIX 5.2:

NOISE LEVEL MEASUREMENT WORKSHEETS

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24-Hour Noise Level Measurement Summary

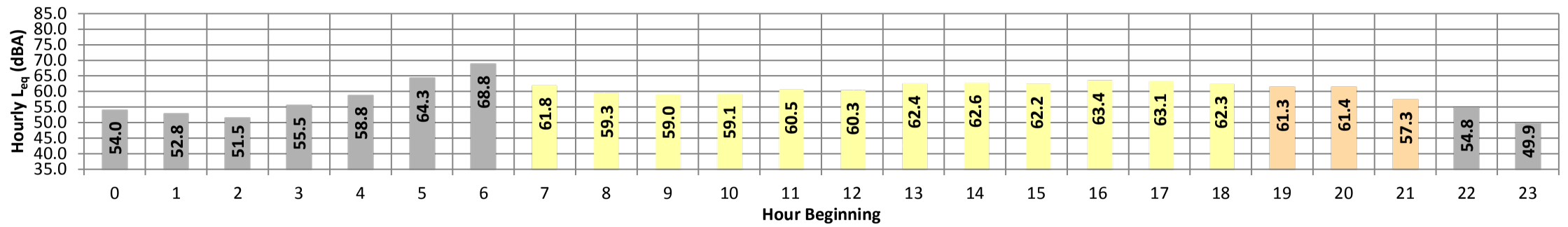
Date: Friday, May 12, 2017
Project: Nichols Ranch

Location: L1 - Located on Nichols Road adjacent to the northern Project site boundary, south of existing Chandler Aggregates activity.

Meter: Piccolo I

JN: 10880
Analyst: A. Wolfe

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	54.0	78.1	35.9	68.0	61.0	50.0	47.0	42.0	41.0	38.0	37.0	37.0	54.0	10.0	64.0
	1	52.8	76.4	35.8	67.0	61.0	50.0	46.0	42.0	40.0	37.0	37.0	36.0	52.8	10.0	62.8
	2	51.5	74.5	37.6	64.0	61.0	51.0	49.0	46.0	44.0	41.0	40.0	39.0	51.5	10.0	61.5
	3	55.5	78.4	42.7	69.0	66.0	60.0	55.0	48.0	47.0	44.0	44.0	43.0	55.5	10.0	65.5
	4	58.8	78.9	42.7	71.0	70.0	66.0	61.0	50.0	47.0	45.0	44.0	43.0	58.8	10.0	68.8
	5	64.3	82.8	43.2	75.0	74.0	71.0	70.0	60.0	53.0	46.0	45.0	44.0	64.3	10.0	74.3
	6	68.8	94.0	45.3	76.0	75.0	73.0	73.0	69.0	63.0	49.0	47.0	46.0	68.8	10.0	78.8
Day	7	61.8	79.6	44.7	73.0	71.0	69.0	67.0	57.0	51.0	47.0	47.0	46.0	61.8	0.0	61.8
	8	59.3	77.9	42.7	71.0	70.0	66.0	64.0	53.0	49.0	46.0	45.0	44.0	59.3	0.0	59.3
	9	59.0	83.0	42.8	70.0	69.0	66.0	63.0	52.0	48.0	45.0	44.0	43.0	59.0	0.0	59.0
	10	59.1	79.1	41.7	71.0	69.0	66.0	63.0	53.0	48.0	44.0	43.0	42.0	59.1	0.0	59.1
	11	60.5	79.4	46.3	71.0	69.0	67.0	65.0	57.0	53.0	49.0	48.0	47.0	60.5	0.0	60.5
	12	60.3	79.0	45.1	71.0	69.0	67.0	65.0	57.0	52.0	49.0	48.0	46.0	60.3	0.0	60.3
	13	62.4	77.5	44.3	71.0	70.0	69.0	67.0	63.0	55.0	47.0	46.0	45.0	62.4	0.0	62.4
	14	62.6	78.5	45.2	72.0	71.0	69.0	67.0	62.0	55.0	48.0	47.0	46.0	62.6	0.0	62.6
	15	62.2	81.8	46.4	72.0	71.0	69.0	67.0	61.0	54.0	49.0	48.0	47.0	62.2	0.0	62.2
	16	63.4	80.3	46.3	73.0	72.0	70.0	68.0	62.0	56.0	51.0	50.0	48.0	63.4	0.0	63.4
	17	63.1	79.5	45.4	73.0	72.0	70.0	68.0	61.0	54.0	49.0	48.0	46.0	63.1	0.0	63.1
	18	62.3	84.4	38.9	73.0	71.0	69.0	67.0	59.0	49.0	43.0	42.0	40.0	62.3	0.0	62.3
Evening	19	61.3	77.6	40.7	73.0	71.0	68.0	67.0	56.0	48.0	43.0	42.0	41.0	61.3	5.0	66.3
	20	61.4	79.5	38.8	73.0	71.0	68.0	67.0	55.0	45.0	41.0	40.0	39.0	61.4	5.0	66.4
	21	57.3	80.8	38.8	71.0	68.0	62.0	56.0	44.0	42.0	40.0	40.0	39.0	57.3	5.0	62.3
Night	22	54.8	77.2	37.7	69.0	65.0	54.0	50.0	43.0	42.0	40.0	39.0	38.0	54.8	10.0	64.8
	23	49.9	74.1	35.8	63.0	57.0	49.0	45.0	41.0	39.0	37.0	36.0	35.0	49.9	10.0	59.9

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	59.0	77.5	38.9	70.0	69.0	66.0	63.0	52.0	48.0	43.0	42.0	40.0
	Max	63.4	84.4	46.4	73.0	72.0	70.0	68.0	63.0	56.0	51.0	50.0	48.0
Energy Average		61.6	Average:		71.8	70.3	68.1	65.9	58.1	52.0	47.3	46.3	45.0
Evening	Min	57.3	77.6	38.8	71.0	68.0	62.0	56.0	44.0	42.0	40.0	40.0	39.0
	Max	61.4	80.8	40.7	73.0	71.0	68.0	67.0	56.0	48.0	43.0	42.0	41.0
Energy Average		60.4	Average:		72.3	70.0	66.0	63.3	51.7	45.0	41.3	40.7	39.7
Night	Min	49.9	74.1	35.8	63.0	57.0	49.0	45.0	41.0	39.0	37.0	36.0	35.0
	Max	68.8	94.0	45.3	76.0	75.0	73.0	73.0	69.0	63.0	49.0	47.0	46.0
Energy Average		61.4	Average:		69.1	65.6	58.2	55.1	49.0	46.2	41.9	41.0	40.1

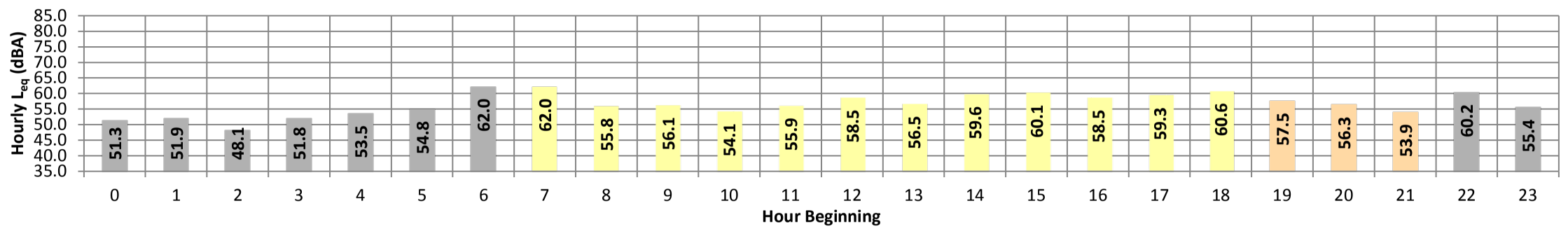
L_{eq} (dBA)		
24-Hour	Daytime	Nighttime
61.4	61.4	61.4

24-Hour CNEL (dBA)
68.0

24-Hour Noise Level Measurement Summary

Date: Friday, May 12, 2017
Project: Nichols Ranch
Location: L2 - Located on Nichols Road at the northern Project site boundary.
Meter: Piccolo I
JN: 10880
Analyst: A. Wolfe

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	80.9	43.3	59.0	55.0	47.0	45.0	44.0	44.0	43.0	43.0	43.0	51.3	10.0	61.3
	1	51.9	80.7	43.6	62.0	58.0	49.0	46.0	44.0	44.0	43.0	43.0	43.0	51.9	10.0	61.9
	2	48.1	70.6	43.2	60.0	54.0	47.0	45.0	44.0	44.0	43.0	43.0	43.0	48.1	10.0	58.1
	3	51.8	72.3	44.4	65.0	60.0	53.0	52.0	48.0	46.0	44.0	44.0	44.0	51.8	10.0	61.8
	4	53.5	78.3	44.9	65.0	62.0	56.0	53.0	50.0	49.0	45.0	45.0	45.0	53.5	10.0	63.5
	5	54.8	76.1	44.9	67.0	65.0	61.0	57.0	48.0	46.0	45.0	45.0	45.0	54.8	10.0	64.8
	6	62.0	89.2	45.3	72.0	69.0	67.0	65.0	58.0	50.0	46.0	46.0	45.0	62.0	10.0	72.0
Day	7	62.0	82.5	44.9	70.0	69.0	67.0	66.0	62.0	55.0	45.0	45.0	45.0	62.0	0.0	62.0
	8	55.8	77.1	44.9	67.0	65.0	62.0	59.0	50.0	46.0	45.0	45.0	45.0	55.8	0.0	55.8
	9	56.1	79.4	45.0	67.0	65.0	62.0	59.0	50.0	47.0	45.0	45.0	45.0	56.1	0.0	56.1
	10	54.1	71.6	45.0	65.0	63.0	60.0	58.0	50.0	47.0	45.0	45.0	45.0	54.1	0.0	54.1
	11	55.9	80.0	45.2	65.0	64.0	61.0	59.0	51.0	48.0	46.0	45.0	45.0	55.9	0.0	55.9
	12	58.5	78.6	46.2	71.0	67.0	62.0	60.0	53.0	50.0	47.0	47.0	46.0	58.5	0.0	58.5
	13	56.5	77.2	45.6	66.0	64.0	62.0	60.0	54.0	49.0	46.0	46.0	45.0	56.5	0.0	56.5
	14	59.6	77.9	45.8	69.0	67.0	65.0	64.0	59.0	54.0	47.0	47.0	46.0	59.6	0.0	59.6
	15	60.1	85.6	46.5	70.0	67.0	64.0	63.0	57.0	50.0	47.0	47.0	46.0	60.1	0.0	60.1
	16	58.5	80.4	46.2	68.0	66.0	64.0	63.0	56.0	50.0	47.0	47.0	46.0	58.5	0.0	58.5
	17	59.3	78.9	45.9	70.0	68.0	65.0	64.0	57.0	51.0	47.0	47.0	46.0	59.3	0.0	59.3
	18	60.6	86.8	45.3	69.0	67.0	65.0	63.0	56.0	50.0	46.0	46.0	45.0	60.6	0.0	60.6
Evening	19	57.5	81.4	44.5	68.0	66.0	64.0	62.0	54.0	48.0	45.0	45.0	44.0	57.5	5.0	62.5
	20	56.3	78.7	44.1	67.0	64.0	61.0	59.0	50.0	46.0	44.0	44.0	44.0	56.3	5.0	61.3
	21	53.9	74.0	43.9	66.0	64.0	60.0	57.0	48.0	45.0	44.0	44.0	44.0	53.9	5.0	58.9
Night	22	60.2	91.7	43.7	66.0	63.0	57.0	52.0	45.0	44.0	44.0	44.0	43.0	60.2	10.0	70.2
	23	55.4	86.7	43.4	62.0	56.0	51.0	48.0	44.0	44.0	43.0	43.0	43.0	55.4	10.0	65.4

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	54.1	71.6	44.9	65.0	63.0	60.0	58.0	50.0	46.0	45.0	45.0	45.0
	Max	62.0	86.8	46.5	71.0	69.0	67.0	66.0	62.0	55.0	47.0	47.0	46.0
Energy Average		58.7	Average:		68.1	66.0	63.3	61.5	54.6	49.8	46.1	46.0	45.4
Evening	Min	53.9	74.0	43.9	66.0	64.0	60.0	57.0	48.0	45.0	44.0	44.0	44.0
	Max	57.5	81.4	44.5	68.0	66.0	64.0	62.0	54.0	48.0	45.0	45.0	44.0
Energy Average		56.1	Average:		67.0	64.7	61.7	59.3	50.7	46.3	44.3	44.3	44.0
Night	Min	48.1	70.6	43.2	59.0	54.0	47.0	45.0	44.0	44.0	43.0	43.0	43.0
	Max	62.0	91.7	45.3	72.0	69.0	67.0	65.0	58.0	50.0	46.0	46.0	45.0
Energy Average		56.5	Average:		64.2	60.2	54.2	51.4	47.2	45.7	44.0	44.0	43.8

L_{eq} (dBA)

24-Hour	Daytime	Nighttime
57.7	**58.3**	**56.5**

24-Hour CNEL (dBA)

63.4

24-Hour Noise Level Measurement Summary

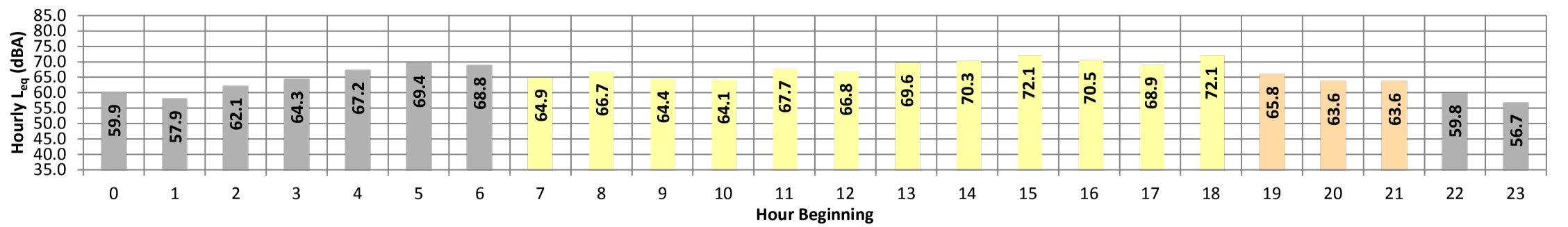
Date: Friday, May 12, 2017
Project: Nichols Ranch

Location: L3 - Located east of the Project site, north of Nichols Road, near existing residential homes.

Meter: Piccolo I

JN: 10880
Analyst: A. Wolfe

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	59.9	85.1	45.4	69.0	67.0	62.0	59.0	53.0	50.0	45.0	45.0	45.0	59.9	10.0	69.9
	1	57.9	81.0	45.4	66.0	63.0	60.0	59.0	55.0	53.0	48.0	48.0	45.0	57.9	10.0	67.9
	2	62.1	84.8	51.1	67.0	65.0	64.0	63.0	61.0	60.0	57.0	56.0	53.0	62.1	10.0	72.1
	3	64.3	80.0	54.6	72.0	69.0	67.0	66.0	64.0	62.0	60.0	58.0	56.0	64.3	10.0	74.3
	4	67.2	89.1	59.9	73.0	70.0	69.0	68.0	67.0	65.0	62.0	62.0	61.0	67.2	10.0	77.2
	5	69.4	90.4	60.3	79.0	76.0	72.0	70.0	68.0	66.0	64.0	64.0	62.0	69.4	10.0	79.4
	6	68.8	89.5	51.8	80.0	77.0	73.0	71.0	67.0	65.0	55.0	54.0	53.0	68.8	10.0	78.8
Day	7	64.9	84.3	51.6	76.0	72.0	69.0	67.0	63.0	60.0	54.0	53.0	52.0	64.9	0.0	64.9
	8	66.7	90.8	51.2	76.0	72.0	69.0	67.0	63.0	59.0	54.0	54.0	53.0	66.7	0.0	66.7
	9	64.4	86.2	52.0	74.0	72.0	68.0	66.0	62.0	58.0	54.0	53.0	53.0	64.4	0.0	64.4
	10	64.1	84.7	52.4	74.0	71.0	68.0	67.0	62.0	59.0	55.0	54.0	53.0	64.1	0.0	64.1
	11	67.7	90.6	53.4	79.0	76.0	71.0	68.0	64.0	61.0	57.0	56.0	55.0	67.7	0.0	67.7
	12	66.8	84.9	56.1	78.0	75.0	70.0	68.0	65.0	63.0	58.0	57.0	56.0	66.8	0.0	66.8
	13	69.6	87.8	59.6	79.0	77.0	74.0	72.0	69.0	66.0	62.0	61.0	60.0	69.6	0.0	69.6
	14	70.3	93.7	61.9	79.0	77.0	73.0	71.0	69.0	67.0	65.0	64.0	63.0	70.3	0.0	70.3
	15	72.1	98.3	62.8	80.0	77.0	72.0	71.0	69.0	67.0	65.0	65.0	64.0	72.1	0.0	72.1
	16	70.5	91.3	62.2	80.0	77.0	73.0	71.0	69.0	67.0	65.0	64.0	63.0	70.5	0.0	70.5
	17	68.9	90.8	60.7	76.0	74.0	71.0	70.0	68.0	66.0	64.0	63.0	62.0	68.9	0.0	68.9
	18	72.1	100.3	57.3	78.0	76.0	71.0	70.0	67.0	65.0	62.0	61.0	59.0	72.1	0.0	72.1
Evening	19	65.8	87.1	56.9	72.0	70.0	69.0	68.0	65.0	63.0	60.0	59.0	58.0	65.8	5.0	70.8
	20	63.6	78.7	54.6	71.0	70.0	68.0	67.0	64.0	61.0	57.0	56.0	55.0	63.6	5.0	68.6
	21	63.6	85.5	54.8	73.0	69.0	65.0	64.0	60.0	59.0	57.0	56.0	55.0	63.6	5.0	68.6
Night	22	59.8	76.8	51.8	69.0	67.0	64.0	62.0	59.0	57.0	54.0	53.0	53.0	59.8	10.0	69.8
	23	56.7	71.8	48.1	63.0	62.0	60.0	59.0	57.0	55.0	50.0	49.0	48.0	56.7	10.0	66.7

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	64.1	84.3	51.2	74.0	71.0	68.0	66.0	62.0	58.0	54.0	53.0	52.0
	Max	72.1	100.3	62.8	80.0	77.0	74.0	72.0	69.0	67.0	65.0	65.0	64.0
Energy Average		69.0	Average:		77.4	74.7	70.8	69.0	65.8	63.2	59.6	58.8	57.8
Evening	Min	63.6	78.7	54.6	71.0	69.0	65.0	64.0	60.0	59.0	57.0	56.0	55.0
	Max	65.8	87.1	56.9	73.0	70.0	69.0	68.0	65.0	63.0	60.0	59.0	58.0
Energy Average		64.5	Average:		72.0	69.7	67.3	66.3	63.0	61.0	58.0	57.0	56.0
Night	Min	56.7	71.8	45.4	63.0	62.0	60.0	59.0	53.0	50.0	45.0	45.0	45.0
	Max	69.4	90.4	60.3	80.0	77.0	73.0	71.0	68.0	66.0	64.0	64.0	62.0
Energy Average		65.1	Average:		70.9	68.4	65.7	64.1	61.2	59.2	55.0	54.3	52.9

L_{eq} (dBA)

24-Hour	Daytime	Nighttime
67.4	68.4	65.1

24-Hour CNEL (dBA)

72.3

24-Hour Noise Level Measurement Summary

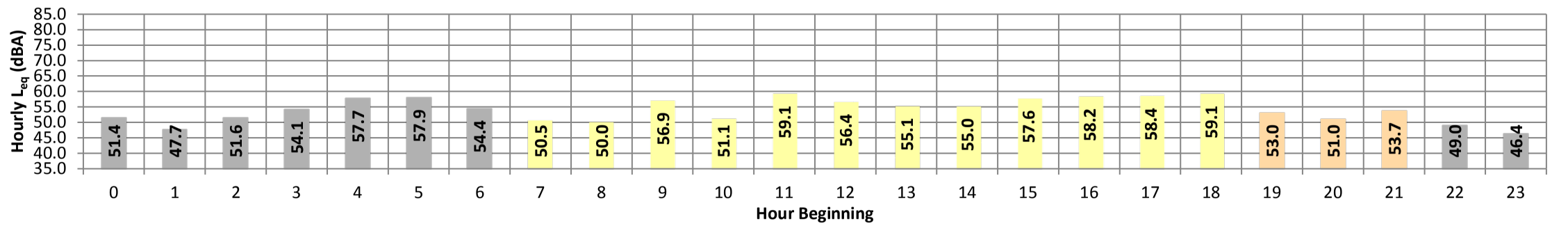
Date: Thursday, May 11, 2017
Project: Nichols Ranch

Location: L4 - Located at the eastern Project site boundary on Wood Mesa Court near existing residential homes.

Meter: Piccolo I

JN: 10880
Analyst: A. Wolfe

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	51.4	73.9	40.6	63.0	61.0	54.0	52.0	47.0	45.0	42.0	40.0	40.0	51.4	10.0	61.4
	1	47.7	61.2	40.6	54.0	53.0	51.0	50.0	48.0	46.0	43.0	40.0	40.0	47.7	10.0	57.7
	2	51.6	60.0	40.6	56.0	56.0	55.0	54.0	52.0	50.0	47.0	46.0	43.0	51.6	10.0	61.6
	3	54.1	61.8	48.4	58.0	57.0	56.0	56.0	54.0	53.0	51.0	50.0	49.0	54.1	10.0	64.1
	4	57.7	69.5	51.2	64.0	62.0	60.0	60.0	58.0	56.0	54.0	53.0	52.0	57.7	10.0	67.7
	5	57.9	71.7	51.5	64.0	62.0	60.0	59.0	58.0	57.0	54.0	53.0	52.0	57.9	10.0	67.9
	6	54.4	70.0	43.6	63.0	62.0	59.0	58.0	54.0	51.0	46.0	45.0	44.0	54.4	10.0	64.4
Day	7	50.5	67.4	43.6	59.0	57.0	55.0	53.0	50.0	47.0	45.0	45.0	43.0	50.5	0.0	50.5
	8	50.0	69.9	43.6	58.0	56.0	53.0	52.0	49.0	47.0	45.0	45.0	44.0	50.0	0.0	50.0
	9	56.9	79.4	43.6	69.0	65.0	60.0	59.0	53.0	48.0	45.0	45.0	43.0	56.9	0.0	56.9
	10	51.1	66.5	43.6	61.0	59.0	56.0	54.0	50.0	47.0	45.0	44.0	43.0	51.1	0.0	51.1
	11	59.1	83.1	46.2	72.0	66.0	59.0	57.0	53.0	50.0	47.0	47.0	46.0	59.1	0.0	59.1
	12	56.4	85.3	45.4	65.0	62.0	59.0	56.0	52.0	50.0	48.0	47.0	46.0	56.4	0.0	56.4
	13	55.1	76.0	46.4	65.0	62.0	59.0	57.0	53.0	51.0	48.0	47.0	46.0	55.1	0.0	55.1
	14	55.0	74.3	48.9	64.0	61.0	58.0	57.0	54.0	52.0	50.0	50.0	49.0	55.0	0.0	55.0
	15	57.6	75.0	50.5	66.0	62.0	59.0	59.0	57.0	56.0	53.0	52.0	51.0	57.6	0.0	57.6
	16	58.2	69.7	52.5	62.0	62.0	61.0	60.0	58.0	57.0	55.0	55.0	54.0	58.2	0.0	58.2
	17	58.4	70.8	50.5	65.0	64.0	63.0	62.0	58.0	56.0	54.0	53.0	51.0	58.4	0.0	58.4
	18	59.1	79.8	47.6	70.0	68.0	64.0	62.0	57.0	55.0	51.0	50.0	49.0	59.1	0.0	59.1
Evening	19	53.0	64.4	46.6	59.0	58.0	56.0	55.0	53.0	51.0	49.0	48.0	47.0	53.0	5.0	58.0
	20	51.0	66.4	45.3	58.0	57.0	54.0	53.0	51.0	49.0	46.0	46.0	45.0	51.0	5.0	56.0
	21	53.7	73.0	44.7	67.0	62.0	56.0	53.0	49.0	47.0	46.0	45.0	45.0	53.7	5.0	58.7
Night	22	49.0	66.2	43.6	58.0	55.0	51.0	50.0	48.0	46.0	45.0	44.0	43.0	49.0	10.0	59.0
	23	46.4	59.8	40.6	53.0	52.0	49.0	49.0	47.0	45.0	40.0	40.0	40.0	46.4	10.0	56.4

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	50.0	66.5	43.6	58.0	56.0	53.0	52.0	49.0	47.0	45.0	44.0	43.0
	Max	59.1	85.3	52.5	72.0	68.0	64.0	62.0	58.0	57.0	55.0	55.0	54.0
Energy Average		56.6	Average:		64.7	62.0	58.8	57.3	53.7	51.3	48.8	48.3	47.1
Evening	Min	51.0	64.4	44.7	58.0	57.0	54.0	53.0	49.0	47.0	46.0	45.0	45.0
	Max	53.7	73.0	46.6	67.0	62.0	56.0	55.0	53.0	51.0	49.0	48.0	47.0
Energy Average		52.7	Average:		61.3	59.0	55.3	53.7	51.0	49.0	47.0	46.3	45.7
Night	Min	46.4	59.8	40.6	53.0	52.0	49.0	49.0	47.0	45.0	40.0	40.0	40.0
	Max	57.9	73.9	51.5	64.0	62.0	60.0	60.0	58.0	57.0	54.0	53.0	52.0
Energy Average		53.9	Average:		59.2	57.8	55.0	54.2	51.8	49.9	46.9	45.7	44.8

L_{eq} (dBA)

24-Hour	Daytime	Nighttime
55.3	**56.0**	**53.9**

24-Hour CNEL (dBA)

60.9

24-Hour Noise Level Measurement Summary

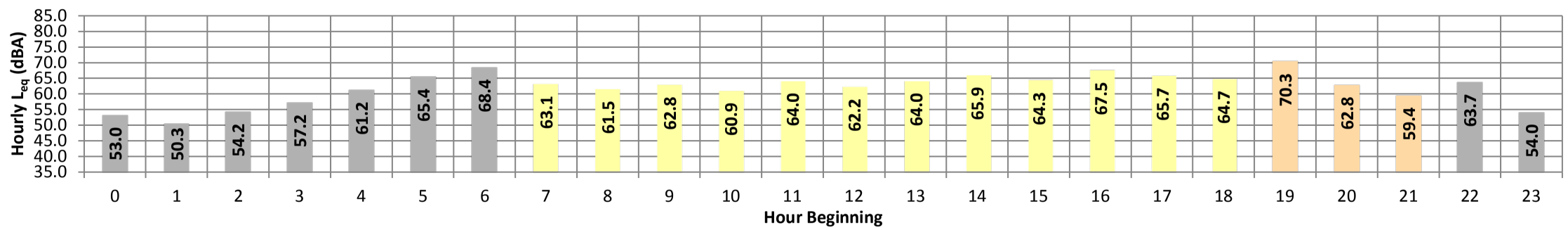
Date: Friday, May 12, 2017
Project: Nichols Ranch

Location: L5 - Located southeast of the Project site on El Toro Road near existing residential homes and Temescal Canyon High School.

Meter: Piccolo I

JN: 10880
Analyst: A. Wolfe

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	53.0	80.8	41.4	61.0	57.0	54.0	52.0	50.0	48.0	44.0	43.0	42.0	53.0	10.0	63.0
	1	50.3	74.3	38.0	54.0	53.0	51.0	51.0	48.0	47.0	43.0	42.0	41.0	50.3	10.0	60.3
	2	54.2	76.5	40.3	64.0	59.0	57.0	56.0	52.0	50.0	46.0	45.0	42.0	54.2	10.0	64.2
	3	57.2	75.9	47.3	66.0	61.0	59.0	59.0	57.0	55.0	53.0	52.0	51.0	57.2	10.0	67.2
	4	61.2	77.6	53.1	69.0	66.0	63.0	63.0	61.0	59.0	57.0	56.0	55.0	61.2	10.0	71.2
	5	65.4	83.5	54.9	74.0	72.0	69.0	68.0	65.0	63.0	58.0	57.0	56.0	65.4	10.0	75.4
	6	68.4	89.9	45.9	78.0	75.0	72.0	71.0	67.0	63.0	53.0	51.0	48.0	68.4	10.0	78.4
Day	7	63.1	87.7	43.5	73.0	71.0	69.0	67.0	60.0	50.0	45.0	45.0	44.0	63.1	0.0	63.1
	8	61.5	84.8	44.4	73.0	71.0	67.0	64.0	53.0	48.0	46.0	46.0	45.0	61.5	0.0	61.5
	9	62.8	88.8	44.9	74.0	71.0	68.0	66.0	53.0	49.0	46.0	46.0	45.0	62.8	0.0	62.8
	10	60.9	82.4	45.1	72.0	71.0	67.0	65.0	55.0	50.0	47.0	46.0	46.0	60.9	0.0	60.9
	11	64.0	94.0	46.2	72.0	70.0	68.0	66.0	57.0	52.0	48.0	48.0	47.0	64.0	0.0	64.0
	12	62.2	78.6	47.2	73.0	71.0	69.0	67.0	58.0	53.0	49.0	49.0	48.0	62.2	0.0	62.2
	13	64.0	89.9	47.3	74.0	71.0	69.0	67.0	61.0	55.0	50.0	50.0	49.0	64.0	0.0	64.0
	14	65.9	84.7	50.7	75.0	73.0	71.0	69.0	66.0	61.0	55.0	54.0	52.0	65.9	0.0	65.9
	15	64.3	84.7	54.0	73.0	71.0	69.0	68.0	63.0	60.0	57.0	56.0	55.0	64.3	0.0	64.3
	16	67.5	96.3	56.6	74.0	72.0	70.0	68.0	64.0	61.0	59.0	58.0	57.0	67.5	0.0	67.5
	17	65.7	87.3	54.2	75.0	72.0	70.0	69.0	64.0	61.0	58.0	57.0	56.0	65.7	0.0	65.7
	18	64.7	87.8	49.4	73.0	71.0	69.0	68.0	63.0	59.0	54.0	52.0	51.0	64.7	0.0	64.7
Evening	19	70.3	99.0	48.3	73.0	71.0	68.0	66.0	61.0	58.0	52.0	51.0	50.0	70.3	5.0	75.3
	20	62.8	82.0	48.0	73.0	71.0	69.0	67.0	60.0	54.0	50.0	49.0	48.0	62.8	5.0	67.8
	21	59.4	80.9	46.2	72.0	69.0	65.0	60.0	53.0	50.0	48.0	48.0	47.0	59.4	5.0	64.4
Night	22	63.7	94.5	45.1	71.0	68.0	60.0	54.0	51.0	50.0	48.0	47.0	46.0	63.7	10.0	73.7
	23	54.0	76.7	44.2	67.0	62.0	55.0	52.0	50.0	48.0	46.0	46.0	45.0	54.0	10.0	64.0

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	60.9	78.6	43.5	72.0	70.0	67.0	64.0	53.0	48.0	45.0	45.0	44.0
	Max	67.5	96.3	56.6	75.0	73.0	71.0	69.0	66.0	61.0	59.0	58.0	57.0
Energy Average		64.3	Average:		73.4	71.3	68.8	67.0	59.8	54.9	51.2	50.6	49.6
Evening	Min	59.4	80.9	46.2	72.0	69.0	65.0	60.0	53.0	50.0	48.0	48.0	47.0
	Max	70.3	99.0	48.3	73.0	71.0	69.0	67.0	61.0	58.0	52.0	51.0	50.0
Energy Average		66.5	Average:		72.7	70.3	67.3	64.3	58.0	54.0	50.0	49.3	48.3
Night	Min	50.3	74.3	38.0	54.0	53.0	51.0	51.0	48.0	47.0	43.0	42.0	41.0
	Max	68.4	94.5	54.9	78.0	75.0	72.0	71.0	67.0	63.0	58.0	57.0	56.0
Energy Average		62.3	Average:		67.1	63.7	60.0	58.4	55.7	53.7	49.8	48.8	47.3

L_{eq} (dBA)

24-Hour	Daytime	Nighttime
64.1	**64.8**	**62.3**

24-Hour CNEL (dBA)

69.8

24-Hour Noise Level Measurement Summary

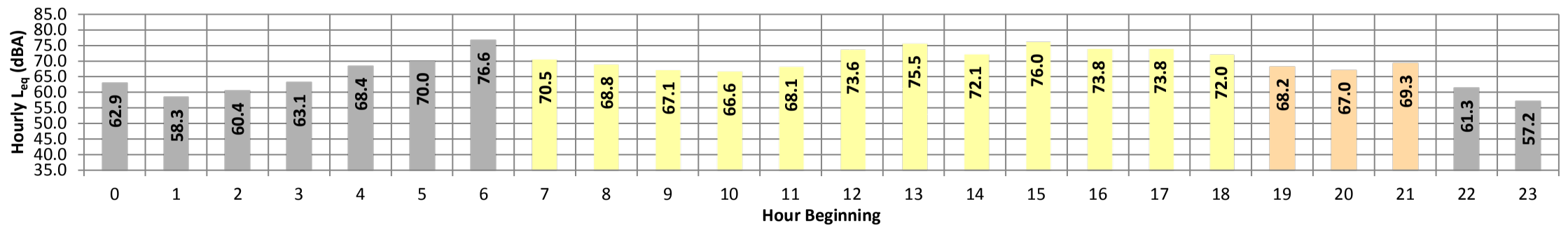
Date: Friday, May 12, 2017
Project: Nichols Ranch

Location: L6 - Located south of the Project site on El Toro Road near existing residential homes and Temescal Canyon High School.

Meter: Piccolo I

JN: 10880
Analyst: A. Wolfe

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	62.9	84.1	48.7	75.0	73.0	68.0	66.0	58.0	54.0	51.0	50.0	50.0	62.9	10.0	72.9
	1	58.3	82.2	48.6	69.0	65.0	59.0	57.0	54.0	51.0	48.0	48.0	48.0	58.3	10.0	68.3
	2	60.4	83.3	49.5	71.0	67.0	61.0	60.0	58.0	56.0	52.0	51.0	50.0	60.4	10.0	70.4
	3	63.1	85.7	54.6	74.0	70.0	64.0	63.0	60.0	59.0	57.0	56.0	55.0	63.1	10.0	73.1
	4	68.4	93.6	56.5	76.0	73.0	70.0	69.0	66.0	63.0	60.0	60.0	59.0	68.4	10.0	78.4
	5	70.0	91.3	56.7	80.0	78.0	74.0	73.0	67.0	63.0	60.0	59.0	58.0	70.0	10.0	80.0
	6	76.6	101.6	53.3	87.0	83.0	79.0	77.0	72.0	68.0	59.0	57.0	55.0	76.6	10.0	86.6
Day	7	70.5	95.0	51.7	83.0	80.0	74.0	72.0	65.0	59.0	54.0	53.0	52.0	70.5	0.0	70.5
	8	68.8	94.8	51.7	80.0	75.0	71.0	69.0	65.0	61.0	55.0	54.0	53.0	68.8	0.0	68.8
	9	67.1	86.9	52.2	79.0	75.0	71.0	69.0	65.0	61.0	55.0	54.0	53.0	67.1	0.0	67.1
	10	66.6	86.5	52.3	77.0	75.0	72.0	70.0	65.0	60.0	55.0	54.0	53.0	66.6	0.0	66.6
	11	68.1	87.7	53.4	79.0	77.0	73.0	71.0	66.0	62.0	57.0	56.0	54.0	68.1	0.0	68.1
	12	73.6	101.3	55.0	83.0	79.0	74.0	72.0	67.0	62.0	57.0	56.0	55.0	73.6	0.0	73.6
	13	75.5	102.0	54.4	86.0	83.0	79.0	78.0	71.0	67.0	59.0	58.0	56.0	75.5	0.0	75.5
	14	72.1	94.9	57.4	83.0	80.0	76.0	74.0	69.0	64.0	60.0	59.0	58.0	72.1	0.0	72.1
	15	76.0	105.3	58.3	82.0	79.0	76.0	73.0	67.0	64.0	61.0	61.0	60.0	76.0	0.0	76.0
	16	73.8	102.9	59.4	82.0	78.0	75.0	73.0	67.0	64.0	61.0	61.0	60.0	73.8	0.0	73.8
	17	73.8	99.8	57.3	82.0	78.0	74.0	72.0	66.0	63.0	59.0	59.0	58.0	73.8	0.0	73.8
	18	72.0	99.1	55.4	82.0	78.0	73.0	71.0	67.0	63.0	59.0	58.0	57.0	72.0	0.0	72.0
Evening	19	68.2	92.3	54.0	78.0	76.0	72.0	69.0	63.0	60.0	56.0	56.0	55.0	68.2	5.0	73.2
	20	67.0	93.4	52.6	76.0	73.0	69.0	67.0	59.0	56.0	54.0	54.0	53.0	67.0	5.0	72.0
	21	69.3	98.3	52.2	78.0	73.0	67.0	63.0	57.0	56.0	54.0	54.0	53.0	69.3	5.0	74.3
Night	22	61.3	86.5	50.4	72.0	69.0	63.0	59.1	55.0	54.0	52.0	52.0	51.0	61.3	10.0	71.3
	23	57.2	77.7	48.3	69.0	65.0	60.0	57.0	54.0	52.0	48.0	48.0	48.0	57.2	10.0	67.2

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	66.6	86.5	51.7	77.0	75.0	71.0	69.0	65.0	59.0	54.0	53.0	52.0
	Max	76.0	105.3	59.4	86.0	83.0	79.0	78.0	71.0	67.0	61.0	61.0	60.0
Energy Average		72.5	Average:		81.5	78.1	74.0	72.0	66.7	62.5	57.7	56.9	55.8
Evening	Min	67.0	92.3	52.2	76.0	73.0	67.0	63.0	57.0	56.0	54.0	54.0	53.0
	Max	69.3	98.3	54.0	78.0	76.0	72.0	69.0	63.0	60.0	56.0	56.0	55.0
Energy Average		68.3	Average:		77.3	74.0	69.3	66.3	59.7	57.3	54.7	54.7	53.7
Night	Min	57.2	77.7	48.3	69.0	65.0	59.0	57.0	54.0	51.0	48.0	48.0	48.0
	Max	76.6	101.6	56.7	87.0	83.0	79.0	77.0	72.0	68.0	60.0	60.0	59.0
Energy Average		68.9	Average:		74.8	71.4	66.4	64.6	60.4	57.8	54.1	53.4	52.7

L_{eq} (dBA)		
24-Hour	Daytime	Nighttime
71.0	71.9	68.9

24-Hour CNEL (dBA)
76.1

APPENDIX 7.1:

OFF-SITE TRAFFIC NOISE LEVEL CONTOURS

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Lake St.
Road Segment: n/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,400 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-0.95	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-18.19	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-22.14	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:	68.2	66.3	64.5	58.5	67.1	67.7
Medium Trucks:	61.8	60.3	53.9	52.4	60.8	61.0
Heavy Trucks:	62.2	60.8	51.7	53.0	61.3	61.5
Vehicle Noise:	69.9	68.1	65.1	60.3	68.9	69.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	50	108	234	503
CNEL:	54	116	251	540

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Lake St.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,790 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	0.12	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-17.12	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.07	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:	69.3	67.4	65.6	59.5	68.2	68.8
Medium Trucks:	62.8	61.3	55.0	53.4	61.9	62.1
Heavy Trucks:	63.3	61.8	52.8	54.0	62.4	62.5
Vehicle Noise:	71.0	69.2	66.2	61.4	69.9	70.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	59	128	275	593
CNEL:	64	137	296	637

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Lake St.
Road Segment: s/o Alberhill Ranch Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,740 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	0.00	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-17.24	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.20	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:	69.1	67.2	65.5	59.4	68.0	68.6
Medium Trucks:	62.7	61.2	54.8	53.3	61.8	62.0
Heavy Trucks:	63.1	61.7	52.7	53.9	62.3	62.4
Vehicle Noise:	70.8	69.1	66.0	61.2	69.8	70.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	58	125	270	582
CNEL:	62	135	290	625

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Alberhill Ranch Rd.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	180 vehicles
Vehicle Speed:	35 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:	39.0 feet
Centerline Dist. to Observer:	39.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	37.443
Medium Trucks:	37.206
Heavy Trucks:	37.230

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-8.31	1.78	-1.20	-4.58	0.000	0.000
Medium Trucks:	75.75	-25.55	1.82	-1.20	-4.87	0.000	0.000
Heavy Trucks:	81.57	-29.50	1.82	-1.20	-5.57	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:	56.6	54.7	52.9	46.9	55.5	56.1
Medium Trucks:	50.8	49.3	43.0	41.4	49.9	50.1
Heavy Trucks:	52.7	51.3	42.2	43.5	51.8	52.0
Vehicle Noise:	58.8	57.1	53.7	49.3	57.8	58.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	6	13	28	60
CNEL:	6	14	30	64

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Strickland Sv.
Road Segment: s/o Riverside Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	20	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	47	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	45.0	feet
Centerline Dist. to Observer:	45.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	38.701
Medium Trucks:	38.471
Heavy Trucks:	38.494

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-18.43	1.57	-1.20	-4.62	0.000	0.000
Medium Trucks:	77.72	-35.67	1.60	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-39.62	1.60	-1.20	-5.49	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:	48.4	46.5	44.8	38.7	47.4	48.0
Medium Trucks:	42.5	40.9	34.6	33.0	41.5	41.7
Heavy Trucks:	43.8	42.3	33.3	34.6	42.9	43.0
Vehicle Noise:	50.5	48.7	45.5	40.9	49.4	49.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	2	4	9	19
CNEL:	2	4	10	21

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Collier Av.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,800	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	680	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	-21.32	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-25.28	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	63.9	62.2	56.1	64.7	65.4
Medium Trucks:	59.4	57.9	51.6	50.0	58.5	58.7
Heavy Trucks:	59.9	58.4	49.4	50.6	59.0	59.1
Vehicle Noise:	67.5	65.8	62.7	58.0	66.5	67.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	29	63	136	293
CNEL:	31	68	146	315

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Collier Av.
Road Segment: s/o Riverside Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,310	vehicles
Vehicle Speed:	45	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	68.46	1.69	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	79.45	-15.55	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-19.51	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:	69.1	67.2	65.4	59.4	68.0	68.6
Medium Trucks:	62.8	61.3	55.0	53.4	61.9	62.1
Heavy Trucks:	63.7	62.3	53.2	54.5	62.8	63.0
Vehicle Noise:	70.9	69.2	66.0	61.3	69.9	70.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	59	127	274	590
CNEL:	63	136	294	633

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Collier Av.
Road Segment: s/o Central Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	990	vehicles
Vehicle Speed:	45	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	68.46	-1.99	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	79.45	-19.23	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-23.19	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:	66.2	64.3	62.5	56.5	65.1	65.7
Medium Trucks:	60.0	58.5	52.1	50.6	59.0	59.3
Heavy Trucks:	60.8	59.4	50.4	51.6	60.0	60.1
Vehicle Noise:	68.0	66.3	63.1	58.5	67.0	67.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	32	68	147	316
CNEL:	34	73	157	339

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: El Toro Rd.
Road Segment: s/o Tereticornis Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	350 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	26.0 feet
Centerline Dist. to Observer:	26.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-3.96	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	70.80	-21.20	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	77.97	-25.15	4.29	-1.20	-5.90	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:	57.8	55.9	54.1	48.1	56.7	57.3
Medium Trucks:	52.7	51.2	44.8	43.3	51.7	52.0
Heavy Trucks:	55.9	54.5	45.5	46.7	55.1	55.2
Vehicle Noise:	60.7	59.0	55.1	51.2	59.7	60.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	5	12	25	54
CNEL:	6	12	26	57

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Dexter Av.
Road Segment: n/o Central Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,130 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	26.0 feet
Centerline Dist. to Observer:	26.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-1.42	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	79.45	-18.66	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	84.25	-22.61	4.29	-1.20	-5.90	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:	70.1	68.2	66.4	60.3	69.0	69.6
Medium Trucks:	63.9	62.4	56.0	54.5	62.9	63.2
Heavy Trucks:	64.7	63.3	54.3	55.5	63.9	64.0
Vehicle Noise:	71.9	70.2	67.0	62.3	70.9	71.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	64	138	298
CNEL:	32	69	148	319

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Nichols Rd.
Road Segment: e/o Lake St.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	500 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-5.42	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-22.66	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-26.61	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:	63.7	61.8	60.0	54.0	62.6	63.2
Medium Trucks:	57.3	55.8	49.4	47.9	56.3	56.6
Heavy Trucks:	57.7	56.3	47.3	48.5	56.9	57.0
Vehicle Noise:	65.4	63.7	60.6	55.8	64.4	64.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	25	55	118	253
CNEL:	27	59	126	272

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Nichols Rd.
Road Segment: e/o Alberhill Ranch Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	620 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-4.48	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-21.72	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-25.68	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:	64.6	62.7	61.0	54.9	63.5	64.2
Medium Trucks:	58.2	56.7	50.4	48.8	57.3	57.5
Heavy Trucks:	58.6	57.2	48.2	49.4	57.8	57.9
Vehicle Noise:	66.3	64.6	61.5	56.8	65.3	65.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	29	63	136	292
CNEL:	31	68	146	314

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Nichols Rd.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	640 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-4.35	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-21.59	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-25.54	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:	64.8	62.9	61.1	55.1	63.7	64.3
Medium Trucks:	58.4	56.9	50.5	49.0	57.4	57.6
Heavy Trucks:	58.8	57.4	48.3	49.6	57.9	58.1
Vehicle Noise:	66.5	64.7	61.7	56.9	65.5	65.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	64	139	299
CNEL:	32	69	149	321

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Tereticornis Av.
Road Segment: e/o El Toro Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	110 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	26.0 feet
Centerline Dist. to Observer:	26.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-8.98	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	70.80	-26.22	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	77.97	-30.18	4.29	-1.20	-5.90	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:	52.8	50.9	49.1	43.0	51.7	52.3
Medium Trucks:	47.7	46.2	39.8	38.3	46.7	46.9
Heavy Trucks:	50.9	49.5	40.4	41.7	50.0	50.2
Vehicle Noise:	55.7	54.0	50.1	46.2	54.7	55.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	2	5	12	25
CNEL:	3	6	12	26

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Riverside Dr.
Road Segment: w/o Lakeshore Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,760 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	1.02	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-16.22	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-20.18	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:	66.5	64.6	62.8	56.7	65.4	66.0
Medium Trucks:	60.4	58.9	52.6	51.0	59.5	59.7
Heavy Trucks:	61.8	60.3	51.3	52.6	60.9	61.0
Vehicle Noise:	68.5	66.7	63.5	58.9	67.4	67.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	41	87	188	406
CNEL:	43	94	202	434

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Riverside Dr.
Road Segment: e/o Lakeshore Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,130 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	1.84	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.39	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.35	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:	67.3	65.4	63.6	57.6	66.2	66.8
Medium Trucks:	61.3	59.8	53.4	51.9	60.3	60.6
Heavy Trucks:	62.6	61.2	52.1	53.4	61.7	61.9
Vehicle Noise:	69.3	67.6	64.3	59.7	68.3	68.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	46	99	214	461
CNEL:	49	106	229	493

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Riverside Dr.
Road Segment: e/o Strickland Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,060	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*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	1.70	0.13	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	77.72	-15.54	0.15	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-19.49	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:	67.1	65.2	63.5	57.4	66.0	66.6
Medium Trucks:	61.1	59.6	53.3	51.7	60.2	60.4
Heavy Trucks:	62.4	61.0	52.0	53.2	61.6	61.7
Vehicle Noise:	69.2	67.4	64.1	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:	48	104	224	482

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Riverside Dr.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,060	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*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	1.70	0.13	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	77.72	-15.54	0.15	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-19.49	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:	67.1	65.2	63.5	57.4	66.0	66.6
Medium Trucks:	61.1	59.6	53.3	51.7	60.2	60.4
Heavy Trucks:	62.4	61.0	52.0	53.2	61.6	61.7
Vehicle Noise:	69.2	67.4	64.1	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:	48	104	224	482

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Central Av.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	920	vehicles
Vehicle Speed:	30	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*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:	61.75	-0.55	0.93	-1.20	*-4.65*	0.000	0.000
Medium Trucks:	73.48	-17.79	0.96	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	79.92	-21.75	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:	60.9	59.0	57.3	51.2	59.8	60.4
Medium Trucks:	55.4	53.9	47.6	46.0	54.5	54.7
Heavy Trucks:	57.9	56.5	47.5	48.7	57.1	57.2
Vehicle Noise:	63.4	61.7	58.1	53.9	62.4	62.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	16	34	73	157
CNEL:	17	36	77	167

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Central Av.
Road Segment: e/o Dexter Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,570	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	96	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	67.0	feet
Centerline Dist. to Observer:	67.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	47.011
Medium Trucks:	46.822
Heavy Trucks:	46.841

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.70	0.30	-1.20	*-4.71*	0.000	0.000
Medium Trucks:	82.40	-14.53	0.32	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-18.49	0.32	-1.20	*-5.29*	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:	73.6	71.7	69.9	63.9	72.5	73.1
Medium Trucks:	67.0	65.5	59.1	57.6	66.0	66.3
Heavy Trucks:	67.0	65.6	56.6	57.8	66.2	66.3
Vehicle Noise:	75.2	73.4	70.4	65.6	74.1	74.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	126	272	586	1,263
CNEL:	136	293	631	1,359

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Central Av.
Road Segment: e/o Cambern Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,610	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	96	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	67.0	feet
Centerline Dist. to Observer:	67.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.011
Medium Trucks:	46.822
Heavy Trucks:	46.841

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.75	0.30	-1.20	-4.71	0.000	0.000
Medium Trucks:	82.40	-14.49	0.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-18.44	0.32	-1.20	-5.29	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:	73.6	71.7	70.0	63.9	72.5	73.1
Medium Trucks:	67.0	65.5	59.2	57.6	66.1	66.3
Heavy Trucks:	67.1	65.7	56.6	57.9	66.2	66.4
Vehicle Noise:	75.2	73.5	70.5	65.6	74.2	74.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	127	274	591	1,273
CNEL:	137	295	635	1,369

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 1
Road Name: Lake St.
Road Segment: n/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,410	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-0.92	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-18.15	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-22.11	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:	68.2	66.3	64.5	58.5	67.1	67.7
Medium Trucks:	61.8	60.3	53.9	52.4	60.8	61.1
Heavy Trucks:	62.2	60.8	51.8	53.0	61.4	61.5
Vehicle Noise:	69.9	68.2	65.1	60.3	68.9	69.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	51	109	235	505
CNEL:	54	117	252	543

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 1
Road Name: Lake St.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,790	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	0.12	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-17.12	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.07	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:	69.3	67.4	65.6	59.5	68.2	68.8
Medium Trucks:	62.8	61.3	55.0	53.4	61.9	62.1
Heavy Trucks:	63.3	61.8	52.8	54.0	62.4	62.5
Vehicle Noise:	71.0	69.2	66.2	61.4	69.9	70.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	59	128	275	593
CNEL:	64	137	296	637

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 1
Road Name: Lake St.
Road Segment: s/o Alberhill Ranch Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,740	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	0.00	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-17.24	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.20	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:	69.1	67.2	65.5	59.4	68.0	68.6
Medium Trucks:	62.7	61.2	54.8	53.3	61.8	62.0
Heavy Trucks:	63.1	61.7	52.7	53.9	62.3	62.4
Vehicle Noise:	70.8	69.1	66.0	61.2	69.8	70.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	58	125	270	582
CNEL:	62	135	290	625

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 1
Road Name: Alberhill Ranch Rd.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	180 vehicles
Vehicle Speed:	35 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:	39.0 feet
Centerline Dist. to Observer:	39.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	37.443
Medium Trucks:	37.206
Heavy Trucks:	37.230

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-8.31	1.78	-1.20	-4.58	0.000	0.000
Medium Trucks:	75.75	-25.55	1.82	-1.20	-4.87	0.000	0.000
Heavy Trucks:	81.57	-29.50	1.82	-1.20	-5.57	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:	56.6	54.7	52.9	46.9	55.5	56.1
Medium Trucks:	50.8	49.3	43.0	41.4	49.9	50.1
Heavy Trucks:	52.7	51.3	42.2	43.5	51.8	52.0
Vehicle Noise:	58.8	57.1	53.7	49.3	57.8	58.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	6	13	28	60
CNEL:	6	14	30	64

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 1
Road Name: Strickland Sv.
Road Segment: s/o Riverside Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	20 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	47 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	45.0 feet
Centerline Dist. to Observer:	45.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	38.701
Medium Trucks:	38.471
Heavy Trucks:	38.494

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-18.43	1.57	-1.20	-4.62	0.000	0.000
Medium Trucks:	77.72	-35.67	1.60	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-39.62	1.60	-1.20	-5.49	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:	48.4	46.5	44.8	38.7	47.4	48.0
Medium Trucks:	42.5	40.9	34.6	33.0	41.5	41.7
Heavy Trucks:	43.8	42.3	33.3	34.6	42.9	43.0
Vehicle Noise:	50.5	48.7	45.5	40.9	49.4	49.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	2	4	9	19
CNEL:	2	4	10	21

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 1
Road Name: Collier Av.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	690 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	-4.02	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-21.26	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-25.21	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	64.0	62.2	56.2	64.8	65.4
Medium Trucks:	59.5	58.0	51.6	50.1	58.5	58.8
Heavy Trucks:	59.9	58.5	49.5	50.7	59.1	59.2
Vehicle Noise:	67.6	65.9	62.8	58.0	66.6	67.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	64	137	296
CNEL:	32	68	147	318

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 1
Road Name: Collier Av.
Road Segment: s/o Riverside Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,310 vehicles
Vehicle Speed:	45 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	68.46	1.69	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	79.45	-15.55	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-19.51	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:	69.1	67.2	65.4	59.4	68.0	68.6
Medium Trucks:	62.8	61.3	55.0	53.4	61.9	62.1
Heavy Trucks:	63.7	62.3	53.2	54.5	62.8	63.0
Vehicle Noise:	70.9	69.2	66.0	61.3	69.9	70.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	59	127	274	590
CNEL:	63	136	294	633

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 1
Road Name: Collier Av.
Road Segment: s/o Central Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	990 vehicles
Vehicle Speed:	45 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	68.46	-1.99	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	79.45	-19.23	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-23.19	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:	66.2	64.3	62.5	56.5	65.1	65.7
Medium Trucks:	60.0	58.5	52.1	50.6	59.0	59.3
Heavy Trucks:	60.8	59.4	50.4	51.6	60.0	60.1
Vehicle Noise:	68.0	66.3	63.1	58.5	67.0	67.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	32	68	147	316
CNEL:	34	73	157	339

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 1
Road Name: El Toro Rd.
Road Segment: s/o Tereticornis Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	350 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	26.0 feet
Centerline Dist. to Observer:	26.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-3.96	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	70.80	-21.20	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	77.97	-25.15	4.29	-1.20	-5.90	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:	57.8	55.9	54.1	48.1	56.7	57.3
Medium Trucks:	52.7	51.2	44.8	43.3	51.7	52.0
Heavy Trucks:	55.9	54.5	45.5	46.7	55.1	55.2
Vehicle Noise:	60.7	59.0	55.1	51.2	59.7	60.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	5	12	25	54
CNEL:	6	12	26	57

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 1
Road Name: Dexter Av.
Road Segment: n/o Central Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,130 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	26.0 feet
Centerline Dist. to Observer:	26.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-1.42	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	79.45	-18.66	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	84.25	-22.61	4.29	-1.20	-5.90	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:	70.1	68.2	66.4	60.3	69.0	69.6
Medium Trucks:	63.9	62.4	56.0	54.5	62.9	63.2
Heavy Trucks:	64.7	63.3	54.3	55.5	63.9	64.0
Vehicle Noise:	71.9	70.2	67.0	62.3	70.9	71.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	64	138	298
CNEL:	32	69	148	319

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 1
Road Name: Nichols Rd.
Road Segment: e/o Lake St.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	500 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-5.42	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-22.66	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-26.61	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:	63.7	61.8	60.0	54.0	62.6	63.2
Medium Trucks:	57.3	55.8	49.4	47.9	56.3	56.6
Heavy Trucks:	57.7	56.3	47.3	48.5	56.9	57.0
Vehicle Noise:	65.4	63.7	60.6	55.8	64.4	64.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	25	55	118	253
CNEL:	27	59	126	272

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 1
Road Name: Nichols Rd.
Road Segment: e/o Alberhill Ranch Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	620	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-4.48	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-21.72	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-25.68	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:	64.6	62.7	61.0	54.9	63.5	64.2
Medium Trucks:	58.2	56.7	50.4	48.8	57.3	57.5
Heavy Trucks:	58.6	57.2	48.2	49.4	57.8	57.9
Vehicle Noise:	66.3	64.6	61.5	56.8	65.3	65.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	29	63	136	292
CNEL:	31	68	146	314

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 1
Road Name: Nichols Rd.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	640	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-4.35	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-21.59	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-25.54	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:	64.8	62.9	61.1	55.1	63.7	64.3
Medium Trucks:	58.4	56.9	50.5	49.0	57.4	57.6
Heavy Trucks:	58.8	57.4	48.3	49.6	57.9	58.1
Vehicle Noise:	66.5	64.7	61.7	56.9	65.5	65.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	64	139	299
CNEL:	32	69	149	321

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 1
Road Name: Tereticornis Av.
Road Segment: e/o El Toro Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	110	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	26.0	feet
Centerline Dist. to Observer:	26.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-8.98	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	70.80	-26.22	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	77.97	-30.18	4.29	-1.20	-5.90	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:	52.8	50.9	49.1	43.0	51.7	52.3
Medium Trucks:	47.7	46.2	39.8	38.3	46.7	46.9
Heavy Trucks:	50.9	49.5	40.4	41.7	50.0	50.2
Vehicle Noise:	55.7	54.0	50.1	46.2	54.7	55.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	2	5	12	25
CNEL:	3	6	12	26

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 1
Road Name: Riverside Dr.
Road Segment: w/o Lakeshore Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,760	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	1.02	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-16.22	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-20.18	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:	66.5	64.6	62.8	56.7	65.4	66.0
Medium Trucks:	60.4	58.9	52.6	51.0	59.5	59.7
Heavy Trucks:	61.8	60.3	51.3	52.6	60.9	61.0
Vehicle Noise:	68.5	66.7	63.5	58.9	67.4	67.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	41	87	188	406
CNEL:	43	94	202	434

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 1
Road Name: Riverside Dr.
Road Segment: e/o Lakeshore Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,300	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,130	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	1.84	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.39	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.35	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:	67.3	65.4	63.6	57.6	66.2	66.8
Medium Trucks:	61.3	59.8	53.4	51.9	60.3	60.6
Heavy Trucks:	62.6	61.2	52.1	53.4	61.7	61.9
Vehicle Noise:	69.3	67.6	64.3	59.7	68.3	68.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	46	99	214	461
CNEL:	49	106	229	493

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 1
Road Name: Riverside Dr.
Road Segment: e/o Strickland Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,060	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	1.70	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.54	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.49	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:	67.1	65.2	63.5	57.4	66.0	66.6
Medium Trucks:	61.1	59.6	53.3	51.7	60.2	60.4
Heavy Trucks:	62.4	61.0	52.0	53.2	61.6	61.7
Vehicle Noise:	69.2	67.4	64.1	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:	48	104	224	482

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 1
Road Name: Riverside Dr.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,060	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	1.70	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.54	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.49	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:	67.1	65.2	63.5	57.4	66.0	66.6
Medium Trucks:	61.1	59.6	53.3	51.7	60.2	60.4
Heavy Trucks:	62.4	61.0	52.0	53.2	61.6	61.7
Vehicle Noise:	69.2	67.4	64.1	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:	48	104	224	482

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 1
Road Name: Central Av.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	920	vehicles
Vehicle Speed:	30	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	61.75	-0.55	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	73.48	-17.79	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	79.92	-21.75	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:	60.9	59.0	57.3	51.2	59.8	60.4
Medium Trucks:	55.4	53.9	47.6	46.0	54.5	54.7
Heavy Trucks:	57.9	56.5	47.5	48.7	57.1	57.2
Vehicle Noise:	63.4	61.7	58.1	53.9	62.4	62.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	16	34	73	157
CNEL:	17	36	77	167

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 1
Road Name: Central Av.
Road Segment: e/o Dexter Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,570 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	96 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	67.0 feet
Centerline Dist. to Observer:	67.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.011
Medium Trucks:	46.822
Heavy Trucks:	46.841

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.70	0.30	-1.20	-4.71	0.000	0.000
Medium Trucks:	82.40	-14.53	0.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-18.49	0.32	-1.20	-5.29	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:	73.6	71.7	69.9	63.9	72.5	73.1
Medium Trucks:	67.0	65.5	59.1	57.6	66.0	66.3
Heavy Trucks:	67.0	65.6	56.6	57.8	66.2	66.3
Vehicle Noise:	75.2	73.4	70.4	65.6	74.1	74.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	126	272	586	1,263
CNEL:	136	293	631	1,359

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 1
Road Name: Central Av.
Road Segment: e/o Cambern Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,610 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	96 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	67.0 feet
Centerline Dist. to Observer:	67.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.011
Medium Trucks:	46.822
Heavy Trucks:	46.841

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.75	0.30	-1.20	-4.71	0.000	0.000
Medium Trucks:	82.40	-14.49	0.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-18.44	0.32	-1.20	-5.29	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:	73.6	71.7	70.0	63.9	72.5	73.1
Medium Trucks:	67.0	65.5	59.2	57.6	66.1	66.3
Heavy Trucks:	67.1	65.7	56.6	57.9	66.2	66.4
Vehicle Noise:	75.2	73.5	70.5	65.6	74.2	74.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	127	274	591	1,273
CNEL:	137	295	635	1,369

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 2
Road Name: Lake St.
Road Segment: n/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,410 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-0.92	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-18.15	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-22.11	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:	68.2	66.3	64.5	58.5	67.1	67.7
Medium Trucks:	61.8	60.3	53.9	52.4	60.8	61.1
Heavy Trucks:	62.2	60.8	51.8	53.0	61.4	61.5
Vehicle Noise:	69.9	68.2	65.1	60.3	68.9	69.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	51	109	235	505
CNEL:	54	117	252	543

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 2
Road Name: Lake St.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,800 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	0.14	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-17.09	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.05	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:	69.3	67.4	65.6	59.6	68.2	68.8
Medium Trucks:	62.9	61.4	55.0	53.4	61.9	62.1
Heavy Trucks:	63.3	61.9	52.8	54.1	62.4	62.6
Vehicle Noise:	71.0	69.2	66.2	61.4	69.9	70.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	59	128	276	595
CNEL:	64	138	297	639

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 2
Road Name: Lake St.
Road Segment: s/o Alberhill Ranch Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,500	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,750	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	0.02	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-17.22	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.17	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:	69.2	67.3	65.5	59.4	68.1	68.7
Medium Trucks:	62.7	61.2	54.9	53.3	61.8	62.0
Heavy Trucks:	63.2	61.7	52.7	53.9	62.3	62.4
Vehicle Noise:	70.9	69.1	66.1	61.3	69.8	70.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	58	126	271	584
CNEL:	63	135	291	627

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 2
Road Name: Alberhill Ranch Rd.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,800	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	180	vehicles
Vehicle Speed:	35	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:	39.0	feet
Centerline Dist. to Observer:	39.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	37.443
Medium Trucks:	37.206
Heavy Trucks:	37.230

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-8.31	1.78	-1.20	-4.58	0.000	0.000
Medium Trucks:	75.75	-25.55	1.82	-1.20	-4.87	0.000	0.000
Heavy Trucks:	81.57	-29.50	1.82	-1.20	-5.57	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:	56.6	54.7	52.9	46.9	55.5	56.1
Medium Trucks:	50.8	49.3	43.0	41.4	49.9	50.1
Heavy Trucks:	52.7	51.3	42.2	43.5	51.8	52.0
Vehicle Noise:	58.8	57.1	53.7	49.3	57.8	58.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	6	13	28	60
CNEL:	6	14	30	64

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 2
Road Name: Strickland Sv.
Road Segment: s/o Riverside Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	20	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	47	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	45.0	feet
Centerline Dist. to Observer:	45.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	38.701
Medium Trucks:	38.471
Heavy Trucks:	38.494

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-18.43	1.57	-1.20	-4.62	0.000	0.000
Medium Trucks:	77.72	-35.67	1.60	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-39.62	1.60	-1.20	-5.49	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:	48.4	46.5	44.8	38.7	47.4	48.0
Medium Trucks:	42.5	40.9	34.6	33.0	41.5	41.7
Heavy Trucks:	43.8	42.3	33.3	34.6	42.9	43.0
Vehicle Noise:	50.5	48.7	45.5	40.9	49.4	49.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	2	4	9	19
CNEL:	2	4	10	21

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 2
Road Name: Collier Av.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	710	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	-3.90	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-21.13	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-25.09	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:	66.0	64.1	62.4	56.3	64.9	65.5
Medium Trucks:	59.6	58.1	51.8	50.2	58.7	58.9
Heavy Trucks:	60.0	58.6	49.6	50.8	59.2	59.3
Vehicle Noise:	67.7	66.0	62.9	58.2	66.7	67.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	65	140	301
CNEL:	32	70	150	324

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 2
Road Name: Collier Av.
Road Segment: s/o Riverside Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,320	vehicles
Vehicle Speed:	45	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	68.46	1.70	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	79.45	-15.53	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-19.49	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:	69.1	67.2	65.4	59.4	68.0	68.6
Medium Trucks:	62.9	61.4	55.0	53.5	61.9	62.1
Heavy Trucks:	63.7	62.3	53.3	54.5	62.9	63.0
Vehicle Noise:	70.9	69.2	66.0	61.4	69.9	70.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	59	127	275	591
CNEL:	63	137	294	634

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 2
Road Name: Collier Av.
Road Segment: s/o Central Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,000	vehicles
Vehicle Speed:	45	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	68.46	-1.95	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	79.45	-19.19	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-23.15	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:	66.2	64.3	62.6	56.5	65.1	65.7
Medium Trucks:	60.0	58.5	52.1	50.6	59.1	59.3
Heavy Trucks:	60.9	59.4	50.4	51.7	60.0	60.1
Vehicle Noise:	68.1	66.3	63.2	58.5	67.1	67.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	32	69	148	318
CNEL:	34	73	158	341

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 2
Road Name: El Toro Rd.
Road Segment: s/o Tereticornis Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	370	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	26.0	feet
Centerline Dist. to Observer:	26.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-3.72	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	70.80	-20.95	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	77.97	-24.91	4.29	-1.20	-5.90	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:	58.0	56.1	54.4	48.3	56.9	57.5
Medium Trucks:	52.9	51.4	45.1	43.5	52.0	52.2
Heavy Trucks:	56.2	54.7	45.7	46.9	55.3	55.4
Vehicle Noise:	60.9	59.3	55.3	51.5	60.0	60.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	6	12	26	56
CNEL:	6	13	27	59

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 2
Road Name: Dexter Av.
Road Segment: n/o Central Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,140	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	26.0	feet
Centerline Dist. to Observer:	26.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-1.38	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	79.45	-18.62	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	84.25	-22.58	4.29	-1.20	-5.90	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:	70.1	68.2	66.4	60.4	69.0	69.6
Medium Trucks:	63.9	62.4	56.1	54.5	63.0	63.2
Heavy Trucks:	64.8	63.3	54.3	55.6	63.9	64.0
Vehicle Noise:	72.0	70.2	67.0	62.4	70.9	71.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	65	139	300
CNEL:	32	69	149	321

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 2
Road Name: Nichols Rd.
Road Segment: e/o Lake St.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	510	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-5.33	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-22.57	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-26.53	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:	63.8	61.9	60.1	54.1	62.7	63.3
Medium Trucks:	57.4	55.9	49.5	48.0	56.4	56.7
Heavy Trucks:	57.8	56.4	47.3	48.6	56.9	57.1
Vehicle Noise:	65.5	63.7	60.7	55.9	64.5	64.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	26	55	119	257
CNEL:	28	59	128	276

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 2
Road Name: Nichols Rd.
Road Segment: e/o Alberhill Ranch Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,300	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	630	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-4.42	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-21.65	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-25.61	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:	64.7	62.8	61.1	55.0	63.6	64.2
Medium Trucks:	58.3	56.8	50.4	48.9	57.3	57.6
Heavy Trucks:	58.7	57.3	48.3	49.5	57.9	58.0
Vehicle Noise:	66.4	64.7	61.6	56.8	65.4	65.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	64	137	295
CNEL:	32	68	147	317

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 2
Road Name: Nichols Rd.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,500	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	650	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-4.28	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-21.52	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-25.47	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:	64.9	63.0	61.2	55.1	63.8	64.4
Medium Trucks:	58.4	56.9	50.6	49.0	57.5	57.7
Heavy Trucks:	58.9	57.4	48.4	49.6	58.0	58.1
Vehicle Noise:	66.6	64.8	61.8	57.0	65.5	66.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	65	140	302
CNEL:	32	70	150	324

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 2
Road Name: Tereticornis Av.
Road Segment: e/o El Toro Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	110	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	26.0	feet
Centerline Dist. to Observer:	26.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-8.98	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	70.80	-26.22	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	77.97	-30.18	4.29	-1.20	-5.90	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:	52.8	50.9	49.1	43.0	51.7	52.3
Medium Trucks:	47.7	46.2	39.8	38.3	46.7	46.9
Heavy Trucks:	50.9	49.5	40.4	41.7	50.0	50.2
Vehicle Noise:	55.7	54.0	50.1	46.2	54.7	55.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	2	5	12	25
CNEL:	3	6	12	26

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 2
Road Name: Riverside Dr.
Road Segment: w/o Lakeshore Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,770	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	1.04	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-16.20	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-20.15	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:	66.5	64.6	62.8	56.8	65.4	66.0
Medium Trucks:	60.5	59.0	52.6	51.1	59.5	59.7
Heavy Trucks:	61.8	60.4	51.3	52.6	60.9	61.1
Vehicle Noise:	68.5	66.8	63.5	58.9	67.5	67.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	41	88	189	407
CNEL:	44	94	202	436

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 2
Road Name: Riverside Dr.
Road Segment: e/o Lakeshore Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,500	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,150	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	1.88	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.35	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.31	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:	67.3	65.4	63.7	57.6	66.2	66.8
Medium Trucks:	61.3	59.8	53.4	51.9	60.4	60.6
Heavy Trucks:	62.6	61.2	52.2	53.4	61.8	61.9
Vehicle Noise:	69.3	67.6	64.3	59.8	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	107	230	496

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 2
Road Name: Riverside Dr.
Road Segment: e/o Strickland Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,800	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,080	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	1.74	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.50	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.45	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:	67.2	65.3	63.5	57.5	66.1	66.7
Medium Trucks:	61.2	59.7	53.3	51.8	60.2	60.4
Heavy Trucks:	62.5	61.1	52.0	53.3	61.6	61.8
Vehicle Noise:	69.2	67.5	64.2	59.6	68.2	68.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	45	98	210	453
CNEL:	49	105	225	485

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 2
Road Name: Riverside Dr.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,800	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,080	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	1.74	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.50	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.45	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:	67.2	65.3	63.5	57.5	66.1	66.7
Medium Trucks:	61.2	59.7	53.3	51.8	60.2	60.4
Heavy Trucks:	62.5	61.1	52.0	53.3	61.6	61.8
Vehicle Noise:	69.2	67.5	64.2	59.6	68.2	68.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	45	98	210	453
CNEL:	49	105	225	485

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 2
Road Name: Central Av.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	940	vehicles
Vehicle Speed:	30	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	61.75	-0.46	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	73.48	-17.70	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	79.92	-21.65	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:	61.0	59.1	57.4	51.3	59.9	60.5
Medium Trucks:	55.5	54.0	47.7	46.1	54.6	54.8
Heavy Trucks:	58.0	56.6	47.6	48.8	57.2	57.3
Vehicle Noise:	63.5	61.8	58.2	54.0	62.5	62.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	16	34	74	159
CNEL:	17	36	79	169

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 2
Road Name: Central Av.
Road Segment: e/o Dexter Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,570	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	96	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	67.0	feet
Centerline Dist. to Observer:	67.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.011
Medium Trucks:	46.822
Heavy Trucks:	46.841

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.70	0.30	-1.20	-4.71	0.000	0.000
Medium Trucks:	82.40	-14.53	0.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-18.49	0.32	-1.20	-5.29	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:	73.6	71.7	69.9	63.9	72.5	73.1
Medium Trucks:	67.0	65.5	59.1	57.6	66.0	66.3
Heavy Trucks:	67.0	65.6	56.6	57.8	66.2	66.3
Vehicle Noise:	75.2	73.4	70.4	65.6	74.1	74.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	126	272	586	1,263
CNEL:	136	293	631	1,359

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Phase 2
Road Name: Central Av.
Road Segment: e/o Cambern Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,620	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	96	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	67.0	feet
Centerline Dist. to Observer:	67.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.011
Medium Trucks:	46.822
Heavy Trucks:	46.841

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.76	0.30	-1.20	-4.71	0.000	0.000
Medium Trucks:	82.40	-14.47	0.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-18.43	0.32	-1.20	-5.29	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:	73.6	71.7	70.0	63.9	72.5	73.2
Medium Trucks:	67.1	65.5	59.2	57.6	66.1	66.3
Heavy Trucks:	67.1	65.7	56.6	57.9	66.2	66.4
Vehicle Noise:	75.2	73.5	70.5	65.6	74.2	74.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	127	275	592	1,275
CNEL:	137	295	637	1,372

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Buildout
Road Name: Lake St.
Road Segment: n/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,300	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,430	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-0.86	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-18.09	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-22.05	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:	68.3	66.4	64.6	58.6	67.2	67.8
Medium Trucks:	61.9	60.4	54.0	52.4	60.9	61.1
Heavy Trucks:	62.3	60.9	51.8	53.1	61.4	61.6
Vehicle Noise:	70.0	68.2	65.2	60.4	68.9	69.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	51	110	237	510
CNEL:	55	118	254	548

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Buildout
Road Name: Lake St.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,840 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	0.24	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-17.00	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-20.95	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:	69.4	67.5	65.7	59.7	68.3	68.9
Medium Trucks:	63.0	61.4	55.1	53.5	62.0	62.2
Heavy Trucks:	63.4	62.0	52.9	54.2	62.5	62.6
Vehicle Noise:	71.1	69.3	66.3	61.5	70.0	70.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	60	130	280	604
CNEL:	65	140	301	649

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Buildout
Road Name: Lake St.
Road Segment: s/o Alberhill Ranch Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,780 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	0.10	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-17.14	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.10	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:	69.2	67.3	65.6	59.5	68.1	68.7
Medium Trucks:	62.8	61.3	54.9	53.4	61.9	62.1
Heavy Trucks:	63.2	61.8	52.8	54.0	62.4	62.5
Vehicle Noise:	70.9	69.2	66.1	61.3	69.9	70.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	59	127	274	590
CNEL:	63	137	294	634

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Buildout
Road Name: Alberhill Ranch Rd.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	200 vehicles
Vehicle Speed:	35 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:	39.0 feet
Centerline Dist. to Observer:	39.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	37.443
Medium Trucks:	37.206
Heavy Trucks:	37.230

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-7.85	1.78	-1.20	-4.58	0.000	0.000
Medium Trucks:	75.75	-25.09	1.82	-1.20	-4.87	0.000	0.000
Heavy Trucks:	81.57	-29.04	1.82	-1.20	-5.57	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:	57.0	55.1	53.4	47.3	55.9	56.5
Medium Trucks:	51.3	49.8	43.4	41.9	50.3	50.6
Heavy Trucks:	53.1	51.7	42.7	43.9	52.3	52.4
Vehicle Noise:	59.3	57.6	54.1	49.7	58.3	58.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	6	14	30	64
CNEL:	7	15	32	69

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Buildout
Road Name: Strickland Sv.
Road Segment: s/o Riverside Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	40 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	47 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	45.0 feet
Centerline Dist. to Observer:	45.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	38.701
Medium Trucks:	38.471
Heavy Trucks:	38.494

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-15.42	1.57	-1.20	-4.62	0.000	0.000
Medium Trucks:	77.72	-32.66	1.60	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-36.61	1.60	-1.20	-5.49	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:	51.5	49.6	47.8	41.7	50.4	51.0
Medium Trucks:	45.5	44.0	37.6	36.0	44.5	44.7
Heavy Trucks:	46.8	45.4	36.3	37.6	45.9	46.1
Vehicle Noise:	53.5	51.7	48.5	43.9	52.5	52.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	7	14	30
CNEL:	3	7	15	33

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Buildout
Road Name: Collier Av.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	830 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	-3.22	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-20.46	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-24.41	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:	66.7	64.8	63.0	57.0	65.6	66.2
Medium Trucks:	60.3	58.8	52.4	50.9	59.3	59.6
Heavy Trucks:	60.7	59.3	50.3	51.5	59.9	60.0
Vehicle Noise:	68.4	66.7	63.6	58.8	67.4	67.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	33	72	155	335
CNEL:	36	77	167	359

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Buildout
Road Name: Collier Av.
Road Segment: s/o Riverside Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,370 vehicles
Vehicle Speed:	45 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	68.46	1.80	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	79.45	-15.44	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-19.40	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:	69.2	67.3	65.5	59.5	68.1	68.7
Medium Trucks:	63.0	61.5	55.1	53.5	62.0	62.2
Heavy Trucks:	63.8	62.4	53.3	54.6	63.0	63.1
Vehicle Noise:	71.0	69.3	66.1	61.5	70.0	70.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	60	129	278	600
CNEL:	64	139	299	643

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Buildout
Road Name: Collier Av.
Road Segment: s/o Central Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,020 vehicles
Vehicle Speed:	45 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	68.46	-1.87	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	79.45	-19.10	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-23.06	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:	66.3	64.4	62.7	56.6	65.2	65.8
Medium Trucks:	60.1	58.6	52.2	50.7	59.2	59.4
Heavy Trucks:	60.9	59.5	50.5	51.7	60.1	60.2
Vehicle Noise:	68.2	66.4	63.3	58.6	67.1	67.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	32	69	150	322
CNEL:	35	74	160	346

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Buildout
Road Name: El Toro Rd.
Road Segment: s/o Tereticornis Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	470 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	26.0 feet
Centerline Dist. to Observer:	26.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-2.68	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	70.80	-19.92	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	77.97	-23.87	4.29	-1.20	-5.90	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:	59.1	57.2	55.4	49.3	58.0	58.6
Medium Trucks:	54.0	52.5	46.1	44.6	53.0	53.3
Heavy Trucks:	57.2	55.8	46.7	48.0	56.3	56.5
Vehicle Noise:	62.0	60.3	56.4	52.5	61.0	61.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	7	14	30	65
CNEL:	7	15	32	69

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Buildout
Road Name: Dexter Av.
Road Segment: n/o Central Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,180 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	26.0 feet
Centerline Dist. to Observer:	26.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-1.23	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	79.45	-18.47	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	84.25	-22.43	4.29	-1.20	-5.90	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:	70.2	68.3	66.6	60.5	69.1	69.7
Medium Trucks:	64.1	62.6	56.2	54.7	63.1	63.4
Heavy Trucks:	64.9	63.5	54.5	55.7	64.1	64.2
Vehicle Noise:	72.1	70.4	67.2	62.5	71.1	71.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	31	66	142	307
CNEL:	33	71	153	329

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Buildout
Road Name: Nichols Rd.
Road Segment: e/o Lake St.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	580 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-4.77	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-22.01	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-25.97	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:	64.4	62.5	60.7	54.6	63.3	63.9
Medium Trucks:	57.9	56.4	50.1	48.5	57.0	57.2
Heavy Trucks:	58.4	56.9	47.9	49.2	57.5	57.6
Vehicle Noise:	66.1	64.3	61.3	56.5	65.0	65.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	28	60	130	280
CNEL:	30	65	139	300

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Buildout
Road Name: Nichols Rd.
Road Segment: e/o Alberhill Ranch Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	720 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-3.84	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-21.07	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-25.03	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:	65.3	63.4	61.6	55.6	64.2	64.8
Medium Trucks:	58.9	57.4	51.0	49.5	57.9	58.2
Heavy Trucks:	59.3	57.9	48.8	50.1	58.4	58.6
Vehicle Noise:	67.0	65.2	62.2	57.4	66.0	66.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	32	70	150	323
CNEL:	35	75	161	347

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Buildout
Road Name: Nichols Rd.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	740 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-3.72	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-20.95	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-24.91	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:	65.4	63.5	61.7	55.7	64.3	64.9
Medium Trucks:	59.0	57.5	51.1	49.6	58.0	58.3
Heavy Trucks:	59.4	58.0	49.0	50.2	58.6	58.7
Vehicle Noise:	67.1	65.4	62.3	57.5	66.1	66.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	33	71	153	329
CNEL:	35	76	164	353

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Buildout
Road Name: Tereticornis Av.
Road Segment: e/o El Toro Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,300	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	130	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	26.0	feet
Centerline Dist. to Observer:	26.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-8.26	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	70.80	-25.50	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	77.97	-29.45	4.29	-1.20	-5.90	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:	53.5	51.6	49.8	43.8	52.4	53.0
Medium Trucks:	48.4	46.9	40.5	39.0	47.4	47.7
Heavy Trucks:	51.6	50.2	41.2	42.4	50.8	50.9
Vehicle Noise:	56.4	54.7	50.8	46.9	55.4	55.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	6	13	28
CNEL:	3	6	14	29

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Buildout
Road Name: Riverside Dr.
Road Segment: w/o Lakeshore Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,790	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	1.09	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-16.15	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-20.11	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:	66.5	64.6	62.9	56.8	65.4	66.0
Medium Trucks:	60.5	59.0	52.6	51.1	59.6	59.8
Heavy Trucks:	61.8	60.4	51.4	52.6	61.0	61.1
Vehicle Noise:	68.5	66.8	63.5	59.0	67.5	68.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	41	88	190	410
CNEL:	44	95	204	439

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Buildout
Road Name: Riverside Dr.
Road Segment: e/o Lakeshore Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,190	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	1.96	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.27	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.23	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	65.5	63.7	57.7	66.3	66.9
Medium Trucks:	61.4	59.9	53.5	52.0	60.4	60.7
Heavy Trucks:	62.7	61.3	52.3	53.5	61.9	62.0
Vehicle Noise:	69.4	67.7	64.4	59.9	68.4	68.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	47	101	218	469
CNEL:	50	108	233	502

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Buildout
Road Name: Riverside Dr.
Road Segment: e/o Strickland Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,160	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	1.91	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.33	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.29	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:	67.3	65.4	63.7	57.6	66.2	66.9
Medium Trucks:	61.3	59.8	53.5	51.9	60.4	60.6
Heavy Trucks:	62.7	61.2	52.2	53.4	61.8	61.9
Vehicle Noise:	69.4	67.6	64.3	59.8	68.3	68.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	46	100	216	465
CNEL:	50	107	231	498

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Buildout
Road Name: Riverside Dr.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,160 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.006

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	1.91	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.33	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.29	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:	67.3	65.4	63.7	57.6	66.2	66.9
Medium Trucks:	61.3	59.8	53.5	51.9	60.4	60.6
Heavy Trucks:	62.7	61.2	52.2	53.4	61.8	61.9
Vehicle Noise:	69.4	67.6	64.3	59.8	68.3	68.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	46	100	216	465
CNEL:	50	107	231	498

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Buildout
Road Name: Central Av.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	950 vehicles
Vehicle Speed:	30 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.006

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:	61.75	-0.41	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	73.48	-17.65	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	79.92	-21.61	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:	61.1	59.2	57.4	51.3	60.0	60.6
Medium Trucks:	55.6	54.1	47.7	46.2	54.6	54.9
Heavy Trucks:	58.1	56.6	47.6	48.9	57.2	57.3
Vehicle Noise:	63.6	61.9	58.2	54.1	62.6	63.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	16	34	74	160
CNEL:	17	37	79	170

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Buildout
Road Name: Central Av.
Road Segment: e/o Dexter Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,620 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	96 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	67.0 feet
Centerline Dist. to Observer:	67.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.006

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	47.011
Medium Trucks:	46.822
Heavy Trucks:	46.841

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.76	0.30	-1.20	-4.71	0.000	0.000
Medium Trucks:	82.40	-14.47	0.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-18.43	0.32	-1.20	-5.29	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:	73.6	71.7	70.0	63.9	72.5	73.2
Medium Trucks:	67.1	65.5	59.2	57.6	66.1	66.3
Heavy Trucks:	67.1	65.7	56.6	57.9	66.2	66.4
Vehicle Noise:	75.2	73.5	70.5	65.6	74.2	74.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	127	275	592	1,275
CNEL:	137	295	637	1,372

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing With Buildout
Road Name: Central Av.
Road Segment: e/o Cambern Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,650 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	96 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	67.0 feet
Centerline Dist. to Observer:	67.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.006

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	47.011
Medium Trucks:	46.822
Heavy Trucks:	46.841

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.80	0.30	-1.20	-4.71	0.000	0.000
Medium Trucks:	82.40	-14.44	0.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-18.39	0.32	-1.20	-5.29	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:	73.7	71.8	70.0	64.0	72.6	73.2
Medium Trucks:	67.1	65.6	59.2	57.7	66.1	66.4
Heavy Trucks:	67.1	65.7	56.7	57.9	66.3	66.4
Vehicle Noise:	75.3	73.5	70.5	65.7	74.2	74.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	128	276	595	1,282
CNEL:	138	297	640	1,379

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2020
Road Name: Lake St.
Road Segment: n/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,460 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-0.77	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-18.00	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.96	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:	68.4	66.5	64.7	58.6	67.3	67.9
Medium Trucks:	61.9	60.4	54.1	52.5	61.0	61.2
Heavy Trucks:	62.4	60.9	51.9	53.2	61.5	61.6
Vehicle Noise:	70.1	68.3	65.3	60.5	69.0	69.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	52	111	240	517
CNEL:	56	120	258	556

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2020
Road Name: Lake St.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,860 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	0.29	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-16.95	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-20.91	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:	69.4	67.5	65.8	59.7	68.3	68.9
Medium Trucks:	63.0	61.5	55.1	53.6	62.0	62.3
Heavy Trucks:	63.4	62.0	53.0	54.2	62.6	62.7
Vehicle Noise:	71.1	69.4	66.3	61.5	70.1	70.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	61	131	282	608
CNEL:	65	141	303	653

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2020
Road Name: Lake St.
Road Segment: s/o Alberhill Ranch Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,810 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	0.17	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-17.07	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.03	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:	69.3	67.4	65.6	59.6	68.2	68.8
Medium Trucks:	62.9	61.4	55.0	53.5	61.9	62.2
Heavy Trucks:	63.3	61.9	52.8	54.1	62.4	62.6
Vehicle Noise:	71.0	69.2	66.2	61.4	70.0	70.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	60	129	277	597
CNEL:	64	138	298	641

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2020
Road Name: Alberhill Ranch Rd.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	190 vehicles
Vehicle Speed:	35 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:	39.0 feet
Centerline Dist. to Observer:	39.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	37.443
Medium Trucks:	37.206
Heavy Trucks:	37.230

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-8.07	1.78	-1.20	-4.58	0.000	0.000
Medium Trucks:	75.75	-25.31	1.82	-1.20	-4.87	0.000	0.000
Heavy Trucks:	81.57	-29.27	1.82	-1.20	-5.57	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:	56.8	54.9	53.1	47.1	55.7	56.3
Medium Trucks:	51.1	49.6	43.2	41.6	50.1	50.3
Heavy Trucks:	52.9	51.5	42.5	43.7	52.1	52.2
Vehicle Noise:	59.0	57.3	53.9	49.5	58.0	58.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	6	13	29	62
CNEL:	7	14	31	66

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2020
Road Name: Strickland Sv.
Road Segment: s/o Riverside Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	20	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	47	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	45.0	feet
Centerline Dist. to Observer:	45.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	38.701
Medium Trucks:	38.471
Heavy Trucks:	38.494

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-18.43	1.57	-1.20	-4.62	0.000	0.000
Medium Trucks:	77.72	-35.67	1.60	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-39.62	1.60	-1.20	-5.49	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:	48.4	46.5	44.8	38.7	47.4	48.0
Medium Trucks:	42.5	40.9	34.6	33.0	41.5	41.7
Heavy Trucks:	43.8	42.3	33.3	34.6	42.9	43.0
Vehicle Noise:	50.5	48.7	45.5	40.9	49.4	49.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	2	4	9	19
CNEL:	2	4	10	21

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2020
Road Name: Collier Av.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	710	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	-3.90	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-21.13	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-25.09	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:	66.0	64.1	62.4	56.3	64.9	65.5
Medium Trucks:	59.6	58.1	51.8	50.2	58.7	58.9
Heavy Trucks:	60.0	58.6	49.6	50.8	59.2	59.3
Vehicle Noise:	67.7	66.0	62.9	58.2	66.7	67.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	65	140	301
CNEL:	32	70	150	324

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2020
Road Name: Collier Av.
Road Segment: s/o Riverside Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	24,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,400	vehicles
Vehicle Speed:	45	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	68.46	1.85	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	79.45	-15.39	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-19.34	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:	69.2	67.3	65.6	59.5	68.1	68.7
Medium Trucks:	63.0	61.5	55.1	53.6	62.1	62.3
Heavy Trucks:	63.9	62.4	53.4	54.7	63.0	63.1
Vehicle Noise:	71.1	69.3	66.2	61.5	70.1	70.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	60	130	281	605
CNEL:	65	140	301	649

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2020
Road Name: Collier Av.
Road Segment: s/o Central Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,300	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,030	vehicles
Vehicle Speed:	45	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	68.46	-1.82	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	79.45	-19.06	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-23.02	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	64.5	62.7	56.6	65.3	65.9
Medium Trucks:	60.1	58.6	52.3	50.7	59.2	59.4
Heavy Trucks:	61.0	59.6	50.5	51.8	60.1	60.3
Vehicle Noise:	68.2	66.5	63.3	58.6	67.2	67.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	32	70	151	324
CNEL:	35	75	161	348

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2020
Road Name: El Toro Rd.
Road Segment: s/o Tereticornis Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	360 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	26.0 feet
Centerline Dist. to Observer:	26.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000	
Medium Trucks:	2.297	
Heavy Trucks:	8.006	Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-3.84	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	70.80	-21.07	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	77.97	-25.03	4.29	-1.20	-5.90	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:	57.9	56.0	54.2	48.2	56.8	57.4
Medium Trucks:	52.8	51.3	45.0	43.4	51.9	52.1
Heavy Trucks:	56.0	54.6	45.6	46.8	55.2	55.3
Vehicle Noise:	60.8	59.2	55.2	51.3	59.8	60.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	5	12	25	55
CNEL:	6	12	27	58

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2020
Road Name: Dexter Av.
Road Segment: n/o Central Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,170 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	26.0 feet
Centerline Dist. to Observer:	26.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000	
Medium Trucks:	2.297	
Heavy Trucks:	8.006	Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-1.27	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	79.45	-18.51	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	84.25	-22.46	4.29	-1.20	-5.90	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:	70.2	68.3	66.5	60.5	69.1	69.7
Medium Trucks:	64.0	62.5	56.2	54.6	63.1	63.3
Heavy Trucks:	64.9	63.5	54.4	55.7	64.0	64.2
Vehicle Noise:	72.1	70.3	67.2	62.5	71.0	71.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	66	142	305
CNEL:	33	70	152	327

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2020
Road Name: Nichols Rd.
Road Segment: e/o Lake St.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	520 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000	
Medium Trucks:	2.297	
Heavy Trucks:	8.006	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:	70.20	-5.25	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-22.49	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-26.44	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:	63.9	62.0	60.2	54.2	62.8	63.4
Medium Trucks:	57.5	56.0	49.6	48.1	56.5	56.7
Heavy Trucks:	57.9	56.5	47.4	48.7	57.0	57.2
Vehicle Noise:	65.6	63.8	60.8	56.0	64.6	65.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	26	56	121	260
CNEL:	28	60	130	279

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2020
Road Name: Nichols Rd.
Road Segment: e/o Alberhill Ranch Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	650 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000	
Medium Trucks:	2.297	
Heavy Trucks:	8.006	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:	70.20	-4.28	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-21.52	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-25.47	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:	64.9	63.0	61.2	55.1	63.8	64.4
Medium Trucks:	58.4	56.9	50.6	49.0	57.5	57.7
Heavy Trucks:	58.9	57.4	48.4	49.6	58.0	58.1
Vehicle Noise:	66.6	64.8	61.8	57.0	65.5	66.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	65	140	302
CNEL:	32	70	150	324

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2020
Road Name: Nichols Rd.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	660	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-4.21	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-21.45	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-25.41	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:	64.9	63.0	61.3	55.2	63.8	64.4
Medium Trucks:	58.5	57.0	50.6	49.1	57.5	57.8
Heavy Trucks:	58.9	57.5	48.5	49.7	58.1	58.2
Vehicle Noise:	66.6	64.9	61.8	57.0	65.6	66.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	66	141	305
CNEL:	33	71	152	327

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2020
Road Name: Tereticornis Av.
Road Segment: e/o El Toro Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	110	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	26.0	feet
Centerline Dist. to Observer:	26.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-8.98	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	70.80	-26.22	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	77.97	-30.18	4.29	-1.20	-5.90	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:	52.8	50.9	49.1	43.0	51.7	52.3
Medium Trucks:	47.7	46.2	39.8	38.3	46.7	46.9
Heavy Trucks:	50.9	49.5	40.4	41.7	50.0	50.2
Vehicle Noise:	55.7	54.0	50.1	46.2	54.7	55.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	2	5	12	25
CNEL:	3	6	12	26

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2020
Road Name: Riverside Dr.
Road Segment: w/o Lakeshore Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,300	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,830	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	1.19	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-16.05	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-20.01	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:	66.6	64.7	63.0	56.9	65.5	66.1
Medium Trucks:	60.6	59.1	52.7	51.2	59.7	59.9
Heavy Trucks:	61.9	60.5	51.5	52.7	61.1	61.2
Vehicle Noise:	68.6	66.9	63.6	59.1	67.6	68.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	42	90	193	416
CNEL:	45	96	207	446

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2020
Road Name: Riverside Dr.
Road Segment: e/o Lakeshore Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,220	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	2.02	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.21	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.17	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:	67.5	65.6	63.8	57.7	66.4	67.0
Medium Trucks:	61.5	59.9	53.6	52.0	60.5	60.7
Heavy Trucks:	62.8	61.4	52.3	53.6	61.9	62.0
Vehicle Noise:	69.5	67.7	64.5	59.9	68.5	68.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	47	102	220	473
CNEL:	51	109	235	507

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2020
Road Name: Riverside Dr.
Road Segment: e/o Strickland Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,140	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*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	1.86	0.13	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	77.72	-15.37	0.15	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-19.33	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:	67.3	65.4	63.6	57.6	66.2	66.8
Medium Trucks:	61.3	59.8	53.4	51.9	60.3	60.6
Heavy Trucks:	62.6	61.2	52.2	53.4	61.8	61.9
Vehicle Noise:	69.3	67.6	64.3	59.8	68.3	68.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	46	100	214	462
CNEL:	49	107	230	495

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2020
Road Name: Riverside Dr.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,140	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*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	1.86	0.13	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	77.72	-15.37	0.15	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-19.33	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:	67.3	65.4	63.6	57.6	66.2	66.8
Medium Trucks:	61.3	59.8	53.4	51.9	60.3	60.6
Heavy Trucks:	62.6	61.2	52.2	53.4	61.8	61.9
Vehicle Noise:	69.3	67.6	64.3	59.8	68.3	68.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	46	100	214	462
CNEL:	49	107	230	495

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2020
Road Name: Central Av.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	960	vehicles
Vehicle Speed:	30	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*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:	61.75	-0.37	0.93	-1.20	*-4.65*	0.000	0.000
Medium Trucks:	73.48	-17.61	0.96	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	79.92	-21.56	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:	61.1	59.2	57.4	51.4	60.0	60.6
Medium Trucks:	55.6	54.1	47.8	46.2	54.7	54.9
Heavy Trucks:	58.1	56.7	47.7	48.9	57.3	57.4
Vehicle Noise:	63.6	61.9	58.3	54.1	62.6	63.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	16	35	75	161
CNEL:	17	37	80	172

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2020
Road Name: Central Av.
Road Segment: e/o Dexter Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,710	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	96	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	67.0	feet
Centerline Dist. to Observer:	67.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	47.011
Medium Trucks:	46.822
Heavy Trucks:	46.841

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.87	0.30	-1.20	*-4.71*	0.000	0.000
Medium Trucks:	82.40	-14.37	0.32	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-18.32	0.32	-1.20	*-5.29*	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:	73.8	71.9	70.1	64.0	72.7	73.3
Medium Trucks:	67.2	65.7	59.3	57.7	66.2	66.4
Heavy Trucks:	67.2	65.8	56.7	58.0	66.3	66.5
Vehicle Noise:	75.3	73.6	70.6	65.7	74.3	74.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	130	279	602	1,296
CNEL:	139	300	647	1,394

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2020
Road Name: Central Av.
Road Segment: e/o Cambern Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,760	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	96	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	67.0	feet
Centerline Dist. to Observer:	67.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.011
Medium Trucks:	46.822
Heavy Trucks:	46.841

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.93	0.30	-1.20	-4.71	0.000	0.000
Medium Trucks:	82.40	-14.31	0.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-18.26	0.32	-1.20	-5.29	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:	73.8	71.9	70.1	64.1	72.7	73.3
Medium Trucks:	67.2	65.7	59.3	57.8	66.3	66.5
Heavy Trucks:	67.3	65.8	56.8	58.0	66.4	66.5
Vehicle Noise:	75.4	73.6	70.7	65.8	74.4	74.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	131	282	607	1,308
CNEL:	141	303	653	1,407

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2020
Road Name: Lake St.
Road Segment: n/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,460	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-0.77	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-18.00	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.96	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:	68.4	66.5	64.7	58.6	67.3	67.9
Medium Trucks:	61.9	60.4	54.1	52.5	61.0	61.2
Heavy Trucks:	62.4	60.9	51.9	53.2	61.5	61.6
Vehicle Noise:	70.1	68.3	65.3	60.5	69.0	69.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	52	111	240	517
CNEL:	56	120	258	556

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2020
Road Name: Lake St.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,860	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	0.29	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-16.95	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-20.91	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:	69.4	67.5	65.8	59.7	68.3	68.9
Medium Trucks:	63.0	61.5	55.1	53.6	62.0	62.3
Heavy Trucks:	63.4	62.0	53.0	54.2	62.6	62.7
Vehicle Noise:	71.1	69.4	66.3	61.5	70.1	70.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	61	131	282	608
CNEL:	65	141	303	653

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2020
Road Name: Lake St.
Road Segment: s/o Alberhill Ranch Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,810	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	0.17	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-17.07	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.03	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:	69.3	67.4	65.6	59.6	68.2	68.8
Medium Trucks:	62.9	61.4	55.0	53.5	61.9	62.2
Heavy Trucks:	63.3	61.9	52.8	54.1	62.4	62.6
Vehicle Noise:	71.0	69.2	66.2	61.4	70.0	70.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	60	129	277	597
CNEL:	64	138	298	641

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2020
Road Name: Alberhill Ranch Rd.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	190 vehicles
Vehicle Speed:	35 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:	39.0 feet
Centerline Dist. to Observer:	39.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	37.443
Medium Trucks:	37.206
Heavy Trucks:	37.230

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-8.07	1.78	-1.20	-4.58	0.000	0.000
Medium Trucks:	75.75	-25.31	1.82	-1.20	-4.87	0.000	0.000
Heavy Trucks:	81.57	-29.27	1.82	-1.20	-5.57	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:	56.8	54.9	53.1	47.1	55.7	56.3
Medium Trucks:	51.1	49.6	43.2	41.6	50.1	50.3
Heavy Trucks:	52.9	51.5	42.5	43.7	52.1	52.2
Vehicle Noise:	59.0	57.3	53.9	49.5	58.0	58.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	6	13	29	62
CNEL:	7	14	31	66

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2020
Road Name: Strickland Sv.
Road Segment: s/o Riverside Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	20 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	47 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	45.0 feet
Centerline Dist. to Observer:	45.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	38.701
Medium Trucks:	38.471
Heavy Trucks:	38.494

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-18.43	1.57	-1.20	-4.62	0.000	0.000
Medium Trucks:	77.72	-35.67	1.60	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-39.62	1.60	-1.20	-5.49	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:	48.4	46.5	44.8	38.7	47.4	48.0
Medium Trucks:	42.5	40.9	34.6	33.0	41.5	41.7
Heavy Trucks:	43.8	42.3	33.3	34.6	42.9	43.0
Vehicle Noise:	50.5	48.7	45.5	40.9	49.4	49.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	2	4	9	19
CNEL:	2	4	10	21

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2020
Road Name: Collier Av.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	710 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	-3.90	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-21.13	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-25.09	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:	66.0	64.1	62.4	56.3	64.9	65.5
Medium Trucks:	59.6	58.1	51.8	50.2	58.7	58.9
Heavy Trucks:	60.0	58.6	49.6	50.8	59.2	59.3
Vehicle Noise:	67.7	66.0	62.9	58.2	66.7	67.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	65	140	301
CNEL:	32	70	150	324

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2020
Road Name: Collier Av.
Road Segment: s/o Riverside Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	24,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,400 vehicles
Vehicle Speed:	45 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	68.46	1.85	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	79.45	-15.39	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-19.34	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:	69.2	67.3	65.6	59.5	68.1	68.7
Medium Trucks:	63.0	61.5	55.1	53.6	62.1	62.3
Heavy Trucks:	63.9	62.4	53.4	54.7	63.0	63.1
Vehicle Noise:	71.1	69.3	66.2	61.5	70.1	70.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	60	130	281	605
CNEL:	65	140	301	649

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2020
Road Name: Collier Av.
Road Segment: s/o Central Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,030 vehicles
Vehicle Speed:	45 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	68.46	-1.82	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	79.45	-19.06	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-23.02	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	64.5	62.7	56.6	65.3	65.9
Medium Trucks:	60.1	58.6	52.3	50.7	59.2	59.4
Heavy Trucks:	61.0	59.6	50.5	51.8	60.1	60.3
Vehicle Noise:	68.2	66.5	63.3	58.6	67.2	67.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	32	70	151	324
CNEL:	35	75	161	348

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2020
Road Name: El Toro Rd.
Road Segment: s/o Tereticornis Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	370 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	26.0 feet
Centerline Dist. to Observer:	26.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-3.72	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	70.80	-20.95	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	77.97	-24.91	4.29	-1.20	-5.90	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:	58.0	56.1	54.4	48.3	56.9	57.5
Medium Trucks:	52.9	51.4	45.1	43.5	52.0	52.2
Heavy Trucks:	56.2	54.7	45.7	46.9	55.3	55.4
Vehicle Noise:	60.9	59.3	55.3	51.5	60.0	60.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	6	12	26	56
CNEL:	6	13	27	59

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2020
Road Name: Dexter Av.
Road Segment: n/o Central Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,170 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	26.0 feet
Centerline Dist. to Observer:	26.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-1.27	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	79.45	-18.51	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	84.25	-22.46	4.29	-1.20	-5.90	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:	70.2	68.3	66.5	60.5	69.1	69.7
Medium Trucks:	64.0	62.5	56.2	54.6	63.1	63.3
Heavy Trucks:	64.9	63.5	54.4	55.7	64.0	64.2
Vehicle Noise:	72.1	70.3	67.2	62.5	71.0	71.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	66	142	305
CNEL:	33	70	152	327

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2020
Road Name: Nichols Rd.
Road Segment: e/o Lake St.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	520 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-5.25	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-22.49	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-26.44	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:	63.9	62.0	60.2	54.2	62.8	63.4
Medium Trucks:	57.5	56.0	49.6	48.1	56.5	56.7
Heavy Trucks:	57.9	56.5	47.4	48.7	57.0	57.2
Vehicle Noise:	65.6	63.8	60.8	56.0	64.6	65.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	26	56	121	260
CNEL:	28	60	130	279

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2020
Road Name: Nichols Rd.
Road Segment: e/o Alberhill Ranch Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	650 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-4.28	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-21.52	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-25.47	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:	64.9	63.0	61.2	55.1	63.8	64.4
Medium Trucks:	58.4	56.9	50.6	49.0	57.5	57.7
Heavy Trucks:	58.9	57.4	48.4	49.6	58.0	58.1
Vehicle Noise:	66.6	64.8	61.8	57.0	65.5	66.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	65	140	302
CNEL:	32	70	150	324

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2020
Road Name: Nichols Rd.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	660 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-4.21	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-21.45	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-25.41	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:	64.9	63.0	61.3	55.2	63.8	64.4
Medium Trucks:	58.5	57.0	50.6	49.1	57.5	57.8
Heavy Trucks:	58.9	57.5	48.5	49.7	58.1	58.2
Vehicle Noise:	66.6	64.9	61.8	57.0	65.6	66.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	66	141	305
CNEL:	33	71	152	327

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2020
Road Name: Tereticornis Av.
Road Segment: e/o El Toro Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	120 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	26.0 feet
Centerline Dist. to Observer:	26.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-8.61	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	70.80	-25.84	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	77.97	-29.80	4.29	-1.20	-5.90	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:	53.1	51.2	49.5	43.4	52.0	52.6
Medium Trucks:	48.0	46.5	40.2	38.6	47.1	47.3
Heavy Trucks:	51.3	49.8	40.8	42.1	50.4	50.5
Vehicle Noise:	56.1	54.4	50.5	46.6	55.1	55.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	6	12	26
CNEL:	3	6	13	28

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2020
Road Name: Riverside Dr.
Road Segment: w/o Lakeshore Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,830 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	1.19	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-16.05	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-20.01	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:	66.6	64.7	63.0	56.9	65.5	66.1
Medium Trucks:	60.6	59.1	52.7	51.2	59.7	59.9
Heavy Trucks:	61.9	60.5	51.5	52.7	61.1	61.2
Vehicle Noise:	68.6	66.9	63.6	59.1	67.6	68.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	42	90	193	416
CNEL:	45	96	207	446

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2020
Road Name: Riverside Dr.
Road Segment: e/o Lakeshore Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,220	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	2.02	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.21	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.17	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:	67.5	65.6	63.8	57.7	66.4	67.0
Medium Trucks:	61.5	59.9	53.6	52.0	60.5	60.7
Heavy Trucks:	62.8	61.4	52.3	53.6	61.9	62.0
Vehicle Noise:	69.5	67.7	64.5	59.9	68.5	68.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	47	102	220	473
CNEL:	51	109	235	507

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2020
Road Name: Riverside Dr.
Road Segment: e/o Strickland Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,500	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,150	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	1.88	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.35	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.31	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:	67.3	65.4	63.7	57.6	66.2	66.8
Medium Trucks:	61.3	59.8	53.4	51.9	60.4	60.6
Heavy Trucks:	62.6	61.2	52.2	53.4	61.8	61.9
Vehicle Noise:	69.3	67.6	64.3	59.8	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	107	230	496

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2020
Road Name: Riverside Dr.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,500	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,150	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	1.88	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.35	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.31	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:	67.3	65.4	63.7	57.6	66.2	66.8
Medium Trucks:	61.3	59.8	53.4	51.9	60.4	60.6
Heavy Trucks:	62.6	61.2	52.2	53.4	61.8	61.9
Vehicle Noise:	69.3	67.6	64.3	59.8	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	107	230	496

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2020
Road Name: Central Av.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	960	vehicles
Vehicle Speed:	30	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	61.75	-0.37	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	73.48	-17.61	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	79.92	-21.56	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:	61.1	59.2	57.4	51.4	60.0	60.6
Medium Trucks:	55.6	54.1	47.8	46.2	54.7	54.9
Heavy Trucks:	58.1	56.7	47.7	48.9	57.3	57.4
Vehicle Noise:	63.6	61.9	58.3	54.1	62.6	63.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	16	35	75	161
CNEL:	17	37	80	172

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2020
Road Name: Central Av.
Road Segment: e/o Dexter Av.

Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,710	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	96	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	67.0	feet
Centerline Dist. to Observer:	67.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	47.011
Medium Trucks:	46.822
Heavy Trucks:	46.841

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	2.87	0.30	-1.20	*-4.71*	0.000	0.000
Medium Trucks:	82.40	-14.37	0.32	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-18.32	0.32	-1.20	*-5.29*	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:	73.8	71.9	70.1	64.0	72.7	73.3
Medium Trucks:	67.2	65.7	59.3	57.7	66.2	66.4
Heavy Trucks:	67.2	65.8	56.7	58.0	66.3	66.5
Vehicle Noise:	75.3	73.6	70.6	65.7	74.3	74.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	130	279	602	1,296
CNEL:	139	300	647	1,394

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2020
Road Name: Central Av.
Road Segment: e/o Cambern Av.

Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,760	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	96	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	67.0	feet
Centerline Dist. to Observer:	67.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	47.011
Medium Trucks:	46.822
Heavy Trucks:	46.841

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	2.93	0.30	-1.20	*-4.71*	0.000	0.000
Medium Trucks:	82.40	-14.31	0.32	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-18.26	0.32	-1.20	*-5.29*	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:	73.8	71.9	70.1	64.1	72.7	73.3
Medium Trucks:	67.2	65.7	59.3	57.8	66.3	66.5
Heavy Trucks:	67.3	65.8	56.8	58.0	66.4	66.5
Vehicle Noise:	75.4	73.6	70.7	65.8	74.4	74.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	131	282	607	1,308
CNEL:	141	303	653	1,407

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2021
Road Name: Lake St.
Road Segment: n/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,490	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*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:	70.20	-0.68	0.13	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	81.00	-17.92	0.15	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-21.87	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:	68.5	66.6	64.8	58.7	67.4	68.0
Medium Trucks:	62.0	60.5	54.2	52.6	61.1	61.3
Heavy Trucks:	62.5	61.0	52.0	53.2	61.6	61.7
Vehicle Noise:	70.2	68.4	65.4	60.6	69.1	69.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	52	113	243	524
CNEL:	56	121	262	563

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2021
Road Name: Lake St.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,900	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*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:	70.20	0.38	0.13	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	81.00	-16.86	0.15	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-20.82	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:	69.5	67.6	65.8	59.8	68.4	69.0
Medium Trucks:	63.1	61.6	55.2	53.7	62.1	62.4
Heavy Trucks:	63.5	62.1	53.1	54.3	62.7	62.8
Vehicle Noise:	71.2	69.5	66.4	61.6	70.2	70.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	62	133	286	617
CNEL:	66	143	308	663

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2021
Road Name: Lake St.
Road Segment: s/o Alberhill Ranch Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,500	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,850	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*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:	70.20	0.26	0.13	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	81.00	-16.98	0.15	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-20.93	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:	69.4	67.5	65.7	59.7	68.3	68.9
Medium Trucks:	63.0	61.5	55.1	53.6	62.0	62.3
Heavy Trucks:	63.4	62.0	52.9	54.2	62.5	62.7
Vehicle Noise:	71.1	69.3	66.3	61.5	70.1	70.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	61	131	281	606
CNEL:	65	140	302	651

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2021
Road Name: Alberhill Ranch Rd.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	190	vehicles
Vehicle Speed:	35	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:	39.0	feet
Centerline Dist. to Observer:	39.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	37.443
Medium Trucks:	37.206
Heavy Trucks:	37.230

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-8.07	1.78	-1.20	*-4.58*	0.000	0.000
Medium Trucks:	75.75	-25.31	1.82	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-29.27	1.82	-1.20	*-5.57*	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:	56.8	54.9	53.1	47.1	55.7	56.3
Medium Trucks:	51.1	49.6	43.2	41.6	50.1	50.3
Heavy Trucks:	52.9	51.5	42.5	43.7	52.1	52.2
Vehicle Noise:	59.0	57.3	53.9	49.5	58.0	58.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	6	13	29	62
CNEL:	7	14	31	66

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2021
Road Name: Strickland Sv.
Road Segment: s/o Riverside Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	20	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	47	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	45.0	feet
Centerline Dist. to Observer:	45.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	38.701
Medium Trucks:	38.471
Heavy Trucks:	38.494

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-18.43	1.57	-1.20	-4.62	0.000	0.000
Medium Trucks:	77.72	-35.67	1.60	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-39.62	1.60	-1.20	-5.49	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:	48.4	46.5	44.8	38.7	47.4	48.0
Medium Trucks:	42.5	40.9	34.6	33.0	41.5	41.7
Heavy Trucks:	43.8	42.3	33.3	34.6	42.9	43.0
Vehicle Noise:	50.5	48.7	45.5	40.9	49.4	49.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	2	4	9	19
CNEL:	2	4	10	21

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2021
Road Name: Collier Av.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	720	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	-3.84	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-21.07	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-25.03	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:	66.1	64.2	62.4	56.4	65.0	65.6
Medium Trucks:	59.7	58.2	51.8	50.3	58.7	59.0
Heavy Trucks:	60.1	58.7	49.6	50.9	59.3	59.4
Vehicle Noise:	67.8	66.0	63.0	58.2	66.8	67.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	66	141	304
CNEL:	33	70	152	327

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2021
Road Name: Collier Av.
Road Segment: s/o Riverside Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	24,500	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,450	vehicles
Vehicle Speed:	45	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	68.46	1.94	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	79.45	-15.30	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-19.25	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:	69.3	67.4	65.7	59.6	68.2	68.8
Medium Trucks:	63.1	61.6	55.2	53.7	62.2	62.4
Heavy Trucks:	63.9	62.5	53.5	54.7	63.1	63.2
Vehicle Noise:	71.2	69.4	66.3	61.6	70.1	70.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	61	132	285	613
CNEL:	66	142	305	658

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2021
Road Name: Collier Av.
Road Segment: s/o Central Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,500	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,050	vehicles
Vehicle Speed:	45	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	68.46	-1.74	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	79.45	-18.98	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-22.93	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	64.5	62.8	56.7	65.3	66.0
Medium Trucks:	60.2	58.7	52.4	50.8	59.3	59.5
Heavy Trucks:	61.1	59.7	50.6	51.9	60.2	60.3
Vehicle Noise:	68.3	66.5	63.4	58.7	67.3	67.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	33	71	152	329
CNEL:	35	76	164	352

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2021
Road Name: El Toro Rd.
Road Segment: s/o Tereticornis Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	370 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	26.0 feet
Centerline Dist. to Observer:	26.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000	
Medium Trucks:	2.297	
Heavy Trucks:	8.006	Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-3.72	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	70.80	-20.95	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	77.97	-24.91	4.29	-1.20	-5.90	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:	58.0	56.1	54.4	48.3	56.9	57.5
Medium Trucks:	52.9	51.4	45.1	43.5	52.0	52.2
Heavy Trucks:	56.2	54.7	45.7	46.9	52.3	55.4
Vehicle Noise:	60.9	59.3	55.3	51.5	60.0	60.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	6	12	26	56
CNEL:	6	13	27	59

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2021
Road Name: Dexter Av.
Road Segment: n/o Central Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,200 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	26.0 feet
Centerline Dist. to Observer:	26.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000	
Medium Trucks:	2.297	
Heavy Trucks:	8.006	Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-1.16	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	79.45	-18.40	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	84.25	-22.35	4.29	-1.20	-5.90	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:	70.3	68.4	66.6	60.6	69.2	69.8
Medium Trucks:	64.1	62.6	56.3	54.7	63.2	63.4
Heavy Trucks:	65.0	63.6	54.5	55.8	64.1	64.3
Vehicle Noise:	72.2	70.4	67.3	62.6	71.1	71.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	31	67	144	310
CNEL:	33	72	154	333

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2021
Road Name: Nichols Rd.
Road Segment: e/o Lake St.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	530 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000	
Medium Trucks:	2.297	
Heavy Trucks:	8.006	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:	70.20	-5.17	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-22.40	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-26.36	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:	64.0	62.1	60.3	54.2	62.9	63.5
Medium Trucks:	57.5	56.0	49.7	48.1	56.6	56.8
Heavy Trucks:	58.0	56.5	47.5	48.8	57.1	57.2
Vehicle Noise:	65.7	63.9	60.9	56.1	64.6	65.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	26	57	122	263
CNEL:	28	61	131	283

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2021
Road Name: Nichols Rd.
Road Segment: e/o Alberhill Ranch Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	660 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000	
Medium Trucks:	2.297	
Heavy Trucks:	8.006	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:	70.20	-4.21	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-21.45	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-25.41	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:	64.9	63.0	61.3	55.2	63.8	64.4
Medium Trucks:	58.5	57.0	50.6	49.1	57.5	57.8
Heavy Trucks:	58.9	57.5	48.5	49.7	58.1	58.2
Vehicle Noise:	66.6	64.9	61.8	57.0	65.6	66.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	66	141	305
CNEL:	33	71	152	327

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2021
Road Name: Nichols Rd.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	670 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-4.15	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-21.39	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-25.34	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:	65.0	63.1	61.3	55.3	63.9	64.5
Medium Trucks:	58.6	57.1	50.7	49.2	57.6	57.8
Heavy Trucks:	59.0	57.6	48.5	49.8	58.1	58.3
Vehicle Noise:	66.7	64.9	61.9	57.1	65.7	66.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	31	66	143	308
CNEL:	33	71	153	331

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2021
Road Name: Tereticornis Av.
Road Segment: e/o El Toro Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	110 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	26.0 feet
Centerline Dist. to Observer:	26.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-8.98	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	70.80	-26.22	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	77.97	-30.18	4.29	-1.20	-5.90	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:	52.8	50.9	49.1	43.0	51.7	52.3
Medium Trucks:	47.7	46.2	39.8	38.3	46.7	46.9
Heavy Trucks:	50.9	49.5	40.4	41.7	50.0	50.2
Vehicle Noise:	55.7	54.0	50.1	46.2	54.7	55.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	2	5	12	25
CNEL:	3	6	12	26

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2021
Road Name: Riverside Dr.
Road Segment: w/o Lakeshore Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,860 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	1.26	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.98	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.94	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:	66.7	64.8	63.0	57.0	65.6	66.2
Medium Trucks:	60.7	59.2	52.8	51.3	59.7	60.0
Heavy Trucks:	62.0	60.6	51.5	52.8	61.2	61.3
Vehicle Noise:	68.7	67.0	63.7	59.2	67.7	68.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	42	91	195	421
CNEL:	45	97	209	450

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2021
Road Name: Riverside Dr.
Road Segment: e/o Lakeshore Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,260 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	2.10	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.14	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.09	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:	67.5	65.6	63.9	57.8	66.4	67.0
Medium Trucks:	61.5	60.0	53.7	52.1	60.6	60.8
Heavy Trucks:	62.9	61.4	52.4	53.6	62.0	62.1
Vehicle Noise:	69.6	67.8	64.5	60.0	68.5	69.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	48	103	222	479
CNEL:	51	111	238	513

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2021
Road Name: Riverside Dr.
Road Segment: e/o Strickland Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,190	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*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	1.96	0.13	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	77.72	-15.27	0.15	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-19.23	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	65.5	63.7	57.7	66.3	66.9
Medium Trucks:	61.4	59.9	53.5	52.0	60.4	60.7
Heavy Trucks:	62.7	61.3	52.3	53.5	61.9	62.0
Vehicle Noise:	69.4	67.7	64.4	59.9	68.4	68.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	47	101	218	469
CNEL:	50	108	233	502

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2021
Road Name: Riverside Dr.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,190	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*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	1.96	0.13	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	77.72	-15.27	0.15	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-19.23	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	65.5	63.7	57.7	66.3	66.9
Medium Trucks:	61.4	59.9	53.5	52.0	60.4	60.7
Heavy Trucks:	62.7	61.3	52.3	53.5	61.9	62.0
Vehicle Noise:	69.4	67.7	64.4	59.9	68.4	68.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	47	101	218	469
CNEL:	50	108	233	502

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2021
Road Name: Central Av.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,800	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	980	vehicles
Vehicle Speed:	30	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*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:	61.75	-0.28	0.93	-1.20	*-4.65*	0.000	0.000
Medium Trucks:	73.48	-17.52	0.96	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	79.92	-21.47	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:	61.2	59.3	57.5	51.5	60.1	60.7
Medium Trucks:	55.7	54.2	47.9	46.3	54.8	55.0
Heavy Trucks:	58.2	56.8	47.7	49.0	57.4	57.5
Vehicle Noise:	63.7	62.0	58.4	54.2	62.7	63.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	16	35	76	163
CNEL:	17	37	81	174

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2021
Road Name: Central Av.
Road Segment: e/o Dexter Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,790	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	96	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	67.0	feet
Centerline Dist. to Observer:	67.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	47.011
Medium Trucks:	46.822
Heavy Trucks:	46.841

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.96	0.30	-1.20	*-4.71*	0.000	0.000
Medium Trucks:	82.40	-14.27	0.32	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-18.23	0.32	-1.20	*-5.29*	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:	73.8	71.9	70.2	64.1	72.7	73.4
Medium Trucks:	67.3	65.7	59.4	57.8	66.3	66.5
Heavy Trucks:	67.3	65.9	56.8	58.1	66.4	66.6
Vehicle Noise:	75.4	73.7	70.7	65.8	74.4	74.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	131	283	610	1,315
CNEL:	141	305	656	1,414

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2021
Road Name: Central Av.
Road Segment: e/o Cambern Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	38,300	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,830	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	96	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	67.0	feet
Centerline Dist. to Observer:	67.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.011
Medium Trucks:	46.822
Heavy Trucks:	46.841

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	3.01	0.30	-1.20	-4.71	0.000	0.000
Medium Trucks:	82.40	-14.23	0.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-18.18	0.32	-1.20	-5.29	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:	73.9	72.0	70.2	64.2	72.8	73.4
Medium Trucks:	67.3	65.8	59.4	57.9	66.3	66.6
Heavy Trucks:	67.3	65.9	56.9	58.1	66.5	66.6
Vehicle Noise:	75.5	73.7	70.8	65.9	74.4	74.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	132	285	614	1,324
CNEL:	142	307	661	1,424

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2021
Road Name: Lake St.
Road Segment: n/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,490	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-0.68	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-17.92	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.87	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:	68.5	66.6	64.8	58.7	67.4	68.0
Medium Trucks:	62.0	60.5	54.2	52.6	61.1	61.3
Heavy Trucks:	62.5	61.0	52.0	53.2	61.6	61.7
Vehicle Noise:	70.2	68.4	65.4	60.6	69.1	69.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	52	113	243	524
CNEL:	56	121	262	563

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2021
Road Name: Lake St.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,910	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	0.40	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-16.84	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-20.79	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:	69.5	67.6	65.9	59.8	68.4	69.0
Medium Trucks:	63.1	61.6	55.2	53.7	62.2	62.4
Heavy Trucks:	63.5	62.1	53.1	54.3	62.7	62.8
Vehicle Noise:	71.2	69.5	66.4	61.7	70.2	70.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	62	133	287	619
CNEL:	66	143	309	665

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2021
Road Name: Lake St.
Road Segment: s/o Alberhill Ranch Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,860	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	0.29	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-16.95	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-20.91	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:	69.4	67.5	65.8	59.7	68.3	68.9
Medium Trucks:	63.0	61.5	55.1	53.6	62.0	62.3
Heavy Trucks:	63.4	62.0	53.0	54.2	62.6	62.7
Vehicle Noise:	71.1	69.4	66.3	61.5	70.1	70.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	61	131	282	608
CNEL:	65	141	303	653

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2021
Road Name: Alberhill Ranch Rd.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	190 vehicles
Vehicle Speed:	35 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:	39.0 feet
Centerline Dist. to Observer:	39.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	37.443
Medium Trucks:	37.206
Heavy Trucks:	37.230

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-8.07	1.78	-1.20	-4.58	0.000	0.000
Medium Trucks:	75.75	-25.31	1.82	-1.20	-4.87	0.000	0.000
Heavy Trucks:	81.57	-29.27	1.82	-1.20	-5.57	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:	56.8	54.9	53.1	47.1	55.7	56.3
Medium Trucks:	51.1	49.6	43.2	41.6	50.1	50.3
Heavy Trucks:	52.9	51.5	42.5	43.7	52.1	52.2
Vehicle Noise:	59.0	57.3	53.9	49.5	58.0	58.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	6	13	29	62
CNEL:	7	14	31	66

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2021
Road Name: Strickland Sv.
Road Segment: s/o Riverside Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	20 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	47 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	45.0 feet
Centerline Dist. to Observer:	45.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	38.701
Medium Trucks:	38.471
Heavy Trucks:	38.494

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-18.43	1.57	-1.20	-4.62	0.000	0.000
Medium Trucks:	77.72	-35.67	1.60	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-39.62	1.60	-1.20	-5.49	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:	48.4	46.5	44.8	38.7	47.4	48.0
Medium Trucks:	42.5	40.9	34.6	33.0	41.5	41.7
Heavy Trucks:	43.8	42.3	33.3	34.6	42.9	43.0
Vehicle Noise:	50.5	48.7	45.5	40.9	49.4	49.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	2	4	9	19
CNEL:	2	4	10	21

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2021
Road Name: Collier Av.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	750 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	-3.66	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-20.90	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-24.85	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:	66.3	64.4	62.6	56.6	65.2	65.8
Medium Trucks:	59.9	58.4	52.0	50.4	58.9	59.1
Heavy Trucks:	60.3	58.9	49.8	51.1	59.4	59.6
Vehicle Noise:	68.0	66.2	63.2	58.4	66.9	67.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	31	67	145	313
CNEL:	34	72	156	336

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2021
Road Name: Collier Av.
Road Segment: s/o Riverside Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	24,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,460 vehicles
Vehicle Speed:	45 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	68.46	1.96	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	79.45	-15.28	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-19.24	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:	69.3	67.4	65.7	59.6	68.2	68.9
Medium Trucks:	63.1	61.6	55.3	53.7	62.2	62.4
Heavy Trucks:	64.0	62.5	53.5	54.8	63.1	63.2
Vehicle Noise:	71.2	69.4	66.3	61.6	70.2	70.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	61	132	285	615
CNEL:	66	142	306	660

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2021
Road Name: Collier Av.
Road Segment: s/o Central Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,060 vehicles
Vehicle Speed:	45 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	68.46	-1.70	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	79.45	-18.94	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-22.89	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:	66.5	64.6	62.8	56.8	65.4	66.0
Medium Trucks:	60.3	58.8	52.4	50.9	59.3	59.5
Heavy Trucks:	61.1	59.7	50.7	51.9	60.3	60.4
Vehicle Noise:	68.3	66.6	63.4	58.8	67.3	67.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	33	71	153	331
CNEL:	35	76	165	355

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2021
Road Name: El Toro Rd.
Road Segment: s/o Tereticornis Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	390 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	26.0 feet
Centerline Dist. to Observer:	26.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-3.49	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	70.80	-20.73	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	77.97	-24.68	4.29	-1.20	-5.90	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:	58.3	56.4	54.6	48.5	57.2	57.8
Medium Trucks:	53.2	51.7	45.3	43.8	52.2	52.4
Heavy Trucks:	56.4	55.0	45.9	47.2	55.5	55.7
Vehicle Noise:	61.2	59.5	55.6	51.7	60.2	60.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	6	12	27	58
CNEL:	6	13	28	61

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2021
Road Name: Dexter Av.
Road Segment: n/o Central Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,200 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	26.0 feet
Centerline Dist. to Observer:	26.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-1.16	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	79.45	-18.40	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	84.25	-22.35	4.29	-1.20	-5.90	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:	70.3	68.4	66.6	60.6	69.2	69.8
Medium Trucks:	64.1	62.6	56.3	54.7	63.2	63.4
Heavy Trucks:	65.0	63.6	54.5	55.8	64.1	64.3
Vehicle Noise:	72.2	70.4	67.3	62.6	71.1	71.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	31	67	144	310
CNEL:	33	72	154	333

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2021
Road Name: Nichols Rd.
Road Segment: e/o Lake St.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	540 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-5.08	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-22.32	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-26.28	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:	64.0	62.1	60.4	54.3	62.9	63.6
Medium Trucks:	57.6	56.1	49.8	48.2	56.7	56.9
Heavy Trucks:	58.0	56.6	47.6	48.8	57.2	57.3
Vehicle Noise:	65.7	64.0	60.9	56.2	64.7	65.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	27	57	124	267
CNEL:	29	62	133	286

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2021
Road Name: Nichols Rd.
Road Segment: e/o Alberhill Ranch Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	670 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-4.15	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-21.39	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-25.34	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:	65.0	63.1	61.3	55.3	63.9	64.5
Medium Trucks:	58.6	57.1	50.7	49.2	57.6	57.8
Heavy Trucks:	59.0	57.6	48.5	49.8	58.1	58.3
Vehicle Noise:	66.7	64.9	61.9	57.1	65.7	66.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	31	66	143	308
CNEL:	33	71	153	331

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2021
Road Name: Nichols Rd.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	690 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-4.02	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-21.26	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-25.21	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:	65.1	63.2	61.4	55.4	64.0	64.6
Medium Trucks:	58.7	57.2	50.8	49.3	57.7	58.0
Heavy Trucks:	59.1	57.7	48.7	49.9	58.3	58.4
Vehicle Noise:	66.8	65.1	62.0	57.2	65.8	66.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	31	68	146	314
CNEL:	34	73	157	337

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2021
Road Name: Tereticornis Av.
Road Segment: e/o El Toro Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	120 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	26.0 feet
Centerline Dist. to Observer:	26.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-8.61	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	70.80	-25.84	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	77.97	-29.80	4.29	-1.20	-5.90	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:	53.1	51.2	49.5	43.4	52.0	52.6
Medium Trucks:	48.0	46.5	40.2	38.6	47.1	47.3
Heavy Trucks:	51.3	49.8	40.8	42.1	50.4	50.5
Vehicle Noise:	56.1	54.4	50.5	46.6	55.1	55.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	6	12	26
CNEL:	3	6	13	28

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2021
Road Name: Riverside Dr.
Road Segment: w/o Lakeshore Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,870 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	1.28	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.96	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.92	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:	66.7	64.8	63.1	57.0	65.6	66.2
Medium Trucks:	60.7	59.2	52.8	51.3	59.8	60.0
Heavy Trucks:	62.0	60.6	51.6	52.8	61.2	61.3
Vehicle Noise:	68.7	67.0	63.7	59.2	67.7	68.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	42	91	196	422
CNEL:	45	97	210	452

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2021
Road Name: Riverside Dr.
Road Segment: e/o Lakeshore Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,800	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,280	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	2.14	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.10	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.05	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:	67.6	65.7	63.9	57.9	66.5	67.1
Medium Trucks:	61.6	60.1	53.7	52.2	60.6	60.8
Heavy Trucks:	62.9	61.5	52.4	53.7	62.0	62.2
Vehicle Noise:	69.6	67.9	64.6	60.0	68.6	69.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	48	104	224	482
CNEL:	52	111	239	516

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2021
Road Name: Riverside Dr.
Road Segment: e/o Strickland Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,200	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	1.98	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.25	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.21	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	65.5	63.8	57.7	66.3	66.9
Medium Trucks:	61.4	59.9	53.5	52.0	60.5	60.7
Heavy Trucks:	62.7	61.3	52.3	53.5	61.9	62.0
Vehicle Noise:	69.4	67.7	64.4	59.9	68.4	68.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	47	101	218	471
CNEL:	50	109	234	504

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2021
Road Name: Riverside Dr.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,200	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	1.98	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.25	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.21	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	65.5	63.8	57.7	66.3	66.9
Medium Trucks:	61.4	59.9	53.5	52.0	60.5	60.7
Heavy Trucks:	62.7	61.3	52.3	53.5	61.9	62.0
Vehicle Noise:	69.4	67.7	64.4	59.9	68.4	68.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	47	101	218	471
CNEL:	50	109	234	504

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2021
Road Name: Central Av.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	990	vehicles
Vehicle Speed:	30	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	61.75	-0.23	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	73.48	-17.47	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	79.92	-21.43	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:	61.2	59.3	57.6	51.5	60.1	60.8
Medium Trucks:	55.8	54.3	47.9	46.4	54.8	55.0
Heavy Trucks:	58.2	56.8	47.8	49.0	57.4	57.5
Vehicle Noise:	63.8	62.1	58.4	54.2	62.8	63.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	16	35	76	164
CNEL:	18	38	81	175

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2021
Road Name: Central Av.
Road Segment: e/o Dexter Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,790	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	96	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	67.0	feet
Centerline Dist. to Observer:	67.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.011
Medium Trucks:	46.822
Heavy Trucks:	46.841

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.96	0.30	-1.20	-4.71	0.000	0.000
Medium Trucks:	82.40	-14.27	0.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-18.23	0.32	-1.20	-5.29	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:	73.8	71.9	70.2	64.1	72.7	73.4
Medium Trucks:	67.3	65.7	59.4	57.8	66.3	66.5
Heavy Trucks:	67.3	65.9	56.8	58.1	66.4	66.6
Vehicle Noise:	75.4	73.7	70.7	65.8	74.4	74.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	131	283	610	1,315
CNEL:	141	305	656	1,414

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2021
Road Name: Central Av.
Road Segment: e/o Cambern Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	38,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,840	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	96	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	67.0	feet
Centerline Dist. to Observer:	67.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.011
Medium Trucks:	46.822
Heavy Trucks:	46.841

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	3.02	0.30	-1.20	-4.71	0.000	0.000
Medium Trucks:	82.40	-14.22	0.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-18.17	0.32	-1.20	-5.29	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:	73.9	72.0	70.2	64.2	72.8	73.4
Medium Trucks:	67.3	65.8	59.4	57.9	66.4	66.6
Heavy Trucks:	67.3	65.9	56.9	58.1	66.5	66.6
Vehicle Noise:	75.5	73.7	70.8	65.9	74.4	74.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	133	286	616	1,326
CNEL:	143	307	662	1,427

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2024
Road Name: Lake St.
Road Segment: n/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,800	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,580	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-0.42	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-17.66	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.62	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:	68.7	66.8	65.0	59.0	67.6	68.2
Medium Trucks:	62.3	60.8	54.4	52.9	61.3	61.6
Heavy Trucks:	62.7	61.3	52.3	53.5	61.9	62.0
Vehicle Noise:	70.4	68.7	65.6	60.8	69.4	69.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	55	117	253	545
CNEL:	59	126	272	586

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2024
Road Name: Lake St.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,010	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	0.62	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-16.61	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-20.57	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:	69.8	67.9	66.1	60.0	68.7	69.3
Medium Trucks:	63.3	61.8	55.5	53.9	62.4	62.6
Heavy Trucks:	63.8	62.3	53.3	54.5	62.9	63.0
Vehicle Noise:	71.5	69.7	66.7	61.9	70.4	70.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	64	138	297	640
CNEL:	69	148	319	688

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2024
Road Name: Lake St.
Road Segment: s/o Alberhill Ranch Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,960 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	0.51	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-16.72	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-20.68	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:	69.6	67.7	66.0	59.9	68.5	69.2
Medium Trucks:	63.2	61.7	55.4	53.8	62.3	62.5
Heavy Trucks:	63.6	62.2	53.2	54.4	62.8	62.9
Vehicle Noise:	71.3	69.6	66.5	61.8	70.3	70.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	63	136	292	630
CNEL:	68	146	314	676

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2024
Road Name: Alberhill Ranch Rd.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	200 vehicles
Vehicle Speed:	35 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:	39.0 feet
Centerline Dist. to Observer:	39.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	37.443
Medium Trucks:	37.206
Heavy Trucks:	37.230

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-7.85	1.78	-1.20	-4.58	0.000	0.000
Medium Trucks:	75.75	-25.09	1.82	-1.20	-4.87	0.000	0.000
Heavy Trucks:	81.57	-29.04	1.82	-1.20	-5.57	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:	57.0	55.1	53.4	47.3	55.9	56.5
Medium Trucks:	51.3	49.8	43.4	41.9	50.3	50.6
Heavy Trucks:	53.1	51.7	42.7	43.9	52.3	52.4
Vehicle Noise:	59.3	57.6	54.1	49.7	58.3	58.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	6	14	30	64
CNEL:	7	15	32	69

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2024
Road Name: Strickland Sv.
Road Segment: s/o Riverside Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	20 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	47 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	45.0 feet
Centerline Dist. to Observer:	45.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	38.701
Medium Trucks:	38.471
Heavy Trucks:	38.494

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-18.43	1.57	-1.20	-4.62	0.000	0.000
Medium Trucks:	77.72	-35.67	1.60	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-39.62	1.60	-1.20	-5.49	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:	48.4	46.5	44.8	38.7	47.4	48.0
Medium Trucks:	42.5	40.9	34.6	33.0	41.5	41.7
Heavy Trucks:	43.8	42.3	33.3	34.6	42.9	43.0
Vehicle Noise:	50.5	48.7	45.5	40.9	49.4	49.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	2	4	9	19
CNEL:	2	4	10	21

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2024
Road Name: Collier Av.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	770 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	-3.54	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-20.78	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-24.74	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	64.5	62.7	56.7	65.3	65.9
Medium Trucks:	60.0	58.5	52.1	50.6	59.0	59.3
Heavy Trucks:	60.4	59.0	49.9	51.2	59.5	59.7
Vehicle Noise:	68.1	66.3	63.3	58.5	67.1	67.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	32	69	148	318
CNEL:	34	74	159	342

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2024
Road Name: Collier Av.
Road Segment: s/o Riverside Dr.

Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,600	vehicles
Vehicle Speed:	45	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	68.46	2.20	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	79.45	-15.04	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-19.00	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:	69.6	67.7	65.9	59.9	68.5	69.1
Medium Trucks:	63.4	61.9	55.5	53.9	62.4	62.6
Heavy Trucks:	64.2	62.8	53.7	55.0	63.4	63.5
Vehicle Noise:	71.4	69.7	66.5	61.9	70.4	70.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	64	137	296	638
CNEL:	68	147	318	684

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2024
Road Name: Collier Av.
Road Segment: s/o Central Av.

Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,120	vehicles
Vehicle Speed:	45	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	68.46	-1.46	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	79.45	-18.70	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-22.65	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:	66.7	64.8	63.1	57.0	65.6	66.2
Medium Trucks:	60.5	59.0	52.6	51.1	59.6	59.8
Heavy Trucks:	61.4	59.9	50.9	52.1	60.5	60.6
Vehicle Noise:	68.6	66.8	63.7	59.0	67.5	68.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	34	74	159	343
CNEL:	37	79	171	368

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2024
Road Name: El Toro Rd.
Road Segment: s/o Tereticornis Av.

Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	390	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	26.0	feet
Centerline Dist. to Observer:	26.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-3.49	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	70.80	-20.73	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	77.97	-24.68	4.29	-1.20	-5.90	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:	58.3	56.4	54.6	48.5	57.2	57.8
Medium Trucks:	53.2	51.7	45.3	43.8	52.2	52.4
Heavy Trucks:	56.4	55.0	45.9	47.2	55.5	55.7
Vehicle Noise:	61.2	59.5	55.6	51.7	60.2	60.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	6	12	27	58
CNEL:	6	13	28	61

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2024
Road Name: Dexter Av.
Road Segment: n/o Central Av.

Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,270	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	26.0	feet
Centerline Dist. to Observer:	26.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-0.91	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	79.45	-18.15	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	84.25	-22.11	4.29	-1.20	-5.90	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:	70.6	68.7	66.9	60.8	69.5	70.1
Medium Trucks:	64.4	62.9	56.5	55.0	63.4	63.7
Heavy Trucks:	65.2	63.8	54.8	56.0	64.4	64.5
Vehicle Noise:	72.4	70.7	67.5	62.9	71.4	71.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	32	69	149	322
CNEL:	35	74	160	345

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2024
Road Name: Nichols Rd.
Road Segment: e/o Lake St.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	560 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-4.93	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-22.17	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-26.12	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:	64.2	62.3	60.5	54.5	63.1	63.7
Medium Trucks:	57.8	56.3	49.9	48.4	56.8	57.1
Heavy Trucks:	58.2	56.8	47.7	49.0	57.4	57.5
Vehicle Noise:	65.9	64.2	61.1	56.3	64.9	65.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	27	59	127	273
CNEL:	29	63	136	293

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2024
Road Name: Nichols Rd.
Road Segment: e/o Alberhill Ranch Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	700 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-3.96	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-21.20	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-25.15	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:	65.2	63.3	61.5	55.5	64.1	64.7
Medium Trucks:	58.8	57.2	50.9	49.3	57.8	58.0
Heavy Trucks:	59.2	57.8	48.7	50.0	58.3	58.4
Vehicle Noise:	66.9	65.1	62.1	57.3	65.8	66.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	32	68	147	317
CNEL:	34	73	158	340

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2024
Road Name: Nichols Rd.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	720 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-3.84	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-21.07	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-25.03	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:	65.3	63.4	61.6	55.6	64.2	64.8
Medium Trucks:	58.9	57.4	51.0	49.5	57.9	58.2
Heavy Trucks:	59.3	57.9	48.8	50.1	58.4	58.6
Vehicle Noise:	67.0	65.2	62.2	57.4	66.0	66.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	32	70	150	323
CNEL:	35	75	161	347

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2024
Road Name: Tereticornis Av.
Road Segment: e/o El Toro Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	140 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	26.0 feet
Centerline Dist. to Observer:	26.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-7.94	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	70.80	-25.18	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	77.97	-29.13	4.29	-1.20	-5.90	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:	53.8	51.9	50.1	44.1	52.7	53.3
Medium Trucks:	48.7	47.2	40.8	39.3	47.8	48.0
Heavy Trucks:	51.9	50.5	41.5	42.7	51.1	51.2
Vehicle Noise:	56.7	55.1	51.1	47.2	55.7	56.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	6	14	29
CNEL:	3	7	14	31

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2024
Road Name: Riverside Dr.
Road Segment: w/o Lakeshore Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,980 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	1.53	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.71	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.67	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	65.1	63.3	57.2	65.9	66.5
Medium Trucks:	61.0	59.4	53.1	51.5	60.0	60.2
Heavy Trucks:	62.3	60.9	51.8	53.1	61.4	61.6
Vehicle Noise:	69.0	67.3	64.0	59.4	68.0	68.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	44	95	204	439
CNEL:	47	101	218	470

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2024
Road Name: Riverside Dr.
Road Segment: e/o Lakeshore Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	24,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,400 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	2.36	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-14.88	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-18.83	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:	67.8	65.9	64.1	58.1	66.7	67.3
Medium Trucks:	61.8	60.3	53.9	52.4	60.8	61.1
Heavy Trucks:	63.1	61.7	52.7	53.9	62.3	62.4
Vehicle Noise:	69.8	68.1	64.8	60.3	68.8	69.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	50	107	231	499
CNEL:	53	115	248	534

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2024
Road Name: Riverside Dr.
Road Segment: e/o Strickland Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,320 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	2.22	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.02	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-18.98	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:	67.7	65.8	64.0	57.9	66.6	67.2
Medium Trucks:	61.6	60.1	53.8	52.2	60.7	60.9
Heavy Trucks:	63.0	61.5	52.5	53.8	62.1	62.2
Vehicle Noise:	69.7	67.9	64.7	60.1	68.6	69.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	49	105	226	488
CNEL:	52	112	242	522

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2024
Road Name: Riverside Dr.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,320 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	2.22	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.02	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-18.98	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:	67.7	65.8	64.0	57.9	66.6	67.2
Medium Trucks:	61.6	60.1	53.8	52.2	60.7	60.9
Heavy Trucks:	63.0	61.5	52.5	53.8	62.1	62.2
Vehicle Noise:	69.7	67.9	64.7	60.1	68.6	69.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	49	105	226	488
CNEL:	52	112	242	522

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2024
Road Name: Central Av.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,040 vehicles
Vehicle Speed:	30 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	61.75	-0.02	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	73.48	-17.26	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	79.92	-21.21	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:	61.5	59.6	57.8	51.7	60.4	61.0
Medium Trucks:	56.0	54.5	48.1	46.6	55.0	55.3
Heavy Trucks:	58.5	57.0	48.0	49.3	57.6	57.7
Vehicle Noise:	64.0	62.3	58.6	54.5	63.0	63.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	17	37	79	170
CNEL:	18	39	84	181

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2024
Road Name: Central Av.
Road Segment: e/o Dexter Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,020 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	96 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	67.0 feet
Centerline Dist. to Observer:	67.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.011
Medium Trucks:	46.822
Heavy Trucks:	46.841

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	3.22	0.30	-1.20	-4.71	0.000	0.000
Medium Trucks:	82.40	-14.02	0.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-17.97	0.32	-1.20	-5.29	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:	74.1	72.2	70.4	64.4	73.0	73.6
Medium Trucks:	67.5	66.0	59.6	58.1	66.6	66.8
Heavy Trucks:	67.5	66.1	57.1	58.3	66.7	66.8
Vehicle Noise:	75.7	73.9	71.0	66.1	74.6	75.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	137	295	635	1,367
CNEL:	147	317	683	1,471

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA 2024
Road Name: Central Av.
Road Segment: e/o Cambern Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,070 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	96 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	67.0 feet
Centerline Dist. to Observer:	67.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.011
Medium Trucks:	46.822
Heavy Trucks:	46.841

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	3.27	0.30	-1.20	-4.71	0.000	0.000
Medium Trucks:	82.40	-13.96	0.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-17.92	0.32	-1.20	-5.29	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:	74.2	72.3	70.5	64.4	73.1	73.7
Medium Trucks:	67.6	66.1	59.7	58.1	66.6	66.8
Heavy Trucks:	67.6	66.2	57.1	58.4	66.7	66.9
Vehicle Noise:	75.7	74.0	71.0	66.1	74.7	75.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	138	297	640	1,379
CNEL:	148	319	688	1,483

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2024
Road Name: Lake St.
Road Segment: n/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,610 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-0.34	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-17.58	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.53	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:	68.8	66.9	65.1	59.1	67.7	68.3
Medium Trucks:	62.4	60.9	54.5	53.0	61.4	61.7
Heavy Trucks:	62.8	61.4	52.3	53.6	61.9	62.1
Vehicle Noise:	70.5	68.7	65.7	60.9	69.5	69.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	55	119	256	552
CNEL:	59	128	275	593

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2024
Road Name: Lake St.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,070 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	0.75	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-16.49	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-20.44	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:	69.9	68.0	66.2	60.2	68.8	69.4
Medium Trucks:	63.5	62.0	55.6	54.1	62.5	62.7
Heavy Trucks:	63.9	62.5	53.4	54.7	63.0	63.2
Vehicle Noise:	71.6	69.8	66.8	62.0	70.6	71.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	65	141	303	653
CNEL:	70	151	326	701

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2024
Road Name: Lake St.
Road Segment: s/o Alberhill Ranch Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,000 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	0.60	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-16.64	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-20.59	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:	69.7	67.8	66.1	60.0	68.6	69.2
Medium Trucks:	63.3	61.8	55.4	53.9	62.4	62.6
Heavy Trucks:	63.7	62.3	53.3	54.5	62.9	63.0
Vehicle Noise:	71.4	69.7	66.6	61.9	70.4	70.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	64	137	296	638
CNEL:	69	148	318	686

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2024
Road Name: Alberhill Ranch Rd.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	230 vehicles
Vehicle Speed:	35 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:	39.0 feet
Centerline Dist. to Observer:	39.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	37.443
Medium Trucks:	37.206
Heavy Trucks:	37.230

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-7.24	1.78	-1.20	-4.58	0.000	0.000
Medium Trucks:	75.75	-24.48	1.82	-1.20	-4.87	0.000	0.000
Heavy Trucks:	81.57	-28.44	1.82	-1.20	-5.57	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:	57.6	55.7	54.0	47.9	56.5	57.1
Medium Trucks:	51.9	50.4	44.0	42.5	50.9	51.2
Heavy Trucks:	53.7	52.3	43.3	44.5	52.9	53.0
Vehicle Noise:	59.9	58.2	54.7	50.3	58.9	59.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	7	15	33	71
CNEL:	8	16	35	75

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2024
Road Name: Strickland Sv.
Road Segment: s/o Riverside Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	40 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	47 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	45.0 feet
Centerline Dist. to Observer:	45.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	38.701
Medium Trucks:	38.471
Heavy Trucks:	38.494

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-15.42	1.57	-1.20	-4.62	0.000	0.000
Medium Trucks:	77.72	-32.66	1.60	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-36.61	1.60	-1.20	-5.49	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:	51.5	49.6	47.8	41.7	50.4	51.0
Medium Trucks:	45.5	44.0	37.6	36.0	44.5	44.7
Heavy Trucks:	46.8	45.4	36.3	37.6	45.9	46.1
Vehicle Noise:	53.5	51.7	48.5	43.9	52.5	52.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	7	14	30
CNEL:	3	7	15	33

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2024
Road Name: Collier Av.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	920 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	-2.77	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-20.01	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-23.96	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:	67.2	65.3	63.5	57.4	66.1	66.7
Medium Trucks:	60.7	59.2	52.9	51.3	59.8	60.0
Heavy Trucks:	61.2	59.7	50.7	52.0	60.3	60.4
Vehicle Noise:	68.9	67.1	64.1	59.3	67.8	68.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	36	77	166	358
CNEL:	38	83	179	385

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2024
Road Name: Collier Av.
Road Segment: s/o Riverside Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,660 vehicles
Vehicle Speed:	45 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	68.46	2.30	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	79.45	-14.94	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-18.90	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:	69.7	67.8	66.0	60.0	68.6	69.2
Medium Trucks:	63.5	62.0	55.6	54.0	62.5	62.7
Heavy Trucks:	64.3	62.9	53.8	55.1	63.5	63.6
Vehicle Noise:	71.5	69.8	66.6	62.0	70.5	71.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	65	140	301	648
CNEL:	69	150	323	695

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2024
Road Name: Collier Av.
Road Segment: s/o Central Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,150 vehicles
Vehicle Speed:	45 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	68.46	-1.34	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	79.45	-18.58	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-22.54	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:	66.8	64.9	63.2	57.1	65.7	66.4
Medium Trucks:	60.6	59.1	52.8	51.2	59.7	59.9
Heavy Trucks:	61.5	60.0	51.0	52.3	60.6	60.7
Vehicle Noise:	68.7	66.9	63.8	59.1	67.7	68.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	35	75	162	349
CNEL:	37	81	174	374

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2024
Road Name: El Toro Rd.
Road Segment: s/o Tereticornis Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	490 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	26.0 feet
Centerline Dist. to Observer:	26.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-2.50	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	70.80	-19.73	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	77.97	-23.69	4.29	-1.20	-5.90	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:	59.2	57.3	55.6	49.5	58.2	58.8
Medium Trucks:	54.2	52.7	46.3	44.7	53.2	53.4
Heavy Trucks:	57.4	55.9	46.9	48.2	56.5	56.6
Vehicle Noise:	62.2	60.5	56.6	52.7	61.2	61.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	7	14	31	67
CNEL:	7	15	33	71

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2024
Road Name: Dexter Av.
Road Segment: n/o Central Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,320	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	26.0	feet
Centerline Dist. to Observer:	26.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-0.75	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	79.45	-17.98	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	84.25	-21.94	4.29	-1.20	-5.90	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:	70.7	68.8	67.1	61.0	69.6	70.2
Medium Trucks:	64.6	63.1	56.7	55.1	63.6	63.8
Heavy Trucks:	65.4	64.0	54.9	56.2	64.5	64.7
Vehicle Noise:	72.6	70.8	67.7	63.0	71.6	72.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	33	71	153	330
CNEL:	35	76	164	354

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2024
Road Name: Nichols Rd.
Road Segment: e/o Lake St.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	640	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-4.35	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-21.59	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-25.54	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:	64.8	62.9	61.1	55.1	63.7	64.3
Medium Trucks:	58.4	56.9	50.5	49.0	57.4	57.6
Heavy Trucks:	58.8	57.4	48.3	49.6	57.9	58.1
Vehicle Noise:	66.5	64.7	61.7	56.9	65.5	65.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	64	139	299
CNEL:	32	69	149	321

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2024
Road Name: Nichols Rd.
Road Segment: e/o Alberhill Ranch Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	800	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-3.38	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-20.62	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-24.57	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:	65.8	63.9	62.1	56.0	64.7	65.3
Medium Trucks:	59.3	57.8	51.5	49.9	58.4	58.6
Heavy Trucks:	59.8	58.3	49.3	50.5	58.9	59.0
Vehicle Noise:	67.5	65.7	62.7	57.9	66.4	66.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	35	75	161	346
CNEL:	37	80	173	372

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2024
Road Name: Nichols Rd.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	820	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-3.27	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-20.51	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-24.46	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:	65.9	64.0	62.2	56.1	64.8	65.4
Medium Trucks:	59.4	57.9	51.6	50.0	58.5	58.7
Heavy Trucks:	59.9	58.4	49.4	50.7	59.0	59.1
Vehicle Noise:	67.6	65.8	62.8	58.0	66.5	67.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	35	76	163	352
CNEL:	38	82	176	378

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2024
Road Name: Tereticornis Av.
Road Segment: e/o El Toro Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,500	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	150	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	26.0	feet
Centerline Dist. to Observer:	26.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-7.64	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	70.80	-24.88	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	77.97	-28.83	4.29	-1.20	-5.90	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:	54.1	52.2	50.4	44.4	53.0	53.6
Medium Trucks:	49.0	47.5	41.1	39.6	48.1	48.3
Heavy Trucks:	52.2	50.8	41.8	43.0	51.4	51.5
Vehicle Noise:	57.0	55.4	51.4	47.5	56.0	56.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	7	14	30
CNEL:	3	7	15	32

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2024
Road Name: Riverside Dr.
Road Segment: w/o Lakeshore Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,010	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	-15.65	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.60	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	65.1	63.4	57.3	65.9	66.5
Medium Trucks:	61.0	59.5	53.2	51.6	60.1	60.3
Heavy Trucks:	62.3	60.9	51.9	53.1	61.5	61.6
Vehicle Noise:	69.0	67.3	64.0	59.5	68.0	68.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	44	95	206	443
CNEL:	47	102	220	474

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2024
Road Name: Riverside Dr.
Road Segment: e/o Lakeshore Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	24,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,460	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	2.47	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-14.77	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-18.72	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:	67.9	66.0	64.2	58.2	66.8	67.4
Medium Trucks:	61.9	60.4	54.0	52.5	60.9	61.2
Heavy Trucks:	63.2	61.8	52.8	54.0	62.4	62.5
Vehicle Noise:	69.9	68.2	64.9	60.4	68.9	69.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	51	109	235	507
CNEL:	54	117	252	543

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2024
Road Name: Riverside Dr.
Road Segment: e/o Strickland Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	24,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,420	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	2.40	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-14.84	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-18.80	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:	67.8	65.9	64.2	58.1	66.7	67.3
Medium Trucks:	61.8	60.3	54.0	52.4	60.9	61.1
Heavy Trucks:	63.1	61.7	52.7	53.9	62.3	62.4
Vehicle Noise:	69.9	68.1	64.8	60.3	68.8	69.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	50	108	233	501
CNEL:	54	116	249	537

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2024
Road Name: Riverside Dr.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	24,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,420	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	2.40	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-14.84	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-18.80	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:	67.8	65.9	64.2	58.1	66.7	67.3
Medium Trucks:	61.8	60.3	54.0	52.4	60.9	61.1
Heavy Trucks:	63.1	61.7	52.7	53.9	62.3	62.4
Vehicle Noise:	69.9	68.1	64.8	60.3	68.8	69.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	50	108	233	501
CNEL:	54	116	249	537

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2024
Road Name: Central Av.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,070	vehicles
Vehicle Speed:	30	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	61.75	0.10	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	73.48	-17.13	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	79.92	-21.09	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:	61.6	59.7	57.9	51.9	60.5	61.1
Medium Trucks:	56.1	54.6	48.2	46.7	55.1	55.4
Heavy Trucks:	58.6	57.2	48.1	49.4	57.7	57.9
Vehicle Noise:	64.1	62.4	58.8	54.6	63.1	63.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	17	37	80	173
CNEL:	18	40	86	184

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2024
Road Name: Central Av.
Road Segment: e/o Dexter Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,070	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	96	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	67.0	feet
Centerline Dist. to Observer:	67.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.011
Medium Trucks:	46.822
Heavy Trucks:	46.841

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	3.27	0.30	-1.20	-4.71	0.000	0.000
Medium Trucks:	82.40	-13.96	0.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-17.92	0.32	-1.20	-5.29	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:	74.2	72.3	70.5	64.4	73.1	73.7
Medium Trucks:	67.6	66.1	59.7	58.1	66.6	66.8
Heavy Trucks:	67.6	66.2	57.1	58.4	66.7	66.9
Vehicle Noise:	75.7	74.0	71.0	66.1	74.7	75.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	138	297	640	1,379
CNEL:	148	319	688	1,483

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP 2024
Road Name: Central Av.
Road Segment: e/o Cambern Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	41,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,110	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	96	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	67.0	feet
Centerline Dist. to Observer:	67.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.011
Medium Trucks:	46.822
Heavy Trucks:	46.841

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	3.32	0.30	-1.20	-4.71	0.000	0.000
Medium Trucks:	82.40	-13.92	0.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-17.88	0.32	-1.20	-5.29	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:	74.2	72.3	70.5	64.5	73.1	73.7
Medium Trucks:	67.6	66.1	59.7	58.2	66.7	66.9
Heavy Trucks:	67.6	66.2	57.2	58.4	66.8	66.9
Vehicle Noise:	75.8	74.0	71.1	66.2	74.7	75.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	139	299	644	1,388
CNEL:	149	322	693	1,493

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2020
Road Name: Lake St.
Road Segment: n/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,500	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,650	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-0.23	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-17.47	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.43	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:	68.9	67.0	65.2	59.2	67.8	68.4
Medium Trucks:	62.5	61.0	54.6	53.1	61.5	61.8
Heavy Trucks:	62.9	61.5	52.4	53.7	62.0	62.2
Vehicle Noise:	70.6	68.8	65.8	61.0	69.6	70.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	56	121	261	561
CNEL:	60	130	280	603

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2020
Road Name: Lake St.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,040	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	0.69	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-16.55	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-20.51	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:	69.8	67.9	66.2	60.1	68.7	69.3
Medium Trucks:	63.4	61.9	55.5	54.0	62.4	62.7
Heavy Trucks:	63.8	62.4	53.4	54.6	63.0	63.1
Vehicle Noise:	71.5	69.8	66.7	61.9	70.5	71.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	65	139	300	647
CNEL:	69	150	322	695

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2020
Road Name: Lake St.
Road Segment: s/o Alberhill Ranch Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,990	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	0.58	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-16.66	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-20.61	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:	69.7	67.8	66.0	60.0	68.6	69.2
Medium Trucks:	63.3	61.8	55.4	53.9	62.3	62.6
Heavy Trucks:	63.7	62.3	53.3	54.5	62.9	63.0
Vehicle Noise:	71.4	69.7	66.6	61.8	70.4	70.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	64	137	295	636
CNEL:	68	147	317	683

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2020
Road Name: Alberhill Ranch Rd.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	190	vehicles
Vehicle Speed:	35	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:	39.0	feet
Centerline Dist. to Observer:	39.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	37.443
Medium Trucks:	37.206
Heavy Trucks:	37.230

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-8.07	1.78	-1.20	-4.58	0.000	0.000
Medium Trucks:	75.75	-25.31	1.82	-1.20	-4.87	0.000	0.000
Heavy Trucks:	81.57	-29.27	1.82	-1.20	-5.57	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:	56.8	54.9	53.1	47.1	55.7	56.3
Medium Trucks:	51.1	49.6	43.2	41.6	50.1	50.3
Heavy Trucks:	52.9	51.5	42.5	43.7	52.1	52.2
Vehicle Noise:	59.0	57.3	53.9	49.5	58.0	58.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	6	13	29	62
CNEL:	7	14	31	66

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2020
Road Name: Strickland Sv.
Road Segment: s/o Riverside Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	300	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	30	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	47	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	45.0	feet
Centerline Dist. to Observer:	45.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	38.701
Medium Trucks:	38.471
Heavy Trucks:	38.494

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-16.67	1.57	-1.20	-4.62	0.000	0.000
Medium Trucks:	77.72	-33.91	1.60	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-37.86	1.60	-1.20	-5.49	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	48.3	46.5	40.5	49.1	49.7
Medium Trucks:	44.2	42.7	36.3	34.8	43.3	43.5
Heavy Trucks:	45.5	44.1	35.1	36.3	44.7	44.8
Vehicle Noise:	52.2	50.5	47.2	42.7	51.2	51.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	5	12	25
CNEL:	3	6	12	27

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2020
Road Name: Collier Av.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	760	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	-3.60	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-20.84	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-24.79	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:	66.3	64.4	62.7	56.6	65.2	65.8
Medium Trucks:	59.9	58.4	52.0	50.5	59.0	59.2
Heavy Trucks:	60.3	58.9	49.9	51.1	59.5	59.6
Vehicle Noise:	68.0	66.3	63.2	58.5	67.0	67.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	32	68	146	315
CNEL:	34	73	157	339

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2020
Road Name: Collier Av.
Road Segment: s/o Riverside Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25,500	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,550	vehicles
Vehicle Speed:	45	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	68.46	2.11	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	79.45	-15.12	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-19.08	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:	69.5	67.6	65.8	59.8	68.4	69.0
Medium Trucks:	63.3	61.8	55.4	53.9	62.3	62.6
Heavy Trucks:	64.1	62.7	53.7	54.9	63.3	63.4
Vehicle Noise:	71.3	69.6	66.4	61.8	70.3	70.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	63	136	292	630
CNEL:	68	146	314	676

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2020
Road Name: Collier Av.
Road Segment: s/o Central Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,110	vehicles
Vehicle Speed:	45	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	68.46	-1.50	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	79.45	-18.74	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-22.69	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:	66.7	64.8	63.0	57.0	65.6	66.2
Medium Trucks:	60.5	59.0	52.6	51.1	59.5	59.7
Heavy Trucks:	61.3	59.9	50.9	52.1	60.5	60.6
Vehicle Noise:	68.5	66.8	63.6	59.0	67.5	68.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	34	73	158	341
CNEL:	37	79	170	366

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2020
Road Name: El Toro Rd.
Road Segment: s/o Tereticornis Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	360 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	26.0 feet
Centerline Dist. to Observer:	26.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-3.84	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	70.80	-21.07	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	77.97	-25.03	4.29	-1.20	-5.90	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:	57.9	56.0	54.2	48.2	56.8	57.4
Medium Trucks:	52.8	51.3	45.0	43.4	51.9	52.1
Heavy Trucks:	56.0	54.6	45.6	46.8	55.2	55.3
Vehicle Noise:	60.8	59.2	55.2	51.3	59.8	60.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	5	12	25	55
CNEL:	6	12	27	58

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2020
Road Name: Dexter Av.
Road Segment: n/o Central Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,170 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	26.0 feet
Centerline Dist. to Observer:	26.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-1.27	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	79.45	-18.51	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	84.25	-22.46	4.29	-1.20	-5.90	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:	70.2	68.3	66.5	60.5	69.1	69.7
Medium Trucks:	64.0	62.5	56.2	54.6	63.1	63.3
Heavy Trucks:	64.9	63.5	54.4	55.7	64.0	64.2
Vehicle Noise:	72.1	70.3	67.2	62.5	71.0	71.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	66	142	305
CNEL:	33	70	152	327

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2020
Road Name: Nichols Rd.
Road Segment: e/o Lake St.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	750 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-3.66	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-20.90	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-24.85	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:	65.5	63.6	61.8	55.8	64.4	65.0
Medium Trucks:	59.1	57.5	51.2	49.6	58.1	58.3
Heavy Trucks:	59.5	58.1	49.0	50.3	58.6	58.7
Vehicle Noise:	67.2	65.4	62.4	57.6	66.1	66.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	33	71	154	332
CNEL:	36	77	165	357

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2020
Road Name: Nichols Rd.
Road Segment: e/o Alberhill Ranch Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	880 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-2.96	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-20.20	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-24.16	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:	66.2	64.3	62.5	56.4	65.1	65.7
Medium Trucks:	59.8	58.2	51.9	50.3	58.8	59.0
Heavy Trucks:	60.2	58.7	49.7	51.0	59.3	59.4
Vehicle Noise:	67.9	66.1	63.1	58.3	66.8	67.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	37	80	171	369
CNEL:	40	85	184	397

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2020
Road Name: Nichols Rd.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	900 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-2.87	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-20.10	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-24.06	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:	66.3	64.4	62.6	56.5	65.2	65.8
Medium Trucks:	59.8	58.3	52.0	50.4	58.9	59.1
Heavy Trucks:	60.3	58.8	49.8	51.1	59.4	59.5
Vehicle Noise:	68.0	66.2	63.2	58.4	66.9	67.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	37	81	174	375
CNEL:	40	87	187	403

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2020
Road Name: Tereticornis Av.
Road Segment: e/o El Toro Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	110 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	26.0 feet
Centerline Dist. to Observer:	26.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-8.98	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	70.80	-26.22	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	77.97	-30.18	4.29	-1.20	-5.90	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:	52.8	50.9	49.1	43.0	51.7	52.3
Medium Trucks:	47.7	46.2	39.8	38.3	46.7	46.9
Heavy Trucks:	50.9	49.5	40.4	41.7	50.0	50.2
Vehicle Noise:	55.7	54.0	50.1	46.2	54.7	55.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	2	5	12	25
CNEL:	3	6	12	26

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2020
Road Name: Riverside Dr.
Road Segment: w/o Lakeshore Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,890 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	1.33	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.91	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.87	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:	66.8	64.9	63.1	57.0	65.7	66.3
Medium Trucks:	60.8	59.2	52.9	51.3	59.8	60.0
Heavy Trucks:	62.1	60.7	51.6	52.9	61.2	61.3
Vehicle Noise:	68.8	67.0	63.8	59.2	67.8	68.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	43	92	197	425
CNEL:	46	98	211	455

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2020
Road Name: Riverside Dr.
Road Segment: e/o Lakeshore Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,310 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	2.20	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.04	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.00	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:	67.6	65.7	64.0	57.9	66.5	67.1
Medium Trucks:	61.6	60.1	53.8	52.2	60.7	60.9
Heavy Trucks:	62.9	61.5	52.5	53.7	62.1	62.2
Vehicle Noise:	69.7	67.9	64.6	60.1	68.6	69.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	49	105	226	486
CNEL:	52	112	242	520

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2020
Road Name: Riverside Dr.
Road Segment: e/o Strickland Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,300	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,230	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	2.04	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.19	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.15	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:	67.5	65.6	63.8	57.8	66.4	67.0
Medium Trucks:	61.5	60.0	53.6	52.1	60.5	60.8
Heavy Trucks:	62.8	61.4	52.3	53.6	61.9	62.1
Vehicle Noise:	69.5	67.8	64.5	59.9	68.5	68.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	47	102	220	475
CNEL:	51	110	236	508

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2020
Road Name: Riverside Dr.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,240	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	2.06	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.18	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.13	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:	67.5	65.6	63.8	57.8	66.4	67.0
Medium Trucks:	61.5	60.0	53.6	52.1	60.5	60.8
Heavy Trucks:	62.8	61.4	52.4	53.6	62.0	62.1
Vehicle Noise:	69.5	67.8	64.5	60.0	68.5	68.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	48	103	221	476
CNEL:	51	110	237	510

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2020
Road Name: Central Av.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,800	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	980	vehicles
Vehicle Speed:	30	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	61.75	-0.28	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	73.48	-17.52	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	79.92	-21.47	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:	61.2	59.3	57.5	51.5	60.1	60.7
Medium Trucks:	55.7	54.2	47.9	46.3	54.8	55.0
Heavy Trucks:	58.2	56.8	47.7	49.0	57.4	57.5
Vehicle Noise:	63.7	62.0	58.4	54.2	62.7	63.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	16	35	76	163
CNEL:	17	37	81	174

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2020
Road Name: Central Av.
Road Segment: e/o Dexter Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,710	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	96	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	67.0	feet
Centerline Dist. to Observer:	67.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.011
Medium Trucks:	46.822
Heavy Trucks:	46.841

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.87	0.30	-1.20	-4.71	0.000	0.000
Medium Trucks:	82.40	-14.37	0.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-18.32	0.32	-1.20	-5.29	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:	73.8	71.9	70.1	64.0	72.7	73.3
Medium Trucks:	67.2	65.7	59.3	57.7	66.2	66.4
Heavy Trucks:	67.2	65.8	56.7	58.0	66.3	66.5
Vehicle Noise:	75.3	73.6	70.6	65.7	74.3	74.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	130	279	602	1,296
CNEL:	139	300	647	1,394

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2020
Road Name: Central Av.
Road Segment: e/o Cambern Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,760	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	96	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	67.0	feet
Centerline Dist. to Observer:	67.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.011
Medium Trucks:	46.822
Heavy Trucks:	46.841

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.93	0.30	-1.20	-4.71	0.000	0.000
Medium Trucks:	82.40	-14.31	0.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-18.26	0.32	-1.20	-5.29	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:	73.8	71.9	70.1	64.1	72.7	73.3
Medium Trucks:	67.2	65.7	59.3	57.8	66.3	66.5
Heavy Trucks:	67.3	65.8	56.8	58.0	66.4	66.5
Vehicle Noise:	75.4	73.6	70.7	65.8	74.4	74.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	131	282	607	1,308
CNEL:	141	303	653	1,407

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2020
Road Name: Lake St.
Road Segment: n/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,500	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,650	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-0.23	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-17.47	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.43	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:	68.9	67.0	65.2	59.2	67.8	68.4
Medium Trucks:	62.5	61.0	54.6	53.1	61.5	61.8
Heavy Trucks:	62.9	61.5	52.4	53.7	62.0	62.2
Vehicle Noise:	70.6	68.8	65.8	61.0	69.6	70.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	56	121	261	561
CNEL:	60	130	280	603

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2020
Road Name: Lake St.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,040	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	0.69	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-16.55	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-20.51	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:	69.8	67.9	66.2	60.1	68.7	69.3
Medium Trucks:	63.4	61.9	55.5	54.0	62.4	62.7
Heavy Trucks:	63.8	62.4	53.4	54.6	63.0	63.1
Vehicle Noise:	71.5	69.8	66.7	61.9	70.5	71.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	65	139	300	647
CNEL:	69	150	322	695

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2020
Road Name: Lake St.
Road Segment: s/o Alberhill Ranch Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,990	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	0.58	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-16.66	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-20.61	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:	69.7	67.8	66.0	60.0	68.6	69.2
Medium Trucks:	63.3	61.8	55.4	53.9	62.3	62.6
Heavy Trucks:	63.7	62.3	53.3	54.5	62.9	63.0
Vehicle Noise:	71.4	69.7	66.6	61.8	70.4	70.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	64	137	295	636
CNEL:	68	147	317	683

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2020
Road Name: Alberhill Ranch Rd.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	190 vehicles
Vehicle Speed:	35 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:	39.0 feet
Centerline Dist. to Observer:	39.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	37.443
Medium Trucks:	37.206
Heavy Trucks:	37.230

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-8.07	1.78	-1.20	-4.58	0.000	0.000
Medium Trucks:	75.75	-25.31	1.82	-1.20	-4.87	0.000	0.000
Heavy Trucks:	81.57	-29.27	1.82	-1.20	-5.57	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:	56.8	54.9	53.1	47.1	55.7	56.3
Medium Trucks:	51.1	49.6	43.2	41.6	50.1	50.3
Heavy Trucks:	52.9	51.5	42.5	43.7	52.1	52.2
Vehicle Noise:	59.0	57.3	53.9	49.5	58.0	58.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	6	13	29	62
CNEL:	7	14	31	66

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2020
Road Name: Strickland Sv.
Road Segment: s/o Riverside Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	30 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	47 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	45.0 feet
Centerline Dist. to Observer:	45.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	38.701
Medium Trucks:	38.471
Heavy Trucks:	38.494

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-16.67	1.57	-1.20	-4.62	0.000	0.000
Medium Trucks:	77.72	-33.91	1.60	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-37.86	1.60	-1.20	-5.49	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	48.3	46.5	40.5	49.1	49.7
Medium Trucks:	44.2	42.7	36.3	34.8	43.3	43.5
Heavy Trucks:	45.5	44.1	35.1	36.3	44.7	44.8
Vehicle Noise:	52.2	50.5	47.2	42.7	51.2	51.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	5	12	25
CNEL:	3	6	12	27

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2020
Road Name: Collier Av.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	760 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	-3.60	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-20.84	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-24.79	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:	66.3	64.4	62.7	56.6	65.2	65.8
Medium Trucks:	59.9	58.4	52.0	50.5	59.0	59.2
Heavy Trucks:	60.3	58.9	49.9	51.1	59.5	59.6
Vehicle Noise:	68.0	66.3	63.2	58.5	67.0	67.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	32	68	146	315
CNEL:	34	73	157	339

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2020
Road Name: Collier Av.
Road Segment: s/o Riverside Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,550 vehicles
Vehicle Speed:	45 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	68.46	2.11	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	79.45	-15.12	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-19.08	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:	69.5	67.6	65.8	59.8	68.4	69.0
Medium Trucks:	63.3	61.8	55.4	53.9	62.3	62.6
Heavy Trucks:	64.1	62.7	53.7	54.9	63.3	63.4
Vehicle Noise:	71.3	69.6	66.4	61.8	70.3	70.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	63	136	292	630
CNEL:	68	146	314	676

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2020
Road Name: Collier Av.
Road Segment: s/o Central Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,110 vehicles
Vehicle Speed:	45 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.006

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:	68.46	-1.50	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	79.45	-18.74	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-22.69	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:	66.7	64.8	63.0	57.0	65.6	66.2
Medium Trucks:	60.5	59.0	52.6	51.1	59.5	59.7
Heavy Trucks:	61.3	59.9	50.9	52.1	60.5	60.6
Vehicle Noise:	68.5	66.8	63.6	59.0	67.5	68.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	34	73	158	341
CNEL:	37	79	170	366

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2020
Road Name: El Toro Rd.
Road Segment: s/o Tereticornis Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	370 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	26.0 feet
Centerline Dist. to Observer:	26.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.006

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-3.72	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	70.80	-20.95	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	77.97	-24.91	4.29	-1.20	-5.90	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:	58.0	56.1	54.4	48.3	56.9	57.5
Medium Trucks:	52.9	51.4	45.1	43.5	52.0	52.2
Heavy Trucks:	56.2	54.7	45.7	46.9	55.3	55.4
Vehicle Noise:	60.9	59.3	55.3	51.5	60.0	60.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	6	12	26	56
CNEL:	6	13	27	59

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2020
Road Name: Dexter Av.
Road Segment: n/o Central Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,170 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	26.0 feet
Centerline Dist. to Observer:	26.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.006

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-1.27	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	79.45	-18.51	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	84.25	-22.46	4.29	-1.20	-5.90	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:	70.2	68.3	66.5	60.5	69.1	69.7
Medium Trucks:	64.0	62.5	56.2	54.6	63.1	63.3
Heavy Trucks:	64.9	63.5	54.4	55.7	64.0	64.2
Vehicle Noise:	72.1	70.3	67.2	62.5	71.0	71.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	30	66	142	305
CNEL:	33	70	152	327

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2020
Road Name: Nichols Rd.
Road Segment: e/o Lake St.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	750 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.006

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:	70.20	-3.66	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-20.90	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-24.85	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:	65.5	63.6	61.8	55.8	64.4	65.0
Medium Trucks:	59.1	57.5	51.2	49.6	58.1	58.3
Heavy Trucks:	59.5	58.1	49.0	50.3	58.6	58.7
Vehicle Noise:	67.2	65.4	62.4	57.6	66.1	66.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	33	71	154	332
CNEL:	36	77	165	357

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2020
Road Name: Nichols Rd.
Road Segment: e/o Alberhill Ranch Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	880 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-2.96	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-20.20	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-24.16	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:	66.2	64.3	62.5	56.4	65.1	65.7
Medium Trucks:	59.8	58.2	51.9	50.3	58.8	59.0
Heavy Trucks:	60.2	58.7	49.7	51.0	59.3	59.4
Vehicle Noise:	67.9	66.1	63.1	58.3	66.8	67.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	37	80	171	369
CNEL:	40	85	184	397

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2020
Road Name: Nichols Rd.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	900 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-2.87	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-20.10	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-24.06	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:	66.3	64.4	62.6	56.5	65.2	65.8
Medium Trucks:	59.8	58.3	52.0	50.4	58.9	59.1
Heavy Trucks:	60.3	58.8	49.8	51.1	59.4	59.5
Vehicle Noise:	68.0	66.2	63.2	58.4	66.9	67.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	37	81	174	375
CNEL:	40	87	187	403

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2020
Road Name: Tereticornis Av.
Road Segment: e/o El Toro Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	120 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	26.0 feet
Centerline Dist. to Observer:	26.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-8.61	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	70.80	-25.84	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	77.97	-29.80	4.29	-1.20	-5.90	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:	53.1	51.2	49.5	43.4	52.0	52.6
Medium Trucks:	48.0	46.5	40.2	38.6	47.1	47.3
Heavy Trucks:	51.3	49.8	40.8	42.1	50.4	50.5
Vehicle Noise:	56.1	54.4	50.5	46.6	55.1	55.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	6	12	26
CNEL:	3	6	13	28

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2020
Road Name: Riverside Dr.
Road Segment: w/o Lakeshore Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,890 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	1.33	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.91	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.87	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:	66.8	64.9	63.1	57.0	65.7	66.3
Medium Trucks:	60.8	59.2	52.9	51.3	59.8	60.0
Heavy Trucks:	62.1	60.7	51.6	52.9	61.2	61.3
Vehicle Noise:	68.8	67.0	63.8	59.2	67.8	68.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	43	92	197	425
CNEL:	46	98	211	455

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2020
Road Name: Riverside Dr.
Road Segment: e/o Lakeshore Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,310	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	2.20	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.04	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.00	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:	67.6	65.7	64.0	57.9	66.5	67.1
Medium Trucks:	61.6	60.1	53.8	52.2	60.7	60.9
Heavy Trucks:	62.9	61.5	52.5	53.7	62.1	62.2
Vehicle Noise:	69.7	67.9	64.6	60.1	68.6	69.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	49	105	226	486
CNEL:	52	112	242	520

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2020
Road Name: Riverside Dr.
Road Segment: e/o Strickland Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,240	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	2.06	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.18	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.13	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:	67.5	65.6	63.8	57.8	66.4	67.0
Medium Trucks:	61.5	60.0	53.6	52.1	60.5	60.8
Heavy Trucks:	62.8	61.4	52.4	53.6	62.0	62.1
Vehicle Noise:	69.5	67.8	64.5	60.0	68.5	68.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	48	103	221	476
CNEL:	51	110	237	510

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2020
Road Name: Riverside Dr.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,500	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,250	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	2.08	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.16	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.11	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:	67.5	65.6	63.9	57.8	66.4	67.0
Medium Trucks:	61.5	60.0	53.6	52.1	60.6	60.8
Heavy Trucks:	62.8	61.4	52.4	53.6	62.0	62.1
Vehicle Noise:	69.5	67.8	64.5	60.0	68.5	69.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	48	103	222	478
CNEL:	51	110	237	511

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2020
Road Name: Central Av.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,800	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	980	vehicles
Vehicle Speed:	30	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	61.75	-0.28	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	73.48	-17.52	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	79.92	-21.47	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:	61.2	59.3	57.5	51.5	60.1	60.7
Medium Trucks:	55.7	54.2	47.9	46.3	54.8	55.0
Heavy Trucks:	58.2	56.8	47.7	49.0	57.4	57.5
Vehicle Noise:	63.7	62.0	58.4	54.2	62.7	63.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	16	35	76	163
CNEL:	17	37	81	174

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2020
Road Name: Central Av.
Road Segment: e/o Dexter Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,710	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	96	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	67.0	feet
Centerline Dist. to Observer:	67.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	47.011
Medium Trucks:	46.822
Heavy Trucks:	46.841

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	2.87	0.30	-1.20	*-4.71*	0.000	0.000
Medium Trucks:	82.40	-14.37	0.32	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-18.32	0.32	-1.20	*-5.29*	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:	73.8	71.9	70.1	64.0	72.7	73.3
Medium Trucks:	67.2	65.7	59.3	57.7	66.2	66.4
Heavy Trucks:	67.2	65.8	56.7	58.0	66.3	66.5
Vehicle Noise:	75.3	73.6	70.6	65.7	74.3	74.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	130	279	602	1,296
CNEL:	139	300	647	1,394

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2020
Road Name: Central Av.
Road Segment: e/o Cambern Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,760	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	96	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	67.0	feet
Centerline Dist. to Observer:	67.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	47.011
Medium Trucks:	46.822
Heavy Trucks:	46.841

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	2.93	0.30	-1.20	*-4.71*	0.000	0.000
Medium Trucks:	82.40	-14.31	0.32	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-18.26	0.32	-1.20	*-5.29*	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:	73.8	71.9	70.1	64.1	72.7	73.3
Medium Trucks:	67.2	65.7	59.3	57.8	66.3	66.5
Heavy Trucks:	67.3	65.8	56.8	58.0	66.4	66.5
Vehicle Noise:	75.4	73.6	70.7	65.8	74.4	74.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	131	282	607	1,308
CNEL:	141	303	653	1,407

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2021
Road Name: Lake St.
Road Segment: n/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,760	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	0.05	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-17.19	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.15	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:	69.2	67.3	65.5	59.5	68.1	68.7
Medium Trucks:	62.8	61.3	54.9	53.3	61.8	62.0
Heavy Trucks:	63.2	61.8	52.7	54.0	62.3	62.5
Vehicle Noise:	70.9	69.1	66.1	61.3	69.8	70.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	59	126	272	586
CNEL:	63	136	292	630

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2021
Road Name: Lake St.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,160	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	0.94	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-16.30	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-20.26	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:	70.1	68.2	66.4	60.3	69.0	69.6
Medium Trucks:	63.7	62.1	55.8	54.2	62.7	62.9
Heavy Trucks:	64.1	62.6	53.6	54.9	63.2	63.3
Vehicle Noise:	71.8	70.0	67.0	62.2	70.7	71.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	67	145	312	672
CNEL:	72	155	335	722

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2021
Road Name: Lake St.
Road Segment: s/o Alberhill Ranch Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,110	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	0.83	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-16.40	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-20.36	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:	70.0	68.1	66.3	60.2	68.9	69.5
Medium Trucks:	63.5	62.0	55.7	54.1	62.6	62.8
Heavy Trucks:	64.0	62.5	53.5	54.8	63.1	63.2
Vehicle Noise:	71.7	69.9	66.9	62.1	70.6	71.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	66	142	307	661
CNEL:	71	153	330	710

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2021
Road Name: Alberhill Ranch Rd.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	200	vehicles
Vehicle Speed:	35	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:	39.0	feet
Centerline Dist. to Observer:	39.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	37.443
Medium Trucks:	37.206
Heavy Trucks:	37.230

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-7.85	1.78	-1.20	-4.58	0.000	0.000
Medium Trucks:	75.75	-25.09	1.82	-1.20	-4.87	0.000	0.000
Heavy Trucks:	81.57	-29.04	1.82	-1.20	-5.57	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:	57.0	55.1	53.4	47.3	55.9	56.5
Medium Trucks:	51.3	49.8	43.4	41.9	50.3	50.6
Heavy Trucks:	53.1	51.7	42.7	43.9	52.3	52.4
Vehicle Noise:	59.3	57.6	54.1	49.7	58.3	58.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	6	14	30	64
CNEL:	7	15	32	69

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2021
Road Name: Strickland Sv.
Road Segment: s/o Riverside Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	300	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	30	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	47	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	45.0	feet
Centerline Dist. to Observer:	45.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	38.701
Medium Trucks:	38.471
Heavy Trucks:	38.494

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-16.67	1.57	-1.20	-4.62	0.000	0.000
Medium Trucks:	77.72	-33.91	1.60	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-37.86	1.60	-1.20	-5.49	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	48.3	46.5	40.5	49.1	49.7
Medium Trucks:	44.2	42.7	36.3	34.8	43.3	43.5
Heavy Trucks:	45.5	44.1	35.1	36.3	44.7	44.8
Vehicle Noise:	52.2	50.5	47.2	42.7	51.2	51.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	5	12	25
CNEL:	3	6	12	27

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2021
Road Name: Collier Av.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	790	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	-3.43	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-20.67	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-24.63	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:	66.5	64.6	62.8	56.8	65.4	66.0
Medium Trucks:	60.1	58.6	52.2	50.7	59.1	59.4
Heavy Trucks:	60.5	59.1	50.0	51.3	59.7	59.8
Vehicle Noise:	68.2	66.4	63.4	58.6	67.2	67.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	32	70	150	324
CNEL:	35	75	161	348

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2021
Road Name: Collier Av.
Road Segment: s/o Riverside Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,670	vehicles
Vehicle Speed:	45	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	68.46	2.31	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	79.45	-14.92	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-18.88	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:	69.7	67.8	66.0	60.0	68.6	69.2
Medium Trucks:	63.5	62.0	55.6	54.1	62.5	62.8
Heavy Trucks:	64.3	62.9	53.9	55.1	63.5	63.6
Vehicle Noise:	71.5	69.8	66.6	62.0	70.5	71.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	65	140	301	650
CNEL:	70	150	323	697

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2021
Road Name: Collier Av.
Road Segment: s/o Central Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,170	vehicles
Vehicle Speed:	45	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	68.46	-1.27	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	79.45	-18.51	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-22.46	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:	66.9	65.0	63.3	57.2	65.8	66.4
Medium Trucks:	60.7	59.2	52.8	51.3	59.7	60.0
Heavy Trucks:	61.5	60.1	51.1	52.3	60.7	60.8
Vehicle Noise:	68.8	67.0	63.9	59.2	67.7	68.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	35	76	164	353
CNEL:	38	82	176	379

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2021
Road Name: El Toro Rd.
Road Segment: s/o Tereticornis Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	370 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	26.0 feet
Centerline Dist. to Observer:	26.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-3.72	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	70.80	-20.95	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	77.97	-24.91	4.29	-1.20	-5.90	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:	58.0	56.1	54.4	48.3	56.9	57.5
Medium Trucks:	52.9	51.4	45.1	43.5	52.0	52.2
Heavy Trucks:	56.2	54.7	45.7	46.9	55.3	55.4
Vehicle Noise:	60.9	59.3	55.3	51.5	60.0	60.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	6	12	26	56
CNEL:	6	13	27	59

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2021
Road Name: Dexter Av.
Road Segment: n/o Central Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,200 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	26.0 feet
Centerline Dist. to Observer:	26.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-1.16	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	79.45	-18.40	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	84.25	-22.35	4.29	-1.20	-5.90	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:	70.3	68.4	66.6	60.6	69.2	69.8
Medium Trucks:	64.1	62.6	56.3	54.7	63.2	63.4
Heavy Trucks:	65.0	63.6	54.5	55.8	64.1	64.3
Vehicle Noise:	72.2	70.4	67.3	62.6	71.1	71.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	31	67	144	310
CNEL:	33	72	154	333

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2021
Road Name: Nichols Rd.
Road Segment: e/o Lake St.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	870 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-3.01	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-20.25	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-24.21	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:	66.1	64.2	62.5	56.4	65.0	65.6
Medium Trucks:	59.7	58.2	51.8	50.3	58.7	59.0
Heavy Trucks:	60.1	58.7	49.7	50.9	59.3	59.4
Vehicle Noise:	67.8	66.1	63.0	58.2	66.8	67.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	37	79	170	366
CNEL:	39	85	183	394

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2021
Road Name: Nichols Rd.
Road Segment: e/o Alberhill Ranch Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,010 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-2.37	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-19.60	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-23.56	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:	66.8	64.9	63.1	57.0	65.7	66.3
Medium Trucks:	60.3	58.8	52.5	50.9	59.4	59.6
Heavy Trucks:	60.8	59.3	50.3	51.6	59.9	60.0
Vehicle Noise:	68.5	66.7	63.7	58.9	67.4	67.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	40	87	188	405
CNEL:	43	94	202	435

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2021
Road Name: Nichols Rd.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,030 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-2.28	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-19.52	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-23.47	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	65.0	63.2	57.1	65.8	66.4
Medium Trucks:	60.4	58.9	52.6	51.0	59.5	59.7
Heavy Trucks:	60.9	59.4	50.4	51.6	60.0	60.1
Vehicle Noise:	68.6	66.8	63.8	59.0	67.5	68.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	41	88	190	410
CNEL:	44	95	204	440

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2021
Road Name: Tereticornis Av.
Road Segment: e/o El Toro Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	120 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	26.0 feet
Centerline Dist. to Observer:	26.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-8.61	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	70.80	-25.84	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	77.97	-29.80	4.29	-1.20	-5.90	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:	53.1	51.2	49.5	43.4	52.0	52.6
Medium Trucks:	48.0	46.5	40.2	38.6	47.1	47.3
Heavy Trucks:	51.3	49.8	40.8	42.1	50.4	50.5
Vehicle Noise:	56.1	54.4	50.5	46.6	55.1	55.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	6	12	26
CNEL:	3	6	13	28

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2021
Road Name: Riverside Dr.
Road Segment: w/o Lakeshore Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,960 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	1.48	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.76	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.71	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	65.0	63.3	57.2	65.8	66.4
Medium Trucks:	60.9	59.4	53.0	51.5	60.0	60.2
Heavy Trucks:	62.2	60.8	51.8	53.0	61.4	61.5
Vehicle Noise:	68.9	67.2	63.9	59.4	67.9	68.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	44	94	202	436
CNEL:	47	101	217	466

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2021
Road Name: Riverside Dr.
Road Segment: e/o Lakeshore Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,390 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	2.34	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-14.89	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-18.85	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:	67.8	65.9	64.1	58.1	66.7	67.3
Medium Trucks:	61.8	60.3	53.9	52.4	60.8	61.1
Heavy Trucks:	63.1	61.7	52.6	53.9	62.2	62.4
Vehicle Noise:	69.8	68.1	64.8	60.2	68.8	69.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	50	107	231	497
CNEL:	53	115	247	532

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2021
Road Name: Riverside Dr.
Road Segment: e/o Strickland Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,300	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,330	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	2.23	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.00	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-18.96	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:	67.7	65.8	64.0	58.0	66.6	67.2
Medium Trucks:	61.7	60.2	53.8	52.2	60.7	60.9
Heavy Trucks:	63.0	61.6	52.5	53.8	62.1	62.3
Vehicle Noise:	69.7	68.0	64.7	60.1	68.7	69.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	49	105	227	489
CNEL:	52	113	243	523

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2021
Road Name: Riverside Dr.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,340	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	2.25	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-14.99	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-18.94	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:	67.7	65.8	64.0	58.0	66.6	67.2
Medium Trucks:	61.7	60.2	53.8	52.3	60.7	61.0
Heavy Trucks:	63.0	61.6	52.5	53.8	62.1	62.3
Vehicle Noise:	69.7	68.0	64.7	60.1	68.7	69.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	49	106	228	490
CNEL:	52	113	244	525

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2021
Road Name: Central Av.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,000	vehicles
Vehicle Speed:	30	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	61.75	-0.19	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	73.48	-17.43	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	79.92	-21.38	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:	61.3	59.4	57.6	51.6	60.2	60.8
Medium Trucks:	55.8	54.3	47.9	46.4	54.9	55.1
Heavy Trucks:	58.3	56.9	47.8	49.1	57.4	57.6
Vehicle Noise:	63.8	62.1	58.5	54.3	62.8	63.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	17	36	77	166
CNEL:	18	38	82	176

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2021
Road Name: Central Av.
Road Segment: e/o Dexter Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,790	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	96	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	67.0	feet
Centerline Dist. to Observer:	67.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.011
Medium Trucks:	46.822
Heavy Trucks:	46.841

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.96	0.30	-1.20	-4.71	0.000	0.000
Medium Trucks:	82.40	-14.27	0.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-18.23	0.32	-1.20	-5.29	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:	73.8	71.9	70.2	64.1	72.7	73.4
Medium Trucks:	67.3	65.7	59.4	57.8	66.3	66.5
Heavy Trucks:	67.3	65.9	56.8	58.1	66.4	66.6
Vehicle Noise:	75.4	73.7	70.7	65.8	74.4	74.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	131	283	610	1,315
CNEL:	141	305	656	1,414

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2021
Road Name: Central Av.
Road Segment: e/o Cambern Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	38,300	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,830	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	96	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	67.0	feet
Centerline Dist. to Observer:	67.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.011
Medium Trucks:	46.822
Heavy Trucks:	46.841

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	3.01	0.30	-1.20	-4.71	0.000	0.000
Medium Trucks:	82.40	-14.23	0.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-18.18	0.32	-1.20	-5.29	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:	73.9	72.0	70.2	64.2	72.8	73.4
Medium Trucks:	67.3	65.8	59.4	57.9	66.3	66.6
Heavy Trucks:	67.3	65.9	56.9	58.1	66.5	66.6
Vehicle Noise:	75.5	73.7	70.8	65.9	74.4	74.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	132	285	614	1,324
CNEL:	142	307	661	1,424

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2021
Road Name: Lake St.
Road Segment: n/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,770	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	0.07	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-17.17	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.12	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:	69.2	67.3	65.5	59.5	68.1	68.7
Medium Trucks:	62.8	61.3	54.9	53.4	61.8	62.1
Heavy Trucks:	63.2	61.8	52.7	54.0	62.4	62.5
Vehicle Noise:	70.9	69.2	66.1	61.3	69.9	70.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	59	127	273	588
CNEL:	63	136	293	632

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2021
Road Name: Lake St.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,170	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	0.96	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-16.28	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-20.24	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:	70.1	68.2	66.4	60.4	69.0	69.6
Medium Trucks:	63.7	62.2	55.8	54.3	62.7	62.9
Heavy Trucks:	64.1	62.7	53.6	54.9	63.2	63.4
Vehicle Noise:	71.8	70.0	67.0	62.2	70.8	71.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	67	145	313	674
CNEL:	72	156	336	724

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2021
Road Name: Lake St.
Road Segment: s/o Alberhill Ranch Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,120	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	0.85	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-16.38	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-20.34	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:	70.0	68.1	66.3	60.3	68.9	69.5
Medium Trucks:	63.6	62.1	55.7	54.2	62.6	62.8
Heavy Trucks:	64.0	62.6	53.5	54.8	63.1	63.3
Vehicle Noise:	71.7	69.9	66.9	62.1	70.7	71.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	66	143	308	663
CNEL:	71	154	331	713

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2021
Road Name: Alberhill Ranch Rd.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	200 vehicles
Vehicle Speed:	35 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:	39.0 feet
Centerline Dist. to Observer:	39.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	37.443
Medium Trucks:	37.206
Heavy Trucks:	37.230

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-7.85	1.78	-1.20	-4.58	0.000	0.000
Medium Trucks:	75.75	-25.09	1.82	-1.20	-4.87	0.000	0.000
Heavy Trucks:	81.57	-29.04	1.82	-1.20	-5.57	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:	57.0	55.1	53.4	47.3	55.9	56.5
Medium Trucks:	51.3	49.8	43.4	41.9	50.3	50.6
Heavy Trucks:	53.1	51.7	42.7	43.9	52.3	52.4
Vehicle Noise:	59.3	57.6	54.1	49.7	58.3	58.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	6	14	30	64
CNEL:	7	15	32	69

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2021
Road Name: Strickland Sv.
Road Segment: s/o Riverside Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	30 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	47 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	45.0 feet
Centerline Dist. to Observer:	45.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	38.701
Medium Trucks:	38.471
Heavy Trucks:	38.494

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-16.67	1.57	-1.20	-4.62	0.000	0.000
Medium Trucks:	77.72	-33.91	1.60	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-37.86	1.60	-1.20	-5.49	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	48.3	46.5	40.5	49.1	49.7
Medium Trucks:	44.2	42.7	36.3	34.8	43.3	43.5
Heavy Trucks:	45.5	44.1	35.1	36.3	44.7	44.8
Vehicle Noise:	52.2	50.5	47.2	42.7	51.2	51.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	5	12	25
CNEL:	3	6	12	27

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2021
Road Name: Collier Av.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	820 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	-3.27	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-20.51	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-24.46	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:	66.7	64.8	63.0	56.9	65.6	66.2
Medium Trucks:	60.2	58.7	52.4	50.8	59.3	59.5
Heavy Trucks:	60.7	59.2	50.2	51.5	59.8	59.9
Vehicle Noise:	68.4	66.6	63.6	58.8	67.3	67.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	33	71	154	332
CNEL:	36	77	165	357

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2021
Road Name: Collier Av.
Road Segment: s/o Riverside Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,680 vehicles
Vehicle Speed:	45 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	68.46	2.33	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	79.45	-14.91	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-18.86	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:	69.7	67.8	66.1	60.0	68.6	69.2
Medium Trucks:	63.5	62.0	55.6	54.1	62.5	62.8
Heavy Trucks:	64.3	62.9	53.9	55.1	63.5	63.6
Vehicle Noise:	71.6	69.8	66.7	62.0	70.5	71.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	65	140	302	651
CNEL:	70	150	324	698

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2021
Road Name: Collier Av.
Road Segment: s/o Central Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,180 vehicles
Vehicle Speed:	45 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	68.46	-1.23	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	79.45	-18.47	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-22.43	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:	67.0	65.1	63.3	57.2	65.9	66.5
Medium Trucks:	60.7	59.2	52.9	51.3	59.8	60.0
Heavy Trucks:	61.6	60.2	51.1	52.4	60.7	60.9
Vehicle Noise:	68.8	67.1	63.9	59.2	67.8	68.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	36	77	165	355
CNEL:	38	82	177	381

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2021
Road Name: El Toro Rd.
Road Segment: s/o Tereticornis Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	390 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	26.0 feet
Centerline Dist. to Observer:	26.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-3.49	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	70.80	-20.73	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	77.97	-24.68	4.29	-1.20	-5.90	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:	58.3	56.4	54.6	48.5	57.2	57.8
Medium Trucks:	53.2	51.7	45.3	43.8	52.2	52.4
Heavy Trucks:	56.4	55.0	45.9	47.2	55.5	55.7
Vehicle Noise:	61.2	59.5	55.6	51.7	60.2	60.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	6	12	27	58
CNEL:	6	13	28	61

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2021
Road Name: Dexter Av.
Road Segment: n/o Central Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,210 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	26.0 feet
Centerline Dist. to Observer:	26.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-1.12	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	79.45	-18.36	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	84.25	-22.32	4.29	-1.20	-5.90	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:	70.3	68.4	66.7	60.6	69.2	69.9
Medium Trucks:	64.2	62.7	56.3	54.8	63.2	63.5
Heavy Trucks:	65.0	63.6	54.6	55.8	64.2	64.3
Vehicle Noise:	72.2	70.5	67.3	62.6	71.2	71.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	31	67	145	312
CNEL:	33	72	155	334

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2021
Road Name: Nichols Rd.
Road Segment: e/o Lake St.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	880 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-2.96	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-20.20	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-24.16	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:	66.2	64.3	62.5	56.4	65.1	65.7
Medium Trucks:	59.8	58.2	51.9	50.3	58.8	59.0
Heavy Trucks:	60.2	58.7	49.7	51.0	59.3	59.4
Vehicle Noise:	67.9	66.1	63.1	58.3	66.8	67.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	37	80	171	369
CNEL:	40	85	184	397

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2021
Road Name: Nichols Rd.
Road Segment: e/o Alberhill Ranch Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,020 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-2.32	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-19.56	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-23.52	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:	66.8	64.9	63.1	57.1	65.7	66.3
Medium Trucks:	60.4	58.9	52.5	51.0	59.4	59.7
Heavy Trucks:	60.8	59.4	50.4	51.6	60.0	60.1
Vehicle Noise:	68.5	66.8	63.7	58.9	67.5	67.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	41	88	189	407
CNEL:	44	94	203	438

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2021
Road Name: Nichols Rd.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,040 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-2.24	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-19.48	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-23.43	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	65.0	63.2	57.2	65.8	66.4
Medium Trucks:	60.5	59.0	52.6	51.1	59.5	59.8
Heavy Trucks:	60.9	59.5	50.4	51.7	60.0	60.2
Vehicle Noise:	68.6	66.8	63.8	59.0	67.6	68.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	41	89	192	413
CNEL:	44	96	206	443

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2021
Road Name: Tereticornis Av.
Road Segment: e/o El Toro Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	120 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	26.0 feet
Centerline Dist. to Observer:	26.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-8.61	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	70.80	-25.84	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	77.97	-29.80	4.29	-1.20	-5.90	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:	53.1	51.2	49.5	43.4	52.0	52.6
Medium Trucks:	48.0	46.5	40.2	38.6	47.1	47.3
Heavy Trucks:	51.3	49.8	40.8	42.1	50.4	50.5
Vehicle Noise:	56.1	54.4	50.5	46.6	55.1	55.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	6	12	26
CNEL:	3	6	13	28

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2021
Road Name: Riverside Dr.
Road Segment: w/o Lakeshore Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,970 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	1.51	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.73	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.69	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:	66.9	65.0	63.3	57.2	65.8	66.5
Medium Trucks:	60.9	59.4	53.1	51.5	60.0	60.2
Heavy Trucks:	62.3	60.8	51.8	53.0	61.4	61.5
Vehicle Noise:	69.0	67.2	63.9	59.4	67.9	68.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	44	94	203	437
CNEL:	47	101	217	468

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2021
Road Name: Riverside Dr.
Road Segment: e/o Lakeshore Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	24,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,410	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	2.38	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-14.86	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-18.81	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:	67.8	65.9	64.2	58.1	66.7	67.3
Medium Trucks:	61.8	60.3	53.9	52.4	60.9	61.1
Heavy Trucks:	63.1	61.7	52.7	53.9	62.3	62.4
Vehicle Noise:	69.8	68.1	64.8	60.3	68.8	69.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	50	108	232	500
CNEL:	54	115	249	535

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2021
Road Name: Riverside Dr.
Road Segment: e/o Strickland Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,500	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,350	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	2.27	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-14.97	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-18.92	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:	67.7	65.8	64.0	58.0	66.6	67.2
Medium Trucks:	61.7	60.2	53.8	52.3	60.7	61.0
Heavy Trucks:	63.0	61.6	52.6	53.8	62.2	62.3
Vehicle Noise:	69.7	68.0	64.7	60.2	68.7	69.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	49	106	228	492
CNEL:	53	113	244	526

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2021
Road Name: Riverside Dr.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,360	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	2.29	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-14.95	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-18.90	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:	67.7	65.8	64.1	58.0	66.6	67.2
Medium Trucks:	61.7	60.2	53.8	52.3	60.8	61.0
Heavy Trucks:	63.0	61.6	52.6	53.8	62.2	62.3
Vehicle Noise:	69.7	68.0	64.7	60.2	68.7	69.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	49	106	229	493
CNEL:	53	114	245	528

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2021
Road Name: Central Av.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,020	vehicles
Vehicle Speed:	30	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	61.75	-0.10	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	73.48	-17.34	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	79.92	-21.30	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:	61.4	59.5	57.7	51.7	60.3	60.9
Medium Trucks:	55.9	54.4	48.0	46.5	54.9	55.2
Heavy Trucks:	58.4	57.0	47.9	49.2	57.5	57.7
Vehicle Noise:	63.9	62.2	58.5	54.4	62.9	63.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	17	36	78	168
CNEL:	18	38	83	179

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2021
Road Name: Central Av.
Road Segment: e/o Dexter Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,790 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	96 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	67.0 feet
Centerline Dist. to Observer:	67.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.011
Medium Trucks:	46.822
Heavy Trucks:	46.841

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	2.96	0.30	-1.20	-4.71	0.000	0.000
Medium Trucks:	82.40	-14.27	0.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-18.23	0.32	-1.20	-5.29	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:	73.8	71.9	70.2	64.1	72.7	73.4
Medium Trucks:	67.3	65.7	59.4	57.8	66.3	66.5
Heavy Trucks:	67.3	65.9	56.8	58.1	66.4	66.6
Vehicle Noise:	75.4	73.7	70.7	65.8	74.4	74.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	131	283	610	1,315
CNEL:	141	305	656	1,414

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2021
Road Name: Central Av.
Road Segment: e/o Cambern Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	38,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,840 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	96 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	67.0 feet
Centerline Dist. to Observer:	67.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.011
Medium Trucks:	46.822
Heavy Trucks:	46.841

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	3.02	0.30	-1.20	-4.71	0.000	0.000
Medium Trucks:	82.40	-14.22	0.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-18.17	0.32	-1.20	-5.29	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:	73.9	72.0	70.2	64.2	72.8	73.4
Medium Trucks:	67.3	65.8	59.4	57.9	66.4	66.6
Heavy Trucks:	67.3	65.9	56.9	58.1	66.5	66.6
Vehicle Noise:	75.5	73.7	70.8	65.9	74.4	74.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	133	286	616	1,326
CNEL:	143	307	662	1,427

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2024
Road Name: Lake St.
Road Segment: n/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,160 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	0.94	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-16.30	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-20.26	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:	70.1	68.2	66.4	60.3	69.0	69.6
Medium Trucks:	63.7	62.1	55.8	54.2	62.7	62.9
Heavy Trucks:	64.1	62.6	53.6	54.9	63.2	63.3
Vehicle Noise:	71.8	70.0	67.0	62.2	70.7	71.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	67	145	312	672
CNEL:	72	155	335	722

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2024
Road Name: Lake St.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,580 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	1.71	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-15.53	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-19.49	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:	70.8	68.9	67.2	61.1	69.7	70.3
Medium Trucks:	64.4	62.9	56.6	55.0	63.5	63.7
Heavy Trucks:	64.8	63.4	54.4	55.6	64.0	64.1
Vehicle Noise:	72.5	70.8	67.7	63.0	71.5	72.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	76	163	351	756
CNEL:	81	175	377	812

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2024
Road Name: Lake St.
Road Segment: s/o Alberhill Ranch Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,510 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	1.59	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-15.65	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-19.61	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:	70.7	68.8	67.1	61.0	69.6	70.2
Medium Trucks:	64.3	62.8	56.4	54.9	63.3	63.6
Heavy Trucks:	64.7	63.3	54.3	55.5	63.9	64.0
Vehicle Noise:	72.4	70.7	67.6	62.8	71.4	71.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	74	160	345	742
CNEL:	80	172	370	798

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2024
Road Name: Alberhill Ranch Rd.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	240 vehicles
Vehicle Speed:	35 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:	39.0 feet
Centerline Dist. to Observer:	39.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	37.443
Medium Trucks:	37.206
Heavy Trucks:	37.230

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-7.06	1.78	-1.20	-4.58	0.000	0.000
Medium Trucks:	75.75	-24.30	1.82	-1.20	-4.87	0.000	0.000
Heavy Trucks:	81.57	-28.25	1.82	-1.20	-5.57	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:	57.8	55.9	54.2	48.1	56.7	57.3
Medium Trucks:	52.1	50.6	44.2	42.7	51.1	51.4
Heavy Trucks:	53.9	52.5	43.5	44.7	53.1	53.2
Vehicle Noise:	60.1	58.3	54.9	50.5	59.0	59.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	7	16	34	73
CNEL:	8	17	36	78

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2024
Road Name: Strickland Sv.
Road Segment: s/o Riverside Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	60 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	47 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	45.0 feet
Centerline Dist. to Observer:	45.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	38.701
Medium Trucks:	38.471
Heavy Trucks:	38.494

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-13.66	1.57	-1.20	-4.62	0.000	0.000
Medium Trucks:	77.72	-30.90	1.60	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-34.85	1.60	-1.20	-5.49	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:	53.2	51.3	49.6	43.5	52.1	52.7
Medium Trucks:	47.2	45.7	39.4	37.8	46.3	46.5
Heavy Trucks:	48.5	47.1	38.1	39.3	47.7	47.8
Vehicle Noise:	55.2	53.5	50.2	45.7	54.2	54.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	4	9	19	40
CNEL:	4	9	20	43

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2024
Road Name: Collier Av.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,030 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	-2.28	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-19.52	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-23.47	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:	67.6	65.8	64.0	57.9	66.6	67.2
Medium Trucks:	61.2	59.7	53.4	51.8	60.3	60.5
Heavy Trucks:	61.7	60.2	51.2	52.4	60.8	60.9
Vehicle Noise:	69.4	67.6	64.6	59.8	68.3	68.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	39	83	179	386
CNEL:	42	89	193	415

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2024
Road Name: Collier Av.
Road Segment: s/o Riverside Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	30,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,080 vehicles
Vehicle Speed:	45 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.006

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:	68.46	2.93	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	79.45	-14.30	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-18.26	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:	70.3	68.4	66.7	60.6	69.2	69.8
Medium Trucks:	64.1	62.6	56.2	54.7	63.1	63.4
Heavy Trucks:	64.9	63.5	54.5	55.7	64.1	64.2
Vehicle Noise:	72.2	70.4	67.3	62.6	71.1	71.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	71	154	332	714
CNEL:	77	165	356	766

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2024
Road Name: Collier Av.
Road Segment: s/o Central Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,380 vehicles
Vehicle Speed:	45 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.006

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:	68.46	-0.55	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	79.45	-17.79	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-21.75	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:	67.6	65.7	64.0	57.9	66.5	67.1
Medium Trucks:	61.4	59.9	53.5	52.0	60.5	60.7
Heavy Trucks:	62.3	60.8	51.8	53.1	61.4	61.5
Vehicle Noise:	69.5	67.7	64.6	59.9	68.5	68.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	39	85	183	394
CNEL:	42	91	196	423

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2024
Road Name: El Toro Rd.
Road Segment: s/o Tereticornis Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	480 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	26.0 feet
Centerline Dist. to Observer:	26.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.006

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-2.59	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	70.80	-19.82	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	77.97	-23.78	4.29	-1.20	-5.90	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:	59.2	57.3	55.5	49.4	58.1	58.7
Medium Trucks:	54.1	52.6	46.2	44.7	53.1	53.3
Heavy Trucks:	57.3	55.9	46.8	48.1	56.4	56.6
Vehicle Noise:	62.1	60.4	56.5	52.6	61.1	61.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	7	14	31	66
CNEL:	7	15	33	70

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2024
Road Name: Dexter Av.
Road Segment: n/o Central Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,310 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	26.0 feet
Centerline Dist. to Observer:	26.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.006

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-0.78	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	79.45	-18.02	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	84.25	-21.97	4.29	-1.20	-5.90	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:	70.7	68.8	67.0	61.0	69.6	70.2
Medium Trucks:	64.5	63.0	56.7	55.1	63.6	63.8
Heavy Trucks:	65.4	63.9	54.9	56.2	64.5	64.6
Vehicle Noise:	72.6	70.8	67.6	63.0	71.5	72.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	33	71	153	329
CNEL:	35	76	164	353

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2024
Road Name: Nichols Rd.
Road Segment: e/o Lake St.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,320	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-1.20	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-18.44	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-22.40	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:	67.9	66.0	64.3	58.2	66.8	67.4
Medium Trucks:	61.5	60.0	53.6	52.1	60.6	60.8
Heavy Trucks:	61.9	60.5	51.5	52.7	61.1	61.2
Vehicle Noise:	69.6	67.9	64.8	60.0	68.6	69.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	48	104	225	484
CNEL:	52	112	241	520

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2024
Road Name: Nichols Rd.
Road Segment: e/o Alberhill Ranch Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,490	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-0.68	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-17.92	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.87	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:	68.5	66.6	64.8	58.7	67.4	68.0
Medium Trucks:	62.0	60.5	54.2	52.6	61.1	61.3
Heavy Trucks:	62.5	61.0	52.0	53.2	61.6	61.7
Vehicle Noise:	70.2	68.4	65.4	60.6	69.1	69.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	52	113	243	524
CNEL:	56	121	262	563

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2024
Road Name: Nichols Rd.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,520	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-0.59	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-17.83	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.78	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:	68.5	66.6	64.9	58.8	67.4	68.0
Medium Trucks:	62.1	60.6	54.3	52.7	61.2	61.4
Heavy Trucks:	62.5	61.1	52.1	53.3	61.7	61.8
Vehicle Noise:	70.2	68.5	65.4	60.7	69.2	69.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	53	114	247	531
CNEL:	57	123	265	571

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2024
Road Name: Tereticornis Av.
Road Segment: e/o El Toro Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,500	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	150	vehicles
Vehicle Speed:	25	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	26.0	feet
Centerline Dist. to Observer:	26.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-7.64	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	70.80	-24.88	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	77.97	-28.83	4.29	-1.20	-5.90	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:	54.1	52.2	50.4	44.4	53.0	53.6
Medium Trucks:	49.0	47.5	41.1	39.6	48.1	48.3
Heavy Trucks:	52.2	50.8	41.8	43.0	51.4	51.5
Vehicle Noise:	57.0	55.4	51.4	47.5	56.0	56.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	7	14	30
CNEL:	3	7	15	32

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2024
Road Name: Riverside Dr.
Road Segment: w/o Lakeshore Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,180 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	-15.29	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.25	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	65.5	63.7	57.7	66.3	66.9
Medium Trucks:	61.4	59.9	53.5	52.0	60.4	60.7
Heavy Trucks:	62.7	61.3	52.2	53.5	61.8	62.0
Vehicle Noise:	69.4	67.7	64.4	59.8	68.4	68.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	47	101	217	468
CNEL:	50	108	232	501

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2024
Road Name: Riverside Dr.
Road Segment: e/o Lakeshore Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,700 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	2.87	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-14.36	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-18.32	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:	68.3	66.4	64.6	58.6	67.2	67.8
Medium Trucks:	62.3	60.8	54.4	52.9	61.3	61.6
Heavy Trucks:	63.6	62.2	53.2	54.4	62.8	62.9
Vehicle Noise:	70.3	68.6	65.3	60.8	69.3	69.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	54	116	250	539
CNEL:	58	124	268	578

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2024
Road Name: Riverside Dr.
Road Segment: e/o Strickland Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,680 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	2.84	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-14.40	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-18.35	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:	68.3	66.4	64.6	58.6	67.2	67.8
Medium Trucks:	62.3	60.8	54.4	52.9	61.3	61.6
Heavy Trucks:	63.6	62.2	53.1	54.4	62.7	62.9
Vehicle Noise:	70.3	68.6	65.3	60.7	69.3	69.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	54	116	249	537
CNEL:	57	124	267	575

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2024
Road Name: Riverside Dr.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,710 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	2.89	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-14.35	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-18.30	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:	68.3	66.4	64.7	58.6	67.2	67.8
Medium Trucks:	62.3	60.8	54.5	52.9	61.4	61.6
Heavy Trucks:	63.6	62.2	53.2	54.4	62.8	62.9
Vehicle Noise:	70.3	68.6	65.3	60.8	69.3	69.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	54	117	251	541
CNEL:	58	125	269	579

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2024
Road Name: Central Av.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,100 vehicles
Vehicle Speed:	30 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	61.75	0.22	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	73.48	-17.01	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	79.92	-20.97	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:	61.7	59.8	58.0	52.0	60.6	61.2
Medium Trucks:	56.2	54.7	48.4	46.8	55.3	55.5
Heavy Trucks:	58.7	57.3	48.2	49.5	57.9	58.0
Vehicle Noise:	64.2	62.5	58.9	54.7	63.2	63.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	18	38	82	176
CNEL:	19	40	87	188

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2024
Road Name: Central Av.
Road Segment: e/o Dexter Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,070 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	96 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	67.0 feet
Centerline Dist. to Observer:	67.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.011
Medium Trucks:	46.822
Heavy Trucks:	46.841

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	3.27	0.30	-1.20	-4.71	0.000	0.000
Medium Trucks:	82.40	-13.96	0.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-17.92	0.32	-1.20	-5.29	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:	74.2	72.3	70.5	64.4	73.1	73.7
Medium Trucks:	67.6	66.1	59.7	58.1	66.6	66.8
Heavy Trucks:	67.6	66.2	57.1	58.4	66.7	66.9
Vehicle Noise:	75.7	74.0	71.0	66.1	74.7	75.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	138	297	640	1,379
CNEL:	148	319	688	1,483

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC 2024
Road Name: Central Av.
Road Segment: e/o Cambern Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	41,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,100 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	96 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	67.0 feet
Centerline Dist. to Observer:	67.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.011
Medium Trucks:	46.822
Heavy Trucks:	46.841

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	3.31	0.30	-1.20	-4.71	0.000	0.000
Medium Trucks:	82.40	-13.93	0.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-17.89	0.32	-1.20	-5.29	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:	74.2	72.3	70.5	64.5	73.1	73.7
Medium Trucks:	67.6	66.1	59.7	58.2	66.6	66.9
Heavy Trucks:	67.6	66.2	57.2	58.4	66.8	66.9
Vehicle Noise:	75.8	74.0	71.0	66.2	74.7	75.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	139	298	643	1,385
CNEL:	149	321	692	1,490

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2024
Road Name: Lake St.
Road Segment: n/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,170 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	0.96	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-16.28	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-20.24	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:	70.1	68.2	66.4	60.4	69.0	69.6
Medium Trucks:	63.7	62.2	55.8	54.3	62.7	62.9
Heavy Trucks:	64.1	62.7	53.6	54.9	63.2	63.4
Vehicle Noise:	71.8	70.0	67.0	62.2	70.8	71.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	67	145	313	674
CNEL:	72	156	336	724

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2024
Road Name: Lake St.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,590 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	1.72	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-15.51	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-19.47	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:	70.9	69.0	67.2	61.1	69.8	70.4
Medium Trucks:	64.4	62.9	56.6	55.0	63.5	63.7
Heavy Trucks:	64.9	63.4	54.4	55.7	64.0	64.1
Vehicle Noise:	72.6	70.8	67.8	63.0	71.5	72.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	76	163	352	758
CNEL:	81	175	378	815

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2024
Road Name: Lake St.
Road Segment: s/o Alberhill Ranch Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,520 vehicles
Vehicle Speed:	50 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	1.61	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-15.63	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-19.59	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:	70.7	68.8	67.1	61.0	69.6	70.2
Medium Trucks:	64.3	62.8	56.5	54.9	63.4	63.6
Heavy Trucks:	64.7	63.3	54.3	55.5	63.9	64.0
Vehicle Noise:	72.4	70.7	67.6	62.9	71.4	71.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	74	160	346	744
CNEL:	80	172	371	800

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2024
Road Name: Alberhill Ranch Rd.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	240 vehicles
Vehicle Speed:	35 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:	39.0 feet
Centerline Dist. to Observer:	39.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	37.443
Medium Trucks:	37.206
Heavy Trucks:	37.230

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	64.30	-7.06	1.78	-1.20	-4.58	0.000	0.000
Medium Trucks:	75.75	-24.30	1.82	-1.20	-4.87	0.000	0.000
Heavy Trucks:	81.57	-28.25	1.82	-1.20	-5.57	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:	57.8	55.9	54.2	48.1	56.7	57.3
Medium Trucks:	52.1	50.6	44.2	42.7	51.1	51.4
Heavy Trucks:	53.9	52.5	43.5	44.7	53.1	53.2
Vehicle Noise:	60.1	58.3	54.9	50.5	59.0	59.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	7	16	34	73
CNEL:	8	17	36	78

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2024
Road Name: Strickland Sv.
Road Segment: s/o Riverside Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	60 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	47 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	45.0 feet
Centerline Dist. to Observer:	45.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	38.701
Medium Trucks:	38.471
Heavy Trucks:	38.494

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-13.66	1.57	-1.20	-4.62	0.000	0.000
Medium Trucks:	77.72	-30.90	1.60	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-34.85	1.60	-1.20	-5.49	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:	53.2	51.3	49.6	43.5	52.1	52.7
Medium Trucks:	47.2	45.7	39.4	37.8	46.3	46.5
Heavy Trucks:	48.5	47.1	38.1	39.3	47.7	47.8
Vehicle Noise:	55.2	53.5	50.2	45.7	54.2	54.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	4	9	19	40
CNEL:	4	9	20	43

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2024
Road Name: Collier Av.
Road Segment: s/o Nichols Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,060 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	-2.16	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	81.00	-19.39	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	85.38	-23.35	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:	67.8	65.9	64.1	58.1	66.7	67.3
Medium Trucks:	61.4	59.9	53.5	52.0	60.4	60.6
Heavy Trucks:	61.8	60.4	51.3	52.6	60.9	61.1
Vehicle Noise:	69.5	67.7	64.7	59.9	68.4	68.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	39	85	183	394
CNEL:	42	91	196	423

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2024
Road Name: Collier Av.
Road Segment: s/o Riverside Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	30,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,090 vehicles
Vehicle Speed:	45 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	68.46	2.95	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	79.45	-14.29	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-18.25	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:	70.3	68.4	66.7	60.6	69.2	69.8
Medium Trucks:	64.1	62.6	56.2	54.7	63.2	63.4
Heavy Trucks:	65.0	63.5	54.5	55.7	64.1	64.2
Vehicle Noise:	72.2	70.4	67.3	62.6	71.2	71.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	72	154	332	716
CNEL:	77	165	356	768

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2024
Road Name: Collier Av.
Road Segment: s/o Central Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,390 vehicles
Vehicle Speed:	45 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	68.46	-0.52	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	79.45	-17.76	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	84.25	-21.72	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:	67.7	65.8	64.0	57.9	66.6	67.2
Medium Trucks:	61.4	59.9	53.6	52.0	60.5	60.7
Heavy Trucks:	62.3	60.9	51.8	53.1	61.4	61.6
Vehicle Noise:	69.5	67.8	64.6	59.9	68.5	68.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	40	85	184	396
CNEL:	42	92	197	425

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2024
Road Name: El Toro Rd.
Road Segment: s/o Tereticornis Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	500 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	26.0 feet
Centerline Dist. to Observer:	26.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-2.41	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	70.80	-19.65	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	77.97	-23.60	4.29	-1.20	-5.90	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:	59.3	57.4	55.7	49.6	58.2	58.8
Medium Trucks:	54.2	52.7	46.4	44.8	53.3	53.5
Heavy Trucks:	57.5	56.0	47.0	48.3	56.6	56.7
Vehicle Noise:	62.3	60.6	56.7	52.8	61.3	61.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	7	15	32	68
CNEL:	7	16	34	72

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2024
Road Name: Dexter Av.
Road Segment: n/o Central Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,320	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	26.0	feet
Centerline Dist. to Observer:	26.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-0.75	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	79.45	-17.98	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	84.25	-21.94	4.29	-1.20	-5.90	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:	70.7	68.8	67.1	61.0	69.6	70.2
Medium Trucks:	64.6	63.1	56.7	55.1	63.6	63.8
Heavy Trucks:	65.4	64.0	54.9	56.2	64.5	64.7
Vehicle Noise:	72.6	70.8	67.7	63.0	71.6	72.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	33	71	153	330
CNEL:	35	76	164	354

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2024
Road Name: Nichols Rd.
Road Segment: e/o Lake St.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,300	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,330	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-1.17	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-18.41	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-22.36	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:	68.0	66.1	64.3	58.2	66.9	67.5
Medium Trucks:	61.5	60.0	53.7	52.1	60.6	60.8
Heavy Trucks:	62.0	60.5	51.5	52.8	61.1	61.2
Vehicle Noise:	69.7	67.9	64.9	60.1	68.6	69.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	49	105	226	486
CNEL:	52	113	242	522

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2024
Road Name: Nichols Rd.
Road Segment: e/o Alberhill Ranch Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,500	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-0.65	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-17.89	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.84	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:	68.5	66.6	64.8	58.8	67.4	68.0
Medium Trucks:	62.1	60.6	54.2	52.7	61.1	61.3
Heavy Trucks:	62.5	61.1	52.0	53.3	61.6	61.8
Vehicle Noise:	70.2	68.4	65.4	60.6	69.2	69.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	53	113	245	527
CNEL:	57	122	263	566

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2024
Road Name: Nichols Rd.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,300	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,530	vehicles
Vehicle Speed:	50	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	70.20	-0.56	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-17.80	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.76	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:	68.6	66.7	64.9	58.9	67.5	68.1
Medium Trucks:	62.2	60.6	54.3	52.7	61.2	61.4
Heavy Trucks:	62.6	61.2	52.1	53.4	61.7	61.8
Vehicle Noise:	70.3	68.5	65.5	60.7	69.2	69.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	53	115	248	534
CNEL:	57	124	266	573

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2024
Road Name: Tereticornis Av.
Road Segment: e/o El Toro Rd.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	150 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	26.0 feet
Centerline Dist. to Observer:	26.0 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	25.788
Medium Trucks:	25.442
Heavy Trucks:	25.476

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	-7.64	4.21	-1.20	-4.43	0.000	0.000
Medium Trucks:	70.80	-24.88	4.30	-1.20	-4.85	0.000	0.000
Heavy Trucks:	77.97	-28.83	4.29	-1.20	-5.90	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:	54.1	52.2	50.4	44.4	53.0	53.6
Medium Trucks:	49.0	47.5	41.1	39.6	48.1	48.3
Heavy Trucks:	52.2	50.8	41.8	43.0	51.4	51.5
Vehicle Noise:	57.0	55.4	51.4	47.5	56.0	56.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	7	14	30
CNEL:	3	7	15	32

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2024
Road Name: Riverside Dr.
Road Segment: w/o Lakeshore Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,190 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	1.96	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.27	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.23	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	65.5	63.7	57.7	66.3	66.9
Medium Trucks:	61.4	59.9	53.5	52.0	60.4	60.7
Heavy Trucks:	62.7	61.3	52.3	53.5	61.9	62.0
Vehicle Noise:	69.4	67.7	64.4	59.9	68.4	68.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	47	101	218	469
CNEL:	50	108	233	502

Thursday, August 23, 2018

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2024
Road Name: Riverside Dr.
Road Segment: e/o Lakeshore Dr.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,720 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	2.91	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-14.33	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-18.29	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:	68.3	66.4	64.7	58.6	67.2	67.9
Medium Trucks:	62.3	60.8	54.5	52.9	61.4	61.6
Heavy Trucks:	63.7	62.2	53.2	54.4	62.8	62.9
Vehicle Noise:	70.4	68.6	65.3	60.8	69.3	69.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	54	117	252	542
CNEL:	58	125	269	580

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2024
Road Name: Riverside Dr.
Road Segment: e/o Strickland Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,700 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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	2.87	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-14.36	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-18.32	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:	68.3	66.4	64.6	58.6	67.2	67.8
Medium Trucks:	62.3	60.8	54.4	52.9	61.3	61.6
Heavy Trucks:	63.6	62.2	53.2	54.4	62.8	62.9
Vehicle Noise:	70.3	68.6	65.3	60.8	69.3	69.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	54	116	250	539
CNEL:	58	124	268	578

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2024
Road Name: Riverside Dr.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,300	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,730	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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	2.92	0.13	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-14.32	0.15	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-18.27	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:	68.4	66.5	64.7	58.6	67.3	67.9
Medium Trucks:	62.4	60.8	54.5	52.9	61.4	61.6
Heavy Trucks:	63.7	62.3	53.2	54.5	62.8	62.9
Vehicle Noise:	70.4	68.6	65.4	60.8	69.4	69.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	54	117	252	543
CNEL:	58	125	270	582

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2024
Road Name: Central Av.
Road Segment: w/o Collier Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,120	vehicles
Vehicle Speed:	30	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	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:	61.75	0.30	0.93	-1.20	-4.65	0.000	0.000
Medium Trucks:	73.48	-16.94	0.96	-1.20	-4.87	0.000	0.000
Heavy Trucks:	79.92	-20.89	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:	61.8	59.9	58.1	52.1	60.7	61.3
Medium Trucks:	56.3	54.8	48.4	46.9	55.3	55.6
Heavy Trucks:	58.8	57.4	48.3	49.6	57.9	58.1
Vehicle Noise:	64.3	62.6	59.0	54.8	63.3	63.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	18	38	83	179
CNEL:	19	41	88	190

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2024
Road Name: Central Av.
Road Segment: e/o Dexter Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,070	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	96	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	67.0	feet
Centerline Dist. to Observer:	67.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.011
Medium Trucks:	46.822
Heavy Trucks:	46.841

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	3.27	0.30	-1.20	-4.71	0.000	0.000
Medium Trucks:	82.40	-13.96	0.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-17.92	0.32	-1.20	-5.29	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:	74.2	72.3	70.5	64.4	73.1	73.7
Medium Trucks:	67.6	66.1	59.7	58.1	66.6	66.8
Heavy Trucks:	67.6	66.2	57.1	58.4	66.7	66.9
Vehicle Noise:	75.7	74.0	71.0	66.1	74.7	75.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	138	297	640	1,379
CNEL:	148	319	688	1,483

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAPC 2024
Road Name: Central Av.
Road Segment: e/o Cambern Av.
Project Name: Nichols Ranch
Job Number: 10880

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	41,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,110	vehicles
Vehicle Speed:	55	mph
Near/Far Lane Distance:	96	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	67.0	feet
Centerline Dist. to Observer:	67.0	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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	47.011
Medium Trucks:	46.822
Heavy Trucks:	46.841

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	71.78	3.32	0.30	-1.20	-4.71	0.000	0.000
Medium Trucks:	82.40	-13.92	0.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	86.40	-17.88	0.32	-1.20	-5.29	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:	74.2	72.3	70.5	64.5	73.1	73.7
Medium Trucks:	67.6	66.1	59.7	58.2	66.7	66.9
Heavy Trucks:	67.6	66.2	57.2	58.4	66.8	66.9
Vehicle Noise:	75.8	74.0	71.1	66.2	74.7	75.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	139	299	644	1,388
CNEL:	149	322	693	1,493

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APPENDIX 8.1:

ON-SITE TRAFFIC NOISE LEVEL CALCULATIONS

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Backyard With Wall	*Project Name:*	Nichols Ranch
Road Name:	I-15 Fwy.	*Job Number:*	10880
Lot No:	91	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	128,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	12,870	vehicles
Vehicle Speed:	70	mph
Near/Far Lane Distance:	130	feet

Site Data

Barrier Height:	**27.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	1.0	
Centerline Dist. to Barrier:	239.0	feet
Centerline Dist. to Observer:	824.0	feet
Barrier Distance to Observer:	585.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	1,314.0	feet
Road Elevation:	1,275.0	feet
Barrier Elevation:	1,275.0	feet
Road Grade:	0.0%	

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%	89.50%
Medium Trucks:	84.8%	4.9%	10.3%	4.72%
Heavy Trucks:	86.5%	2.7%	10.8%	5.78%

Noise Source Elevations (in feet)

Autos:	1,275.000		
Medium Trucks:	1,277.297		
Heavy Trucks:	1,283.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	816.818
Medium Trucks:	816.561
Heavy Trucks:	816.021

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	76.79	6.86	-18.30	-1.20	*0.58*	-8.900	-11.900
Medium Trucks:	82.53	-5.92	-18.30	-1.20	*0.46*	-8.300	-11.300
Heavy Trucks:	85.83	-5.04	-18.29	-1.20	*0.21*	-6.870	-9.870

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.1	62.2	60.5	54.4	63.0	63.7
Medium Trucks:	57.1	55.6	49.2	47.7	56.2	56.4
Heavy Trucks:	61.3	59.9	50.8	52.1	60.4	60.6
Vehicle Noise:	66.5	64.8	61.2	57.0	65.5	65.9

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	52.2	50.3	48.6	42.5	51.1	51.8
Medium Trucks:	45.8	44.3	37.9	36.4	44.9	45.1
Heavy Trucks:	51.4	50.0	41.0	42.2	50.6	50.7
Vehicle Noise:	55.4	53.7	49.6	45.9	54.4	54.8

Centerline Distance to Noise Contour (in feet)	*70 dBA*	*65 dBA*	*60 dBA*	*55 dBA*
CNEL:	439	947	2,040	4,394

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Backyard With Wall	*Project Name:*	Nichols Ranch
Road Name:	I-15 Fwy.	*Job Number:*	10880
Lot No:	99	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	128,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	12,870	vehicles
Vehicle Speed:	70	mph
Near/Far Lane Distance:	130	feet

Site Data

Barrier Height:	**20.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	1.0	
Centerline Dist. to Barrier:	230.0	feet
Centerline Dist. to Observer:	485.0	feet
Barrier Distance to Observer:	255.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	1,310.0	feet
Road Elevation:	1,290.0	feet
Barrier Elevation:	1,290.0	feet
Road Grade:	0.0%	

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%	89.50%
Medium Trucks:	84.8%	4.9%	10.3%	4.72%
Heavy Trucks:	86.5%	2.7%	10.8%	5.78%

Noise Source Elevations (in feet)

Autos:	1,290.000		
Medium Trucks:	1,292.297		
Heavy Trucks:	1,298.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	476.578
Medium Trucks:	476.382
Heavy Trucks:	475.999

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	76.79	6.86	-14.79	-1.20	*0.27*	-7.290	-10.290
Medium Trucks:	82.53	-5.92	-14.79	-1.20	*0.19*	-6.720	-9.720
Heavy Trucks:	85.83	-5.04	-14.78	-1.20	*0.06*	-5.600	-8.600

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	67.7	65.8	64.0	57.9	66.6	67.2
Medium Trucks:	60.6	59.1	52.8	51.2	59.7	59.9
Heavy Trucks:	64.8	63.4	54.3	55.6	63.9	64.1
Vehicle Noise:	70.0	68.3	64.7	60.5	69.0	69.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	57.4	55.5	53.7	47.6	56.3	56.9
Medium Trucks:	50.9	49.4	43.0	41.5	50.0	50.2
Heavy Trucks:	56.2	54.8	45.7	47.0	55.3	55.5
Vehicle Noise:	60.4	58.7	54.7	50.9	59.4	59.7

Centerline Distance to Noise Contour (in feet)	*70 dBA*	*65 dBA*	*60 dBA*	*55 dBA*
CNEL:	443	955	2,058	4,433

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Backyard With Wall	*Project Name:*	Nichols Ranch
Road Name:	Nichols Rd.	*Job Number:*	10880
Lot No:	80	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	43,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,310	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	78	feet

Site Data

Barrier Height:	**8.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	90.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	10.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	1,321.2	feet
Road Elevation:	1,313.0	feet
Barrier Elevation:	1,321.2	feet
Road Grade:	0.0%	

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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	1,313.000		
Medium Trucks:	1,315.297		
Heavy Trucks:	1,321.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	93.153
Medium Trucks:	92.734
Heavy Trucks:	91.964

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.12	3.94	-4.16	-1.20	*1.00*	-10.300	-13.300
Medium Trucks:	78.79	-13.30	-4.13	-1.20	*0.90*	-10.000	-13.000
Heavy Trucks:	83.02	-17.26	-4.07	-1.20	*0.66*	-9.180	-12.180

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	69.7	67.8	66.0	60.0	68.6	69.2
Medium Trucks:	60.2	58.7	52.3	50.7	59.2	59.4
Heavy Trucks:	60.5	59.1	50.0	51.3	59.6	59.8
Vehicle Noise:	70.6	68.8	66.3	61.0	69.5	70.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	59.4	57.5	55.7	49.7	58.3	58.9
Medium Trucks:	50.2	48.7	42.3	40.7	49.2	49.4
Heavy Trucks:	51.3	49.9	40.9	42.1	50.5	50.6
Vehicle Noise:	60.5	58.7	56.1	50.8	59.4	59.9

Centerline Distance to Noise Contour (in feet)	*70 dBA*	*65 dBA*	*60 dBA*	*55 dBA*
CNEL:	101	218	469	1,011

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Backyard With Wall	*Project Name:*	Nichols Ranch
Road Name:	Nichols Rd.	*Job Number:*	10880
Lot No:	45	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	43,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,310	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	78	feet

Site Data

Barrier Height:	**8.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	94.0	feet
Centerline Dist. to Observer:	104.0	feet
Barrier Distance to Observer:	10.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	1,352.3	feet
Road Elevation:	1,345.0	feet
Barrier Elevation:	1,352.3	feet
Road Grade:	0.0%	

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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	1,345.000		
Medium Trucks:	1,347.297		
Heavy Trucks:	1,353.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	97.326
Medium Trucks:	96.951
Heavy Trucks:	96.279

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.12	3.94	-4.44	-1.20	*0.93*	-10.090	-13.090
Medium Trucks:	78.79	-13.30	-4.42	-1.20	*0.84*	-9.820	-12.820
Heavy Trucks:	83.02	-17.26	-4.37	-1.20	*0.62*	-9.060	-12.060

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	69.4	67.5	65.7	59.7	68.3	68.9
Medium Trucks:	59.9	58.4	52.0	50.5	58.9	59.2
Heavy Trucks:	60.2	58.8	49.7	51.0	59.3	59.5
Vehicle Noise:	70.3	68.5	66.0	60.7	69.3	69.8

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	59.3	57.4	55.7	49.6	58.2	58.8
Medium Trucks:	50.1	48.5	42.2	40.6	49.1	49.3
Heavy Trucks:	51.1	49.7	40.7	41.9	50.3	50.4
Vehicle Noise:	60.4	58.6	56.0	50.7	59.3	59.8

Centerline Distance to Noise Contour (in feet)	*70 dBA*	*65 dBA*	*60 dBA*	*55 dBA*
CNEL:	101	217	467	1,006

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Backyard With Wall	*Project Name:*	Nichols Ranch
Road Name:	Nichols Rd.	*Job Number:*	10880
Lot No:	35	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	43,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,310	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	78	feet

Site Data

Barrier Height:	**8.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	65.0	feet
Centerline Dist. to Observer:	75.0	feet
Barrier Distance to Observer:	10.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	1,359.0	feet
Road Elevation:	1,365.0	feet
Barrier Elevation:	1,365.0	feet
Road Grade:	0.0%	

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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	1,365.000		
Medium Trucks:	1,367.297		
Heavy Trucks:	1,373.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	66.065
Medium Trucks:	65.765
Heavy Trucks:	65.454

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.12	3.94	-1.92	-1.20	*3.85*	-14.450	-17.450
Medium Trucks:	78.79	-13.30	-1.89	-1.20	*3.55*	-14.150	-17.150
Heavy Trucks:	83.02	-17.26	-1.86	-1.20	*2.85*	-13.405	-16.405

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	71.9	70.0	68.3	62.2	70.8	71.4
Medium Trucks:	62.4	60.9	54.5	53.0	61.4	61.7
Heavy Trucks:	62.7	61.3	52.2	53.5	61.9	62.0
Vehicle Noise:	72.8	71.0	68.6	63.2	71.8	72.3

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	57.5	55.6	53.8	47.8	56.4	57.0
Medium Trucks:	48.3	46.7	40.4	38.8	47.3	47.5
Heavy Trucks:	49.3	47.9	38.8	40.1	48.4	48.6
Vehicle Noise:	58.5	56.7	54.1	48.9	57.5	58.0

Centerline Distance to Noise Contour (in feet)	*70 dBA*	*65 dBA*	*60 dBA*	*55 dBA*
CNEL:	107	230	496	1,068

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	First Floor With Wall	*Project Name:*	Nichols Ranch
Road Name:	I-15 Fwy.	*Job Number:*	10880
Lot No:	Hotel	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	128,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	12,870	vehicles
Vehicle Speed:	70	mph
Near/Far Lane Distance:	130	feet

Site Data

Barrier Height:	**28.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	1.0	
Centerline Dist. to Barrier:	266.0	feet
Centerline Dist. to Observer:	286.0	feet
Barrier Distance to Observer:	20.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	1,306.0	feet
Road Elevation:	1,278.0	feet
Barrier Elevation:	1,278.0	feet
Road Grade:	0.0%	

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%	89.50%
Medium Trucks:	84.8%	4.9%	10.3%	4.72%
Heavy Trucks:	86.5%	2.7%	10.8%	5.78%

Noise Source Elevations (in feet)

Autos:	1,278.000		
Medium Trucks:	1,280.297		
Heavy Trucks:	1,286.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	280.067
Medium Trucks:	279.829
Heavy Trucks:	279.325

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	76.79	6.86	-11.33	-1.20	*0.18*	-6.640	-9.640
Medium Trucks:	82.53	-5.92	-11.32	-1.20	*0.21*	-6.870	-9.870
Heavy Trucks:	85.83	-5.04	-11.31	-1.20	*0.27*	-7.290	-10.290

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	71.1	69.2	67.5	61.4	70.0	70.6
Medium Trucks:	64.1	62.6	56.2	54.7	63.1	63.4
Heavy Trucks:	68.3	66.9	57.8	59.1	67.4	67.5
Vehicle Noise:	73.5	71.8	68.2	63.9	72.5	72.9

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.5	59.6	57.8	51.8	60.4	61.0
Medium Trucks:	54.2	52.7	46.4	44.8	53.3	53.5
Heavy Trucks:	58.0	56.6	47.5	48.8	57.1	57.3
Vehicle Noise:	63.6	61.9	58.5	54.1	62.6	63.0

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	First Floor With Wall	*Project Name:*	Nichols Ranch
Road Name:	I-15 Fwy.	*Job Number:*	10880
Lot No:	91	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	128,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	12,870	vehicles
Vehicle Speed:	70	mph
Near/Far Lane Distance:	130	feet

Site Data

Barrier Height:	**27.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	1.0	
Centerline Dist. to Barrier:	239.0	feet
Centerline Dist. to Observer:	834.0	feet
Barrier Distance to Observer:	595.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	1,314.0	feet
Road Elevation:	1,275.0	feet
Barrier Elevation:	1,275.0	feet
Road Grade:	0.0%	

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%	89.50%
Medium Trucks:	84.8%	4.9%	10.3%	4.72%
Heavy Trucks:	86.5%	2.7%	10.8%	5.78%

Noise Source Elevations (in feet)

Autos:	1,275.000		
Medium Trucks:	1,277.297		
Heavy Trucks:	1,283.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	826.814
Medium Trucks:	826.557
Heavy Trucks:	826.017

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	76.79	6.86	-18.38	-1.20	*0.59*	-8.950	-11.950
Medium Trucks:	82.53	-5.92	-18.38	-1.20	*0.46*	-8.300	-11.300
Heavy Trucks:	85.83	-5.04	-18.37	-1.20	*0.22*	-6.940	-9.940

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.1	62.2	60.4	54.3	63.0	63.6
Medium Trucks:	57.0	55.5	49.2	47.6	56.1	56.3
Heavy Trucks:	61.2	59.8	50.8	52.0	60.4	60.5
Vehicle Noise:	66.4	64.7	61.1	56.9	65.4	65.8

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	52.1	50.2	48.5	42.4	51.0	51.6
Medium Trucks:	45.7	44.2	37.9	36.3	44.8	45.0
Heavy Trucks:	51.3	49.8	40.8	42.1	50.4	50.5
Vehicle Noise:	55.2	53.6	49.5	45.8	54.3	54.6

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	First Floor With Wall	*Project Name:*	Nichols Ranch
Road Name:	I-15 Fwy.	*Job Number:*	10880
Lot No:	99	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	128,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	12,870	vehicles
Vehicle Speed:	70	mph
Near/Far Lane Distance:	130	feet

Site Data

Barrier Height:	**20.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	1.0	
Centerline Dist. to Barrier:	230.0	feet
Centerline Dist. to Observer:	495.0	feet
Barrier Distance to Observer:	265.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	1,310.0	feet
Road Elevation:	1,290.0	feet
Barrier Elevation:	1,290.0	feet
Road Grade:	0.0%	

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%	89.50%
Medium Trucks:	84.8%	4.9%	10.3%	4.72%
Heavy Trucks:	86.5%	2.7%	10.8%	5.78%

Noise Source Elevations (in feet)

Autos:	1,290.000		
Medium Trucks:	1,292.297		
Heavy Trucks:	1,298.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	486.576
Medium Trucks:	486.380
Heavy Trucks:	485.997

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	76.79	6.86	-14.93	-1.20	*0.28*	-7.360	-10.360
Medium Trucks:	82.53	-5.92	-14.92	-1.20	*0.20*	-6.800	-9.800
Heavy Trucks:	85.83	-5.04	-14.92	-1.20	*0.07*	-5.700	-8.700

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	67.5	65.6	63.9	57.8	66.4	67.0
Medium Trucks:	60.5	59.0	52.6	51.1	59.5	59.8
Heavy Trucks:	64.7	63.2	54.2	55.5	63.8	63.9
Vehicle Noise:	69.9	68.2	64.6	60.3	68.9	69.3

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	57.2	55.3	53.5	47.4	56.1	56.7
Medium Trucks:	50.7	49.2	42.8	41.3	49.7	50.0
Heavy Trucks:	56.0	54.5	45.5	46.8	55.1	55.2
Vehicle Noise:	60.1	58.5	54.4	50.7	59.2	59.5

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	First Floor With Wall	*Project Name:*	Nichols Ranch
Road Name:	Nichols Rd.	*Job Number:*	10880
Lot No:	80	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	43,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,310	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	78	feet

Site Data

Barrier Height:	**8.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	90.0	feet
Centerline Dist. to Observer:	110.0	feet
Barrier Distance to Observer:	20.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	1,321.2	feet
Road Elevation:	1,313.0	feet
Barrier Elevation:	1,321.2	feet
Road Grade:	0.0%	

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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	1,313.000		
Medium Trucks:	1,315.297		
Heavy Trucks:	1,321.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	102.937
Medium Trucks:	102.518
Heavy Trucks:	101.748

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.12	3.94	-4.81	-1.20	*0.86*	-9.880	-12.880
Medium Trucks:	78.79	-13.30	-4.78	-1.20	*0.74*	-9.460	-12.460
Heavy Trucks:	83.02	-17.26	-4.73	-1.20	*0.46*	-8.300	-11.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	69.0	67.2	65.4	59.3	68.0	68.6
Medium Trucks:	59.5	58.0	51.6	50.1	58.6	58.8
Heavy Trucks:	59.8	58.4	49.4	50.6	59.0	59.1
Vehicle Noise:	70.0	68.1	65.7	60.3	68.9	69.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	59.2	57.3	55.5	49.4	58.1	58.7
Medium Trucks:	50.1	48.5	42.2	40.6	49.1	49.3
Heavy Trucks:	51.5	50.1	41.1	42.3	50.7	50.8
Vehicle Noise:	60.3	58.5	55.8	50.7	59.2	59.7

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	First Floor With Wall	*Project Name:*	Nichols Ranch
Road Name:	Nichols Rd.	*Job Number:*	10880
Lot No:	45	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	43,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,310	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	78	feet

Site Data

Barrier Height:	**8.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	94.0	feet
Centerline Dist. to Observer:	114.0	feet
Barrier Distance to Observer:	20.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	1,352.3	feet
Road Elevation:	1,345.0	feet
Barrier Elevation:	1,352.3	feet
Road Grade:	0.0%	

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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	1,345.000		
Medium Trucks:	1,347.297		
Heavy Trucks:	1,353.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	107.109
Medium Trucks:	106.734
Heavy Trucks:	106.062

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.12	3.94	-5.07	-1.20	*0.78*	-9.620	-12.620
Medium Trucks:	78.79	-13.30	-5.04	-1.20	*0.67*	-9.210	-12.210
Heavy Trucks:	83.02	-17.26	-5.00	-1.20	*0.42*	-8.100	-11.100

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	68.8	66.9	65.1	59.1	67.7	68.3
Medium Trucks:	59.2	57.7	51.4	49.8	58.3	58.5
Heavy Trucks:	59.6	58.1	49.1	50.4	58.7	58.8
Vehicle Noise:	69.7	67.9	65.4	60.1	68.6	69.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	59.2	57.3	55.5	49.5	58.1	58.7
Medium Trucks:	50.0	48.5	42.2	40.6	49.1	49.3
Heavy Trucks:	51.5	50.0	41.0	42.3	50.6	50.7
Vehicle Noise:	60.3	58.5	55.8	50.7	59.2	59.7

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	First Floor With Wall	*Project Name:*	Nichols Ranch
Road Name:	Nichols Rd.	*Job Number:*	10880
Lot No:	35	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	43,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,310	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	78	feet

Site Data

Barrier Height:	**8.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	65.0	feet
Centerline Dist. to Observer:	85.0	feet
Barrier Distance to Observer:	20.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	1,359.0	feet
Road Elevation:	1,365.0	feet
Barrier Elevation:	1,365.0	feet
Road Grade:	0.0%	

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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	1,365.000		
Medium Trucks:	1,367.297		
Heavy Trucks:	1,373.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	74.543
Medium Trucks:	74.244
Heavy Trucks:	73.932

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.12	3.94	-2.71	-1.20	*2.36*	-12.768	-15.768
Medium Trucks:	78.79	-13.30	-2.68	-1.20	*2.07*	-12.391	-15.391
Heavy Trucks:	83.02	-17.26	-2.65	-1.20	*1.42*	-11.140	-14.140

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	71.2	69.3	67.5	61.4	70.1	70.7
Medium Trucks:	61.6	60.1	53.7	52.2	60.7	60.9
Heavy Trucks:	61.9	60.5	51.5	52.7	61.1	61.2
Vehicle Noise:	72.1	70.2	67.8	62.4	71.0	71.5

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.4	56.5	54.7	48.7	57.3	57.9
Medium Trucks:	49.2	47.7	41.4	39.8	48.3	48.5
Heavy Trucks:	50.8	49.3	40.3	41.6	49.9	50.0
Vehicle Noise:	59.5	57.7	55.1	49.9	58.5	59.0

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Second Floor With Wall	*Project Name:*	Nichols Ranch
Road Name:	I-15 Fwy.	*Job Number:*	10880
Lot No:	91	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	128,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	12,870	vehicles
Vehicle Speed:	70	mph
Near/Far Lane Distance:	130	feet

Site Data

Barrier Height:	**27.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	1.0	
Centerline Dist. to Barrier:	239.0	feet
Centerline Dist. to Observer:	834.0	feet
Barrier Distance to Observer:	595.0	feet
Observer Height (Above Pad):	14.0	feet
Pad Elevation:	1,314.0	feet
Road Elevation:	1,275.0	feet
Barrier Elevation:	1,275.0	feet
Road Grade:	0.0%	

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%	89.50%
Medium Trucks:	84.8%	4.9%	10.3%	4.72%
Heavy Trucks:	86.5%	2.7%	10.8%	5.78%

Noise Source Elevations (in feet)

Autos:	1,275.000		
Medium Trucks:	1,277.297		
Heavy Trucks:	1,283.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	827.139
Medium Trucks:	826.882
Heavy Trucks:	826.342

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	76.79	6.86	-18.38	-1.20	*0.40*	-8.000	-11.000
Medium Trucks:	82.53	-5.92	-18.38	-1.20	*0.29*	-7.430	-10.430
Heavy Trucks:	85.83	-5.04	-18.38	-1.20	*0.11*	-6.080	-9.080

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.1	62.2	60.4	54.3	63.0	63.6
Medium Trucks:	57.0	55.5	49.2	47.6	56.1	56.3
Heavy Trucks:	61.2	59.8	50.8	52.0	60.4	60.5
Vehicle Noise:	66.4	64.7	61.1	56.9	65.4	65.8

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	53.1	51.2	49.4	43.3	52.0	52.6
Medium Trucks:	46.6	45.1	38.7	37.2	45.6	45.9
Heavy Trucks:	52.1	50.7	41.7	42.9	51.3	51.4
Vehicle Noise:	56.1	54.5	50.4	46.7	55.2	55.5

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Second Floor With Wall	*Project Name:*	Nichols Ranch
Road Name:	I-15 Fwy.	*Job Number:*	10880
Lot No:	99	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	128,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	12,870	vehicles
Vehicle Speed:	70	mph
Near/Far Lane Distance:	130	feet

Site Data

Barrier Height:	**20.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	1.0	
Centerline Dist. to Barrier:	230.0	feet
Centerline Dist. to Observer:	495.0	feet
Barrier Distance to Observer:	265.0	feet
Observer Height (Above Pad):	14.0	feet
Pad Elevation:	1,310.0	feet
Road Elevation:	1,290.0	feet
Barrier Elevation:	1,290.0	feet
Road Grade:	0.0%	

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%	89.50%
Medium Trucks:	84.8%	4.9%	10.3%	4.72%
Heavy Trucks:	86.5%	2.7%	10.8%	5.78%

Noise Source Elevations (in feet)

Autos:	1,290.000		
Medium Trucks:	1,292.297		
Heavy Trucks:	1,298.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	486.898
Medium Trucks:	486.703
Heavy Trucks:	486.319

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	76.79	6.86	-14.93	-1.20	*0.07*	-5.700	-8.700
Medium Trucks:	82.53	-5.92	-14.93	-1.20	*0.03*	-5.300	-8.300
Heavy Trucks:	85.83	-5.04	-14.92	-1.20	*0.00*	-4.900	-7.900

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	67.5	65.6	63.9	57.8	66.4	67.0
Medium Trucks:	60.5	59.0	52.6	51.1	59.5	59.8
Heavy Trucks:	64.7	63.2	54.2	55.5	63.8	63.9
Vehicle Noise:	69.9	68.2	64.6	60.3	68.9	69.3

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.8	56.9	55.2	49.1	57.7	58.3
Medium Trucks:	52.2	50.7	44.3	42.8	51.2	51.5
Heavy Trucks:	56.8	55.3	46.3	47.6	55.9	56.0
Vehicle Noise:	61.5	59.8	56.0	52.0	60.5	60.9

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Second Floor With Wall	*Project Name:*	Nichols Ranch
Road Name:	Nichols Rd.	*Job Number:*	10880
Lot No:	80	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	43,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,310	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	78	feet

Site Data

Barrier Height:	**8.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	90.0	feet
Centerline Dist. to Observer:	110.0	feet
Barrier Distance to Observer:	20.0	feet
Observer Height (Above Pad):	14.0	feet
Pad Elevation:	1,321.2	feet
Road Elevation:	1,313.0	feet
Barrier Elevation:	1,321.2	feet
Road Grade:	0.0%	

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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	1,313.000		
Medium Trucks:	1,315.297		
Heavy Trucks:	1,321.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	105.223
Medium Trucks:	104.762
Heavy Trucks:	103.829

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.12	3.94	-4.95	-1.20	*-0.11*	0.000	0.000
Medium Trucks:	78.79	-13.30	-4.92	-1.20	*-0.16*	0.000	0.000
Heavy Trucks:	83.02	-17.26	-4.86	-1.20	*-0.33*	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:	68.9	67.0	65.2	59.2	67.8	68.4
Medium Trucks:	59.4	57.9	51.5	50.0	58.4	58.6
Heavy Trucks:	59.7	58.3	49.2	50.5	58.8	59.0
Vehicle Noise:	69.8	68.0	65.5	60.2	68.7	69.3

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	68.9	67.0	65.2	59.2	67.8	68.4
Medium Trucks:	59.4	57.9	51.5	50.0	58.4	58.6
Heavy Trucks:	59.7	58.3	49.2	50.5	58.8	59.0
Vehicle Noise:	69.8	68.0	65.5	60.2	68.7	69.3

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Second Floor With Wall	*Project Name:*	Nichols Ranch
Road Name:	Nichols Rd.	*Job Number:*	10880
Lot No:	45	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	43,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,310	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	78	feet

Site Data

Barrier Height:	**8.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	94.0	feet
Centerline Dist. to Observer:	114.0	feet
Barrier Distance to Observer:	20.0	feet
Observer Height (Above Pad):	14.0	feet
Pad Elevation:	1,352.3	feet
Road Elevation:	1,345.0	feet
Barrier Elevation:	1,352.3	feet
Road Grade:	0.0%	

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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	1,345.000		
Medium Trucks:	1,347.297		
Heavy Trucks:	1,353.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	109.219
Medium Trucks:	108.794
Heavy Trucks:	107.943

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.12	3.94	-5.19	-1.20	*-0.14*	0.000	0.000
Medium Trucks:	78.79	-13.30	-5.17	-1.20	*-0.20*	0.000	0.000
Heavy Trucks:	83.02	-17.26	-5.12	-1.20	*-0.38*	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:	68.7	66.8	65.0	58.9	67.6	68.2
Medium Trucks:	59.1	57.6	51.3	49.7	58.2	58.4
Heavy Trucks:	59.4	58.0	49.0	50.2	58.6	58.7
Vehicle Noise:	69.6	67.8	65.3	59.9	68.5	69.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	68.7	66.8	65.0	58.9	67.6	68.2
Medium Trucks:	59.1	57.6	51.3	49.7	58.2	58.4
Heavy Trucks:	59.4	58.0	49.0	50.2	58.6	58.7
Vehicle Noise:	69.6	67.8	65.3	59.9	68.5	69.0

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Second Floor With Wall	*Project Name:*	Nichols Ranch
Road Name:	Nichols Rd.	*Job Number:*	10880
Lot No:	35	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	43,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,310	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	78	feet

Site Data

Barrier Height:	**8.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	65.0	feet
Centerline Dist. to Observer:	85.0	feet
Barrier Distance to Observer:	20.0	feet
Observer Height (Above Pad):	14.0	feet
Pad Elevation:	1,359.0	feet
Road Elevation:	1,365.0	feet
Barrier Elevation:	1,365.0	feet
Road Grade:	0.0%	

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%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	1,365.000		
Medium Trucks:	1,367.297		
Heavy Trucks:	1,373.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	72.612
Medium Trucks:	72.312
Heavy Trucks:	75.525

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.12	3.94	-2.53	-1.20	*0.11*	-6.080	-9.080
Medium Trucks:	78.79	-13.30	-2.51	-1.20	*0.06*	-5.600	-8.600
Heavy Trucks:	83.02	-17.26	-2.79	-1.20	*0.00*	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:	71.3	69.4	67.7	61.6	70.2	70.8
Medium Trucks:	61.8	60.3	53.9	52.4	60.8	61.1
Heavy Trucks:	61.8	60.4	51.3	52.6	60.9	61.0
Vehicle Noise:	72.2	70.4	67.9	62.6	71.1	71.7

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.2	63.3	61.6	55.5	64.1	64.8
Medium Trucks:	56.2	54.7	48.3	46.8	55.2	55.5
Heavy Trucks:	61.8	60.4	51.3	52.6	60.9	61.0
Vehicle Noise:	67.2	65.5	62.2	57.7	66.2	66.6

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Second Floor With Wall	*Project Name:*	Nichols Ranch
Road Name:	I-15 Fwy.	*Job Number:*	10880
Lot No:	Hotel (2-4F)	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	128,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	12,870	vehicles
Vehicle Speed:	70	mph
Near/Far Lane Distance:	130	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	286.0	feet
Centerline Dist. to Observer:	286.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	14.0	feet
Pad Elevation:	1,306.0	feet
Road Elevation:	1,278.0	feet
Barrier Elevation:	1,278.0	feet
Road Grade:	0.0%	

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%	89.50%
Medium Trucks:	84.8%	4.9%	10.3%	4.72%
Heavy Trucks:	86.5%	2.7%	10.8%	5.78%

Noise Source Elevations (in feet)

Autos:	1,278.000		
Medium Trucks:	1,280.297		
Heavy Trucks:	1,286.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	281.665
Medium Trucks:	281.331
Heavy Trucks:	280.583

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	76.79	6.86	-11.36	-1.20	*-38.09*	0.000	0.000
Medium Trucks:	82.53	-5.92	-11.36	-1.20	*-38.42*	0.000	0.000
Heavy Trucks:	85.83	-5.04	-11.34	-1.20	*-39.23*	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:	71.1	69.2	67.4	61.4	70.0	70.6
Medium Trucks:	64.1	62.5	56.2	54.6	63.1	63.3
Heavy Trucks:	68.2	66.8	57.8	59.0	67.4	67.5
Vehicle Noise:	73.4	71.7	68.2	63.9	72.4	72.8

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	71.1	69.2	67.4	61.4	70.0	70.6
Medium Trucks:	64.1	62.5	56.2	54.6	63.1	63.3
Heavy Trucks:	68.2	66.8	57.8	59.0	67.4	67.5
Vehicle Noise:	73.4	71.7	68.2	63.9	72.4	72.8

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Third Floor With Wall	*Project Name:*	Nichols Ranch
Road Name:	I-15 Fwy.	*Job Number:*	10880
Lot No:	Hotel (2-4F)	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	128,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	12,870	vehicles
Vehicle Speed:	70	mph
Near/Far Lane Distance:	130	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	286.0	feet
Centerline Dist. to Observer:	286.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	23.0	feet
Pad Elevation:	1,306.0	feet
Road Elevation:	1,278.0	feet
Barrier Elevation:	1,278.0	feet
Road Grade:	0.0%	

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%	89.50%
Medium Trucks:	84.8%	4.9%	10.3%	4.72%
Heavy Trucks:	86.5%	2.7%	10.8%	5.78%

Noise Source Elevations (in feet)

Autos:	1,278.000		
Medium Trucks:	1,280.297		
Heavy Trucks:	1,286.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	283.147
Medium Trucks:	282.742
Heavy Trucks:	281.815

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	76.79	6.86	-11.40	-1.20	*-45.48*	0.000	0.000
Medium Trucks:	82.53	-5.92	-11.39	-1.20	*-45.88*	0.000	0.000
Heavy Trucks:	85.83	-5.04	-11.37	-1.20	*-46.86*	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:	71.0	69.1	67.4	61.3	70.0	70.6
Medium Trucks:	64.0	62.5	56.2	54.6	63.1	63.3
Heavy Trucks:	68.2	66.8	57.8	59.0	67.4	67.5
Vehicle Noise:	73.4	71.7	68.1	63.9	72.4	72.8

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	71.0	69.1	67.4	61.3	70.0	70.6
Medium Trucks:	64.0	62.5	56.2	54.6	63.1	63.3
Heavy Trucks:	68.2	66.8	57.8	59.0	67.4	67.5
Vehicle Noise:	73.4	71.7	68.1	63.9	72.4	72.8

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 6/2/2013

Scenario:	Fourth Floor With Wall	*Project Name:*	Nichols Ranch
Road Name:	I-15 Fwy.	*Job Number:*	10880
Lot No:	Hotel (2-4F)	*Analyst:*	A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	128,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	12,870	vehicles
Vehicle Speed:	70	mph
Near/Far Lane Distance:	130	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	286.0	feet
Centerline Dist. to Observer:	286.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	32.0	feet
Pad Elevation:	1,306.0	feet
Road Elevation:	1,278.0	feet
Barrier Elevation:	1,278.0	feet
Road Grade:	0.0%	

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%	89.50%
Medium Trucks:	84.8%	4.9%	10.3%	4.72%
Heavy Trucks:	86.5%	2.7%	10.8%	5.78%

Noise Source Elevations (in feet)

Autos:	1,278.000		
Medium Trucks:	1,280.297		
Heavy Trucks:	1,286.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	284.905
Medium Trucks:	284.430
Heavy Trucks:	283.327

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	76.79	6.86	-11.44	-1.20	*-52.61*	0.000	0.000
Medium Trucks:	82.53	-5.92	-11.43	-1.20	*-53.07*	0.000	0.000
Heavy Trucks:	85.83	-5.04	-11.40	-1.20	*-54.23*	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:	71.0	69.1	67.3	61.3	69.9	70.5
Medium Trucks:	64.0	62.5	56.1	54.6	63.0	63.3
Heavy Trucks:	68.2	66.8	57.7	59.0	67.3	67.5
Vehicle Noise:	73.4	71.7	68.1	63.8	72.4	72.8

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	71.0	69.1	67.3	61.3	69.9	70.5
Medium Trucks:	64.0	62.5	56.1	54.6	63.0	63.3
Heavy Trucks:	68.2	66.8	57.7	59.0	67.3	67.5
Vehicle Noise:	73.4	71.7	68.1	63.8	72.4	72.8

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APPENDIX 10.1:

OPERATIONAL NOISE LEVEL CALCULATIONS

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STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location:	**R1**	*Project Name:*	Nichols Ranch
Source:	Roof-Top Air Conditioning Units	*Job Number:*	10880
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	2,353.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	2,353.0	feet	*Noise Source Height:*	5.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	10.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	74.4	76.1	77.4	77.7	78.2
Distance Attenuation	2,353.0	-53.5	-53.5	-53.5	-53.5	-53.5	-53.5
Shielding (Barrier Attenuation)	2,353.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-53.5	20.9	22.6	23.9	24.2	24.7
60 Minute Hourly Adjustment		**-53.5**	**20.9**	**22.6**	**23.9**	**24.2**	**24.7**

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location:	**R1**	*Project Name:*	Nichols Ranch
Source:	Parking Lot Vehicle Movements	*Job Number:*	10880
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	2,353.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	2,353.0	feet	*Noise Source Height:*	4.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	15.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	56.7	60.7	63.7	67.1	79.5
Distance Attenuation	2,353.0	-40.1	-40.1	-40.1	-40.1	-40.1	-40.1
Shielding (Barrier Attenuation)	2,353.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-40.1	16.6	20.6	23.6	27.0	39.4
60 Minute Hourly Adjustment		**-40.1**	**16.6**	**20.6**	**23.6**	**27.0**	**39.4**

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location: **R1**
Source: Drive-Through Speakerphones
Condition: Operational

Project Name: Nichols Ranch
Job Number: 10880
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	2,354.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	2,354.0	feet	*Noise Source Height:*	3.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	15.0	0.0	60.9	62.1	63.6	65.3	66.4
Distance Attenuation	2,354.0	-43.9	-43.9	-43.9	-43.9	-43.9	-43.9
Shielding (Barrier Attenuation)	2,354.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-43.9	17.0	18.2	19.7	21.4	22.5
60 Minute Hourly Adjustment		**-43.9**	**17.0**	**18.2**	**19.7**	**21.4**	**22.5**

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location: **R1**
Source: Gas Station Activity
Condition: Operational

Project Name: Nichols Ranch
Job Number: 10880
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	2,361.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	2,361.0	feet	*Noise Source Height:*	5.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	65.6	66.9	69.5	74.4	82.4
Distance Attenuation	2,361.0	-53.5	-53.5	-53.5	-53.5	-53.5	-53.5
Shielding (Barrier Attenuation)	2,361.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-53.5	12.1	13.4	16.0	20.9	28.9
60 Minute Hourly Adjustment		**-53.5**	**12.1**	**13.4**	**16.0**	**20.9**	**28.9**

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location:	**R1**	*Project Name:*	Nichols Ranch
Source:	Car Wash	*Job Number:*	10880
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	2,864.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	2,864.0	feet	*Noise Source Height:*	6.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	50.0	0.0	77.6	78.3	78.9	79.2	79.4
Distance Attenuation	2,864.0	-35.2	-35.2	-35.2	-35.2	-35.2	-35.2
Shielding (Barrier Attenuation)	2,864.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-35.2	42.4	43.1	43.7	44.0	44.2
60 Minute Hourly Adjustment		**-35.2**	**42.4**	**43.1**	**43.7**	**44.0**	**44.2**

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location:	**R1**	*Project Name:*	Nichols Ranch
Source:	Park Activity	*Job Number:*	10880
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	302.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	302.0	feet	*Noise Source Height:*	4.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	61.7	64.1	67.0	69.7	73.9
Distance Attenuation	302.0	-35.6	-35.6	-35.6	-35.6	-35.6	-35.6
Shielding (Barrier Attenuation)	302.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-35.6	26.1	28.5	31.4	34.1	38.3
60 Minute Hourly Adjustment		**-35.6**	**26.1**	**28.5**	**31.4**	**34.1**	**38.3**

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location:	**R2**	*Project Name:*	Nichols Ranch
Source:	Roof-Top Air Conditioning Units	*Job Number:*	10880
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	2,179.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	2,179.0	feet	*Noise Source Height:*	5.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	10.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	74.4	76.1	77.4	77.7	78.2
Distance Attenuation	2,179.0	-52.8	-52.8	-52.8	-52.8	-52.8	-52.8
Shielding (Barrier Attenuation)	2,179.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-52.8	21.6	23.3	24.6	24.9	25.4
60 Minute Hourly Adjustment		**-52.8**	**21.6**	**23.3**	**24.6**	**24.9**	**25.4**

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location:	**R2**	*Project Name:*	Nichols Ranch
Source:	Parking Lot Vehicle Movements	*Job Number:*	10880
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	2,179.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	2,179.0	feet	*Noise Source Height:*	4.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	15.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	56.7	60.7	63.7	67.1	79.5
Distance Attenuation	2,179.0	-39.6	-39.6	-39.6	-39.6	-39.6	-39.6
Shielding (Barrier Attenuation)	2,179.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-39.6	17.1	21.1	24.1	27.5	39.9
60 Minute Hourly Adjustment		**-39.6**	**17.1**	**21.1**	**24.1**	**27.5**	**39.9**

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location:	**R2**	*Project Name:*	Nichols Ranch
Source:	Drive-Through Speakerphones	*Job Number:*	10880
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	2,303.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	2,303.0	feet	*Noise Source Height:*	3.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	15.0	0.0	60.9	62.1	63.6	65.3	66.4
Distance Attenuation	2,303.0	-43.7	-43.7	-43.7	-43.7	-43.7	-43.7
Shielding (Barrier Attenuation)	2,303.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-43.7	17.2	18.4	19.9	21.6	22.7
60 Minute Hourly Adjustment		**-43.7**	**17.2**	**18.4**	**19.9**	**21.6**	**22.7**

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location:	**R2**	*Project Name:*	Nichols Ranch
Source:	Gas Station Activity	*Job Number:*	10880
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	2,283.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	2,283.0	feet	*Noise Source Height:*	5.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	65.6	66.9	69.5	74.4	82.4
Distance Attenuation	2,283.0	-53.2	-53.2	-53.2	-53.2	-53.2	-53.2
Shielding (Barrier Attenuation)	2,283.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-53.2	12.4	13.7	16.3	21.2	29.2
60 Minute Hourly Adjustment		**-53.2**	**12.4**	**13.7**	**16.3**	**21.2**	**29.2**

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location:	**R2**	*Project Name:*	Nichols Ranch
Source:	Car Wash	*Job Number:*	10880
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	2,761.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	2,761.0	feet	*Noise Source Height:*	6.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	50.0	0.0	77.6	78.3	78.9	79.2	79.4
Distance Attenuation	2,761.0	-34.8	-34.8	-34.8	-34.8	-34.8	-34.8
Shielding (Barrier Attenuation)	2,761.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-34.8	42.8	43.5	44.1	44.4	44.6
60 Minute Hourly Adjustment		**-34.8**	**42.8**	**43.5**	**44.1**	**44.4**	**44.6**

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location:	**R2**	*Project Name:*	Nichols Ranch
Source:	Park Activity	*Job Number:*	10880
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	497.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	497.0	feet	*Noise Source Height:*	4.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	61.7	64.1	67.0	69.7	73.9
Distance Attenuation	497.0	-39.9	-39.9	-39.9	-39.9	-39.9	-39.9
Shielding (Barrier Attenuation)	497.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-39.9	21.8	24.2	27.1	29.8	34.0
60 Minute Hourly Adjustment		**-39.9**	**21.8**	**24.2**	**27.1**	**29.8**	**34.0**

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location:	**R3**	*Project Name:*	Nichols Ranch
Source:	Roof-Top Air Conditioning Units	*Job Number:*	10880
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	2,145.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	2,145.0	feet	*Noise Source Height:*	5.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	10.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	74.4	76.1	77.4	77.7	78.2
Distance Attenuation	2,145.0	-52.6	-52.6	-52.6	-52.6	-52.6	-52.6
Shielding (Barrier Attenuation)	2,145.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-52.6	21.8	23.5	24.8	25.1	25.6
60 Minute Hourly Adjustment		**-52.6**	**21.8**	**23.5**	**24.8**	**25.1**	**25.6**

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location:	**R3**	*Project Name:*	Nichols Ranch
Source:	Parking Lot Vehicle Movements	*Job Number:*	10880
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	2,145.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	2,145.0	feet	*Noise Source Height:*	4.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	15.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	56.7	60.7	63.7	67.1	79.5
Distance Attenuation	2,145.0	-39.5	-39.5	-39.5	-39.5	-39.5	-39.5
Shielding (Barrier Attenuation)	2,145.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-39.5	17.2	21.2	24.2	27.6	40.0
60 Minute Hourly Adjustment		**-39.5**	**17.2**	**21.2**	**24.2**	**27.6**	**40.0**

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location:	**R3**	*Project Name:*	Nichols Ranch
Source:	Drive-Through Speakerphones	*Job Number:*	10880
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	2,345.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	2,345.0	feet	*Noise Source Height:*	3.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	15.0	0.0	60.9	62.1	63.6	65.3	66.4
Distance Attenuation	2,345.0	-43.9	-43.9	-43.9	-43.9	-43.9	-43.9
Shielding (Barrier Attenuation)	2,345.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-43.9	17.0	18.2	19.7	21.4	22.5
60 Minute Hourly Adjustment		**-43.9**	**17.0**	**18.2**	**19.7**	**21.4**	**22.5**

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location:	**R3**	*Project Name:*	Nichols Ranch
Source:	Gas Station Activity	*Job Number:*	10880
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	2,329.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	2,329.0	feet	*Noise Source Height:*	5.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	65.6	66.9	69.5	74.4	82.4
Distance Attenuation	2,329.0	-53.4	-53.4	-53.4	-53.4	-53.4	-53.4
Shielding (Barrier Attenuation)	2,329.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-53.4	12.2	13.5	16.1	21.0	29.0
60 Minute Hourly Adjustment		**-53.4**	**12.2**	**13.5**	**16.1**	**21.0**	**29.0**

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location:	**R3**	*Project Name:*	Nichols Ranch
Source:	Car Wash	*Job Number:*	10880
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	2,786.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	2,786.0	feet	*Noise Source Height:*	6.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	50.0	0.0	77.6	78.3	78.9	79.2	79.4
Distance Attenuation	2,786.0	-34.9	-34.9	-34.9	-34.9	-34.9	-34.9
Shielding (Barrier Attenuation)	2,786.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-34.9	42.7	43.4	44.0	44.3	44.5
60 Minute Hourly Adjustment		**-34.9**	**42.7**	**43.4**	**44.0**	**44.3**	**44.5**

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location:	**R3**	*Project Name:*	Nichols Ranch
Source:	Park Activity	*Job Number:*	10880
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	653.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	653.0	feet	*Noise Source Height:*	4.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	61.7	64.1	67.0	69.7	73.9
Distance Attenuation	653.0	-42.3	-42.3	-42.3	-42.3	-42.3	-42.3
Shielding (Barrier Attenuation)	653.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-42.3	19.4	21.8	24.7	27.4	31.6
60 Minute Hourly Adjustment		**-42.3**	**19.4**	**21.8**	**24.7**	**27.4**	**31.6**

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location:	**R4**	*Project Name:*	Nichols Ranch
Source:	Roof-Top Air Conditioning Units	*Job Number:*	10880
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	1,458.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	1,458.0	feet	*Noise Source Height:*	5.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	10.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	74.4	76.1	77.4	77.7	78.2
Distance Attenuation	1,458.0	-49.3	-49.3	-49.3	-49.3	-49.3	-49.3
Shielding (Barrier Attenuation)	1,458.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-49.3	25.1	26.8	28.1	28.4	28.9
60 Minute Hourly Adjustment		**-49.3**	**25.1**	**26.8**	**28.1**	**28.4**	**28.9**

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location:	**R4**	*Project Name:*	Nichols Ranch
Source:	Parking Lot Vehicle Movements	*Job Number:*	10880
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	1,458.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	1,458.0	feet	*Noise Source Height:*	4.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	15.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	56.7	60.7	63.7	67.1	79.5
Distance Attenuation	1,458.0	-37.0	-37.0	-37.0	-37.0	-37.0	-37.0
Shielding (Barrier Attenuation)	1,458.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-37.0	19.7	23.7	26.7	30.1	42.5
60 Minute Hourly Adjustment		**-37.0**	**19.7**	**23.7**	**26.7**	**30.1**	**42.5**

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location:	**R4**	*Project Name:*	Nichols Ranch
Source:	Drive-Through Speakerphones	*Job Number:*	10880
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	1,802.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	1,802.0	feet	*Noise Source Height:*	3.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	15.0	0.0	60.9	62.1	63.6	65.3	66.4
Distance Attenuation	1,802.0	-41.6	-41.6	-41.6	-41.6	-41.6	-41.6
Shielding (Barrier Attenuation)	1,802.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-41.6	19.3	20.5	22.0	23.7	24.8
60 Minute Hourly Adjustment		**-41.6**	**19.3**	**20.5**	**22.0**	**23.7**	**24.8**

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location:	**R4**	*Project Name:*	Nichols Ranch
Source:	Gas Station Activity	*Job Number:*	10880
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	1,760.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	1,760.0	feet	*Noise Source Height:*	5.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	65.6	66.9	69.5	74.4	82.4
Distance Attenuation	1,760.0	-50.9	-50.9	-50.9	-50.9	-50.9	-50.9
Shielding (Barrier Attenuation)	1,760.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-50.9	14.7	16.0	18.6	23.5	31.5
60 Minute Hourly Adjustment		**-50.9**	**14.7**	**16.0**	**18.6**	**23.5**	**31.5**

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location:	**R4**	*Project Name:*	Nichols Ranch
Source:	Car Wash	*Job Number:*	10880
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	2,176.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	2,176.0	feet	*Noise Source Height:*	6.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	50.0	0.0	77.6	78.3	78.9	79.2	79.4
Distance Attenuation	2,176.0	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8
Shielding (Barrier Attenuation)	2,176.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-32.8	44.8	45.5	46.1	46.4	46.6
60 Minute Hourly Adjustment		**-32.8**	**44.8**	**45.5**	**46.1**	**46.4**	**46.6**

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location:	**R4**	*Project Name:*	Nichols Ranch
Source:	Park Activity	*Job Number:*	10880
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	197.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	197.0	feet	*Noise Source Height:*	4.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	61.7	64.1	67.0	69.7	73.9
Distance Attenuation	197.0	-31.9	-31.9	-31.9	-31.9	-31.9	-31.9
Shielding (Barrier Attenuation)	197.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-31.9	29.8	32.2	35.1	37.8	42.0
60 Minute Hourly Adjustment		**-31.9**	**29.8**	**32.2**	**35.1**	**37.8**	**42.0**

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location: **R5**
Source: Roof-Top Air Conditioning Units
Condition: Operational

Project Name: Nichols Ranch
Job Number: 10880
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	1,095.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	1,095.0	feet	*Noise Source Height:*	5.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	10.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	74.4	76.1	77.4	77.7	78.2
Distance Attenuation	1,095.0	-46.8	-46.8	-46.8	-46.8	-46.8	-46.8
Shielding (Barrier Attenuation)	1,095.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-46.8	27.6	29.3	30.6	30.9	31.4
60 Minute Hourly Adjustment		**-46.8**	**27.6**	**29.3**	**30.6**	**30.9**	**31.4**

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location: **R5**
Source: Parking Lot Vehicle Movements
Condition: Operational

Project Name: Nichols Ranch
Job Number: 10880
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	1,095.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	1,095.0	feet	*Noise Source Height:*	4.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	15.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	56.7	60.7	63.7	67.1	79.5
Distance Attenuation	1,095.0	-35.1	-35.1	-35.1	-35.1	-35.1	-35.1
Shielding (Barrier Attenuation)	1,095.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-35.1	21.6	25.6	28.6	32.0	44.4
60 Minute Hourly Adjustment		**-35.1**	**21.6**	**25.6**	**28.6**	**32.0**	**44.4**

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location:	**R5**	*Project Name:*	Nichols Ranch
Source:	Drive-Through Speakerphones	*Job Number:*	10880
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	1,560.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	1,560.0	feet	*Noise Source Height:*	3.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	15.0	0.0	60.9	62.1	63.6	65.3	66.4
Distance Attenuation	1,560.0	-40.3	-40.3	-40.3	-40.3	-40.3	-40.3
Shielding (Barrier Attenuation)	1,560.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-40.3	20.6	21.8	23.3	25.0	26.1
60 Minute Hourly Adjustment		**-40.3**	**20.6**	**21.8**	**23.3**	**25.0**	**26.1**

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location:	**R5**	*Project Name:*	Nichols Ranch
Source:	Gas Station Activity	*Job Number:*	10880
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	1,499.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	1,499.0	feet	*Noise Source Height:*	5.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	65.6	66.9	69.5	74.4	82.4
Distance Attenuation	1,499.0	-49.5	-49.5	-49.5	-49.5	-49.5	-49.5
Shielding (Barrier Attenuation)	1,499.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-49.5	16.1	17.4	20.0	24.9	32.9
60 Minute Hourly Adjustment		**-49.5**	**16.1**	**17.4**	**20.0**	**24.9**	**32.9**

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location:	**R5**	*Project Name:*	Nichols Ranch
Source:	Car Wash	*Job Number:*	10880
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	1,871.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	1,871.0	feet	*Noise Source Height:*	6.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	50.0	0.0	77.6	78.3	78.9	79.2	79.4
Distance Attenuation	1,871.0	-31.5	-31.5	-31.5	-31.5	-31.5	-31.5
Shielding (Barrier Attenuation)	1,871.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-31.5	46.1	46.8	47.4	47.7	47.9
60 Minute Hourly Adjustment		**-31.5**	**46.1**	**46.8**	**47.4**	**47.7**	**47.9**

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location:	**R5**	*Project Name:*	Nichols Ranch
Source:	Park Activity	*Job Number:*	10880
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	148.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	148.0	feet	*Noise Source Height:*	4.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	61.7	64.1	67.0	69.7	73.9
Distance Attenuation	148.0	-29.4	-29.4	-29.4	-29.4	-29.4	-29.4
Shielding (Barrier Attenuation)	148.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-29.4	32.3	34.7	37.6	40.3	44.5
60 Minute Hourly Adjustment		**-29.4**	**32.3**	**34.7**	**37.6**	**40.3**	**44.5**

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location:	**R6**	*Project Name:*	Nichols Ranch
Source:	Roof-Top Air Conditioning Units	*Job Number:*	10880
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	825.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	825.0	feet	*Noise Source Height:*	5.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	10.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	74.4	76.1	77.4	77.7	78.2
Distance Attenuation	825.0	-44.3	-44.3	-44.3	-44.3	-44.3	-44.3
Shielding (Barrier Attenuation)	825.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-44.3	30.1	31.8	33.1	33.4	33.9
60 Minute Hourly Adjustment		**-44.3**	**30.1**	**31.8**	**33.1**	**33.4**	**33.9**

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location:	**R6**	*Project Name:*	Nichols Ranch
Source:	Parking Lot Vehicle Movements	*Job Number:*	10880
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	825.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	825.0	feet	*Noise Source Height:*	4.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	15.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	56.7	60.7	63.7	67.1	79.5
Distance Attenuation	825.0	-33.3	-33.3	-33.3	-33.3	-33.3	-33.3
Shielding (Barrier Attenuation)	825.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-33.3	23.4	27.4	30.4	33.8	46.2
60 Minute Hourly Adjustment		**-33.3**	**23.4**	**27.4**	**30.4**	**33.8**	**46.2**

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location:	**R6**	*Project Name:*	Nichols Ranch
Source:	Drive-Through Speakerphones	*Job Number:*	10880
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	1,644.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	1,644.0	feet	*Noise Source Height:*	3.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	15.0	0.0	60.9	62.1	63.6	65.3	66.4
Distance Attenuation	1,644.0	-40.8	-40.8	-40.8	-40.8	-40.8	-40.8
Shielding (Barrier Attenuation)	1,644.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-40.8	20.1	21.3	22.8	24.5	25.6
60 Minute Hourly Adjustment		**-40.8**	**20.1**	**21.3**	**22.8**	**24.5**	**25.6**

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location:	**R6**	*Project Name:*	Nichols Ranch
Source:	Gas Station Activity	*Job Number:*	10880
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	1,556.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	1,556.0	feet	*Noise Source Height:*	5.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	65.6	66.9	69.5	74.4	82.4
Distance Attenuation	1,556.0	-49.9	-49.9	-49.9	-49.9	-49.9	-49.9
Shielding (Barrier Attenuation)	1,556.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-49.9	15.7	17.0	19.6	24.5	32.5
60 Minute Hourly Adjustment		**-49.9**	**15.7**	**17.0**	**19.6**	**24.5**	**32.5**

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location:	**R6**	*Project Name:*	Nichols Ranch
Source:	Car Wash	*Job Number:*	10880
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	1,758.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	1,758.0	feet	*Noise Source Height:*	6.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	50.0	0.0	77.6	78.3	78.9	79.2	79.4
Distance Attenuation	1,758.0	-30.9	-30.9	-30.9	-30.9	-30.9	-30.9
Shielding (Barrier Attenuation)	1,758.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-30.9	46.7	47.4	48.0	48.3	48.5
60 Minute Hourly Adjustment		**-30.9**	**46.7**	**47.4**	**48.0**	**48.3**	**48.5**

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location:	**R6**	*Project Name:*	Nichols Ranch
Source:	Park Activity	*Job Number:*	10880
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	79.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	79.0	feet	*Noise Source Height:*	4.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	61.7	64.1	67.0	69.7	73.9
Distance Attenuation	79.0	-24.0	-24.0	-24.0	-24.0	-24.0	-24.0
Shielding (Barrier Attenuation)	79.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		-24.0	37.7	40.1	43.0	45.7	49.9
60 Minute Hourly Adjustment		**-24.0**	**37.7**	**40.1**	**43.0**	**45.7**	**49.9**

APPENDIX 11.1:

TEMPORARY CONSTRUCTION NOISE BARRIER ATTENUATION

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STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location:	**R1**	*Project Name:*	Nichols Ranch
Source:	Peak Construction Activity	*Job Number:*	10880
Condition:	Construction Mitigated	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	203.0	feet	***Barrier Height:***	**10.0**	**feet**
Noise Distance to Barrier:	10.0	feet	*Noise Source Height:*	8.0	feet
Barrier Distance to Observer:	193.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	50.0	0.0	0.0	0.0	0.0	0.0	82.5
Distance Attenuation	203.0	-12.2	-12.2	-12.2	-12.2	-12.2	-12.2
Shielding (Barrier Attenuation)	10.0	-7.1	-7.1	-7.1	-7.1	-7.1	-7.1

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location:	**R2**	*Project Name:*	Nichols Ranch
Source:	Peak Construction Activity	*Job Number:*	10880
Condition:	Construction Mitigated	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	66.0	feet	***Barrier Height:***	**10.0**	**feet**
Noise Distance to Barrier:	10.0	feet	*Noise Source Height:*	8.0	feet
Barrier Distance to Observer:	56.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	50.0	0.0	0.0	0.0	0.0	0.0	82.5
Distance Attenuation	66.0	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4
Shielding (Barrier Attenuation)	10.0	-7.7	-7.7	-7.7	-7.7	-7.7	-7.7

STATIONARY SOURCE NOISE PREDICTION MODEL

8/23/2018

Observer Location:	**R3**	*Project Name:*	Nichols Ranch
Source:	Peak Construction Activity	*Job Number:*	10880
Condition:	Construction Mitigated	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	70.0	feet	***Barrier Height:***	**10.0**	**feet**
Noise Distance to Barrier:	10.0	feet	*Noise Source Height:*	8.0	feet
Barrier Distance to Observer:	60.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	50.0	0.0	0.0	0.0	0.0	0.0	82.5
Distance Attenuation	70.0	-2.9	-2.9	-2.9	-2.9	-2.9	-2.9
Shielding (Barrier Attenuation)	10.0	-7.6	-7.6	-7.6	-7.6	-7.6	-7.6

APPENDIX 11.2:

TEMPORARY CONSTRUCTION NOISE BARRIER EXAMPLE PHOTOS

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Temporary Construction Noise Barrier Examples

I-Beam & Acoustic Material 01

I-Beam & Acoustic Material 02

I-Beam & Acoustic Material 03

K-Rail Plywood & Acoustic Material

K-Rail Temporary Fence & Acoustic Material

K-Rail-Mounted Acoustic Material 01

Temporary Construction Noise Barrier Examples

Pillar & Acoustic Material

Straw Bales 01

Straw Bales 02

Temporary Fence & Acoustic Material 01

Temporary Fence & Acoustic Material 02