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Noise Analysis for the Black Mountain Road Community Plan Amendment Project San Diego, California

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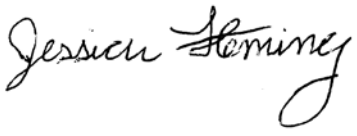

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Acronyms

ADT	average daily traffic
Caltrans	California Department of Transportation
City	City of San Diego
CNEL	community noise equivalent level
dB	decibel
dB(A)	A-weighted decibel
FHWA	Federal Highway Administration
GPA	General Plan Amendment
L_{eq}	one-hour equivalent noise level
LOS	Level of Service
L_{pw}	sound power level
SANDAG	San Diego Association of Governments
SEL	sound exposure level
SR-56	State Route 56

Executive Summary

The Black Mountain Road Community Plan Amendment (CPA) Project (project) proposes to reclassify a segment of Black Mountain Road from a 6-lane Primary Arterial to a 4-lane Major. The project segment of Black Mountain Road subject to the CPA (project roadway) stretches approximately 1.3 miles from Twin Trails Drive to the southern boundary of the Rancho Peñasquitos community adjacent to the Los Peñasquitos Canyon Preserve. The project also includes the following four roadway improvements: (1) installation of a traffic signal at the intersection of Sundance Avenue and Twin Trails Drive (MM-TRA-1), (2) construction of a continuous auxiliary lane on eastbound State Route 56 (SR-56) between Camino Del Sur and Black Mountain Road (MM-TRA-2), (3) construction of an additional on-ramp lane at the Rancho Peñasquitos Boulevard/SR-56 westbound on-ramp (MM-TRA-3), and (4) restriping of the segment of Black Mountain Road between the SR-56 westbound ramps and SR-56 eastbound ramps (project design feature).

This report discusses potential noise impacts from the construction and operation of the project. As part of this assessment, noise levels due to vehicle traffic were calculated and evaluated against City of San Diego (City) thresholds of significance. In addition, the potential for noise to impact adjacent receivers from construction activity was assessed. Where impacts were identified, measures have been identified to comply with the City's noise standards. A summary of the findings is provided below.

Construction Noise

Construction of proposed roadway improvements would potentially result in short-term impacts to surrounding residential properties. A variety of noise-generating equipment–backhoes, crawler tractors, excavators, graders, loaders, rollers, scrapers, and signal boards–would be used to construct these roadway improvements. Construction noise levels at the residential uses located adjacent to the roadway improvement areas were calculated. Construction noise levels would be less than 75 A-weighted decibels dB(A) one-hour equivalent noise level (L_{eq}) at all adjacent residential uses. Although the existing adjacent residences would be exposed to construction noise levels that could be heard above ambient conditions, the exposure would be temporary. Because construction activities associated with the roadway improvements would comply with the applicable regulation for construction, temporary increases in noise levels associated with construction activities would be less than significant.

Traffic Noise

Off-site Traffic Noise

Reclassification of the project roadway from a 6-lane Primary Arterial to a 4-lane Major and implementation of the roadway improvements would not generate additional traffic. However, implementation of the project would result in a future redistribution of vehicles

on the roadway network in the vicinity of the project, and would therefore result in a change in vehicle traffic noise levels adjacent to these roadways. The City's Significance Determination Thresholds state that if a project is currently at or exceeds the significance thresholds for traffic noise and noise levels result in less than a 3 dB(A) increase, the impact would not be considered significant.

The cumulative increases in noise levels between the existing condition and year 2050, without and with the project, are due to regional growth and are not attributed to the project, as the project itself would not result in any growth or trip generation. Off-site traffic noise impacts were determined by comparing year 2050 noise levels with and without implementation of the project. Noise levels would either decrease or increase adjacent to the project area roadways. This is due to the redistribution of traffic on these roadways. As calculated in this analysis, the changes in noise levels due to the project would be less than 1 decibel (dB). These changes in noise levels would not be perceivable and would not exceed the City's significance thresholds. Vehicle traffic noise impacts to off-site uses would be less than significant.

Roadway Improvement Areas

MM-TRA-1 would replace the stop sign at the intersection of Sundance Avenue and Twin Trails Drive with a traffic signal, which would change the traffic flow and therefore the traffic noise at the intersection. Noise levels at the adjacent residential uses were calculated with and without the project. As calculated in this analysis, installation of the traffic signal would improve the traffic flow at the intersection of Sundance Avenue and Twin Trails Drive, and thereby decrease noise levels at the adjacent uses. Therefore, there would be no operational impacts associated with MM-TRA-1.

MM-TRA-2 would construct a continous auxiliary lane on eastbound SR-56, between Camino Del Sur and Black Mountain Road, that would shift some traffic closer to the residential uses to the south, and therefore increase traffic noise levels at these uses. Traffic noise levels with and without construction of the auxiliary lane were calculated at the nearest sensitive receiver. As calculated in this analysis, the construction of the eastbound auxiliary lane would increase noise levels at the nearest residential uses to the south of SR-56 by less than 1 dB. Noise level increases of this magnitude would not be perceivable. Noise levels at the residential uses north of SR-56 would decrease because the additional auxiliary lane would shift some traffic further to the south. Therefore, noise impacts associated with operation of MM-TRA-2 would be less than significant.

MM-TRA-3 would construct an additional on-ramp lane at the Rancho Peñasquitos Boulevard/SR-56 westbound on-ramp, which would shift some on-ramp traffic closer to the residential uses to the north and therefore increase traffic noise levels at these uses. Traffic noise levels with and without the additional on-ramp lane were calculated at the nearest sensitive receiver. As calculated in this analysis, the construction of the additional on-ramp lane would increase noise levels at the nearest residential uses to the north by less than 1 dB. Noise level increases of this magnitude would not be perceivable. Therefore, noise impacts associated with operation of MM-TRA-3 would be less than significant.

The project design feature would restripe the segment of Black Mountain Road between the SR-56 westbound ramps and SR-56 eastbound ramps to include an additional northbound lane along Black Mountain Road from the SR-56 eastbound ramps to the middle of the overpass. To accommodate the additional northbound lane created by this restriping on the overpass, the roadway north of the overpass bridge would need to be widened for northbound traffic. The widening would extend approximately 0.15 mile from the SR-56 westbound off-ramp to the first commercial driveway to the north of the overpass. There are residential uses to the west of this portion of Black Mountain Road. The proposed restriping and slight widening would shift some traffic slightly to the east, away from the residential uses. Therefore, implementation of the project design feature would not result in an increase in noise levels due to vehicle traffic on Black Mountain Road at the adjacent sensitive receivers.

1.0 Introduction

1.1 Project Description

The project proposes to reclassify a segment of Black Mountain Road from a 6-lane Primary Arterial to a 4-lane Major. The project segment of Black Mountain Road subject to the Community Plan Amendment (CPA) (project roadway) stretches approximately 1.3 miles from Twin Trails Drive on the north to the southern boundary of the Rancho Peñasquitos community adjacent to the Los Peñasquitos Canyon Preserve. The project roadway currently operates as a 4-lane Major with landscaped center medians, contiguous sidewalks, and Class II bike lanes. The bridge section of Black Mountain Road over SR-56 is wider and operates as a 5-lane Primary Arterial. The project proposes a General Plan Amendment (GPA) to Figure LU-2, Land Use and Street System Map in the Land Use and Community Planning Element of the General Plan to reclassify the project roadway from a Prime Arterial to a Major Arterial, and a CPA to the Rancho Peñasquitos Community Plan Circulation Element to reclassify the project roadway from a 6-lane Primary Arterial to a 4-lane Major[1]. The City of San Diego (City) Planning Commission initiated the Community Plan Amendment on February 27, 2014.

The project proposes the following roadway improvement as a design feature to increase the northbound to westbound left-turn pocket storage and improve the flow of northbound traffic (project design feature):

Restripe the segment of Black Mountain Road between the SR-56 westbound ramps and SR-56 eastbound ramps to include an additional northbound lane along Black Mountain Road from the SR-56 eastbound ramps to the middle of the overpass. To accommodate the additional northbound lane created by this restriping on the overpass, the roadway north of the overpass bridge would need to be widened for northbound traffic. The widening would extend approximately 0.15 mile from the SR-56 westbound off-ramp to the first commercial driveway to the north of the overpass.

The following three roadway improvements identified in the Transportation Impact Study (TIS) would mitigate traffic impacts associated with the reclassification of the project roadway from a 6-lane Primary Arterial to a 4-lane Major:

MM-TRA-1: Install a traffic signal at the intersection of Sundance Avenue and Twin Trails Drive.

MM-TRA-2: Construct a continuous auxiliary lane on eastbound SR-56 between Camino Del Sur and Black Mountain Road.

MM-TRA-3: Construct an additional on-ramp lane at the Rancho Peñasquitos Boulevard/SR-56 westbound on-ramp.

[1] The City of San Diego General Plan and Rancho Peñasquitos Community Plan use different nomenclature for roadway classifications. Consequently, the GPA would reclassify the project roadway as a Major Arterial, and the CPA would reclassify the project roadway as a 4-lane Major.

Figure 1 shows the regional location, while Figure 2 shows the locations of the project design feature and three traffic mitigation measures in relation to the project roadway. Figures 3 through 5 show the footprints of MM-TRA-2, MM-TRA-3, and the project design feature, respectively. A figure showing the footprint of MM-TRA-1 is not included since this traffic mitigation measure is limited to installation of a traffic signal.

Concurrent with the GPA and CPA, the project would also amend the Black Mountain Ranch Subarea Plan and Transportation Phasing Plan to remove the requirement to widen the project roadway to a 6-lane Primary Arterial and to add the project design feature and three traffic mitigation measures. As a part of this amendment, the Transportation Phasing Plan for Black Mountain Ranch would be updated to reflect the project and mitigation measures.

Implementation of the project would subsequently require amending the Rancho Peñasquitos, Black Mountain Ranch, and Pacific Highlands Ranch Public Facilities Financing Plans to remove the requirement to widen the project roadway to a 6-lane Primary Arterial and to add the project design feature and three traffic mitigation measures. At such time the Public Facilities Financing Plans are updated for the Rancho Peñasquitos, Black Mountain Ranch, and Pacific Highlands Ranch communities, any changes to reflect the project and mitigation measures adopted by this action would be incorporated.

1.2 Fundamentals of Noise

Sound levels are described in units called the decibel (dB). Decibels are measured on a logarithmic scale that quantifies sound intensity in a manner similar to the Richter scale used for earthquake magnitudes. Thus, a doubling of the energy of a noise source, such as doubling of traffic volume, would increase the noise level by 3 dB; a halving of the energy would result in a 3 dB decrease.

Additionally, in technical terms, sound levels are described as either a “sound power level” or a “sound pressure level,” which while commonly confused are two distinct characteristics of sound. Both share the same unit of measure, the dB. However, sound power, expressed as L_{pw}, is the energy converted into sound by the source. The L_{pw} is used to estimate how far a noise will travel and to predict the sound levels at various distances from the source. As sound energy travels through the air, it creates a sound wave that exerts pressure on receivers such as an eardrum or microphone and is the sound pressure level. Noise measurement instruments only measure sound pressure, and noise level limits used in standards are generally sound pressure levels.

The human ear is not equally sensitive to all frequencies within the sound spectrum. To accommodate this phenomenon, the A-scale, which approximates the frequency response of the average young ear when listening to most ordinary everyday sounds, was devised. When people make relative judgments of the loudness or annoyance of a sound, their judgments correlate well with the A-scale sound levels of those sounds. Therefore, the “A-weighted” noise scale is used for measurements and standards involving the human perception of noise. Noise levels using A-weighted measurements are designated with the notation dB(A).

Project Location

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FIGURE 1

Regional Location

Image source: Nearmap (flown June 2018)

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Project Roadway

Project Design Feature and Traffic Mitigation Measures

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FIGURE 2

Project Location on Aerial Photograph

Image Source: NearMaps (flown June 2018)

FIGURE 3

MM-TRA-2 Footprint

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Image Source: NearMaps (flown June 2018)

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FIGURE 4

MM-TRA-3 Footprint

Image Source: NearMaps (flown June 2018)

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FIGURE 5

Project Design Feature Footprint

The impact of noise is not a function of loudness alone. The time of day when noise occurs and the duration of the noise are also important. In addition, most noise that lasts for more than a few seconds is variable in its intensity. Consequently, a variety of noise descriptors has been developed. The noise descriptors used for this study are the one-hour equivalent noise level (L_{eq}), the community noise equivalent level (CNEL), and the sound exposure level. The CNEL is a 24-hour equivalent sound level. The CNEL calculation applies an additional 5 dB(A) penalty to noise occurring during evening hours, between 7:00 p.m. and 10:00 p.m., and an additional 10 dB(A) penalty is added to noise occurring during the night, between 10:00 p.m. and 7:00 a.m. These increases for certain times are intended to account for the added sensitivity of humans to noise during the evening and night. The sound exposure level is a noise level over a stated period of time or event and normalized to one second.

Sound from a small, localized source (approximating a "point" source) radiates uniformly outward as it travels away from the source in a spherical pattern, known as geometric spreading. The sound level decreases or drops off at a rate of 6 dB(A) for each doubling of the distance.

Traffic noise is not a single, stationary point source of sound. The movement of vehicles makes the source of the sound appear to emanate from a line (line source) rather than a point when viewed over some time interval. The drop-off rate for a line source is 3 dB(A) for each doubling of distance.

The propagation of noise is also affected by the intervening ground, known as ground absorption. A hard site (such as parking lots or smooth bodies of water) receives no additional ground attenuation, and the changes in noise levels with distance (drop-off rate) are simply the geometric spreading of the source. A soft site (such as soft dirt, grass, or scattered bushes and trees) receives an additional ground attenuation value of 1.5 dB(A) per doubling of distance. Thus, a point source over a soft site would attenuate at 7.5 dB(A) per doubling of distance.

Human perception of noise has no simple correlation with acoustical energy. A change in noise levels is generally perceived as follows: 3 dB(A) barely perceptible, 5 dB(A) readily perceptible, and 10 dB(A) perceived as a doubling or halving of noise (California Department of Transportation [Caltrans] 2013).

2.0 Applicable Standards

2.1 General Plan

The City's Noise Element of the General Plan specifies compatibility standards for different categories of land use. The noise land use compatibility guidelines are intended to be used for future development within San Diego to prevent future incompatibilities. uses The City's land use/noise compatibility guidelines are shown in Table 1. The project does not proposes the construction of a noise sensitive land use. However, a majority of the development in the vicinity of the project consists of single family residential uses. As shown, for single family residential uses, exterior noise levels up to 60 CNEL are

considered "compatible" and exterior noise levels up to 65 CNEL are considered "conditionally compatible."

Table 1
City of San Diego Land Use–Noise Compatibility Guidelines

Land Use Category	Exterior Noise Exposure [dB(A) CNEL] 60	65	70	75
Parks and Recreational				
Parks, Active and Passive Recreation				
Outdoor Spectator Sports, Golf Courses; Water Recreational Facilities; Indoor Recreation Facilities				
Agricultural				
Crop Raising and Farming; Community Gardens, Aquaculture, Dairies; Horticulture Nurseries and Greenhouses; Animal Raising, Maintaining and Keeping; Commercial Stables				
Residential				
Single Dwelling Units; Mobile Homes		**45**		
Multiple Dwelling Units **For uses affected by aircraft noise, refer to Policies NE-D.2. & NE-D.3.*		**45**	**45**	
Institutional				
Hospitals; Nursing Facilities; Intermediate Care Facilities; Kindergarten through Grade 12 Educational Facilities; Libraries; Museums; Child Care Facilities		**45**		
Other Educational Facilities including Vocational/Trade Schools and Colleges and Universities		**45**	**45**	
Cemeteries				
Retail Sales				
Building Supplies/Equipment; Food, Beverage, and Groceries; Pets and Pet Supplies; Sundries, Pharmaceutical, and Convenience Sales; Wearing Apparel and Accessories			**50**	**50**
Commercial Services				
Building Services; Business Support; Eating and Drinking; Financial Institutions; Maintenance & Repair; Personal Services; Assembly and Entertainment (includes public and religious assembly); Radio and Television Studios; Golf Course Support			**50**	**50**
Visitor Accommodations		**45**	**45**	**45**
Offices				
Business and Professional; Government; Medical, Dental, and Health Practitioner; Regional and Corporate Headquarters			**50**	**50**
Vehicle and Vehicular Equipment Sales and Services Use				
Commercial or Personal Vehicle Repair and Maintenance; Commercial or Personal Vehicle Sales and Rentals; Vehicle Equipment and Supplies Sales and Rentals; Vehicle Parking				
Wholesale, Distribution, Storage Use Category				
Equipment and Materials Storage Yards; Moving and Storage Facilities; Warehouse; Wholesale Distribution				
Industrial				
Heavy Manufacturing; Light Manufacturing; Marine Industry; Trucking and Transportation Terminals; Mining and Extractive Industries				
Research and Development				**50**

	Compatible	**Indoor Uses**	Standard construction methods should attenuate exterior noise to an acceptable indoor noise level.
		Outdoor Uses	Activities associated with the land use may be carried out.
45, 50	**Conditionally Compatible**	**Indoor Uses**	Building structure must attenuate exterior noise to the indoor noise level indicated by the number for occupied areas.
		Outdoor Uses	Feasible noise mitigation techniques should be analyzed and incorporated to make the outdoor activities acceptable.
	Incompatible	**Indoor Uses**	New construction should not be undertaken.
		Outdoor Uses	Severe noise interference makes outdoor activities unacceptable.

SOURCE: City of San Diego 2015.

2.2 San Diego Significance Determination Thresholds

The noise section of the City of San Diego's Significance Determination Thresholds for the California Environmental Quality Act (CEQA) identifies thresholds for traffic noise. These noise levels are summarized in Table 2.

Table 2
Traffic Noise Significance Thresholds
(dB[A] CNEL)

Structure or Proposed Use that would be Impacted by Traffic Noise	Interior Space	Exterior Useable Space*	General Indication of Potential Significance
Single-family detached	45 dB	65 dB	Structure or outdoor useable area is <50 feet from the center of the closest (outside) lane on a street with existing or future ADTs >7,500
Multi-family, school, library, hospital, day care center, hotel, motel, park, convalescent home	Development Services Department ensures 45 dB pursuant to Title 24	65 dB	
Office, church, business, professional uses	n/a	70 dB	Structure or outdoor useable area is <50 feet from the center of the closest lane on a street with existing or future ADTs >20,000
Commercial, retail, industrial, outdoor spectator sports uses	n/a	75 dB	Structure or outdoor useable area is <50 feet from the center of the closest lane on a street with existing or future ADTs >40,000

ADT = Average Daily Trips
*If a project is currently at or exceeds the significance thresholds for traffic noise described above and noise levels would result in less than a 3 dB increase, then the impact is not considered significant.

2.3 Construction Noise Level Limits

Section 59.5.0404 of the City's Noise Abatement and Control Ordinance states that:

> A. It shall be unlawful for any person, between the hours of 7:00 p.m. of any day and 7:00 a.m. of the following day, or on legal holidays as specified in Section 21.04 of the San Diego Municipal Code, with exception of Columbus Day and Washington's Birthday, or on Sundays, to erect, construct, demolish, excavate for, alter or repair any building or structure in such a manner as to create disturbing, excessive or offensive noise. . . .
>
> B. . . . it shall be unlawful for any person, including the City of San Diego, to conduct any construction activity so as to cause, at or beyond the property lines of any property zoned residential, an average sound level greater than 75 decibels during the 12-hour period from 7:00 a.m. to 7:00 p.m.

The project construction would be restricted to between the hours of 7:00 a.m. and 7:00 p.m. and construction noise levels may not exceed 75 dB(A) $L_{eq(12)}$ as assessed at or beyond the property line of a property zoned residential.

3.0 Existing Conditions

Existing noise levels in the vicinity of the roadway improvement sites were measured on June 28, 2017, using a Larson-Davis LxT Sound Expert Sound Level Meter, serial number 3827. The following parameters were used:

Filter:	A-weighted
Response:	Slow
Time History Period:	5 seconds
Height of Instrument:	5 feet above ground level

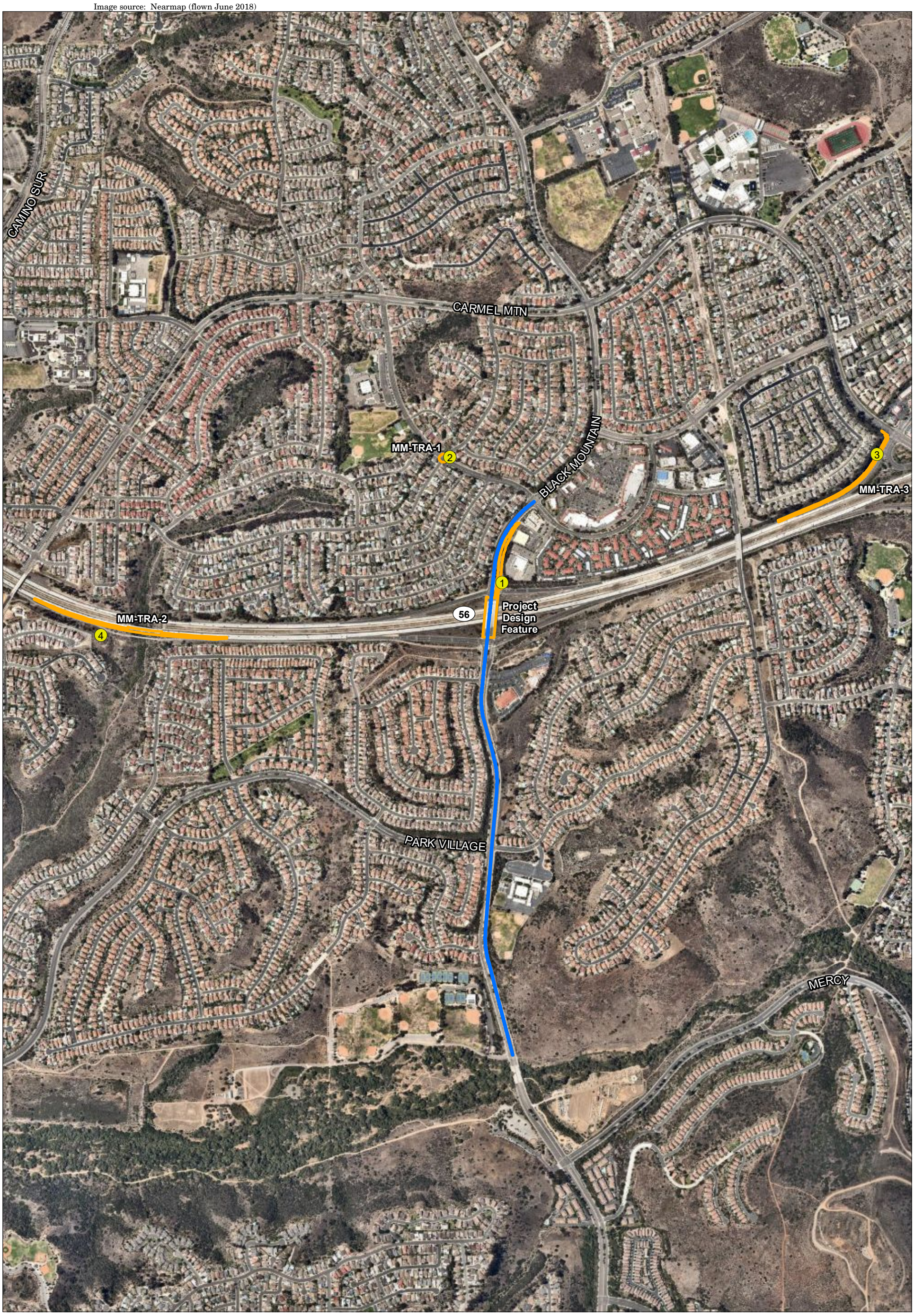
The meter was calibrated before and after each measurement. Four 15-minute measurements were made on the project site, as described below. The locations of the measurements are shown on Figure 6, and the noise measurement data are contained in Attachment 1.

Measurement 1 was located in the vicinity of the project design feature restriping/widening roadway improvements. The measurement was located on the corner of Black Mountain Road and the SR-56 westbound off-ramp, on a slope approximately 50 feet east of Black Mountain Road. The slope is elevated approximately 15 feet above the elevation of Black Mountain Road. The main source of noise at the measurement location was vehicle traffic on Black Mountain Road. Vehicle traffic on SR-56 and the on- and off-ramps was also audible from the measurement location. Noise levels were measured for 15 minutes. Traffic volumes on Black Mountain Road were counted during the measurement. The average measured noise level during Measurement 1 was 71.1 dB(A) L_{eq}.

Measurement 2 was located in the vicinity of the MM-TRA-1 signal installation roadway improvements. The measurement was located approximately 10 feet north of Twin Trails Drive and 30 feet east of Sundance Avenue. The main source of noise at the measurement location was vehicle traffic on Twin Trails Drive and Sundance Avenue. Other sources of noise included a moving truck and bird vocalizations. Noise levels were measured for 15 minutes. Traffic volumes on Twin Trails Drive were counted during the measurement. The average measured noise level during Measurement 2 was 60.7 dB(A) L_{eq}.

Measurement 3 was located in the vicinity of the MM-TRA-3 on-ramp roadway improvements. The measurement was located approximately 30 feet north of the Rancho Peñasquitos Boulevard/SR-56 westbound on-ramp. The main source of noise at the measurement location was vehicle traffic on SR-56 and the on-ramp. Noise levels were measured for 15 minutes. Traffic volumes on the on-ramp were counted during the measurement. The average measured noise level during Measurement 3 was 63.9 dB(A) L_{eq}.

Image source: Nearmap (flown June 2018)



0 Feet 1,000

Project Roadway

Project Design Feature and Traffic Mitigation Measures

Noise Measurement

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FIGURE 6

Noise Measurement Locations

Measurement 4 was located in the vicinity of the MM-TRA-2 SR-56 auxiliary lane roadway improvements. The measurement was located on a hillside approximately 200 feet south of SR-56. The main source of noise at the measurement location was vehicle traffic on SR-56. Other sources of noise included aircraft. Noise levels were measured for 15 minutes. Traffic volumes on SR-56 were counted during the measurement. The average measured noise level during Measurement 4 was 67.1 dB(A) L_{eq}.

Noise measurements are summarized in Table 3. Vehicle traffic counts are summarized in Table 4.

Table 3
Noise Measurements

Measurement	Location	Time	Noise Sources	L_{eq}	L_{90}
1	Project Design Feature: 50 feet east of Black Mountain Road, north of SR-56 westbound off-ramp	10:28 a.m.–10:43 a.m.	Vehicle traffic on Black Mountain Road, SR-56, and on- and off-ramps	71.1	62.8
2	MM-TRA-1: 10 feet north of Twin Trails Drive and 30 feet east of Sundance Avenue	11:07 a.m.–11:22 a.m.	Vehicle traffic on Twin Trails Drive and Sundance Avenue	60.7	50.1
3	MM-TRA-3: 30 feet north of the Rancho Peñasquitos Boulevard/ SR-56 westbound on-ramp	11:51 a.m.–12:06 p.m.	Vehicle traffic on SR-56 and on-ramp	63.9	55.4
4	MM-TRA-2: 200 feet south of SR-56	12:56 p.m.–1:11 p.m.	Vehicle traffic on SR-56	67.1	64.2

L_{90} = Noise level exceeded 90 percent of the time.
NOTE: Noise measurement data are contained in Attachment 1.

Table 4
15-minute Traffic Counts

Measurement	Roadway	Speed (mph)	Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles
1	Black Mountain Road	45	433	5	1	0	0
2	Twin Trails Drive	30	141	2	0	0	0
3	Rancho Peñasquitos Boulevard/ SR-56 westbound on-ramp	30	101	1	0	0	0
4	SR-56	65	1,128	21	7	5	2

4.0 Analysis Methodology

4.1 Construction Noise Analysis

As discussed in Section 1.1, there are four proposed roadway improvements: signalizing the intersection of Sundance Avenue and Twin Trails Drive (MM-TRA-1), constructing an auxiliary lane on eastbound SR-56 between Camino Del Sur and Black Mountain Road (MM-TRA-2), constructing an additional on-ramp lane at the Rancho Peñasquitos Boulevard/SR-56 westbound on-ramp (MM-TRA-3), and restriping/widening a segment of Black Mountain Road (project design feature). Construction of these roadway improvements would require heavy duty construction equipment that could include

backhoes, crawler tractors, excavators, graders, loaders, rollers, scrapers, and signal boards. These improvement areas are located adjacent to residential uses. Therefore, construction noise impacts associated with activities required for these three improvements were analyzed.

Noise level predictions and contour mapping were developed using noise modeling software, SoundPlan Essential, version 3.0 (Navcon Engineering 2015). SoundPLAN calculates noise propagation based on the International Organization for Standardization method (ISO 9613-2 – Acoustics, Attenuation of Sound during Propagation Outdoors). The model calculates noise levels at selected receiver locations using input parameter estimates such as total noise generated by each noise source; distances between sources, barriers, and receivers; and shielding provided by intervening terrain, barriers, and structures. The model outputs can be developed as noise level contour maps or noise levels at specific receivers. In all cases, receivers were modeled at 5 feet above ground elevation, which represents the average height of the human ear.

For MM-TRA-1, installation of a new traffic signal would require a drill for drilling holes at the corners for the signal posts and a crane or similar equipment for lifting the poles into place. Noise associated with the signal installation would be minimal when compared to the other traffic improvements, as much of the time taken to install a new signal is associated with wiring and a minimal amount of equipment. Noise levels due to operation of a crane or a drill were modeled at the adjacent residential receivers. As work during a given day would occur at each corner of the intersection, the center of the construction activity was modeled at the center of the intersection. Additionally, as equipment would mostly be stationary, it was modeled as a point source. Construction noise is considered a point source and would attenuate at approximately 6 dB(A) for every doubling of distance. Hourly average noise levels from a crane and a drill would be 78 dB(A) Leq at 50 feet, or a LPW of approximately 118 dB(A) from the center of construction activity.

A variety of noise-generating equipment– such as backhoes, front-end loaders, rollers, pavers, and concrete saws, along with others–would be used during construction of MM-TRA-2, MM-TRA-3, and the project design feature. Equipment moves to different locations and goes through varying load cycles during construction, and there are breaks for the operators and for non-equipment tasks, such as measurement. Table 5 summarizes noise levels and cycles of typical construction equipment. Although maximum noise levels may be 85 to 90 dB(A) at a distance of 50 feet, hourly average noise levels would be lower when taking into account the equipment usage factors. For the project, the loudest phase of construction would be the excavation phase and would include dozers, loaders, and excavators. Construction noise levels were calculated based on all three pieces of equipment being active simultaneously. Hourly average noise levels would be 82 dB(A) Leq at 50 feet, or an LPW of approximately 114 dB(A) from the center of construction activity when assessing the loudest pieces of equipment working simultaneously.

Construction noise from a linear project, such as a roadway, is assessed from the centerline of the alignment and work area. Maximum noise levels would occur when the loudest construction equipment is nearest to a noise sensitive receiver. Although construction

equipment may temporarily be located at the point on the alignment nearest to a receiver, over time equipment would move along the alignment. Therefore, the distance from a receiver to the centerline of the alignment is not the same as the average distance during a given day from the receiver to construction equipment. Thus, average noise levels correlate to the area of active construction. To reflect the nature of construction activities, equipment was modeled as an area source distributed over the footprint of each traffic improvement area.

Table 5
Typical Construction Equipment Noise Levels

Equipment	Noise Level at 50 Feet [dB(A) L_{eq}]	Typical Duty Cycle
Auger Drill Rig	85	20%
Backhoe	80	40%
Blasting	94	1%
Chain Saw	85	20%
Clam Shovel	93	20%
Compactor (ground)	80	20%
Compressor (air)	80	40%
Concrete Mixer Truck	85	40%
Concrete Pump	82	20%
Concrete Saw	90	20%
Crane (mobile or stationary)	85	20%
Dozer	85	40%
Dump Truck	84	40%
Excavator	85	40%
Front End Loader	80	40%
Generator (25 kilovolt ampts or less)	70	50%
Generator (more than 25 kilovolt amps)	82	50%
Grader	85	40%
Hydra Break Ram	90	10%
Impact Pile Driver (diesel or drop)	95	20%
Insitu Soil Sampling Rig	84	20%
Jackhammer	85	20%
Mounted Impact Hammer (hoe ram)	90	20%
Paver	85	50%
Pneumatic Tools	85	50%
Pumps	77	50%
Rock Drill	85	20%
Roller	74	40%
Scraper	85	40%
Tractor	84	40%
Vacuum Excavator (vac-truck)	85	40%
Vibratory Concrete Mixer	80	20%
Vibratory Pile Driver	95	20%
SOURCE: Federal Highway Administration (FHWA) 2006.		

4.2 Traffic Noise Analysis

4.2.1 Off-Site Traffic Noise

Reclassification of the project roadway from a 6-lane Primary Arterial to a 4-lane Major and implementation of the project design feature and traffic mitigation measures would not generate additional traffic. However, implementation of the project would result in a future redistribution of vehicles on the roadway network in the vicinity of the project, and would therefore result in a change in vehicle traffic noise levels adjacent to these roadways.

Off-site traffic noise was modeled using the Federal Highway Administration's Traffic Noise Prediction Model algorithms and reference levels. Traffic noise levels were calculated at 50 feet from the centerline of the affected roadways to determine the noise level increase associated with the project. The model uses various input parameters, such as traffic volumes; vehicle mix, distribution, and speed. Traffic noise levels were calculated based on the future total average daily traffic volume on each roadway segment with and without the project. For modeling purposes, "hard" ground conditions were used for the analysis of future conditions, since a majority of the project area is paved and the hard site provides the most conservative impact assessment.

Table 6 summarizes the existing and future traffic volumes for the area roadway segments. The roadway segments presented in Table 6 are consistent with those analyzed in the TIS prepared for the project.

4.2.2 Roadway Improvement Areas

4.2.2.1 MM-TRA-1 Traffic Signal

There is currently a stop sign at the intersection of Sundance Avenue and Twin Trails Drive. MM-TRA-1 would replace the stop sign with a traffic signal, which would change the traffic flow and therefore the traffic noise at the intersection. Noise generated by future traffic with and without the traffic signal was modeled using SoundPLAN Essential, version 3.0. The SoundPLAN program (Navcon Engineering 2015) uses the Federal Highway Administration (FHWA) Traffic Noise Model algorithms and reference levels to calculate noise levels at selected receiver locations. The model uses various input parameters, such as projected hourly average traffic rates; vehicle mix, distribution, and speed; roadway lengths and gradients; traffic control devices; distances between sources, barriers, and receivers; and shielding provided by intervening terrain, barriers, and structures. Receivers, roadways, and barriers were input into the model using three-dimensional coordinates.

Table 6 Vehicle Traffic Parameters						
			Average Daily Traffic (ADT)			
No.	Roadway	Segment	Existing	Year 2050 without Project	Year 2050 with Project	Speed (mph)
1	Camino Del Sur	South of Carmel Valley Road	17,728	25,903	25,250	45
2	Camino Del Sur	South of Wolverine Way-Fallhaven Road	20,710	30,260	29,497	45
3	Camino Del Sur	North of SR-56 Westbound Ramps	25,921	37,874	36,919	45
4	Camino Del Sur	South of SR-56 Eastbound Ramps	9,818	26,700	27,400	40
5	Carmel Valley Road	West of Black Mountain Road	10,489	17,223	17,349	55
6	Carmel Valley Road	East of Black Mountain Road	13,793	22,648	22,814	50
7	Black Mountain Road	North of Maler Road	12,303	18,262	19,204	45
8	Black Mountain Road	South of Oviedo Street	18,956	23,562	23,472	40
9	Black Mountain Road	South of Carmel Mountain Road	14,740	18,353	17,709	40
10	Black Mountain Road	Between Paseo Montalban and Twin Trails Drive	14,315	17,824	17,198	40
11	Black Mountain Road	South of Twin Trails Drive	33,492	38,028	37,540	45
12	Black Mountain Road	Between SR-56 Westbound and Eastbound Ramps	30,567	34,707	34,261	45
13	Black Mountain Road	North of Park Village Road - Adolphia Street	35,443	43,949	35,500	45
14	Black Mountain Road	North of Canyonside Park Drive	30,380	40,431	34,677	45
15	Black Mountain Road	Between Mercy Road and Babuta Road	28,862	38,411	32,944	50
16	Black Mountain Road	South of Westview Parkway	22,214	29,564	25,356	50
17	Westview Parkway	East of Black Mountain Road	6,099	8,854	7,197	45
18	Carmel Mountain Road	Between Paseo Aldabra and Sundevil Way	14,152	14,661	14,819	40
19	Carmel Mountain Road	Between Paseo Montalban and SR-56 Westbound Ramps	21,907	22,696	22,940	40
20	Rancho Peñasquitos Boulevard	Between SR-56 Ramps-Azuaga Street and Calle De Las Rosas	27,441	26,218	27,500	50
21	Rancho Peñasquitos Boulevard	Between Calle De Las Rosas and Via Del Sud	28,120	26,867	28,200	50
22	Rancho Peñasquitos Boulevard	Between Paseo Montril and I-15 Southbound Ramps	33,066	31,592	33,100	40
23	Poway Road	East of I-15 Northbound Ramps	45,045	53,230	53,230	50
24	Carmel Mountain Road	South of Sundance Avenue	1,241	9,784	9,980	40
25	Carmel Mountain Road	West of Sparren Avenue	6,811	8,895	9,312	40
26	Carmel Mountain Road	West of Black Mountain Road	8,316	10,400	10,600	40
27	Sundance Avenue	West of War Bonnet Street	1,884	2,500	2,600	25
28	Carmel Mountain Road	East of Freeport Road	11,328	14,425	14,396	40
29	Carmel Mountain Road	Between Peñasquitos Drive and Gerana Street	13,655	17,389	17,354	40
30	Carmel Mountain Road	Between I-15 Southbound Ramps and Peñasquitos Drive	25,071	29,444	29,337	40
31	Carmel Mountain Road	East of I-15 Northbound Ramps	44,953	52,794	52,601	35
32	Camino Del Sur	North of Park Village Road	1,185	10,700	10,200	40
33	Park Village Road	East of Camino Del Sur	8,430	12,600	11,700	45
34	Park Village Road	West of Black Mountain Road	17,546	17,757	17,600	45
35	Mercy Road	Between Chabola Road and Branicole Lane	14,279	18,662	17,420	45
36	Mercy Road	North of Alemania Road	19,851	23,662	22,420	45
37	Scripps Poway Parkway	East of I-15 Northbound Ramps	52,815	63,408	62,005	50
SOURCE:						

For the purpose of traffic noise compatibility analysis, the loudest traffic noise condition is represented as the maximum level of service (LOS) C/minimum LOS D traffic volume. The maximum LOS C/minimum LOS D represents a condition where the maximum number of vehicles are using the roadway at the maximum speed. LOS A and B categories allow full travel speed but do not have as many vehicles, while LOS E and F have a greater number of vehicles, but due to the traffic volume travel at reduced speeds, thus generating less noise. Twin Trails Drive is a 2-lane collector with a maximum LOS C/minimum LOS D volume of 13,000 Average Daily Trips (ADTs). Sundance Avenue is a residential local roadway which are not assigned LOS criteria. The design volume for a residential local roadway is 1,500 ADT. However, San Diego Association of Governments (SANDAG) projects that Sundance Avenue would carry future traffic volumes of 4,100 ADT west of Twin Trails Drive and 2,100 ADT east of Twin Trails Drive (SANDAG 2017). As a worst-case analysis, these SANDAG volumes were used to model future traffic noise on Sundance Avenue and are considered conservative.

Traffic noise levels are calculated based on the peak-hour traffic volumes, which is approximately 10 percent of the ADT volume. Typically, the peak-hour noise level is equivalent to the CNEL. The vehicle classification mix for these roadways was modeled as 95 percent automobiles, 2 percent medium trucks, 1 percent heavy trucks, 1 percent buses, and 1 percent motorcycles. Based on field traffic counts, this is considered a conservative vehicle classification mix.

Table 7 summarizes the traffic volumes and vehicle classification mixes for the modeled roadways.

Table 7
MM-TRA-1 Traffic Parameters

Roadway	Volume (ADT)	Peak Hour Volume	Speed	Vehicle Mix (Percent)				
				Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles
Twin Trails Drive	13,000	1,300	30	95	2	1	1	1
Sundance Avenue								
East of Twin Trails Drive	4,100	410	25	95	2	1	1	1
West of Twin Trails Drive	2,100	210						

4.2.2.2 MM-TRA-2 Auxiliary Lane

Construction of the SR-56 auxiliary lane would shift some traffic closer to the residential uses to the south, and therefore increase traffic noise levels at these uses. Traffic noise with and without construction of the auxiliary lane was modeled using the FHWA's Traffic Noise Prediction Model algorithms and reference levels. The model uses various input parameters, such as traffic volumes; vehicle mix, distribution, and speed. To determine the noise level increase associated with the project, traffic noise levels were calculated at the closest sensitive receiver, which is 78 feet south of the existing SR-56 eastbound centerline and would be 72 feet south of the SR-56 centerline with construction of the auxiliary lane.

The project would not alter the centerline of the SR-56 westbound lanes, which is 208 feet north of the closest sensitive receiver to the south.

Noise levels were calculated for the AM and PM peak hours with and without the project. The vehicle classification mix was modeled as 96 percent automobiles, 3 percent medium trucks, and 1 percent heavy trucks, and was based on Caltrans truck counts (Caltrans 2017). Future peak hour volumes with and without the project are summarized in Table 8.

Table 8
Future SR-56 Traffic Volumes

Segment	Without Project		With Project	
	AM Peak Hour Volume	PM Peak Hour Volume	AM Peak Hour Volume	PM Peak Hour Volume
SR-56 Westbound Lanes	7,888	2,902	7,925	2,916
SR-56 Eastbound Lanes	3,024	7,744	3,038	7,780

4.2.2.3 MM-TRA-3 On Ramp

Construction of an additional on-ramp lane at the Rancho Peñasquitos Boulevard/SR-56 westbound on-ramp would shift some on-ramp traffic closer to the residential uses to the north, and therefore increase traffic noise levels at these uses. As with MM-TRA-2, traffic noise with and without construction of the additional on-ramp lane was modeled using the FHWA's Traffic Noise Prediction Model algorithms and reference levels. To determine the noise level increase associated with the project, traffic noise levels were calculated at the closest sensitive receiver, which is 136 feet north of the existing on-ramp centerline and would be 130 feet north of the on-ramp centerline with construction of the additional lane.

Noise levels were calculated for the worst case AM peak hour with and without the project. PM peak hour volumes would be less than AM peak hour volumes. The same vehicle mix discussed in Section 4.2.2.2 was modeled. Future peak hour volumes with and without the project are summarized in Table 9.

Table 9
Future Rancho Peñasquitos Boulevard/SR-56
Westbound On-Ramp Traffic Volumes

Segment	AM Peak Hour Volume Without Project	AM Peak Hour Volume With Project
Westbound On-Ramp	811	835

4.2.2.4 Project Design Feature on Black Mountain Road

There are residential uses to the west of the segment of Black Mountain Road that would be restriped and widened. The proposed restriping and slight widening would shift some traffic slightly to the east, away from the residential uses. Because this improvement would not result in an increase in noise levels at the adjacent sensitive uses, the change in noise levels due to this shift were not calculated.

5.0 Future Acoustical Environment and Impacts

5.1 Construction Noise

Construction of the project design feature and traffic mitigation measures would potentially result in short-term impacts to surrounding residential properties. As discussed, a variety of noise-generating equipment would be used to construct these improvements such as backhoes, crawler tractors, excavators, graders, loaders, rollers, scrapers, and signal boards. Using the methodology discussed in Section 4.1, construction noise levels at the residential uses located adjacent to these roadway improvement areas were calculated.

Construction noise levels adjacent to the MM-TRA-1 signal installation at Sundance Avenue and Twin Trail Drive are summarized in Table 10, modeled receiver locations and construction contours are shown in Figure 7, and SoundPLAN data is contained in Attachment 2.

Table 10
MM-TRA-1 Construction Noise Levels

Receiver	Construction Noise Level [dB(A) L_{eq}]
1	62
2	72
3	74
4	67
5	68
6	75
7	75
8	64
9	68
10	74
11	72
12	65
13	59
14	67
15	72
16	63

Construction noise levels adjacent to the MM-TRA-2 SR-56 auxiliary lane are summarized in Table 11, modeled receiver locations and construction contours are shown in Figure 8, and SoundPLAN data is contained in Attachment 3.

Image Source: NearMaps (flown June 2018)

Noise Receiver **Noise Contours [dB(A) Leq]**

60
65
70
75

0 Feet 120

FIGURE 7

MM-TRA-1 Construction Noise Contours

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Image Source: NearMaps (flown June 2017)

Noise Receiver **Noise Contours [dB(A) Leq]**

60
65
70
75

0 Feet 350

FIGURE 8

MM-TRA-2 Construction Noise Contours

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Table 11 MM-TRA-2 Construction Noise Levels	
Receiver	Construction Noise Level [dB(A) L_{eq}]
1	51
2	57
3	60
4	57
5	59
6	66
7	55
8	59
9	61
10	56

Construction noise levels adjacent to the MM-TRA-3 on-ramp improvements are summarized in Table 12, modeled receiver locations and construction contours are shown in Figure 9, and SoundPLAN data is contained in Attachment 4.

Table 12 MM-TRA-3 Construction Noise Levels	
Receiver	Construction Noise Level [dB(A) L_{eq}]
1	62
2	67
3	67
4	67
5	67
6	67
7	66
8	66
9	67
10	67
11	67
12	66
13	65
14	66
15	66
16	62

Construction noise levels adjacent to the project design feature Black Mountain Road restriping/widening are summarized in Table 13, modeled receiver locations and construction contours are shown in Figure 10, and SoundPLAN data is contained in Attachment 5.

Image Source: NearMaps (flown June 2018)

Noise Receiver **Noise Contours [dB(A) Leq]**

60
65
70
75

0 Feet 200

FIGURE 9

MM-TRA-3 Construction Noise Contours

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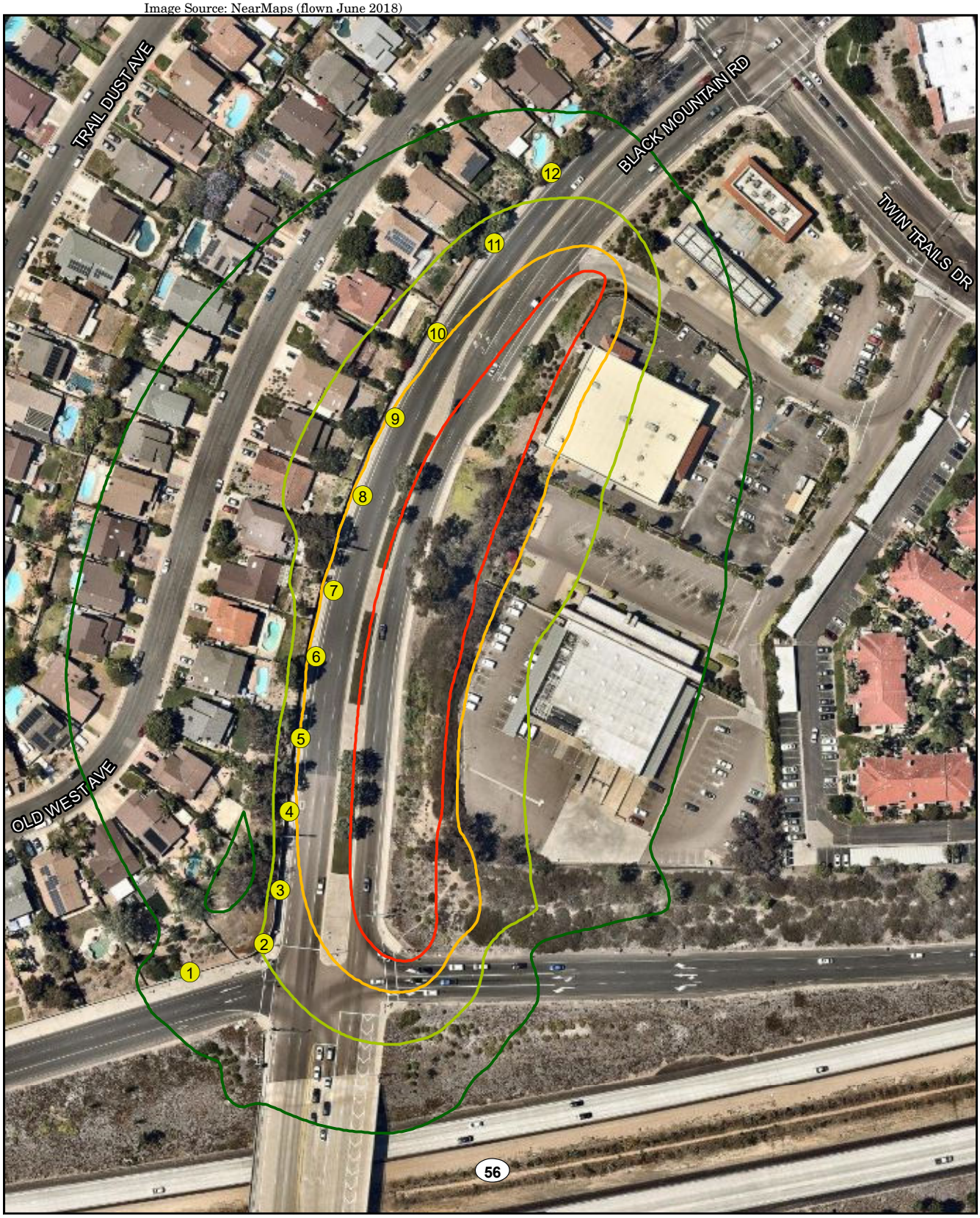
Image Source: NearMaps (flown June 2018)



Noise Receiver **Noise Contours [dB(A) Leq]**

60
65
70
75

0 Feet 150

FIGURE 10

Project Design Feature Construction Noise Contours

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Table 13 Project Design Feature Construction Noise Levels	
Receiver	Construction Noise Level [dB(A) L_{eq}]
1	62
2	65
3	68
4	69
5	70
6	71
7	71
8	71
9	71
10	69
11	67
12	63

Although the existing residences adjacent to all four roadway improvements would be exposed to construction noise levels that could be heard above ambient conditions, the exposure would be temporary. Additionally, construction activities are not anticipated to exceed 75 dB(A)L_{eq} at the nearest residential uses. Because construction activities associated with the project would comply with the applicable regulation for construction, temporary increases in noise levels from construction activities would be less than significant.

5.2 Traffic Noise

5.2.1 Off-Site Traffic Noise

The project would result in a future redistribution of vehicles on the roadway network in the vicinity of the project. However, the project would not substantially alter the vehicle volumes or classifications mix on local or regional roadways, nor would the project alter the speed on an existing roadway; thus, the primary factor affecting off-site noise levels would be increased traffic volumes.

A significant impact would occur if the project resulted in or created a significant increase in the existing ambient noise levels. Studies have shown that the average human ear can barely perceive a change in sound level of 3 dB(A). A change of at least 5 dB(A) is considered a readily perceivable change in a normal environment. A 10 dB(A) increase is subjectively heard as a doubling in loudness and would cause a community response. The City's Significance Determination Thresholds state that if a project is currently at or exceeds the significance thresholds for traffic noise and noise levels result in less than a 3 dB(A) increase, the impact would not be considered significant (City of San Diego 2016).

Noise levels were calculated using the FHWA Traffic Noise Prediction Model algorithms and reference levels. The results are shown in Table 14. The roadway segments presented in Table 14 are consistent with those analyzed in the TIS prepared for the project. Noise level calculations are contained in Attachment 6.

The cumulative increases in noise levels between the existing condition and year 2050, without and with the project, are due to regional growth and are not attributed to the project, as the project itself would not result in any growth or trip generation. Off-site traffic noise impacts were determined by comparing year 2050 noise levels with and without implementation of the project. As shown, existing noise levels due to vehicle traffic currently exceed the City's residential noise level limit of 65 CNEL adjacent to all roadway segments except Carmel Mountain Road south of Sundance Avenue, Sundance Avenue west of War Bonnet Street, and Camino Del Sure north of Park Village Road. Noise levels would either decrease or increase adjacent to the project area roadways. This is due to the redistribution of traffic on these roadways. As shown, the changes in noise levels due to the project would range from -0.9 to 0.2 CNEL. These changes in noise levels would not be perceivable and would not exceed the City's significance thresholds. Vehicle traffic noise impacts to off-site uses would be less than significant.

5.2.2 Roadway Improvement Areas

As discussed in Section 5.2.1, the City's Significance Determination Thresholds state that if a project is currently at or exceeds the significance thresholds for traffic noise and noise levels result in less than a 3 dB(A) increase, the impact would not be considered significant (City of San Diego 2016).

5.2.2.2 MM-TRA-1 Traffic Signal

There is currently a stop sign at the intersection of Sundance Avenue and Twin Trails Drive. MM-TRA-1 would replace the stop sign with a traffic signal, which would change the traffic flow and therefore the traffic noise at the intersection. Using the methodology discussed in Section 4.2.1, noise levels at the adjacent residential uses were calculated with and without the project. The results are shown in Table 15, and SoundPLAN data is contained in Attachment 7. Figure 11a shows the vehicle traffic noise contours with the stop sign, and Figure 11b shows the vehicle traffic noise contours with the traffic signal. As shown, installation of the traffic signal would improve the traffic flow at the intersection of Sundance Avenue and Twin Trails Drive, and thereby decrease noise levels at the adjacent uses. Therefore, there would be no operational impacts associated with the installation of a traffic signal at the intersection of Sundance Avenue and Twin Trails Drive.

Table 14 Changes in Vehicle Traffic Noise Levels							
			Noise Level (CNEL)				
No.	Roadway	Segment	Existing	Year 2050 without Project	Year 2050 with Project	Cumulative Δ dB	Direct Δ dB
1	Camino Del Sur	South of Carmel Valley Road	71.0	72.7	72.6	1.6	-0.1
2	Camino Del Sur	South of Wolverine Way-Fallhaven Road	71.7	73.4	73.2	1.5	-0.2
3	Camino Del Sur	North of SR-56 Westbound Ramps	72.7	74.3	74.2	1.5	-0.1
4	Camino Del Sur	South of SR-56 Eastbound Ramps	67.3	71.6	71.7	4.4	0.1
5	Carmel Valley Road	West of Black Mountain Road	70.9	73.1	73.1	2.2	0.0
6	Carmel Valley Road	East of Black Mountain Road	71.1	73.2	73.2	2.1	0.0
7	Black Mountain Road	North of Maler Road	69.4	71.2	71.4	2.0	0.2
8	Black Mountain Road	South of Oviedo Street	70.1	71.1	71.0	0.9	-0.1
9	Black Mountain Road	South of Carmel Mountain Road	69.0	70.0	69.8	0.8	-0.2
10	Black Mountain Road	Between Paseo Montalban and Twin Trails Drive	68.9	69.8	69.7	0.8	-0.1
11	Black Mountain Road	South of Twin Trails Drive	73.8	74.3	74.3	0.5	0.0
12	Black Mountain Road	Between SR-56 Westbound and Eastbound Ramps	73.4	74.0	73.9	0.5	-0.1
13	Black Mountain Road	North of Park Village Road-Adolphia Street	74.0	75.0	74.1	0.1	-0.9
14	Black Mountain Road	North of Canyonside Park Drive	73.4	74.6	73.9	0.5	-0.7
15	Black Mountain Road	Between Mercy Road and Babuta Road	74.3	75.5	74.8	0.5	-0.7
16	Black Mountain Road	South of Westview Parkway	73.1	74.4	73.7	0.6	-0.7
17	Westview Parkway	East of Black Mountain Road	66.4	68.0	67.1	0.7	-0.9
18	Carmel Mountain Road	Between Paseo Aldabra and Sundevil Way	68.8	69.0	69.0	0.2	0.0
19	Carmel Mountain Road	Between Paseo Montalban and SR-56 Westbound Ramps	70.7	70.9	70.9	0.2	0.0
20	Rancho Peñasquitos Boulevard	Between SR-56 Ramps-Azuaga Street and Calle De Las Rosas	74.0	73.9	74.1	0.1	0.2
21	Rancho Peñasquitos Boulevard	Between Calle De Las Rosas and Via Del Sud	74.2	74.0	74.2	0.0	0.2
22	Rancho Peñasquitos Boulevard	Between Paseo Montril and Interstate 15 (I-15) Southbound Ramps	72.5	72.3	72.5	0.0	0.2
23	Poway Road	East of I-15 Northbound Ramps	76.2	76.9	76.9	0.7	0.0
24	Carmel Mountain Road	South of Sundance Avenue	58.3	67.2	67.3	9.0	0.1
25	Carmel Mountain Road	West of Sparren Avenue	65.7	66.8	67.0	1.3	0.2
26	Carmel Mountain Road	West of Black Mountain Road	66.5	67.5	67.6	1.1	0.1
27	Sundance Avenue	West of War Bonnet Street	56.1	57.4	57.5	1.4	0.1
28	Carmel Mountain Road	East of Freeport Road	67.9	68.9	68.9	1.0	0.0
29	Carmel Mountain Road	Between Peñasquitos Drive and Gerana Street	68.7	69.7	69.7	1.0	0.0

Table 14 Changes in Vehicle Traffic Noise Levels							
			Noise Level (CNEL)				
No.	Roadway	Segment	Existing	Year 2050 without Project	Year 2050 with Project	Cumulative Δ dB	Direct Δ dB
30	Carmel Mountain Road	Between I-15 Southbound Ramps and Peñasquitos Drive	71.3	72.0	72.0	0.7	0.0
31	Carmel Mountain Road	East of I-15 Northbound Ramps	72.5	73.2	73.2	0.7	0.0
32	Camino Del Sur	North of Park Village Road	58.1	67.6	67.4	9.3	-0.2
33	Park Village Road	East of Camino Del Sur	67.8	69.6	69.2	1.4	-0.4
34	Park Village Road	West of Black Mountain Road	71.0	71.0	71.0	0.0	0.0
35	Mercy Road	Between Chabola Road and Branicole Lane	70.1	71.3	71.0	0.9	-0.3
36	Mercy Road	North of Alemania Road	71.5	72.3	72.1	0.6	-0.2
37	Scripps Poway Parkway	East of I-15 Northbound Ramps	76.9	77.7	77.6	0.7	-0.1

Image Source: NearMaps (flown June 2018)

Noise Receiver **Noise Contours (CNEL)**

55

60

65

0 Feet 200

FIGURE 11a

MM-TRA-1 Traffic Noise Contours with Stop Sign

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Image Source: NearMaps (flown June 2018)

Noise Receiver **Noise Contours (CNEL)**

55

60

65

0 Feet 200

FIGURE 11b

MM-TRA-1 Traffic Noise Contours with Traffic Signal

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Table 15 MM-TRA-1 Noise Levels (CNEL)			
Receiver	Noise Level with Stop Sign	Noise Level with Traffic Signal	Difference
1	64	63	-1
2	68	65	-3
3	67	62	-5
4	63	60	-3
5	63	60	-3
6	67	62	-5
7	68	63	-5
8	64	63	-1
9	65	63	-2
10	68	64	-4
11	65	61	-5
12	61	58	-3
13	56	54	-2
14	62	59	-4
15	67	64	-3
16	64	63	-1

5.2.2.2 MM-TRA-2 Auxiliary Lane

MM-TRA-2 would introduce an auxiliary lane on eastbound SR-56 between Camino Del Sur and Black Mountain Road that would shift some traffic closer to the residential uses to the south, and therefore increase traffic noise levels at these uses. Traffic noise levels with and without construction of the auxiliary lane were calculated at the nearest sensitive receiver as discussed in Section 4.2.2.2, and the results are shown in Table 16.

Table 16 MM-TRA-2 Noise Levels (CNEL)						
	AM Peak Hour			PM Peak Hour		
Roadway	Without Auxiliary Lane	With Auxiliary Lane	Difference	Without Auxiliary Lane	With Auxiliary Lane	Difference
Westbound SR-56	75	75	0	71	71	0
Eastbound SR-56	75	76	<1	80	80	<1
SR-56–All Lanes	78	79	<1	80	80	<1
NOTE: Differences may vary due to independent rounding. FHWA RD-77-108 output contained in Attachment 8						

As shown, the construction of the eastbound auxiliary lane would increase noise levels at the nearest residential uses to the south of SR-56 by less than 1 dB. Noise level increases of this magnitude would not be perceivable Noise levels at the residential uses north of SR-56 would decrease because the additional auxiliary lane would shift freeway traffic further to

the south. Noise impacts associated with operation of MM-TRA-2 would be less than significant.

5.2.2.3 MM-TRA-3 On Ramp

Construction of an additional on-ramp lane at the Rancho Peñasquitos Boulevard/SR-56 westbound on-ramp would shift some on-ramp traffic closer to the residential uses to the north, and therefore increase traffic noise levels at these uses. Traffic noise levels with and without the additional on-ramp lane were calculated at the nearest sensitive receiver as discussed in Section 4.2.2.3, and the results are shown in Table 17.

Table 17
MM-TRA-3 Noise Levels
(CNEL)

Roadway	Without Additional Lane	With Additional Lane	Difference
Westbound On-Ramp	54	55	<1

Note: Difference may vary due to independent rounding.
FHWA RD-77-108 output contained in Attachment 9

As shown, the construction of the additional on-ramp lane would increase noise levels at the nearest residential uses to the north by less than 1 dB. This increase would not be readily perceivable. Noise impacts associated with operation of MM-TRA-3 would be less than significant. It should be noted that the dominant noise source at the residential uses adjacent to the MM-TRA-3 roadway improvement area is vehicle traffic on SR-56. As shown in Table 3, the measured noise level in this vicinity was 63.9 dB(A) L_{eq}. Noise due to vehicle traffic on the ramp does not contribute measurably to the overall ambient noise environment.

5.2.2.4 Project Design Feature on Black Mountain Road

There are residential uses to the west of the portion of Black Mountain Road that would be restriped and widened. As discussed in Section 4.2.2.4, the proposed restriping and slight widening would shift some traffic slightly to the east, away from the residential uses. Therefore, implementation of the project design feature would not result in an increase in noise levels due to vehicle traffic on Black Mountain Road at the adjacent sensitive receivers. Additionally, as with MM-TRA-3, the dominant noise source at the residential uses adjacent to the project design feature roadway improvement area is also vehicle traffic on SR-56. As shown in Table 3, the measured noise level in this vicinity was 71.1 dB(A) Leq. The restriping/widening of Black Mountain Road would not result in a perceptible change in the ambient noise environment.

6.0 Conclusions and Noise Abatement Measures

6.1 Construction Noise

Construction of the project design feature and traffic mitigation measures would potentially result in short-term impacts to surrounding residential properties. A variety of noise-generating equipment would be used to construct these improvements such as backhoes, crawler tractors, excavators, graders, loaders, rollers, scrapers, and signal boards. Construction noise levels at the residential uses located adjacent to the roadway improvement areas were calculated. Construction noise levels would be less than 75 dB(A) L_{eq} at all adjacent residential uses. Although the existing adjacent residences would be exposed to construction noise levels that could be heard above ambient conditions, the exposure would be temporary. Because construction activities associated with the roadway improvements would comply with the applicable regulation for construction, temporary increases in noise levels from construction activities would be less than significant.

6.2 Traffic Noise

6.2.1 Off-Site Traffic Noise

Reclassification of the project roadway from a 6-lane Primary Arterial to a 4-lane Major and implementation of the project design feature and traffic mitigation measures would not generate additional traffic. However, implementation of the project would result in a future redistribution of vehicles on the roadway network in the vicinity of the project, and would therefore result in a change in vehicle traffic noise levels adjacent to these roadways. The City's Significance Determination Thresholds state that if a project is currently at or exceeds the significance thresholds for traffic noise and noise levels result in less than a 3 dB(A) increase, the impact would not be considered significant (City of San Diego 2016).

The cumulative increases in noise levels between the existing condition and year 2050, without and with the project, are due to regional growth and are not attributed to the project, as the project itself would not result in any growth or trip generation. Off-site traffic noise impacts were determined by comparing year 2050 noise levels with and without implementation of the project. Noise levels would either decrease or increase adjacent to the project area roadways. This is due to the redistribution of traffic on these roadways. As shown in Table 14, the changes in noise levels due to the project would be less than 1 dB. These changes in noise levels would not be perceivable and would not exceed the City's significance thresholds. Vehicle traffic noise impacts to off-site uses would be less than significant.

6.2.2 Roadway Improvement Areas

MM-TRA-1 would replace the stop sign at the intersection of Sundance Avenue and Twin Trails Drive with a traffic signal, which would change the traffic flow and therefore the traffic noise at the intersection. Noise levels at the adjacent residential uses were calculated with and without the project. As shown in Table 15, installation of the traffic signal would improve the traffic flow at the intersection of Sundance Avenue and Twin Trails Drive, and thereby decrease noise levels at the adjacent uses. Therefore, there would be no operational impacts associated with MM-TRA-1.

MM-TRA-2 would introduce an auxiliary lane on eastbound SR-56 between Camino Del Sur and Black Mountain Road that would shift some traffic closer to the residential uses to the south, and therefore increase traffic noise levels at these uses. Traffic noise levels with and without construction of the auxiliary lane were calculated at the nearest sensitive receiver. As shown in Table 16, the construction of the eastbound auxiliary lane would increase noise levels at the nearest residential uses to the south of SR-56 by less than 1 dB. Noise level increases of this magnitude would not be perceivable. Noise levels at the residential uses north of SR-56 would decrease because the additional auxiliary lane would shift freeway traffic further to the south. Noise impacts associated with operation of MM-TRA-2 would be less than significant.

MM-TRA-3 would construction an additional on-ramp lane at the Rancho Peñasquitos Boulevard/SR-56 westbound on-ramp, which would shift some on-ramp traffic closer to the residential uses to the north and therefore increase traffic noise levels at these uses. Traffic noise levels with and without the additional on-ramp lane were calculated at the nearest sensitive receiver. As shown in Table 17, the construction of the additional on-ramp lane would increase noise levels at the nearest residential uses to the north by less than 1 dB. This increase would not be readily perceivable. Noise impacts associated with operation of MM-TRA-3 would be less than significant.

The project design feature would restripe a segment of Black Mountain Road between the SR-56 westbound ramps and SR-56 eastbound ramps to include an additional northbound lane along Black Mountain Road from the SR-56 eastbound ramps to the middle of the overpass. To accommodate the additional northbound lane created by this restriping on the overpass, it is estimated for modeling purposes that the roadway north of the overpass bridge would need to be widened by up to 22 feet for northbound traffic. The widening would extend approximately 0.15 mile from the SR-56 westbound off-ramp to the first commercial driveway. There are residential uses to the west of this portion of Black Mountain Road. The proposed restriping and slight widening would shift some traffic slightly to the east, away from the residential uses. Therefore, implementation of the project design feature would not result in an increase in noise levels due to vehicle traffic on Black Mountain Road at the adjacent sensitive receivers.

7.0 References Cited

California Department of Transportation (Caltrans)
2013 Technical Noise Supplement. November.

Federal Highway Administration (FHWA)
2006 FHWA Roadway Construction Noise Model User's Guide, Final Report. January 2006.

KOA Corporation
2016 Black Mountain Road Transportation Impact Study (8th Submittal). May 2016.

Navcon Engineering, Inc.
2015 SoundPLAN Essential version 3.0

San Diego, City of
2015 City of San Diego General Plan. Amended June 29.

2016 California Environmental Quality Act Significance Determination Thresholds. July 2016.

ATTACHMENTS

ATTACHMENT 1

Noise Measurement Data

Summary

Filename	LxT_Data.027
Serial Number	3827
Model	SoundExpert™ LxT
Firmware Version	2.301
User	
Location	
Job Description	
Note	
Measurement Description	
Start	2017/06/28 10:27:48
Stop	2017/06/28 10:42:49
Duration	0:15:01.2
Run Time	0:15:01.2
Pause	0:00:00.0
Pre Calibration	2017/06/28 10:24:37
Post Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamp	PRMLxT1L
Microphone Correction	Off
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Freq. Weighting	A Weighting
OBA Max Spectrum	At Lmax
Overload	121.6 dB

	A	C	Z
Under Range Peak	**77.9**	74.9	79.9 dB
Under Range Limit	**26.0**	25.2	32.0 dB
Noise Floor	16.2	16.0	21.9 dB

Results

LAeq	71.1 dB	
LAE	100.6 dB	
EA	1.275 mPa²h	
LApeak (max)	2017/06/28 10:40:11	101.7 dB
LASmax	2017/06/28 10:40:11	90.0 dB
LASmin	2017/06/28 10:33:03	58.8 dB
SEA	-99.9 dB	

LAS > 85.0 dB (Exceedence Counts / Duration)	1	8.1 s
LAS > 115.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 135.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 137.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 140.0 dB (Exceedence Counts / Duration)	0	0.0 s

Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**	**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**
	71.1	71.1	-99.9	71.1	71.1	-99.9	-99.9

LCeq	77.4 dB
LAeq	71.1 dB
LCeq - LAeq	6.3 dB
LAleq	73.3 dB
LAeq	71.1 dB
LAleq - LAeq	2.2 dB
# Overloads	0
Overload Duration	0.0 s
# OBA Overloads	0
OBA Overload Duration	0.0 s

Statistics

LAS5.00	72.7 dB
LAS10.00	71.3 dB
LAS33.30	68.1 dB
LAS50.00	66.7 dB
LAS66.60	65.1 dB
LAS90.00	62.8 dB

Summary

Filename	LxT_Data.028
Serial Number	3827
Model	SoundExpert™ LxT
Firmware Version	2.301
User	
Location	
Job Description	
Note	
Measurement Description	
Start	2017/06/28 11:06:54
Stop	2017/06/28 11:21:55
Duration	0:15:01.2
Run Time	0:15:01.2
Pause	0:00:00.0
Pre Calibration	2017/06/28 11:03:04
Post Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamp	PRMLxT1L
Microphone Correction	Off
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Freq. Weighting	A Weighting
OBA Max Spectrum	At Lmax
Overload	121.5 dB

	A	C	Z
Under Range Peak	**77.8**	74.8	79.8 dB
Under Range Limit	**25.9**	25.2	31.9 dB
Noise Floor	16.2	16.0	21.9 dB

Results

LAeq	60.7 dB	
LAE	90.2 dB	
EA	117.030 µPa²h	
LApeak (max)	2017/06/28 11:19:28	87.7 dB
LASmax	2017/06/28 11:09:13	73.8 dB
LASmin	2017/06/28 11:16:23	43.4 dB
SEA	-99.9 dB	

LAS > 85.0 dB (Exceedence Counts / Duration)	0	0.0 s
LAS > 115.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 135.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 137.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 140.0 dB (Exceedence Counts / Duration)	0	0.0 s

Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**	**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**
	60.7	60.7	-99.9	60.7	60.7	-99.9	-99.9

LCeq	72.0 dB
LAeq	60.7 dB
LCeq - LAeq	11.3 dB
LAleq	61.6 dB
LAeq	60.7 dB
LAleq - LAeq	0.9 dB
# Overloads	0
Overload Duration	0.0 s
# OBA Overloads	0
OBA Overload Duration	0.0 s

Statistics

LAS5.00	65.7 dB
LAS10.00	63.5 dB
LAS33.30	59.6 dB
LAS50.00	58.0 dB
LAS66.60	55.7 dB
LAS90.00	50.1 dB

Summary

Filename	LxT_Data.029
Serial Number	3827
Model	SoundExpert™ LxT
Firmware Version	2.301
User	
Location	
Job Description	
Note	
Measurement Description	
Start	2017/06/28 11:50:40
Stop	2017/06/28 12:05:41
Duration	0:15:00.7
Run Time	0:15:00.7
Pause	0:00:00.0
Pre Calibration	2017/06/28 11:47:57
Post Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamp	PRMLxT1L
Microphone Correction	Off
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Freq. Weighting	A Weighting
OBA Max Spectrum	At Lmax
Overload	121.7 dB

	A	C	Z
Under Range Peak	**77.9**	74.9	79.9 dB
Under Range Limit	**26.0**	25.2	32.0 dB
Noise Floor	16.2	16.1	21.9 dB

Results

LAeq	63.9 dB	
LAE	93.4 dB	
EA	245.089 µPa²h	
LApeak (max)	2017/06/28 11:55:08	94.9 dB
LASmax	2017/06/28 11:55:09	77.0 dB
LASmin	2017/06/28 11:53:54	52.8 dB
SEA	-99.9 dB	

LAS > 85.0 dB (Exceedence Counts / Duration)	0	0.0 s
LAS > 115.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 135.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 137.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 140.0 dB (Exceedence Counts / Duration)	0	0.0 s

Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**	**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**
	63.9	63.9	-99.9	63.9	63.9	-99.9	-99.9

LCeq	70.7 dB
LAeq	63.9 dB
LCeq - LAeq	6.8 dB
LAleq	64.9 dB
LAeq	63.9 dB
LAleq - LAeq	1.0 dB
# Overloads	0
Overload Duration	0.0 s
# OBA Overloads	0
OBA Overload Duration	0.0 s

Statistics

LAS5.00	69.8 dB
LAS10.00	68.3 dB
LAS33.30	61.6 dB
LAS50.00	59.2 dB
LAS66.60	57.7 dB
LAS90.00	55.4 dB

Summary

Filename	LxT_Data.031
Serial Number	3827
Model	SoundExpert™ LxT
Firmware Version	2.301
User	
Location	
Job Description	
Note	
Measurement Description	
Start	2017/06/28 12:55:55
Stop	2017/06/28 13:10:57
Duration	0:15:02.2
Run Time	0:15:02.2
Pause	0:00:00.0
Pre Calibration	2017/06/28 12:50:15
Post Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamp	PRMLxT1L
Microphone Correction	Off
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Freq. Weighting	A Weighting
OBA Max Spectrum	At Lmax
Overload	121.5 dB

	A	C	Z
Under Range Peak	**77.8**	74.8	79.8 dB
Under Range Limit	**25.9**	25.2	31.9 dB
Noise Floor	16.2	16.0	21.9 dB

Results

LAeq	67.1 dB	
LAE	96.6 dB	
EA	511.074 µPa²h	
LApeak (max)	2017/06/28 13:09:31	91.3 dB
LASmax	2017/06/28 13:05:22	73.0 dB
LASmin	2017/06/28 12:58:09	59.7 dB
SEA	-99.9 dB	

LAS > 85.0 dB (Exceedence Counts / Duration)	0	0.0 s
LAS > 115.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 135.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 137.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 140.0 dB (Exceedence Counts / Duration)	0	0.0 s

Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**	**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**
	67.1	67.1	-99.9	67.1	67.1	-99.9	-99.9

LCeq	73.9 dB
LAeq	67.1 dB
LCeq - LAeq	6.9 dB
LAleq	68.2 dB
LAeq	67.1 dB
LAleq - LAeq	1.1 dB
# Overloads	0
Overload Duration	0.0 s
# OBA Overloads	0
OBA Overload Duration	0.0 s

Statistics

LAS5.00	69.9 dB
LAS10.00	69.3 dB
LAS33.30	67.3 dB
LAS50.00	66.6 dB
LAS66.60	65.8 dB
LAS90.00	64.2 dB

ATTACHMENT 2

SoundPLAN Data–MM-TRA-1 Signal Installation

Source name	Reference	Level Leq1 dB(A)	Corrections Kwall dB(A)	CI dB(A)	CT dB(A)
Signal Installation	Unit	110	-	-	-

6524 Black Mountain Road
SoundPLAN Data - TRA-1 Signal Installation

No.	Coordinates X	Y	Floor	Height	Limit Leq1	Level w/o NP Leq1	Level w. NP Leq1	Difference Leq1	Conflict Leq1
	in meter			m	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
1	487733.15	3646663.56	1.Fl	161.22	-	62.3	0	-62.3	-
2	487700.83	3646683.63	1.Fl	158.23	-	72.0	0	-72.0	-
3	487677.35	3646683.29	1.Fl	156.95	-	73.9	0	-73.9	-
4	487667.49	3646669.00	1.Fl	156.59	-	67.3	0	-67.3	-
5	487653.88	3646677.85	1.Fl	156.87	-	67.5	0	-67.5	-
6	487665.10	3646694.18	1.Fl	156.95	-	74.9	0	-74.9	-
7	487660.34	3646710.51	1.Fl	155.82	-	74.7	0	-74.7	-
8	487633.46	3646734.32	1.Fl	152.79	-	63.8	0	-63.8	-
9	487661.36	3646742.83	1.Fl	153.90	-	67.7	0	-67.7	-
10	487675.31	3646731.60	1.Fl	154.55	-	73.8	0	-73.8	-
11	487698.79	3646735.00	1.Fl	157.04	-	71.7	0	-71.7	-
12	487719.88	3646747.59	1.Fl	159.48	-	64.8	0	-64.8	-
13	487760.71	3646748.27	1.Fl	161.82	-	59.3	0	-59.3	-
14	487722.60	3646730.24	1.Fl	159.16	-	66.9	0	-66.9	-
15	487714.78	3646705.06	1.Fl	158.45	-	71.6	0	-71.6	-
16	487744.04	3646688.73	1.Fl	160.60	-	62.8	0	-62.8	-

ATTACHMENT 3

SoundPLAN Data–MM-TRA-2 SR-56 Auxiliary Lane Construction

Source name	Reference	Level Leq1 dB(A)	Corrections Kwall dB(A)	CI dB(A)	CT dB(A)
Cosntruction	Unit	114	-	-	-

No.	Coordinates X	Coordinates Y	Floor	Height	Limit Leq1	Level w/o NP Leq1	Level w. NP Leq1	Difference Leq1	Conflict Leq1	Conflict Leq2	Conflict Leq3	Conflict Lmax
	in meter			m	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)			
1	487032.50	3646077.20	1.Fl	123.60	-	50.9	0	-50.9	-	-	-	-
2	486969.67	3646078.52	1.Fl	121.52	-	57.0	0	-57.0	-	-	-	-
3	486911.46	3646077.86	1.Fl	119.33	-	60.3	0	-60.3	-	-	-	-
4	486853.25	3646076.54	1.Fl	117.93	-	57.1	0	-57.1	-	-	-	-
5	486790.41	3646078.52	1.Fl	117.74	-	59.0	0	-59.0	-	-	-	-
6	486750.06	3646070.58	1.Fl	114.78	-	66.4	0	-66.4	-	-	-	-
7	486961.73	3646188.99	1.Fl	125.56	-	55.1	0	-55.1	-	-	-	-
8	486879.71	3646183.69	1.Fl	123.41	-	59.3	0	-59.3	-	-	-	-
9	486777.84	3646196.92	1.Fl	123.42	-	61.0	0	-61.0	-	-	-	-
10	486554.93	3646235.95	1.Fl	126.69	-	56.0	0	-56.0	-	-	-	-

ATTACHMENT 4

SoundPLAN Data–MM-TRA-3 On-ramp Improvements Construction

Source name	Reference	Level Leq1 dB(A)	Corrections Kwall dB(A)	CI dB(A)	CT dB(A)
Construction1	Unit	114	-	-	-

6524 Black Mountain Road
SoundPLAN Data - TRA-3 On-Ramp Improvements Construction

No.	Coordinates X	Y	Floor	Height	Limit Leq1	Level w/o NP Leq1	Level w. NP Leq1	Difference Leq1	Conflict Leq1
	in meter			m	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
1	489125.96	3646796.54	1.Fl	194.53	-	62.3	0	-62.3	-
2	489133.33	3646778.12	1.Fl	194.16	-	66.6	0	-66.6	-
3	489118.59	3646750.49	1.Fl	193.38	-	66.9	0	-66.9	-
4	489106.01	3646730.23	1.Fl	193.47	-	66.9	0	-66.9	-
5	489092.19	3646709.97	1.Fl	194.13	-	66.7	0	-66.7	-
6	489076.23	3646688.48	1.Fl	194.74	-	67.0	0	-67.0	-
7	489055.97	3646673.44	1.Fl	195.00	-	66.1	0	-66.1	-
8	489037.24	3646657.17	1.Fl	195.66	-	66.2	0	-66.2	-
9	489017.60	3646640.28	1.Fl	195.96	-	66.5	0	-66.5	-
10	488998.26	3646626.16	1.Fl	196.57	-	66.6	0	-66.6	-
11	488966.21	3646605.52	1.Fl	197.41		67.1	0	-67.1	
12	488938.91	3646590.36	1.Fl	197.82		65.8	0	-65.8	
13	488904.17	3646573.81	1.Fl	198.43		65.2	0	-65.2	
14	488867.22	3646561.13	1.Fl	199.32		66.4	0	-66.4	
15	488833.58	3646549.27	1.Fl	200.23		66.0	0	-66.0	
16	488790.84	3646534.11	1.Fl	200.84		62.4	0	-62.4	

ATTACHMENT 5

SoundPLAN Data–Project Design Feature Black Mountain Road Restriping/Widening Construction

Source name	Reference	Level	Corrections		
		Leq1	Kwall	CI	CT
		dB(A)	dB(A)	dB(A)	dB(A)
Construction1	Unit	114	-	-	-

ATTACHMENT 6

FHWA RD-77-108–Roadway Segment Noise Level Calculations

Segment	Roadway	Segment	Existing	2050 Without Project	2050 With Project	Δ dB
1	Camino Del Sur	South of Carmel Valley Road	71.0	72.7	72.6	-0.1
2	Camino Del Sur	South of Wolverine Way - Fallhaven Road	71.7	73.4	73.2	-0.2
3	Camino Del Sur	North of SR-56 Westbound Ramps	72.7	74.3	74.2	-0.1
4	Camino Del Sur	South of SR-56 Eastbound Ramps	67.3	71.6	71.7	0.1
5	Carmel Valley Road	West of Black Mountain Road	70.9	73.1	73.1	0.0
6	Carmel Valley Road	East of Black Mountain Road	71.1	73.2	73.2	0.0
7	Black Mountain Road	North of Maler Road	69.4	71.2	71.4	0.2
8	Black Mountain Road	South of Oviedo Street	70.1	71.1	71.0	-0.1
9	Black Mountain Road	South of Carmel Mountain Road	69.0	70.0	69.8	-0.2
10	Black Mountain Road	Between Paseo Montalban and Twin Trails Drive	68.9	69.8	69.7	-0.1
11	Black Mountain Road	South of Twin Trails Drive	73.8	74.3	74.3	0.0
12	Black Mountain Road	Between SR-56 Westbound and Eastbound Ramps	73.4	74.0	73.9	-0.1
13	Black Mountain Road	North of Park Village Road - Adolphia Street	74.0	75.0	74.1	-0.9
14	Black Mountain Road	North of Canyonside Park Drive	73.4	74.6	73.9	-0.7
15	Black Mountain Road	Between Mercy Road and Babuta Road	74.3	75.5	74.8	-0.7
16	Black Mountain Road	South of Westview Parkway	73.1	74.4	73.7	-0.7
17	Westview Parkway	East of Black Mountain Road	66.4	68.0	67.1	-0.9
18	Carmel Mountain Road	Between Paseo Aldabra and Sundevil Way	68.8	69.0	69.0	0.0
19	Carmel Mountain Road	Between Paseo Montalban and SR-56 Westbound Ramps	70.7	70.9	70.9	0.0
20	Rancho Peñasquitos Boulevard	Between SR-56 Ramps - Azuaga Street and Calle De Las Rosas	74.0	73.9	74.1	0.2
21	Rancho Peñasquitos Boulevard	Between Calle De Las Rosas and Via Del Sud	74.2	74.0	74.2	0.2
22	Rancho Peñasquitos Boulevard	Between Paseo Montril and I-15 Sounthbound Ramps	72.5	72.3	72.5	0.2
23	Poway Road	East of I-15 Northbound Ramps	76.2	76.9	76.9	0.0
24	Carmel Mountain Road	South of Sundance Avenue	58.3	67.2	67.3	0.1
25	Carmel Mountain Road	West of Sparren Avenue	65.7	66.8	67.0	0.2
26	Carmel Mountain Road	West of Black Mountain Road	66.5	67.5	67.6	0.1
27	Sundance Avenue	West of War Bonnet Street	56.1	57.4	57.5	0.1
28	Carmel Mountain Road	East of Freeport Road	67.9	68.9	68.9	0.0
29	Carmel Mountain Road	Between Peñasquitos Drive and Gerana Street	68.7	69.7	69.7	0.0
30	Carmel Mountain Road	Between I-15 Southbound Ramps and Peñasquitos Drive	71.3	72.0	72.0	0.0
31	Carmel Mountain Road	East of I-15 Northbound Ramps	72.5	73.2	73.2	0.0
32	Camino Del Sur	North of Park Village Road	58.1	67.6	67.4	-0.2
33	Park Village Road	East of Camino Del Sur	67.8	69.6	69.2	-0.4
34	Park Village Road	West of Black Mountain Road	71.0	71.0	71.0	0.0
35	Mercy Road	Between Chabola Road and Branicole Lane	70.1	71.3	71.0	-0.3
36	Mercy Road	North of Alemania Road	71.5	72.3	72.1	-0.2
37	Scripps Poway Parkway	East of I-15 Northbound Ramps	76.9	77.7	77.6	-0.1

FHWA RD-77-108

Traffic Noise Prediction Model

Data Input Sheet

Project Name : Black Mountain Road Project
Project Number : 6524
Modeled Condition : Existing

Surface Refelction: CNEL
Assessment Metric: Hard
Peak ratio to ADT: 10.00
Traffic Desc. (Peak or ADT) : ADT

Segment	Roadway	Segment	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	K-Factor
1	Camino Del Sur	South of Carmel Valley Road	17,728	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
2	Camino Del Sur	South of Wolverine Way - Fallhaven Road	20,710	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
3	Camino Del Sur	North of SR-56 Westbound Ramps	25,921	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
4	Camino Del Sur	South of SR-56 Eastbound Ramps	9,818	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
5	Carmel Valley Road	West of Black Mountain Road	10,489	55	50	96.00	3.00	1.00	80.00	10.00	10.00	
6	Carmel Valley Road	East of Black Mountain Road	13,793	50	50	96.00	3.00	1.00	80.00	10.00	10.00	
7	Black Mountain Road	North of Maler Road	12,303	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
8	Black Mountain Road	South of Oviedo Street	18,956	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
9	Black Mountain Road	South of Carmel Mountain Road	14,740	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
10	Black Mountain Road	Between Paseo Montalban and Twin Trails Drive	14,315	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
11	Black Mountain Road	South of Twin Trails Drive	33,492	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
12	Black Mountain Road	Between SR-56 Westbound and Eastbound Ramps	30,567	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
13	Black Mountain Road	North of Park Village Road - Adolphia Street	35,443	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
14	Black Mountain Road	North of Canyonside Park Drive	30,380	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
15	Black Mountain Road	Between Mercy Road and Babuta Road	28,862	50	50	96.00	3.00	1.00	80.00	10.00	10.00	
16	Black Mountain Road	South of Westview Parkway	22,214	50	50	96.00	3.00	1.00	80.00	10.00	10.00	
17	Westview Parkway	East of Black Mountain Road	6,099	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
18	Carmel Mountain Road	Between Paseo Aldabra and Sundevil Way	14,152	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
19	Carmel Mountain Road	Between Paseo Montalban and SR-56 Westbound Ramps	21,907	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
20	Rancho Peñasquitos Boulevard	Between SR-56 Ramps - Azuaga Street and Calle De Las Rosas	27,441	50	50	96.00	3.00	1.00	80.00	10.00	10.00	
21	Rancho Peñasquitos Boulevard	Between Calle De Las Rosas and Via Del Sud	28,120	50	50	96.00	3.00	1.00	80.00	10.00	10.00	
22	Rancho Peñasquitos Boulevard	Between Paseo Montril and I-15 Sounthbound Ramps	33,066	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
23	Poway Road	East of I-15 Northbound Ramps	45,045	50	50	96.00	3.00	1.00	80.00	10.00	10.00	
24	Carmel Mountain Road	South of Sundance Avenue	1,241	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
25	Carmel Mountain Road	West of Sparren Avenue	6,811	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
26	Carmel Mountain Road	West of Black Mountain Road	8,316	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
27	Sundance Avenue	West of War Bonnet Street	1,884	25	50	96.00	3.00	1.00	80.00	10.00	10.00	
28	Carmel Mountain Road	East of Freeport Road	11,328	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
29	Carmel Mountain Road	Between Peñasquitos Drive and Gerana Street	13,655	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
30	Carmel Mountain Road	Between I-15 Southbound Ramps and Peñasquitos Drive	25,071	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
31	Carmel Mountain Road	East of I-15 Northbound Ramps	44,953	35	50	96.00	3.00	1.00	80.00	10.00	10.00	
32	Camino Del Sur	North of Park Village Road	1,185	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
33	Park Village Road	East of Camino Del Sur	8,430	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
34	Park Village Road	West of Black Mountain Road	17,546	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
35	Mercy Road	Between Chabola Road and Branicole Lane	14,279	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
36	Mercy Road	North of Alemania Road	19,851	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
37	Scripps Poway Parkway	East of I-15 Northbound Ramps	52,815	50	50	96.00	3.00	1.00	80.00	10.00	10.00	

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Traffic Noise Prediction Model

Predicted Noise Levels

Project Name : Black Mountain Road Project
Project Number : 6524
Modeled Condition : Existing
Assessment Metric: Hard

Segment	Roadway	Segment	Noise Levels, dBA Hard				Distance to Traffic Noise Level Contours, Feet					
			Auto	MT	HT	Total	75 dB	70 dB	65 dB	60 dB	55 dB	50 dB
1	Camino Del Sur	South of Carmel Valley Road	69.6	62.8	62.5	71	20	63	199	629	1,991	6,295
2	Camino Del Sur	South of Wolverine Way - Fallhaven Road	70.2	63.4	63.2	72	23	74	234	740	2,339	7,396
3	Camino Del Sur	North of SR-56 Westbound Ramps	71.2	64.4	64.1	73	29	93	294	931	2,944	9,310
4	Camino Del Sur	South of SR-56 Eastbound Ramps	65.5	59.4	59.4	67	8	27	85	269	849	2,685
5	Carmel Valley Road	West of Black Mountain Road	69.8	61.8	61.0	71	19	62	195	615	1,945	6,151
6	Carmel Valley Road	East of Black Mountain Road	69.8	62.4	61.8	71	20	64	204	644	2,037	6,441
7	Black Mountain Road	North of Maler Road	68.0	61.2	60.9	69	14	44	138	435	1,377	4,355
8	Black Mountain Road	South of Oviedo Street	68.4	62.2	62.3	70	16	51	162	512	1,618	5,116
9	Black Mountain Road	South of Carmel Mountain Road	67.3	61.2	61.2	69	13	40	126	397	1,256	3,972
10	Black Mountain Road	Between Paseo Montalban and Twin Trails Drive	67.2	61.0	61.1	69	12	39	123	388	1,227	3,881
11	Black Mountain Road	South of Twin Trails Drive	72.3	65.5	65.2	74	38	120	379	1,199	3,793	11,994
12	Black Mountain Road	Between SR-56 Westbound and Eastbound Ramps	71.9	65.1	64.8	73	35	109	346	1,094	3,459	10,939
13	Black Mountain Road	North of Park Village Road - Adolphia Street	72.6	65.8	65.5	74	40	126	397	1,256	3,972	12,559
14	Black Mountain Road	North of Canyonside Park Drive	71.9	65.1	64.8	73	35	109	346	1,094	3,459	10,939
15	Black Mountain Road	Between Mercy Road and Babuta Road	73.0	65.6	65.0	74	43	135	426	1,346	4,256	13,458
16	Black Mountain Road	South of Westview Parkway	71.9	64.5	63.9	73	32	102	323	1,021	3,228	10,209
17	Westview Parkway	East of Black Mountain Road	64.9	58.1	57.8	66	7	22	69	218	690	2,183
18	Carmel Mountain Road	Between Paseo Aldabra and Sundevil Way	67.1	61.0	61.0	69	12	38	120	379	1,199	3,793
19	Carmel Mountain Road	Between Paseo Montalban and SR-56 Westbound Ramps	69.0	62.9	62.9	71	19	59	186	587	1,858	5,874
20	Rancho Peñasquitos Boulevard	Between SR-56 Ramps - Azuaga Street and Calle De Las Rosas	72.8	65.4	64.8	74	40	126	397	1,256	3,972	12,559
21	Rancho Peñasquitos Boulevard	Between Calle De Las Rosas and Via Del Sud	72.9	65.5	64.9	74	42	132	416	1,315	4,159	13,151
22	Rancho Peñasquitos Boulevard	Between Paseo Montril and I-15 Sounthbound Ramps	70.8	64.7	64.7	73	28	89	281	889	2,812	8,891
23	Poway Road	East of I-15 Northbound Ramps	74.9	67.5	67.0	76	66	208	659	2,084	6,591	20,843
24	Carmel Mountain Road	South of Sundance Avenue	56.5	50.4	50.5	58	1	3	11	34	107	338
25	Carmel Mountain Road	West of Sparren Avenue	63.9	57.8	57.9	66	6	19	59	186	587	1,858
26	Carmel Mountain Road	West of Black Mountain Road	64.8	58.7	58.7	67	7	22	71	223	706	2,233
27	Sundance Avenue	West of War Bonnet Street	52.5	49.0	51.9	56	1	2	6	20	64	204
28	Carmel Mountain Road	East of Freeport Road	66.1	60.0	60.1	68	10	31	97	308	975	3,083
29	Carmel Mountain Road	Between Peñasquitos Drive and Gerana Street	67.0	60.8	60.9	69	12	37	117	371	1,172	3,707
30	Carmel Mountain Road	Between I-15 Southbound Ramps and Peñasquitos Drive	69.6	63.5	63.5	71	21	67	213	674	2,133	6,745
31	Carmel Mountain Road	East of I-15 Northbound Ramps	70.5	65.1	65.5	73	28	89	281	889	2,812	8,891
32	Camino Del Sur	North of Park Village Road	56.3	50.2	50.3	58	1	3	10	32	102	323
33	Park Village Road	East of Camino Del Sur	66.3	59.5	59.3	68	10	30	95	301	953	3,013
34	Park Village Road	West of Black Mountain Road	69.5	62.7	62.4	71	20	63	199	629	1,991	6,295
35	Mercy Road	Between Chabola Road and Branicole Lane	68.6	61.8	61.5	70	16	51	162	512	1,618	5,116
36	Mercy Road	North of Alemania Road	70.0	63.2	63.0	72	22	71	223	706	2,233	7,063
37	Scripps Poway Parkway	East of I-15 Northbound Ramps	75.6	68.2	67.6	77	77	245	774	2,449	7,744	24,489

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Traffic Noise Prediction Model

Data Input Sheet

Project Name : Black Mountain Road Project
Project Number : 6524
Modeled Condition : 2050 Without Project

Surface Refelction: CNEL
Assessment Metric: Hard
Peak ratio to ADT: 10.00
Traffic Desc. (Peak or ADT) : ADT

Segment	Roadway	Segment	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	K-Factor
1	Camino Del Sur	South of Carmel Valley Road	25,903	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
2	Camino Del Sur	South of Wolverine Way - Fallhaven Road	30,260	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
3	Camino Del Sur	North of SR-56 Westbound Ramps	37,874	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
4	Camino Del Sur	South of SR-56 Eastbound Ramps	26,700	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
5	Carmel Valley Road	West of Black Mountain Road	17,223	55	50	96.00	3.00	1.00	80.00	10.00	10.00	
6	Carmel Valley Road	East of Black Mountain Road	22,648	50	50	96.00	3.00	1.00	80.00	10.00	10.00	
7	Black Mountain Road	North of Maler Road	18,262	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
8	Black Mountain Road	South of Oviedo Street	23,562	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
9	Black Mountain Road	South of Carmel Mountain Road	18,353	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
10	Black Mountain Road	Between Paseo Montalban and Twin Trails Drive	17,824	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
11	Black Mountain Road	South of Twin Trails Drive	38,028	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
12	Black Mountain Road	Between SR-56 Westbound and Eastbound Ramps	34,707	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
13	Black Mountain Road	North of Park Village Road - Adolphia Street	43,949	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
14	Black Mountain Road	North of Canyonside Park Drive	40,431	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
15	Black Mountain Road	Between Mercy Road and Babuta Road	38,411	50	50	96.00	3.00	1.00	80.00	10.00	10.00	
16	Black Mountain Road	South of Westview Parkway	29,564	50	50	96.00	3.00	1.00	80.00	10.00	10.00	
17	Westview Parkway	East of Black Mountain Road	8,854	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
18	Carmel Mountain Road	Between Paseo Aldabra and Sundevil Way	14,661	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
19	Carmel Mountain Road	Between Paseo Montalban and SR-56 Westbound Ramps	22,696	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
20	Rancho Peñasquitos Boulevard	Between SR-56 Ramps - Azuaga Street and Calle De Las Rosas	26,218	50	50	96.00	3.00	1.00	80.00	10.00	10.00	
21	Rancho Peñasquitos Boulevard	Between Calle De Las Rosas and Via Del Sud	26,867	50	50	96.00	3.00	1.00	80.00	10.00	10.00	
22	Rancho Peñasquitos Boulevard	Between Paseo Montril and I-15 Sounthbound Ramps	31,592	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
23	Poway Road	East of I-15 Northbound Ramps	53,230	50	50	96.00	3.00	1.00	80.00	10.00	10.00	
24	Carmel Mountain Road	South of Sundance Avenue	9,784	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
25	Carmel Mountain Road	West of Sparren Avenue	8,895	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
26	Carmel Mountain Road	West of Black Mountain Road	10,400	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
27	Sundance Avenue	West of War Bonnet Street	2,500	25	50	96.00	3.00	1.00	80.00	10.00	10.00	
28	Carmel Mountain Road	East of Freeport Road	14,425	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
29	Carmel Mountain Road	Between Peñasquitos Drive and Gerana Street	17,389	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
30	Carmel Mountain Road	Between I-15 Southbound Ramps and Peñasquitos Drive	29,444	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
31	Carmel Mountain Road	East of I-15 Northbound Ramps	52,794	35	50	96.00	3.00	1.00	80.00	10.00	10.00	
32	Camino Del Sur	North of Park Village Road	10,700	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
33	Park Village Road	East of Camino Del Sur	12,600	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
34	Park Village Road	West of Black Mountain Road	17,757	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
35	Mercy Road	Between Chabola Road and Branicole Lane	18,662	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
36	Mercy Road	North of Alemania Road	23,662	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
37	Scripps Poway Parkway	East of I-15 Northbound Ramps	63,408	50	50	96.00	3.00	1.00	80.00	10.00	10.00	

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Traffic Noise Prediction Model

Predicted Noise Levels

Project Name : Black Mountain Road Project
Project Number : 6524
Modeled Condition : 2050 Without Project
Assessment Metric: Hard

Segment	Roadway	Segment	Noise Levels, dBA Hard				Distance to Traffic Noise Level Contours, Feet					
			Auto	MT	HT	Total	75 dB	70 dB	65 dB	60 dB	55 dB	50 dB
1	Camino Del Sur	South of Carmel Valley Road	71.2	64.4	64.1	73	29	93	294	931	2,944	9,310
2	Camino Del Sur	South of Wolverine Way - Fallhaven Road	71.9	65.1	64.8	73	35	109	346	1,094	3,459	10,939
3	Camino Del Sur	North of SR-56 Westbound Ramps	72.9	66.1	65.8	74	43	135	426	1,346	4,256	13,458
4	Camino Del Sur	South of SR-56 Eastbound Ramps	69.9	63.7	63.8	72	23	72	229	723	2,285	7,227
5	Carmel Valley Road	West of Black Mountain Road	71.9	64.0	63.2	73	32	102	323	1,021	3,228	10,209
6	Carmel Valley Road	East of Black Mountain Road	71.9	64.5	64.0	73	33	104	330	1,045	3,303	10,446
7	Black Mountain Road	North of Maler Road	69.7	62.9	62.6	71	21	66	208	659	2,084	6,591
8	Black Mountain Road	South of Oviedo Street	69.3	63.2	63.2	71	20	64	204	644	2,037	6,441
9	Black Mountain Road	South of Carmel Mountain Road	68.2	62.1	62.2	70	16	50	158	500	1,581	5,000
10	Black Mountain Road	Between Paseo Montalban and Twin Trails Drive	68.1	62.0	62.0	70	15	48	151	477	1,510	4,775
11	Black Mountain Road	South of Twin Trails Drive	72.9	66.1	65.8	74	43	135	426	1,346	4,256	13,458
12	Black Mountain Road	Between SR-56 Westbound and Eastbound Ramps	72.5	65.7	65.4	74	40	126	397	1,256	3,972	12,559
13	Black Mountain Road	North of Park Village Road - Adolphia Street	73.5	66.7	66.4	75	50	158	500	1,581	5,000	15,811
14	Black Mountain Road	North of Canyonside Park Drive	73.1	66.3	66.1	75	46	144	456	1,442	4,560	14,420
15	Black Mountain Road	Between Mercy Road and Babuta Road	74.2	66.8	66.3	76	56	177	561	1,774	5,610	17,741
16	Black Mountain Road	South of Westview Parkway	73.1	65.7	65.1	74	44	138	435	1,377	4,355	13,771
17	Westview Parkway	East of Black Mountain Road	66.5	59.7	59.5	68	10	32	100	315	998	3,155
18	Carmel Mountain Road	Between Paseo Aldabra and Sundevil Way	67.3	61.1	61.2	69	13	40	126	397	1,256	3,972
19	Carmel Mountain Road	Between Paseo Montalban and SR-56 Westbound Ramps	69.2	63.0	63.1	71	19	62	195	615	1,945	6,151
20	Rancho Peñasquitos Boulevard	Between SR-56 Ramps - Azuaga Street and Calle De Las Rosas	72.6	65.2	64.6	74	39	123	388	1,227	3,881	12,274
21	Rancho Peñasquitos Boulevard	Between Calle De Las Rosas and Via Del Sud	72.7	65.3	64.7	74	40	126	397	1,256	3,972	12,559
22	Rancho Peñasquitos Boulevard	Between Paseo Montril and I-15 Sounthbound Ramps	70.6	64.5	64.5	72	27	85	269	849	2,685	8,491
23	Poway Road	East of I-15 Northbound Ramps	75.7	68.2	67.7	77	77	245	774	2,449	7,744	24,489
24	Carmel Mountain Road	South of Sundance Avenue	65.5	59.4	59.4	67	8	26	83	262	830	2,624
25	Carmel Mountain Road	West of Sparren Avenue	65.1	59.0	59.0	67	8	24	76	239	757	2,393
26	Carmel Mountain Road	West of Black Mountain Road	65.8	59.6	59.7	68	9	28	89	281	889	2,812
27	Sundance Avenue	West of War Bonnet Street	53.7	50.3	53.1	57	1	3	9	27	87	275
28	Carmel Mountain Road	East of Freeport Road	67.2	61.1	61.1	69	12	39	123	388	1,227	3,881
29	Carmel Mountain Road	Between Peñasquitos Drive and Gerana Street	68.0	61.9	61.9	70	15	47	148	467	1,476	4,666
30	Carmel Mountain Road	Between I-15 Southbound Ramps and Peñasquitos Drive	70.3	64.2	64.2	72	25	79	251	792	2,506	7,924
31	Carmel Mountain Road	East of I-15 Northbound Ramps	71.2	65.8	66.2	73	33	104	330	1,045	3,303	10,446
32	Camino Del Sur	North of Park Village Road	65.9	59.8	59.8	68	9	29	91	288	910	2,877
33	Park Village Road	East of Camino Del Sur	68.1	61.3	61.0	70	14	46	144	456	1,442	4,560
34	Park Village Road	West of Black Mountain Road	69.6	62.8	62.5	71	20	63	199	629	1,991	6,295
35	Mercy Road	Between Chabola Road and Branicole Lane	69.8	63.0	62.7	71	21	67	213	674	2,133	6,745
36	Mercy Road	North of Alemania Road	70.8	64.0	63.7	72	27	85	269	849	2,685	8,491
37	Scripps Poway Parkway	East of I-15 Northbound Ramps	76.4	69.0	68.4	78	93	294	931	2,944	9,310	29,442

FHWA RD-77-108

Traffic Noise Prediction Model

Data Input Sheet

Project Name : Black Mountain Road Project
Project Number : 6524
Modeled Condition : 2050 With Project

Surface Refelction: CNEL
Assessment Metric: Hard
Peak ratio to ADT: 10.00
Traffic Desc. (Peak or ADT) : ADT

Segment	Roadway	Segment	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	K-Factor
1	Camino Del Sur	South of Carmel Valley Road	25,250	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
2	Camino Del Sur	South of Wolverine Way - Fallhaven Road	29,497	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
3	Camino Del Sur	North of SR-56 Westbound Ramps	36,919	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
4	Camino Del Sur	South of SR-56 Eastbound Ramps	27,400	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
5	Carmel Valley Road	West of Black Mountain Road	17,349	55	50	96.00	3.00	1.00	80.00	10.00	10.00	
6	Carmel Valley Road	East of Black Mountain Road	22,814	50	50	96.00	3.00	1.00	80.00	10.00	10.00	
7	Black Mountain Road	North of Maler Road	19,204	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
8	Black Mountain Road	South of Oviedo Street	23,472	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
9	Black Mountain Road	South of Carmel Mountain Road	17,709	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
10	Black Mountain Road	Between Paseo Montalban and Twin Trails Drive	17,198	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
11	Black Mountain Road	South of Twin Trails Drive	37,540	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
12	Black Mountain Road	Between SR-56 Westbound and Eastbound Ramps	34,261	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
13	Black Mountain Road	North of Park Village Road - Adolphia Street	35,500	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
14	Black Mountain Road	North of Canyonside Park Drive	34,677	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
15	Black Mountain Road	Between Mercy Road and Babuta Road	32,944	50	50	96.00	3.00	1.00	80.00	10.00	10.00	
16	Black Mountain Road	South of Westview Parkway	25,356	50	50	96.00	3.00	1.00	80.00	10.00	10.00	
17	Westview Parkway	East of Black Mountain Road	7,197	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
18	Carmel Mountain Road	Between Paseo Aldabra and Sundevil Way	14,819	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
19	Carmel Mountain Road	Between Paseo Montalban and SR-56 Westbound Ramps	22,940	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
20	Rancho Peñasquitos Boulevard	Between SR-56 Ramps - Azuaga Street and Calle De Las Rosas	27,500	50	50	96.00	3.00	1.00	80.00	10.00	10.00	
21	Rancho Peñasquitos Boulevard	Between Calle De Las Rosas and Via Del Sud	28,200	50	50	96.00	3.00	1.00	80.00	10.00	10.00	
22	Rancho Peñasquitos Boulevard	Between Paseo Montril and I-15 Sounthbound Ramps	33,100	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
23	Poway Road	East of I-15 Northbound Ramps	53,230	50	50	96.00	3.00	1.00	80.00	10.00	10.00	
24	Carmel Mountain Road	South of Sundance Avenue	9,980	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
25	Carmel Mountain Road	West of Sparren Avenue	9,312	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
26	Carmel Mountain Road	West of Black Mountain Road	10,600	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
27	Sundance Avenue	West of War Bonnet Street	2,600	25	50	96.00	3.00	1.00	80.00	10.00	10.00	
28	Carmel Mountain Road	East of Freeport Road	14,396	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
29	Carmel Mountain Road	Between Peñasquitos Drive and Gerana Street	17,354	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
30	Carmel Mountain Road	Between I-15 Southbound Ramps and Peñasquitos Drive	29,337	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
31	Carmel Mountain Road	East of I-15 Northbound Ramps	52,601	35	50	96.00	3.00	1.00	80.00	10.00	10.00	
32	Camino Del Sur	North of Park Village Road	10,200	40	50	96.00	3.00	1.00	80.00	10.00	10.00	
33	Park Village Road	East of Camino Del Sur	11,700	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
34	Park Village Road	West of Black Mountain Road	17,600	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
35	Mercy Road	Between Chabola Road and Branicole Lane	17,420	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
36	Mercy Road	North of Alemania Road	22,420	45	50	96.00	3.00	1.00	80.00	10.00	10.00	
37	Scripps Poway Parkway	East of I-15 Northbound Ramps	62,005	50	50	96.00	3.00	1.00	80.00	10.00	10.00	

FHWA RD-77-108

Traffic Noise Prediction Model

Predicted Noise Levels

Project Name : Black Mountain Road Project
Project Number : 6524
Modeled Condition : 2050 With Project
Assessment Metric: Hard

Segment	Roadway	Segment	Noise Levels, dBA Hard				Distance to Traffic Noise Level Contours, Feet					
			Auto	MT	HT	Total	75 dB	70 dB	65 dB	60 dB	55 dB	50 dB
1	Camino Del Sur	South of Carmel Valley Road	71.1	64.3	64.0	73	29	91	288	910	2,877	9,099
2	Camino Del Sur	South of Wolverine Way - Fallhaven Road	71.8	65.0	64.7	73	33	104	330	1,045	3,303	10,446
3	Camino Del Sur	North of SR-56 Westbound Ramps	72.7	65.9	65.7	74	42	132	416	1,315	4,159	13,151
4	Camino Del Sur	South of SR-56 Eastbound Ramps	70.0	63.8	63.9	72	23	74	234	740	2,339	7,396
5	Carmel Valley Road	West of Black Mountain Road	72.0	64.0	63.2	73	32	102	323	1,021	3,228	10,209
6	Carmel Valley Road	East of Black Mountain Road	72.0	64.6	64.0	73	33	104	330	1,045	3,303	10,446
7	Black Mountain Road	North of Maler Road	69.9	63.1	62.8	71	22	69	218	690	2,183	6,902
8	Black Mountain Road	South of Oviedo Street	69.3	63.2	63.2	71	20	63	199	629	1,991	6,295
9	Black Mountain Road	South of Carmel Mountain Road	68.1	62.0	62.0	70	15	48	151	477	1,510	4,775
10	Black Mountain Road	Between Paseo Montalban and Twin Trails Drive	68.0	61.8	61.9	70	15	47	148	467	1,476	4,666
11	Black Mountain Road	South of Twin Trails Drive	72.8	66.0	65.7	74	43	135	426	1,346	4,256	13,458
12	Black Mountain Road	Between SR-56 Westbound and Eastbound Ramps	72.4	65.6	65.3	74	39	123	388	1,227	3,881	12,274
13	Black Mountain Road	North of Park Village Road - Adolphia Street	72.6	65.8	65.5	74	41	129	406	1,285	4,064	12,852
14	Black Mountain Road	North of Canyonside Park Drive	72.5	65.7	65.4	74	39	123	388	1,227	3,881	12,274
15	Black Mountain Road	Between Mercy Road and Babuta Road	73.6	66.2	65.6	75	48	151	477	1,510	4,775	15,100
16	Black Mountain Road	South of Westview Parkway	72.4	65.0	64.5	74	37	117	371	1,172	3,707	11,721
17	Westview Parkway	East of Black Mountain Road	65.6	58.8	58.6	67	8	26	81	256	811	2,564
18	Carmel Mountain Road	Between Paseo Aldabra and Sundevil Way	67.3	61.2	61.2	69	13	40	126	397	1,256	3,972
19	Carmel Mountain Road	Between Paseo Montalban and SR-56 Westbound Ramps	69.2	63.1	63.1	71	19	62	195	615	1,945	6,151
20	Rancho Peñasquitos Boulevard	Between SR-56 Ramps - Azuaga Street and Calle De Las Rosas	72.8	65.4	64.8	74	41	129	406	1,285	4,064	12,852
21	Rancho Peñasquitos Boulevard	Between Calle De Las Rosas and Via Del Sud	72.9	65.5	64.9	74	42	132	416	1,315	4,159	13,151
22	Rancho Peñasquitos Boulevard	Between Paseo Montril and I-15 Sounthbound Ramps	70.8	64.7	64.7	73	28	89	281	889	2,812	8,891
23	Poway Road	East of I-15 Northbound Ramps	75.7	68.2	67.7	77	77	245	774	2,449	7,744	24,489
24	Carmel Mountain Road	South of Sundance Avenue	65.6	59.5	59.5	67	8	27	85	269	849	2,685
25	Carmel Mountain Road	West of Sparren Avenue	65.3	59.2	59.2	67	8	25	79	251	792	2,506
26	Carmel Mountain Road	West of Black Mountain Road	65.9	59.7	59.8	68	9	29	91	288	910	2,877
27	Sundance Avenue	West of War Bonnet Street	53.9	50.4	53.3	58	1	3	9	28	89	281
28	Carmel Mountain Road	East of Freeport Road	67.2	61.1	61.1	69	12	39	123	388	1,227	3,881
29	Carmel Mountain Road	Between Peñasquitos Drive and Gerana Street	68.0	61.9	61.9	70	15	47	148	467	1,476	4,666
30	Carmel Mountain Road	Between I-15 Southbound Ramps and Peñasquitos Drive	70.3	64.1	64.2	72	25	79	251	792	2,506	7,924
31	Carmel Mountain Road	East of I-15 Northbound Ramps	71.1	65.8	66.2	73	33	104	330	1,045	3,303	10,446
32	Camino Del Sur	North of Park Village Road	65.7	59.6	59.6	67	9	27	87	275	869	2,748
33	Park Village Road	East of Camino Del Sur	67.8	61.0	60.7	69	13	42	132	416	1,315	4,159
34	Park Village Road	West of Black Mountain Road	69.5	62.7	62.5	71	20	63	199	629	1,991	6,295
35	Mercy Road	Between Chabola Road and Branicole Lane	69.5	62.7	62.4	71	20	63	199	629	1,991	6,295
36	Mercy Road	North of Alemania Road	70.6	63.8	63.5	72	26	81	256	811	2,564	8,109
37	Scripps Poway Parkway	East of I-15 Northbound Ramps	76.3	68.9	68.3	78	91	288	910	2,877	9,099	28,772

ATTACHMENT 7

SoundPLAN Data–MM-TRA-1 Intersection–Stop Sign and Signal Traffic Noise Levels

Stationing km	ADT Veh/24h	Traffic values Vehicles type	Vehicle name	day Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Max %
Twin Trails SB		Traffic direction:	In entry direction							
0+000	15648	Total	-	652	-	none	-	-	Average (of DGAC and PCC)	0.2 / 6.2
0+000	15648	Automobiles	-	618	48	none	-	-	Average (of DGAC and PCC)	0.2 / 6.2
0+000	15648	Medium trucks	-	13	48	none	-	-	Average (of DGAC and PCC)	0.2 / 6.2
0+000	15648	Heavy trucks	-	7	48	none	-	-	Average (of DGAC and PCC)	0.2 / 6.2
0+000	15648	Buses	-	7	48	none	-	-	Average (of DGAC and PCC)	0.2 / 6.2
0+000	15648	Motorcycles	-	7	48	none	-	-	Average (of DGAC and PCC)	0.2 / 6.2
0+000	15648	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	0.2 / 6.2
0+153	15648	Total	-	652	-	Stop sign	8	100	Average (of DGAC and PCC)	6.3
0+153	15648	Automobiles	-	618	48	Stop sign	8	100	Average (of DGAC and PCC)	6.3
0+153	15648	Medium trucks	-	13	48	Stop sign	8	100	Average (of DGAC and PCC)	6.3
0+153	15648	Heavy trucks	-	7	48	Stop sign	8	100	Average (of DGAC and PCC)	6.3
0+153	15648	Buses	-	7	48	Stop sign	8	100	Average (of DGAC and PCC)	6.3
0+153	15648	Motorcycles	-	7	48	Stop sign	8	100	Average (of DGAC and PCC)	6.3
0+153	15648	Auxiliary Vehicle	-	-	-	Stop sign	8	100	Average (of DGAC and PCC)	6.3
0+180	15648	Total	-	652	-	none	-	-	Average (of DGAC and PCC)	-0.09375
0+180	15648	Automobiles	-	618	48	none	-	-	Average (of DGAC and PCC)	-0.09375
0+180	15648	Medium trucks	-	13	48	none	-	-	Average (of DGAC and PCC)	-0.09375
0+180	15648	Heavy trucks	-	7	48	none	-	-	Average (of DGAC and PCC)	-0.09375
0+180	15648	Buses	-	7	48	none	-	-	Average (of DGAC and PCC)	-0.09375
0+180	15648	Motorcycles	-	7	48	none	-	-	Average (of DGAC and PCC)	-0.09375
0+180	15648	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	-0.09375
0+396	-					-	-	-	-	-
Twin Trails NB		Traffic direction:	In entry direction							
0+000	15648	Total	-	652	-	none	-	-	Average (of DGAC and PCC)	21.33333333
0+000	15648	Automobiles	-	618	48	none	-	-	Average (of DGAC and PCC)	21.33333333
0+000	15648	Medium trucks	-	13	48	none	-	-	Average (of DGAC and PCC)	21.33333333
0+000	15648	Heavy trucks	-	7	48	none	-	-	Average (of DGAC and PCC)	21.33333333
0+000	15648	Buses	-	7	48	none	-	-	Average (of DGAC and PCC)	21.33333333
0+000	15648	Motorcycles	-	7	48	none	-	-	Average (of DGAC and PCC)	21.33333333
0+000	15648	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	21.33333333
0+214	15648	Total	-	652	-	Stop sign	8	100	Average (of DGAC and PCC)	-5.1
0+214	15648	Automobiles	-	618	48	Stop sign	8	100	Average (of DGAC and PCC)	-5.1
0+214	15648	Medium trucks	-	13	48	Stop sign	8	100	Average (of DGAC and PCC)	-5.1
0+214	15648	Heavy trucks	-	7	48	Stop sign	8	100	Average (of DGAC and PCC)	-5.1
0+214	15648	Buses	-	7	48	Stop sign	8	100	Average (of DGAC and PCC)	-5.1
0+214	15648	Motorcycles	-	7	48	Stop sign	8	100	Average (of DGAC and PCC)	-5.1
0+214	15648	Auxiliary Vehicle	-	-	-	Stop sign	8	100	Average (of DGAC and PCC)	-5.1
0+238	15648	Total	-	652	-	none	-	-	Average (of DGAC and PCC)	#DIV/0!
0+238	15648	Automobiles	-	618	48	none	-	-	Average (of DGAC and PCC)	#DIV/0!
0+238	15648	Medium trucks	-	13	48	none	-	-	Average (of DGAC and PCC)	#DIV/0!
0+238	15648	Heavy trucks	-	7	48	none	-	-	Average (of DGAC and PCC)	#DIV/0!
0+238	15648	Buses	-	7	48	none	-	-	Average (of DGAC and PCC)	#DIV/0!
0+238	15648	Motorcycles	-	7	48	none	-	-	Average (of DGAC and PCC)	#DIV/0!
0+238	15648	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	#DIV/0!
0+387	-					-	-	-	-	-
Sundance EB		Traffic direction:	In entry direction							
0+000	4920	Total	-	205	-	none	-	-	Average (of DGAC and PCC)	-0.941176471
0+000	4920	Automobiles	-	195	40	none	-	-	Average (of DGAC and PCC)	-0.941176471
0+000	4920	Medium trucks	-	4	40	none	-	-	Average (of DGAC and PCC)	-0.941176471
0+000	4920	Heavy trucks	-	2	40	none	-	-	Average (of DGAC and PCC)	-0.941176471
0+000	4920	Buses	-	2	40	none	-	-	Average (of DGAC and PCC)	-0.941176471
0+000	4920	Motorcycles	-	2	40	none	-	-	Average (of DGAC and PCC)	-0.941176471
0+000	4920	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	-0.941176471
0+123	4920	Total	-	205	-	Stop sign	8	100	Average (of DGAC and PCC)	0.1
0+123	4920	Automobiles	-	195	40	Stop sign	8	100	Average (of DGAC and PCC)	0.1
0+123	4920	Medium trucks	-	4	40	Stop sign	8	100	Average (of DGAC and PCC)	0.1
0+123	4920	Heavy trucks	-	2	40	Stop sign	8	100	Average (of DGAC and PCC)	0.1
0+123	4920	Buses	-	2	40	Stop sign	8	100	Average (of DGAC and PCC)	0.1
0+123	4920	Motorcycles	-	2	40	Stop sign	8	100	Average (of DGAC and PCC)	0.1
0+123	4920	Auxiliary Vehicle	-	-	-	Stop sign	8	100	Average (of DGAC and PCC)	0.1
0+148	2520	Total	-	105	-	none	-	-	Average (of DGAC and PCC)	6.8 / 10.1
0+148	2520	Automobiles	-	100	40	none	-	-	Average (of DGAC and PCC)	6.8 / 10.1
0+148	2520	Medium trucks	-	2	40	none	-	-	Average (of DGAC and PCC)	6.8 / 10.1
0+148	2520	Heavy trucks	-	1	40	none	-	-	Average (of DGAC and PCC)	6.8 / 10.1
0+148	2520	Buses	-	1	40	none	-	-	Average (of DGAC and PCC)	6.8 / 10.1
0+148	2520	Motorcycles	-	1	40	none	-	-	Average (of DGAC and PCC)	6.8 / 10.1
0+148	2520	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	6.8 / 10.1
0+253	-					-	-	-	-	-
Sundance WB		Traffic direction:	In entry direction							
0+000	2520	Total	-	105	-	none	-	-	Average (of DGAC and PCC)	1.913793103
0+000	2520	Automobiles	-	100	40	none	-	-	Average (of DGAC and PCC)	1.913793103
0+000	2520	Medium trucks	-	2	40	none	-	-	Average (of DGAC and PCC)	1.913793103
0+000	2520	Heavy trucks	-	1	40	none	-	-	Average (of DGAC and PCC)	1.913793103
0+000	2520	Buses	-	1	40	none	-	-	Average (of DGAC and PCC)	1.913793103
0+000	2520	Motorcycles	-	1	40	none	-	-	Average (of DGAC and PCC)	1.913793103
0+000	2520	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	1.913793103
0+103	2520	Total	-	105	-	Stop sign	8	100	Average (of DGAC and PCC)	0.4
0+103	2520	Automobiles	-	100	40	Stop sign	8	100	Average (of DGAC and PCC)	0.4
0+103	2520	Medium trucks	-	2	40	Stop sign	8	100	Average (of DGAC and PCC)	0.4
0+103	2520	Heavy trucks	-	1	40	Stop sign	8	100	Average (of DGAC and PCC)	0.4
0+103	2520	Buses	-	1	40	Stop sign	8	100	Average (of DGAC and PCC)	0.4
0+103	2520	Motorcycles	-	1	40	Stop sign	8	100	Average (of DGAC and PCC)	0.4
0+103	2520	Auxiliary Vehicle	-	-	-	Stop sign	8	100	Average (of DGAC and PCC)	0.4
0+129	4920	Total	-	205	-	none	-	-	Average (of DGAC and PCC)	-0.869565217
0+129	4920	Automobiles	-	195	40	none	-	-	Average (of DGAC and PCC)	-0.869565217
0+129	4920	Medium trucks	-	4	40	none	-	-	Average (of DGAC and PCC)	-0.869565217
0+129	4920	Heavy trucks	-	2	40	none	-	-	Average (of DGAC and PCC)	-0.869565217
0+129	4920	Buses	-	2	40	none	-	-	Average (of DGAC and PCC)	-0.869565217
0+129	4920	Motorcycles	-	2	40	none	-	-	Average (of DGAC and PCC)	-0.869565217
0+129	4920	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	-0.869565217
0+250	-					-	-	-	-	-

6524 Black Mountain Road
SoundPLAN Data - TRA-1 Intersection - Stop Sign

No.	Coordinates X	Y	Floor	Height	Limit L(Aeq1h)	Level w/o NP L(Aeq1h)	Level w. NP L(Aeq1h)	Difference L(Aeq1h)	Conflict L(Aeq1h)
	in meter			m	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
1	487733.15	3646663.56	1.Fl	161.22	-	63.7	0	-63.7	-
2	487700.83	3646683.63	1.Fl	158.23	-	67.7	0	-67.7	-
3	487677.35	3646683.29	1.Fl	156.95	-	66.7	0	-66.7	-
4	487667.49	3646669.00	1.Fl	156.59	-	62.5	0	-62.5	-
5	487653.88	3646677.85	1.Fl	156.87	-	62.5	0	-62.5	-
6	487665.10	3646694.18	1.Fl	156.95	-	67.2	0	-67.2	-
7	487660.34	3646710.51	1.Fl	155.82	-	67.8	0	-67.8	-
8	487633.46	3646734.32	1.Fl	152.79	-	63.5	0	-63.5	-
9	487661.36	3646742.83	1.Fl	153.90	-	64.9	0	-64.9	-
10	487675.31	3646731.60	1.Fl	154.55	-	67.6	0	-67.6	-
11	487698.79	3646735.00	1.Fl	157.04	-	65.1	0	-65.1	-
12	487719.88	3646747.59	1.Fl	159.48	-	61.0	0	-61.0	-
13	487760.71	3646748.27	1.Fl	161.82	-	56.0	0	-56.0	-
14	487722.60	3646730.24	1.Fl	159.16	-	62.1	0	-62.1	-
15	487714.78	3646705.06	1.Fl	158.45	-	66.8	0	-66.8	-
16	487744.04	3646688.73	1.Fl	160.60	-	63.8	0	-63.8	-

Source name	Lane		Level w/o NP L(Aeq1h) dB(A)	Level w. NP L(Aeq1h) dB(A)
1	1.Fl	63.7	0.0	
Sundance EB			47.6	0
Sundance WB			44.8	0
Twin Trails NB			56.9	0
Twin Trails SB			62.5	0
2	1.Fl	67.7	0.0	
Sundance EB			56.1	0
Sundance WB			52.1	0
Twin Trails NB			61.0	0
Twin Trails SB			66.1	0
3	1.Fl	66.7	0.0	
Sundance EB			59.9	0
Sundance WB			55.9	0
Twin Trails NB			59.4	0
Twin Trails SB			63.8	0
4	1.Fl	62.5	0.0	
Sundance EB			57.5	0
Sundance WB			54.3	0
Twin Trails NB			55.0	0
Twin Trails SB			57.9	0
5	1.Fl	62.5	0.0	
Sundance EB			55.5	0
Sundance WB			56.9	0
Twin Trails NB			55.3	0
Twin Trails SB			57.8	0
6	1.Fl	67.2	0.0	
Sundance EB			58.6	0
Sundance WB			58.7	0
Twin Trails NB			59.9	0
Twin Trails SB			64.4	0
7	1.Fl	67.8	0.0	
Sundance EB			56.0	0
Sundance WB			55.3	0
Twin Trails NB			61.3	0
Twin Trails SB			66.0	0
8	1.Fl	63.5	0.0	
Sundance EB			47.8	0
Sundance WB			46.2	0
Twin Trails NB			57.7	0
Twin Trails SB			61.9	0
9	1.Fl	64.9	0.0	
Sundance EB			51.1	0
Sundance WB			50.0	0
Twin Trails NB			62.8	0
Twin Trails SB			59.9	0
10	1.Fl	67.6	0.0	
Sundance EB			55.8	0
Sundance WB			55.6	0
Twin Trails NB			65.0	0
Twin Trails SB			62.7	0
11	1.Fl	65.1	0.0	
Sundance EB			56.8	0
Sundance WB			57.0	0
Twin Trails NB			61.2	0
Twin Trails SB			59.7	0
12	1.Fl	61.0	0.0	
Sundance EB			53.6	0
Sundance WB			55.2	0
Twin Trails NB			55.4	0
Twin Trails SB			55.3	0
13	1.Fl	56.0	0.0	
Sundance EB			52.3	0
Sundance WB			48.1	0
Twin Trails NB			49.3	0
Twin Trails SB			48.8	0
14	1.Fl	62.1	0.0	
Sundance EB			57.0	0
Sundance WB			52.3	0
Twin Trails NB			57.2	0
Twin Trails SB			56.5	0
15	1.Fl	66.8	0.0	
Sundance EB			56.3	0
Sundance WB			52.3	0
Twin Trails NB			64.3	0
Twin Trails SB			61.9	0
16	1.Fl	63.8	0.0	
Sundance EB			48.3	0
Sundance WB			45.0	0
Twin Trails NB			62.1	0
Twin Trails SB			58.4	0

Stationing km	ADT Veh/24h	Traffic values Vehicles type	Vehicle name	day Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Max %
Twin Trails SB	Traffic direction:	In entry direction								
0+000	15648	Total	-	652	-	none	-	-	Average (of DGAC and PCC)	0.2 / 6.2
0+000	15648	Automobiles	-	618	48	none	-	-	Average (of DGAC and PCC)	0.2 / 6.2
0+000	15648	Medium trucks	-	13	48	none	-	-	Average (of DGAC and PCC)	0.2 / 6.2
0+000	15648	Heavy trucks	-	7	48	none	-	-	Average (of DGAC and PCC)	0.2 / 6.2
0+000	15648	Buses	-	7	48	none	-	-	Average (of DGAC and PCC)	0.2 / 6.2
0+000	15648	Motorcycles	-	7	48	none	-	-	Average (of DGAC and PCC)	0.2 / 6.2
0+000	15648	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	0.2 / 6.2
0+153	15648	Total	-	652	-	Traffic light	24	25	Average (of DGAC and PCC)	6.3
0+153	15648	Automobiles	-	618	48	Traffic light	24	25	Average (of DGAC and PCC)	6.3
0+153	15648	Medium trucks	-	13	48	Traffic light	24	25	Average (of DGAC and PCC)	6.3
0+153	15648	Heavy trucks	-	7	48	Traffic light	24	25	Average (of DGAC and PCC)	6.3
0+153	15648	Buses	-	7	48	Traffic light	24	25	Average (of DGAC and PCC)	6.3
0+153	15648	Motorcycles	-	7	48	Traffic light	24	25	Average (of DGAC and PCC)	6.3
0+153	15648	Auxiliary Vehicle	-	-	-	Traffic light	24	25	Average (of DGAC and PCC)	6.3
0+180	15648	Total	-	652	-	none	-	-	Average (of DGAC and PCC)	-0.09375
0+180	15648	Automobiles	-	618	48	none	-	-	Average (of DGAC and PCC)	-0.09375
0+180	15648	Medium trucks	-	13	48	none	-	-	Average (of DGAC and PCC)	-0.09375
0+180	15648	Heavy trucks	-	7	48	none	-	-	Average (of DGAC and PCC)	-0.09375
0+180	15648	Buses	-	7	48	none	-	-	Average (of DGAC and PCC)	-0.09375
0+180	15648	Motorcycles	-	7	48	none	-	-	Average (of DGAC and PCC)	-0.09375
0+180	15648	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	-0.09375
0+396	-					-	-	-	-	-
Twin Trails NB	Traffic direction:	In entry direction								
0+000	15648	Total	-	652	-	none	-	-	Average (of DGAC and PCC)	21.33333333
0+000	15648	Automobiles	-	618	48	none	-	-	Average (of DGAC and PCC)	21.33333333
0+000	15648	Medium trucks	-	13	48	none	-	-	Average (of DGAC and PCC)	21.33333333
0+000	15648	Heavy trucks	-	7	48	none	-	-	Average (of DGAC and PCC)	21.33333333
0+000	15648	Buses	-	7	48	none	-	-	Average (of DGAC and PCC)	21.33333333
0+000	15648	Motorcycles	-	7	48	none	-	-	Average (of DGAC and PCC)	21.33333333
0+000	15648	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	21.33333333
0+214	15648	Total	-	652	-	Traffic light	24	25	Average (of DGAC and PCC)	-5.1
0+214	15648	Automobiles	-	618	48	Traffic light	24	25	Average (of DGAC and PCC)	-5.1
0+214	15648	Medium trucks	-	13	48	Traffic light	24	25	Average (of DGAC and PCC)	-5.1
0+214	15648	Heavy trucks	-	7	48	Traffic light	24	25	Average (of DGAC and PCC)	-5.1
0+214	15648	Buses	-	7	48	Traffic light	24	25	Average (of DGAC and PCC)	-5.1
0+214	15648	Motorcycles	-	7	48	Traffic light	24	25	Average (of DGAC and PCC)	-5.1
0+214	15648	Auxiliary Vehicle	-	-	-	Traffic light	24	25	Average (of DGAC and PCC)	-5.1
0+238	15648	Total	-	652	-	none	-	-	Average (of DGAC and PCC)	#DIV/0!
0+238	15648	Automobiles	-	618	48	none	-	-	Average (of DGAC and PCC)	#DIV/0!
0+238	15648	Medium trucks	-	13	48	none	-	-	Average (of DGAC and PCC)	#DIV/0!
0+238	15648	Heavy trucks	-	7	48	none	-	-	Average (of DGAC and PCC)	#DIV/0!
0+238	15648	Buses	-	7	48	none	-	-	Average (of DGAC and PCC)	#DIV/0!
0+238	15648	Motorcycles	-	7	48	none	-	-	Average (of DGAC and PCC)	#DIV/0!
0+238	15648	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	#DIV/0!
0+387	-					-	-	-	-	-
Sundance EB	Traffic direction:	In entry direction								
0+000	4920	Total	-	205	-	none	-	-	Average (of DGAC and PCC)	-0.941176471
0+000	4920	Automobiles	-	195	40	none	-	-	Average (of DGAC and PCC)	-0.941176471
0+000	4920	Medium trucks	-	4	40	none	-	-	Average (of DGAC and PCC)	-0.941176471
0+000	4920	Heavy trucks	-	2	40	none	-	-	Average (of DGAC and PCC)	-0.941176471
0+000	4920	Buses	-	2	40	none	-	-	Average (of DGAC and PCC)	-0.941176471
0+000	4920	Motorcycles	-	2	40	none	-	-	Average (of DGAC and PCC)	-0.941176471
0+000	4920	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	-0.941176471
0+123	4920	Total	-	205	-	Traffic light	24	75	Average (of DGAC and PCC)	0.1
0+123	4920	Automobiles	-	195	40	Traffic light	24	75	Average (of DGAC and PCC)	0.1
0+123	4920	Medium trucks	-	4	40	Traffic light	24	75	Average (of DGAC and PCC)	0.1
0+123	4920	Heavy trucks	-	2	40	Traffic light	24	75	Average (of DGAC and PCC)	0.1
0+123	4920	Buses	-	2	40	Traffic light	24	75	Average (of DGAC and PCC)	0.1
0+123	4920	Motorcycles	-	2	40	Traffic light	24	75	Average (of DGAC and PCC)	0.1
0+123	4920	Auxiliary Vehicle	-	-	-	Traffic light	24	75	Average (of DGAC and PCC)	0.1
0+148	2520	Total	-	105	-	none	-	-	Average (of DGAC and PCC)	6.8 / 10.1
0+148	2520	Automobiles	-	100	40	none	-	-	Average (of DGAC and PCC)	6.8 / 10.1
0+148	2520	Medium trucks	-	2	40	none	-	-	Average (of DGAC and PCC)	6.8 / 10.1
0+148	2520	Heavy trucks	-	1	40	none	-	-	Average (of DGAC and PCC)	6.8 / 10.1
0+148	2520	Buses	-	1	40	none	-	-	Average (of DGAC and PCC)	6.8 / 10.1
0+148	2520	Motorcycles	-	1	40	none	-	-	Average (of DGAC and PCC)	6.8 / 10.1
0+148	2520	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	6.8 / 10.1
0+253	-					-	-	-	-	-
Sundance WB	Traffic direction:	In entry direction								
0+000	2520	Total	-	105	-	none	-	-	Average (of DGAC and PCC)	1.913793103
0+000	2520	Automobiles	-	100	40	none	-	-	Average (of DGAC and PCC)	1.913793103
0+000	2520	Medium trucks	-	2	40	none	-	-	Average (of DGAC and PCC)	1.913793103
0+000	2520	Heavy trucks	-	1	40	none	-	-	Average (of DGAC and PCC)	1.913793103
0+000	2520	Buses	-	1	40	none	-	-	Average (of DGAC and PCC)	1.913793103
0+000	2520	Motorcycles	-	1	40	none	-	-	Average (of DGAC and PCC)	1.913793103
0+000	2520	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	1.913793103
0+103	2520	Total	-	105	-	Traffic light	24	75	Average (of DGAC and PCC)	0.4
0+103	2520	Automobiles	-	100	40	Traffic light	24	75	Average (of DGAC and PCC)	0.4
0+103	2520	Medium trucks	-	2	40	Traffic light	24	75	Average (of DGAC and PCC)	0.4
0+103	2520	Heavy trucks	-	1	40	Traffic light	24	75	Average (of DGAC and PCC)	0.4
0+103	2520	Buses	-	1	40	Traffic light	24	75	Average (of DGAC and PCC)	0.4
0+103	2520	Motorcycles	-	1	40	Traffic light	24	75	Average (of DGAC and PCC)	0.4
0+103	2520	Auxiliary Vehicle	-	-	-	Traffic light	24	75	Average (of DGAC and PCC)	0.4
0+129	4920	Total	-	205	-	none	-	-	Average (of DGAC and PCC)	-0.869565217
0+129	4920	Automobiles	-	195	40	none	-	-	Average (of DGAC and PCC)	-0.869565217
0+129	4920	Medium trucks	-	4	40	none	-	-	Average (of DGAC and PCC)	-0.869565217
0+129	4920	Heavy trucks	-	2	40	none	-	-	Average (of DGAC and PCC)	-0.869565217
0+129	4920	Buses	-	2	40	none	-	-	Average (of DGAC and PCC)	-0.869565217
0+129	4920	Motorcycles	-	2	40	none	-	-	Average (of DGAC and PCC)	-0.869565217
0+129	4920	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	-0.869565217
0+250	-					-	-	-	-	-

No.	Coordinates X	Y	Floor	Height	Limit L(Aeq1h)	Level w/o NP L(Aeq1h)	Level w. NP L(Aeq1h)	Difference L(Aeq1h)	Conflict L(Aeq1h)
	in meter			m	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
1	487733.15	3646663.56	1.Fl	161.22	-	63.0	0.0	-63.0	-
2	487700.83	3646683.63	1.Fl	158.23	-	64.9	0.0	-64.9	-
3	487677.35	3646683.29	1.Fl	156.95	-	62.1	0.0	-62.1	-
4	487667.49	3646669.00	1.Fl	156.59	-	59.8	0.0	-59.8	-
5	487653.88	3646677.85	1.Fl	156.87	-	59.9	0.0	-59.9	-
6	487665.10	3646694.18	1.Fl	156.95	-	62.3	0.0	-62.3	-
7	487660.34	3646710.51	1.Fl	155.82	-	63.2	0.0	-63.2	-
8	487633.46	3646734.32	1.Fl	152.79	-	62.6	0.0	-62.6	-
9	487661.36	3646742.83	1.Fl	153.90	-	63.3	0.0	-63.3	-
10	487675.31	3646731.60	1.Fl	154.55	-	63.9	0.0	-63.9	-
11	487698.79	3646735.00	1.Fl	157.04	-	60.5	0.0	-60.5	-
12	487719.88	3646747.59	1.Fl	159.48	-	58.0	0.0	-58.0	-
13	487760.71	3646748.27	1.Fl	161.82	-	54.1	0.0	-54.1	-
14	487722.60	3646730.24	1.Fl	159.16	-	58.6	0.0	-58.6	-
15	487714.78	3646705.06	1.Fl	158.45	-	63.5	0.0	-63.5	-
16	487744.04	3646688.73	1.Fl	160.60	-	63.0	0.0	-63.0	-

Source name		Lane		Level w/o NP L(Aeq1h) dB(A)	Level w. NP L(Aeq1h) dB(A)
1	1.Fl	63.0	0.0		
Sundance EB				43.5	0
Sundance WB				41.3	0
Twin Trails NB				55.7	0
Twin Trails SB				62.0	0
2	1.Fl	64.9	0.0		
Sundance EB				51.5	0
Sundance WB				48.3	0
Twin Trails NB				56.8	0
Twin Trails SB				63.8	0
3	1.Fl	62.1	0.0		
Sundance EB				57.6	0
Sundance WB				54.0	0
Twin Trails NB				53.7	0
Twin Trails SB				57.5	0
4	1.Fl	59.8	0.0		
Sundance EB				56.6	0
Sundance WB				53.7	0
Twin Trails NB				49.8	0
Twin Trails SB				52.3	0
5	1.Fl	59.9	0.0		
Sundance EB				54.2	0
Sundance WB				56.5	0
Twin Trails NB				50.1	0
Twin Trails SB				52.3	0
6	1.Fl	62.3	0.0		
Sundance EB				55.3	0
Sundance WB				57.2	0
Twin Trails NB				54.3	0
Twin Trails SB				57.7	0
7	1.Fl	63.2	0.0		
Sundance EB				51.5	0
Sundance WB				51.3	0
Twin Trails NB				56.8	0
Twin Trails SB				61.3	0
8	1.Fl	62.6	0.0		
Sundance EB				43.3	0
Sundance WB				42.1	0
Twin Trails NB				56.4	0
Twin Trails SB				61.2	0
9	1.Fl	63.3	0.0		
Sundance EB				46.6	0
Sundance WB				45.7	0
Twin Trails NB				61.9	0
Twin Trails SB				57.2	0
10	1.Fl	63.9	0.0		
Sundance EB				51.1	0
Sundance WB				50.9	0
Twin Trails NB				62.1	0
Twin Trails SB				57.7	0
11	1.Fl	60.5	0.0		
Sundance EB				53.3	0
Sundance WB				54.9	0
Twin Trails NB				55.3	0
Twin Trails SB				53.9	0
12	1.Fl	58.0	0.0		
Sundance EB				52.1	0
Sundance WB				54.6	0
Twin Trails NB				49.6	0
Twin Trails SB				49.6	0
13	1.Fl	54.1	0.0		
Sundance EB				51.8	0
Sundance WB				47.5	0
Twin Trails NB				43.7	0
Twin Trails SB				44.4	0
14	1.Fl	58.6	0.0		
Sundance EB				55.9	0
Sundance WB				50.6	0
Twin Trails NB				50.9	0
Twin Trails SB				50.1	0
15	1.Fl	63.5	0.0		
Sundance EB				51.6	0
Sundance WB				47.9	0
Twin Trails NB				61.7	0
Twin Trails SB				57.6	0
16	1.Fl	63.0	0.0		
Sundance EB				43.6	0
Sundance WB				41.1	0
Twin Trails NB				61.6	0
Twin Trails SB				57.1	0

ATTACHMENT 8

FHWA RD-77-108–MM-TRA-2 Traffic Noise Levels

	AM Peak Hour			PM Peak Hour		
	Without Project	With Project	Δ	Without Project	With Project	Δ
SR-56 WB	75.3	75.3	0.0	71.0	71.0	0.0
SR-56 EB	75.4	75.8	0.4	79.5	79.9	0.4
SR-56	78.4	78.6	0.2	80.1	80.4	0.4

FHWA RD-77-108

Traffic Noise Prediction Model

Data Input Sheet

Project Name : Black Mountain Road - SR-56 Aux Lane
Project Number : 6524
Modeled Condition : Horizon with and without Project

Surface Refelction: CNEL
Assessment Metric: Hard
Peak ratio to ADT: 10.00
Traffic Desc. (Peak or ADT) : Peak

Segment	Roadway	Segment	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	K-Factor
1	SR-56 WB - Horizon without Project AM Peak Hour		7,888	65	208	96.00	3.00	1.00	80.00	10.00	10.00	
2	SR-56 WB - Horizon without Project PM Peak Hour		2,902	65	208	96.00	3.00	1.00	80.00	10.00	10.00	
3	SR-56 EB - Horizon without Project AM Peak Hour		3,024	65	78	96.00	3.00	1.00	80.00	10.00	10.00	
4	SR-56 EB - Horizon without Project PM Peak Hour		7,744	65	78	96.00	3.00	1.00	80.00	10.00	10.00	
1	SR-56 WB - Horizon with Project AM Peak Hour		7,925	65	208	96.00	3.00	1.00	80.00	10.00	10.00	
2	SR-56 WB - Horizon with Project PM Peak Hour		2,916	65	208	96.00	3.00	1.00	80.00	10.00	10.00	
3	SR-56 EB - Horizon with Project AM Peak Hour		3,038	65	72	96.00	3.00	1.00	80.00	10.00	10.00	
4	SR-56 EB - Horizon with Project PM Peak Hour		7,780	65	72	96.00	3.00	1.00	80.00	10.00	10.00	

FHWA RD-77-108

Traffic Noise Prediction Model

Predicted Noise Levels

Project Name : Black Mountain Road - SR-56 Aux Lane
Project Number : 6524
Modeled Condition : Horizon with and without Project
Assessment Metric: Hard

			Noise Levels, dBA Hard				Distance to Traffic Noise Level Contours, Feet					
Segment	Roadway	Segment	Auto	MT	HT	Total	75 dB	70 dB	65 dB	60 dB	55 dB	50 dB
1	SR-56 WB - Horizon without Project AM Peak Hour		74.4	65.5	64.2	75.3	223	705	2,229	7,048	22,288	70,480
2	SR-56 WB - Horizon without Project PM Peak Hour		70.1	61.2	59.9	71.0	83	262	828	2,619	8,281	26,186
3	SR-56 EB - Horizon without Project AM Peak Hour		74.5	65.6	64.3	75.4	86	270	855	2,705	8,553	27,045
4	SR-56 EB - Horizon without Project PM Peak Hour		78.6	69.7	68.4	79.5	220	695	2,198	6,952	21,983	69,518
1	SR-56 WB - Horizon with Project AM Peak Hour		74.5	65.6	64.3	75.3	223	705	2,229	7,048	22,288	70,480
2	SR-56 WB - Horizon with Project PM Peak Hour		70.1	61.2	59.9	71.0	83	262	828	2,619	8,281	26,186
3	SR-56 EB - Horizon with Project AM Peak Hour		74.9	66.0	64.7	75.8	87	274	866	2,737	8,656	27,374
4	SR-56 EB - Horizon with Project PM Peak Hour		79.0	70.1	68.8	79.9	223	704	2,225	7,036	22,250	70,361

ATTACHMENT 9

FHWA RD-77-108–MM-TRA-3 Traffic Noise Levels

FHWA RD-77-108

Traffic Noise Prediction Model

Data Input Sheet

Project Name : Black Mountain Road - Rancho Penaquitos/SR-56 WB Ramp
Project Number : 6524
Modeled Condition : Horizon with and without Project

Surface Refelction: CNEL
Assessment Metric: Hard
Peak ratio to ADT: 10.00
Traffic Desc. (Peak or ADT) : Peak

Segment	Roadway	Segment	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	K-Factor
1	Rancho Penaquitos/SR-56 WB Ramp - Horizon without Project		811	15	136	96.00	3.00	1.00	80.00	10.00	10.00	
2	Rancho Penaquitos/SR-56 WB Ramp - Horizon with Project		835	15	130	96.00	3.00	1.00	80.00	10.00	10.00	

FHWA RD-77-108

Traffic Noise Prediction Model

Predicted Noise Levels

Project Name : Black Mountain Road - Rancho Penaquitos/SR-56 WB Ramp
Project Number : 6524
Modeled Condition : Horizon with and without Project
Assessment Metric: Hard

			Noise Levels, dBA Hard				Distance to Traffic Noise Level Contours, Feet					
Segment	Roadway	Segment	Auto	MT	HT	Total	75 dB	70 dB	65 dB	60 dB	55 dB	50 dB
1	Rancho Penaquitos/SR-56 WB Ramp - Horizon without Project		48.1	47.6	51.9	54.4	1	4	12	37	118	375
2	Rancho Penaquitos/SR-56 WB Ramp - Horizon with Project		48.4	47.9	52.2	54.7	1	4	12	38	121	384