Noise Technical Report for the Meadowood Project County of San Diego GPA04-002, SPA04-001, R04-004, VTM 5354RPL², S04-005, S04-006, S04-007 and ER No. 04-02-004

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1.0 Summary of Findings

The proposed Meadowood project (Proposed Project) is located to the north of the realigned State Route 76 (SR-76), also known as Pala Road, and east of Interstate 15 (I-15) in the county of San Diego. The Proposed Project is situated between several planned developments which will eventually contribute to the ambient noise levels: Palomar College North Education Center, Campus Park, and Campus Park West. Located to the north and east is land that is currently undeveloped and consists of citrus and avocado orchards, and natural open space. The future site of the Rosemary's Mountain Rock Quarry is located to the east of the Project Site.

The Proposed Project includes construction of 844 single- and multi-family homes and an elementary school on 389.5 acres. Figure 1 shows the regional location of the Proposed Project. Figure 2 shows the Proposed Project boundary plotted on an aerial photograph of the Proposed Project vicinity. Figure 3 shows the proposed site plan for the Proposed Project.

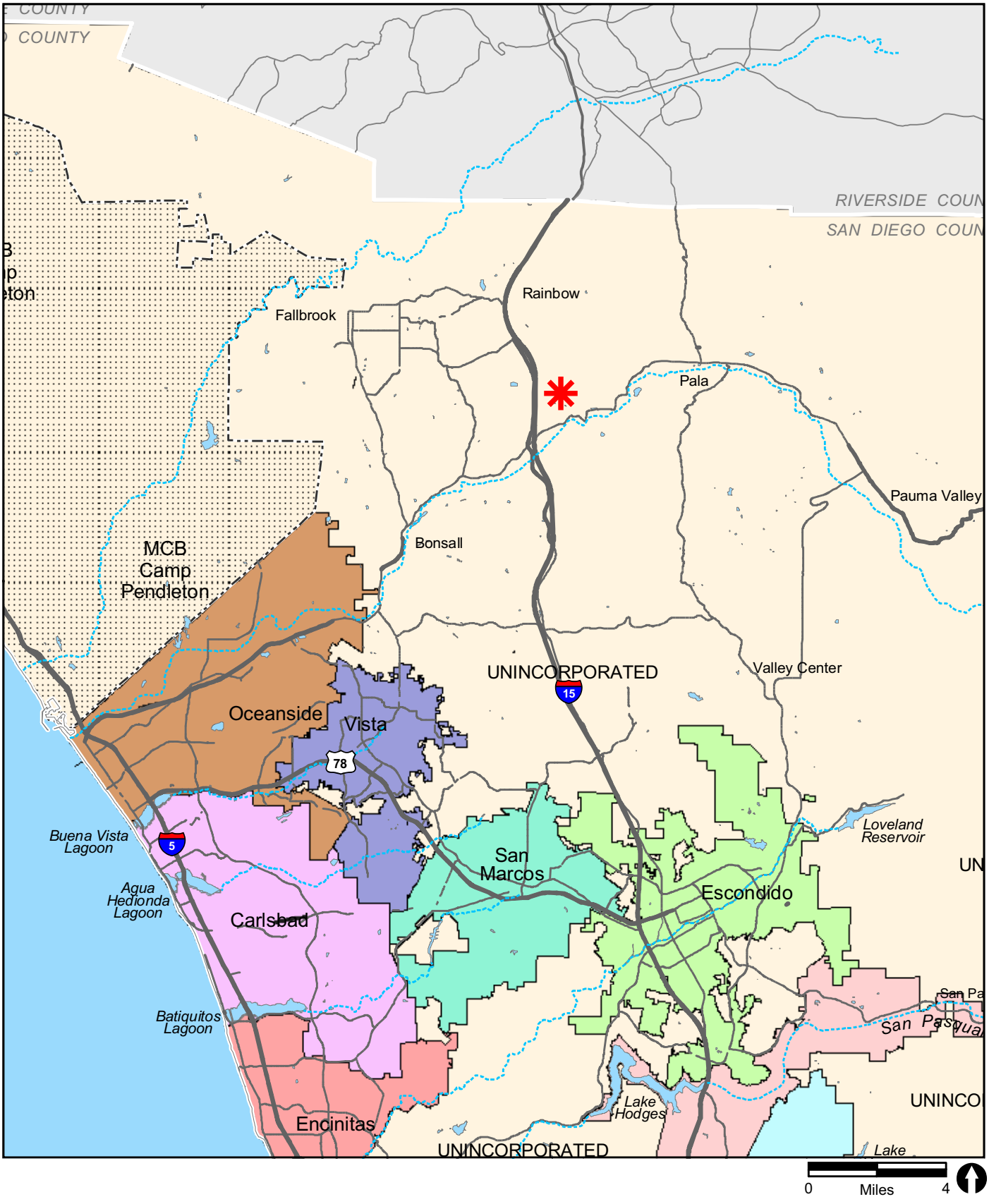
The Project Site would be affected by future traffic noise on I-15, SR-76, the future alignments of Pala Mesa Drive and Street R, and the proposed Horse Ranch Creek Road. An analysis was performed to assess the potential impacts due to traffic noise at the exterior use areas within the Proposed Project. The County of San Diego's noise standards are 60 community noise equivalent level (CNEL) for exterior residential areas and 45 CNEL for noise-sensitive interior rooms.

This report summarizes the results of the acoustical analysis. Impacts are assessed in accordance with the guidelines, policies, and standards established by the County of San Diego. Measures are recommended, as required, to reduce significant noise impacts to noise-sensitive areas.

1.1 Residential Units and School Site

Exterior noise levels for the ground-floor receivers at lots adjacent to major roadways are projected to exceed the County's 60 CNEL exterior noise standard without mitigation. With the construction of barriers ranging from three to ten-feet high along the edge of the pads all ground floor noise sensitive areas within the Proposed Project are projected to be at or below the County's 60 CNEL exterior noise standard.

Examples of acceptable barrier materials include, but are not limited to, masonry block, wood frame with stucco, 0.5-inch-thick Plexiglas, or 0.25-inch-thick plate glass. If transparent barrier materials are used, no gaps should occur between the panels.



Project location

FIGURE 1

Regional Location

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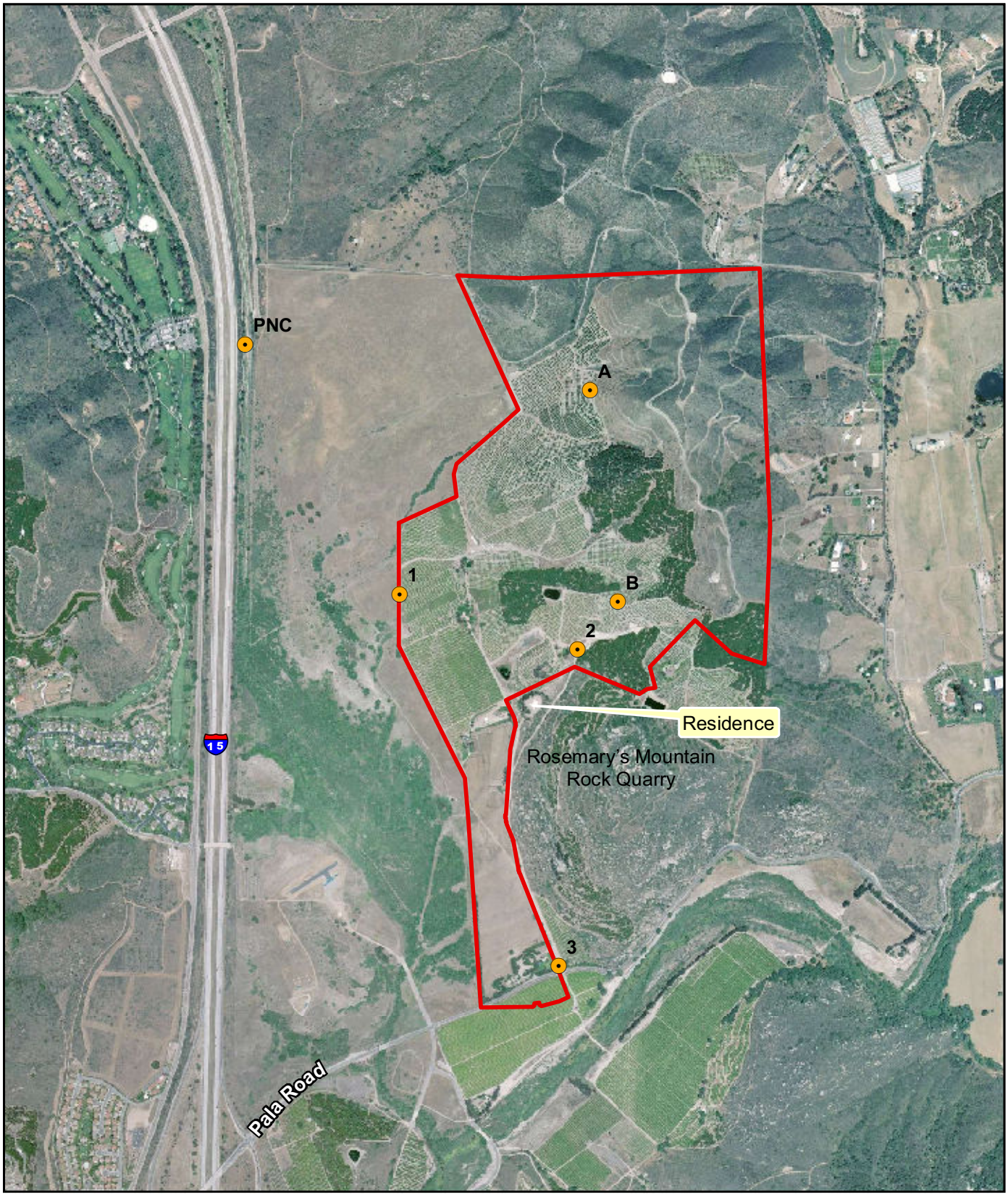

FIGURE 2

Aerial Photograph of Project and Noise Measurements Locations

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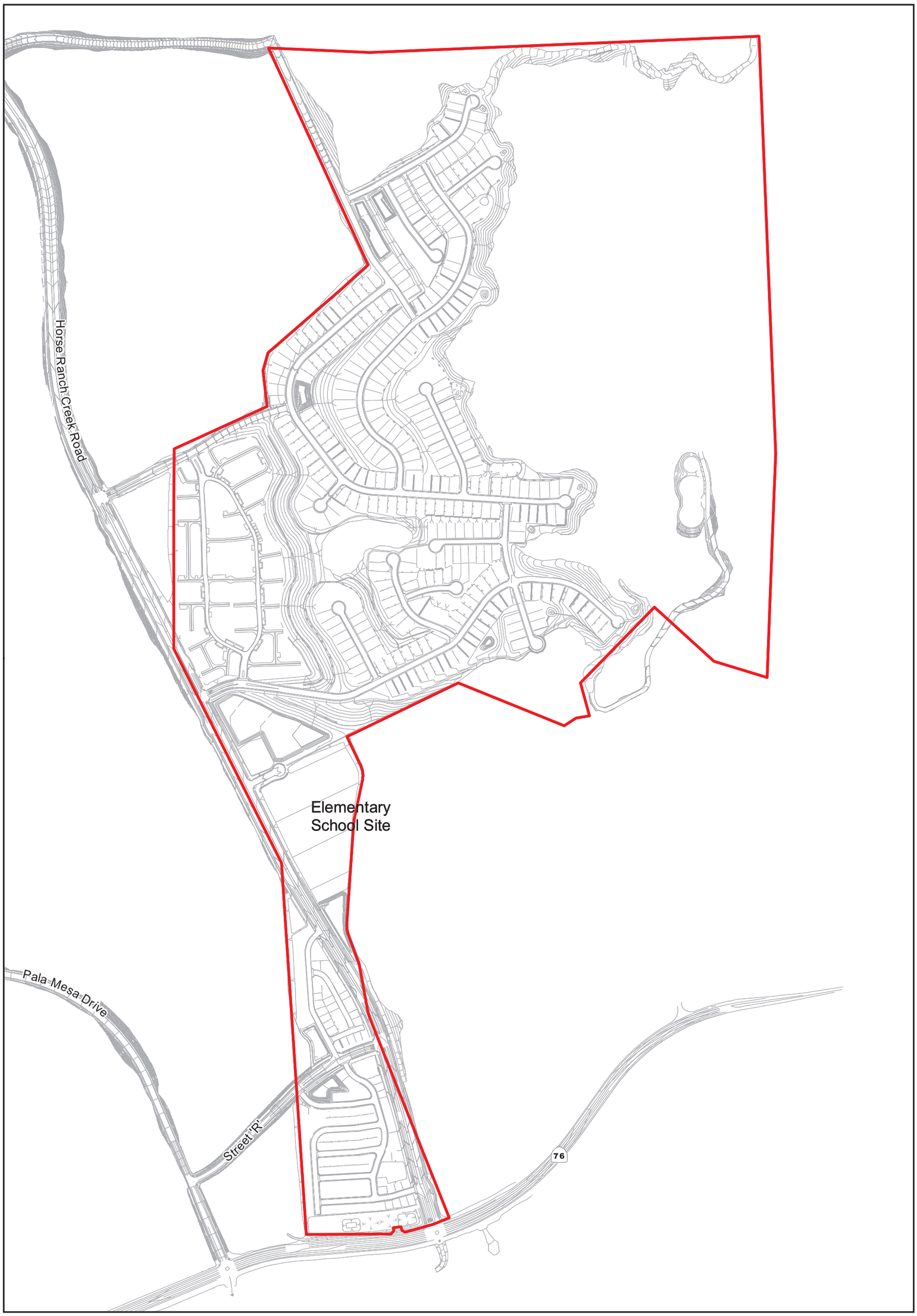

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FIGURE 3

Site Plan

Even with the construction of barriers, exterior noise levels above the ground floor levels could exceed 60 CNEL at the multi-family buildings. Therefore, at such time as architectural plans are available, and prior to the issuance of building permits, an interior acoustical analysis shall be conducted for the multi-family units detailed in the Mitigation section below. If interior allowable noise levels are met by requiring that windows be unopenable or closed, the design for the structure must also specify a ventilation or air-conditioning system to provide a habitable interior environment, as specified in the State Building Code.

1.2 Construction

Construction shall be limited to the hours of 7:00 A.M. to 7:00 P.M. Monday through Saturday as stated in the County of San Diego's Noise Abatement and Control Ordinance. In accordance with the County's noise ordinance, no construction shall take place on Sundays or on legal holidays specified in Section 36.409 of the San Diego County Code of Regulatory Ordinances.

As discussed below, construction noise levels are not projected to exceed the County's noise ordinance standard at sensitive receptors.

1.3 Rosemary's Mountain Rock Quarry

As discussed below, quarry noises, such as blast noise, may be audible and perceived as a nuisance to lots within the 50 decibel contour. The following lots would require notification of the potential nuisance impact: Lots 1 through 5, 16 through 31, 38 through 68, 78 through 109, 357, 360 through 370, and 379 through 381.

1.4 Wastewater Treatment Plant

Noise at exterior receivers due to the on-site wastewater treatment plant (WWTP) will be significant but mitigable. The barriers discussed below, specifically the ~~10~~9-foot barrier proposed south of Planning Area 1 (PA-1) residences and a 7-foot barrier proposed south of the WWTP site, would reduce noise impacts to a level that is less than significant.

2.0 Analysis Methodology

2.1 Applicable Standards and Definitions of Terms

Noise standards applicable to traffic-generated noise are expressed in terms of the CNEL. The CNEL is a 24-hour A-weighted average sound level [dB(A) L_{eq}] from midnight to midnight obtained after the addition of five decibels to sound levels occurring between 7:00 P.M. and 10:00 P.M. and of 10 decibels to the sound levels occurring between 10:00 P.M. and 7:00 A.M. A-weighting is a frequency correction that often correlates well with the subjective response of humans to noise. Adding five decibels and 10 decibels to the evening and nighttime hours, respectively, accounts for the added sensitivity of humans to noise during these time periods. L_{10} represents the A-weighted sound level which is exceeded 10 percent of a stated time period.

For the purpose of this analysis, exceeding the following Guidelines of Significance will be considered substantial evidence that a significant impact exists related to noise if:

1. Project implementation will expose exterior on- or off-site, existing or planned noise sensitive land uses (NSLU) to any noise in excess of 60 CNEL. For single-family residential sites, the minimum acceptable NSLU shall be the greater of the following:

    a. Fifteen (15) percent of the available buildable portion of the lot, or

    b. 400 square feet.

2. Project implementation will expose interior on- or off-site, existing or planned NSLU to noise in excess of 45 CNEL for single- or multi-family residential uses.

3. Project implementation exposes rooms with “noise sensitive” daytime uses (schools, libraries, or similar) that result in one-hour average interior sound levels that exceed 50 dB(A) L_{eq}.

4. For existing NSLU whose site conditions are below 50 CNEL, project implementation will expose on- or off-site, existing NSLU to noise 10 decibels over existing noise levels, and County noise standards are not exceeded.

5. Non-construction noise generated by the Proposed Project will exceed the standards listed under the San Diego County Code of Regulatory Ordinances, Section 36.404, Sound Level Limits at or beyond the property line. The sound

level limit at a location on a boundary between two zoning districts is the arithmetic mean of the respective limits for the two districts.

ZONE	PERIOD	APPLICABLE LIMIT ONE-HOUR AVERAGE SOUND LEVEL (dB(A) L_{eq})
R-S, R-D, R-R, R-MH, A-70, A-72, S-80, S-81, S-87, S-90, S-92, R-V, and R-U with a density of less than 11 dwelling units per acre.	7 AM to 10 PM 10 PM to 7 AM	50 45
R-RO, R-C, R-M, S-86, V5, and R-V and R-U with a density of 11 or more dwelling units per acre.	7 AM to 10 PM 10 PM to 7 AM	55 50
S94, V4, and all commercial zones	7:00 A.M. to 10:00 P.M. 10:00 P.M. to 7:00 A.M.	60 55
V1	7:00 A.M. to 7:00 P.M. 7:00 P.M. to 7:00 A.M.	60 55
V2	7:00 A.M. to 7:00 P.M. 7:00 P.M. to 10:00 P.M. 10:00 P.M. to 7:00 A.M.	60 55 50
V3	7:00 A.M. to 10:00 P.M. 10:00 P.M. to 7:00 A.M.	70 65
M-50, M-52, and M-54	Anytime	70
S82, M56, and M58	Anytime	75

Noise generated by the construction of the Proposed Project will exceed the construction equipment standards listed in the San Diego County Code of Regulatory Ordinances, Section 36.409, Sound Level Limitations on Construction Equipment. Section 36.409 states that:

> Except for emergency work, it shall be unlawful for any person to operate construction equipment or cause construction equipment to be operated, that exceeds an average sound level of 75 dB(A) L_{eq} for an eight-hour period, between 7:00 A.M. and 7:00 P.M., when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is being received.

6. In cases where existing noise levels already exceed the applicable noise guideline:

a. The on-site noise generated by the Proposed Project will increase received noise levels at or beyond the property line by one decibel. The received levels refer to the sum of the contributions from all sources on the Project Site (property).

b. Project implementation will expose on- or off-site, existing and planned NSLU to road noise three (3) decibels over existing noise levels and are not to exceed 65 CNEL. The specified existing noise levels are for NSLU with site conditions greater than 58 CNEL.

In addition, if exterior noise levels at any noise sensitive area exceed 75 CNEL, the development should not be approved.

Guidelines of Significance come from the Noise Element of the County of San Diego General Plan and the San Diego County Noise Ordinance and CEQA Guidelines.

The transmission of exterior to interior noise in multi-family projects is also governed by Title 24 of the State Building Code that states:

> **1208A.8.2 Allowable interior noise levels.** Interior noise levels attributable to exterior sources shall not exceed 45 dB(A) in any habitable room. The noise metric shall be either the day-night average sound level (L_{dn}) or the community noise equivalent level (CNEL), consistent with the noise element of the local general plan.
>
> **NOTE:** L_{dn} is the preferred metric for implementing these standards.

Worst-case noise levels, either existing or future, shall be used as the basis for determining compliance with this section. Future noise levels shall be predicted for a period of at least 10 years from the time of building permit application.

> **1208A.8.4 Other noise sources.** Residential structures to be located where the L_{dn} or CNEL exceeds 60 dB(A) shall require an acoustical analysis showing that the proposed design will limit exterior noise to the prescribed allowable interior level.
>
> **1208A.8.5 Compliance.** If interior allowable noise levels are met by requiring that windows be unopenable or closed, the design for the structure must also specify a ventilation or air-conditioning system to provide a habitable interior environment. The ventilation system must not compromise the dwelling unit or guest room noise reduction.

2.2 Existing Noise Level Measurements

Field measurements were taken by RECON with two Larson-Davis Model 720 Type 2 Integrating Sound Level Meters, serial numbers 0260 and 0272. The following parameters were used:

Filter: A-weighted

Response: Fast

Time History Period: 1 second

The meters were calibrated prior to the day's measurements. Five ground-floor measurements (five feet above the ground) were taken on the Project Site. Additionally, traffic counts were taken during the measurement adjacent to SR-76, as discussed below.

In addition, a long-term (24-hour) measurement was taken by Pacific Noise Control for the Campus Park Project located directly west of the Project Site (Pacific Noise Control 2005).

2.3 Traffic Noise Analysis

2.3.1 Traffic Parameters

Year 2030 traffic volumes and speeds were obtained from the Proposed Project traffic study (LOS Engineering 2009). The future traffic volume on the segment of I-15 that runs parallel to the Proposed Project is projected to be 251,000 average daily traffic (ADT). The speed limit used in this analysis for I-15 was 65 miles per hour (mph). The traffic mix data used for I-15 was assumed to be 91.9 percent cars, 2.6 percent medium trucks, and 5.5 percent heavy trucks, and was based on Caltrans truck volumes (Caltrans 2005a).

The future realignment of the segment of SR-76 that runs adjacent to the Proposed Project has a future ADT of 32,000 and a posted speed of 55 mph. The traffic mix used for this roadway is based on traffic counts taken at the Project Site. The traffic mix for SR-76 was taken to be 85.4 percent cars, 4.7 percent medium trucks, and 9.9 percent heavy trucks.

The proposed Horse Ranch Creek Road is a boulevard with a raised median adjacent to the Proposed Project. Boulevards have a design speed of 40 mph. Future traffic volumes of 13,600 ADT between SR-76 and Street R, 22,800 ADT between Street R and Street Q, 22,600 ADT between Street Q and Street A, 20,800 ADT between Street

A and Street B, 16,000 ADT between Street B and Longspur Road, and 11,400 between Longspur Road and Baltimore Oriole Drive, and an average speed of 40 mph were used to model traffic on Horse Ranch Creek Road adjacent to the Project Site (LOS Engineering 2009).

The future extension of Pala Mesa Drive will extend from I-15 to connect Pankey Road which connects to SR-76 west of the Project Site. This portion of Pala Mesa Drive will have a future traffic volume of 7,500 ADT and a speed of 45 mph (LOS Engineering 2009).

The future Street R will extend from Pala Mesa Drive to Horse Ranch Creek Road. This roadway will have a future traffic volume of 10,300 ADT and a speed of 45 mph (LOS Engineering 2009).

Horse Ranch Creek Road, Pala Mesa Drive, and Street R were also assumed to carry primarily non-truck traffic, but given the high truck traffic on SR-76, the mix used was 95 percent autos, 3 percent medium trucks, and 2 percent heavy trucks, which is a higher truck mix than would be expected in most residential areas. This is reasonable since truck traffic travels primarily on I-15 and SR-76. Horse Ranch Creek Road, Street R, and Pala Mesa Drive would be primarily for residential access. Table 1 summarizes the traffic parameters used in this analysis.

TABLE 1
YEAR 2030 ROADWAY TRAFFIC PARAMETERS

Roadway	ADT	Percent Autos	Percent Medium Trucks	Percent Heavy Trucks	Speed (mph)
I-15					
SR-76 to Mission Road	251,000	91.9	2.6	5.5	65
SR-76					
Pankey Road to Horse Ranch Creek Road	32,000	85.4	4.7	9.9	55
Horse Ranch Creek Road					
SR-76 to Street R	13,600				
Street R to Street Q	22,800				
Street Q to Street A	22,600	95	3	2	40
Street A to Street B	20,800				
Street B to Longspur Rd	16,000				
Longspur Rd to Baltimore Oriole Dr	11,400				
Pala Mesa Drive/ Pankey Road					
SR-76 to I-15	7,500	95	3	2	45
Street R					
Pala Mesa Dr to Horse Ranch Creek Rd	10,300	95	3	2	45

For all roadways except I-15, a traffic distribution of 77 percent of the ADT during daytime hours, 10 percent during evening hours, and 13 percent during the nighttime hours was assumed. With this day/evening/night distribution, CNEL is approximately two decibels greater than a noise level for an average daytime hour.

For I-15, a traffic distribution of 68 percent of the ADT during the daytime hours, 12 percent during the evening hours, and 20 percent during the nighttime hours was assumed. This reasonably matched the 24 hour measurement discussed below. With this day/evening/night distribution, CNEL is approximately four decibels greater than a noise level for an average daytime hour.

2.3.2 Analysis of Traffic Noise

Noise generated by future traffic on all area roadways except I-15 was projected using the STAMINA 2.0/OPTIMA computer models from Vanderbilt University (1991). These models are computerized versions of the Federal Highway Administration Noise Prediction Model (1979), which uses California vehicle noise emission (Calveno) levels (California Department of Transportation 1983).

The Proposed Project is located approximately 2,000 feet from I-15. The noise prediction model is most accurate for receivers within 200 feet of the noise source. At greater distances, however, the noise levels predicted by the model are not accurate. Caltrans does not recommend using the current prediction models for receivers that are more than 500 feet from the noise source (Caltrans 2002). Therefore, noise generated by future traffic on I-15 was projected based on noise measurements and extrapolated from existing to future traffic volumes by the following formula:

$$\Delta \text{ dB(A)} = 10 \cdot \log (\text{ADT Future} / \text{ADT Existing})$$

Exterior traffic noise levels at first- and second-floor receivers were calculated. First-floor receivers were placed at five feet above ground level and second-floor receivers were placed at 15 feet above ground level. Calculations were completed for a daytime hour and the resulting hourly average noise levels (L_{eq}) were weighted and combined into CNEL values. Projected CNEL values based on the traffic distributions used for all area roads except I-15 are approximately two decibels higher than the daytime hourly L_{eq} calculated by STAMINA as indicated above. The CNEL values based on the traffic distribution for I-15 are 3.7 decibels higher than the measured daytime L_{eq}. Noise measurements are discussed below.

The STAMINA model calculates noise levels at selected receiver locations using input parameter estimates such as projected hourly average traffic rates; vehicle mix, distribution, and speed; roadway lengths and gradients; distances between sources, barriers, and receivers; and shielding provided by intervening terrain, barriers, and

structures. The OPTIMA model calculates noise levels at selected receivers for varying noise barrier heights using the STAMINA output.

Locations and elevations of residential pads and slopes for the Proposed Project and for the adjacent roadways were obtained from CAD drawing files received from the project engineer. Receivers, roadways, and barriers are entered into the STAMINA model using three-dimensional coordinates. The coordinates used for this analysis were the NAD83 coordinates used in the CAD files.

3.0 Existing Conditions

The existing Project Site is currently relatively undeveloped. Ambient noise in the vicinity of the Project Site is generated by traffic on SR-76 and the I-15. In addition, the Proposed Project is situated between several planned developments which will eventually contribute to the ambient noise levels: Palomar College North Education Center, Campus Park, and Campus Park West. As part of this analysis, ambient noise conditions were measured in and around the Project Site. In order to provide a qualitative assessment of the variability of noise throughout the study area, a series of three daytime noise measurements, 20 minutes in duration, were made by RECON on July 14, 2005, throughout the study area. An additional two measurements were made by RECON on November 13, 2006. Long-term (24-hour) measurements were taken by Pacific Noise Control for the Campus Park Project located directly west of the Project Site. The measurement locations are shown in Figure 2 and were chosen to obtain existing noise levels in order to characterize the existing ambient noise condition. The noise measurement data are contained in Attachment 1.

The first set of measurements was taken between 10:40 A.M. and 12:10 P.M. on Thursday, July 14, 2005. The weather was warm and mostly cloudy with three to five mph winds from the southwest. Measurement 1 was taken on the western boundary of the Project Site with a relatively unobstructed view of I-15. During measurement 1 a few vehicles passed by the dirt road adjacent to the measurement, however the primary noise source was traffic on I-15. Measurement 2 was taken near the center of the Project Site. Measurement 2 had only a partial line of sight to I-15. Measurement 3 was located adjacent to SR-76.

The second set of measurements was taken by RECON on November 13, 2006, between the hours of 3:00 P.M. and 4:30 P.M. The weather was clear with gentle, immeasurable winds. Measurement A was taken towards the north end of the Project Site and Measurement B was taken northeast of Measurement 2. There was a clear view of I-15 from both measurement locations.

Table 2 presents the results of the noise measurements. As seen from Table 2, the measured short-term noise levels ranged from approximately 46 to 69 dB(A) L_{eq} with the loudest levels occurring adjacent to SR-76.

TABLE 2
SHORT-TERM MEASUREMENT RESULTS

Location	Date	Duration (Minutes)	Average Noise Level [dB(A) L_{eq}]	Traffic Noise Sources	Distance from Source
1	07/14/2005	20	61.2/58.6*	I-15	1,920 from centerline
2	07/14/2005	20	45.7	I-15 and SR-76	3,840 from centerline of I-15
3	07/14/2005	20	68.6	SR-76	50 feet from centerline
A	11/13/2006	15	53.2	I-15	3,900 from centerline
B	11/13/2006	15	52.0	I-15	4,250 from centerline

*The second noise level is without the few vehicles driving past the measurement on the adjacent dirt road.

Traffic counts were taken for SR-76 during the measurement period for location 3. Table 3 presents the results of the traffic count.

TABLE 3
20-MINUTE TRAFFIC COUNT FOR SR-76

	Cars	Motorcycles	Medium Trucks	Buses	Heavy Trucks
SR-76 WB	72	0	4	0	8
SR-76 EB	91	1	5	0	11

WB = westbound; EB = eastbound.

Long-term (24-hour) measurements were taken by Pacific Noise Control for the Campus Park Project located directly west of the Proposed Project (Pacific Noise Control 2005). The measurement was taken from August 23, 2005, at 2:00 P.M. to August 25, 2005, at 12:00 P.M. The long-term measurement location (Measurement PNC) is shown in Figure 2. This measurement was taken approximately 180 feet east of the center line of I-15. The measured hourly noise levels are summarized in Table 4. The average daytime noise level was 78.4 dB(A) L_{eq}, the average evening noise level was 76.9 dB(A) L_{eq}, and the average nighttime noise level was 74.3 dB(A) L_{eq}. The noise level during the 24-hour period was 82 CNEL. This long-term measurement results in a daytime/evening/nighttime traffic distribution of 68 percent of the traffic during the daytime hours, 12 percent during the evening hours, and 20 percent during the nighttime hours for I-15.

As discussed above, the STAMINA model is not recommended for distances as far as the Proposed Project is from the freeway. Therefore, in order to identify whether the STAMINA model could accurately predict noise levels at the Proposed Project, the

STAMINA model was run using the existing I-15 traffic volume and mix data for measurement locations 1, A, and B. These measurements were selected for modeling given their relatively unobstructed view of I-15 and not being adjacent to other roads.

TABLE 4
MEASUREMENT PNC HOURLY AVERAGE NOISE LEVELS

Date	Start Hour	Average Hourly Noise Level [dB(A) L_{eq}]
August 23, 2005	2:00 P.M.	79
	3:00 P.M.	79
	4:00 P.M.	80
	5:00 P.M.	80
	6:00 P.M.	79
	7:00 P.M.	78
	8:00 P.M.	77
	9:00 P.M.	76
	10:00 P.M.	76
	11:00 P.M.	74
August 24, 2005	12:00 A.M.	72
	1:00 A.M.	71
	2:00 A.M.	70
	3:00 A.M.	71
	4:00 A.M.	74
	5:00 A.M.	76
	6:00 A.M.	78
	7:00 A.M.	78
	8:00 A.M.	78
	9:00 A.M.	78
	10:00 A.M.	77
	11:00 A.M.	77
	12:00 P.M.	77
	1:00 P.M.	78
	2:00 P.M.	78
	3:00 P.M.	79
	4:00 P.M.	79
	5:00 P.M.	79
	6:00 P.M.	79
	7:00 P.M.	77
	8:00 P.M.	77
	9:00 P.M.	76
	10:00 P.M.	75
	11:00 P.M.	74
August 25, 2005	12:00 A.M.	72
	1:00 A.M.	70
	2:00 A.M.	70
	3:00 A.M.	71
	4:00 A.M.	74
	5:00 A.M.	77
	6:00 A.M.	78
	7:00 A.M.	78
	8:00 A.M.	78
	9:00 A.M.	78
	10:00 A.M.	77
	11:00 A.M.	77

The vehicle mix and existing traffic volume for I-15 were obtained from Caltrans data (Caltrans 2005a, 2005b). The existing traffic volume on I-15 is 127,000. As discussed above, a traffic distribution of 68 percent of the ADT during daytime hours, 12 percent during evening hours, and 20 percent during the nighttime hours was assumed for I-15. With these assumptions, the STAMINA model was used to calculate a daytime hourly noise level at locations 1, A, and B.

The STAMINA model allows the user to choose between acoustically "hard" and "soft" site conditions. Hard sites have an attenuation of 3 decibels for every doubling of distance from a line source; soft sites have an attenuation of 4.5 decibels for every doubling of distance. Hard site conditions are generally appropriate for all situations except where:

> The height of the line of sight [between the source and receiver is less than three meters; and
>
> The view of the roadway is interrupted by isolated buildings, clumps of bushes, scattered trees, or the intervening ground is soft or covered with vegetation (FHWA 1979).

Under those situations, soft site conditions may be assumed.

An average traffic speed of 65 mph and the existing traffic volume of 135,000 ADT were used for modeling I-15. The posted speed limit is 70 mph, however, 65 mph is the upper limit of the STAMINA model. Both hard and soft site conditions were used for modeling the noise at measurement locations 1, A, and B. With hard-site assumptions, the STAMINA model resulted in noise levels that were approximately five decibels higher than measured levels. With soft-site assumptions, the model resulted in noise levels that were approximately four decibels less than measured noise levels. Therefore, the STAMINA model is not accurate for modeling noise levels due to I-15. Therefore, future traffic noise levels for I-15 were based on the noise measurements discussed above (see Measurements A and B in Table 2). The results of this model are included in Attachment 2. Table 5 summarizes the results of modeling the hard and soft-site conditions.

TABLE 5
MODELED VERSUS MEASURED NOISE LEVELS [dB(A) L_{eq}]

Measurement Location	Measured Noise Level	Modeled Noise Level with Hard-Site Assumptions	Difference	Modeled Noise Level with Soft-Site Assumptions	Difference
1	58.6	62.1	+3.5	56.0	-2.6
A	53.2	58.2	+5.0	49.1	-4.1
B	52.0	57.7	+5.7	48.7	-3.3

4.0 Future Acoustical Environment and Impacts

The methods used in the analysis of future conditions are described in the Analysis Methodology section of this report.

4.1 Traffic Noise Analysis

This study considers the future noise levels that would result from traffic on the area roads on-site and from the addition of project and cumulative projects traffic to area roads off the Project Site. The former of these, traffic generated noise at the Project Site, is considered in the analysis of project specific impacts. The latter, additional traffic on off-site roads, is considered in determining cumulative effects. Traffic volumes used for the analysis of future traffic noise were obtained from the traffic report prepared for the Proposed Project. Year 2030 plus Proposed Project traffic volumes were used.

4.1.1 Project Specific Impacts

Future distances to 75 and 60 CNEL contour lines were calculated for each roadway assuming flat-site conditions. Flat-site contours are shown in Figure 4 and the flat-site contour distances from each roadway are summarized in Table 6. These contours do not take into account any noise attenuation that would be provided by vegetation, buildings, or topography. This would be considered a worst-case analysis and actual future noise levels at the Proposed Project would be less than those shown in Figure 4. The County Noise Element restricts residential development in areas where noise levels exceed 75 CNEL. As shown in Figure 4, the Proposed Project would not expose residences to noise levels greater than 75 CNEL.

TABLE 6
FLAT-SITE ROADWAY CONTOUR DISTANCES (feet)

Roadway	Distance to 75 CNEL Contour Line	Distance to 60 CNEL Contour Line
SR-76	150	2,713
Street R	18	554
Pala Mesa Drive	13	404
Horse Ranch Creek Road		
SR-76 to Street R	18	566
Street R to Street Q	30	950
Street Q to Street A	30	941
Street A to Street B	27	866
Street B to Longspur Road	21	666
Longspur Road to Baltimore Oriole Drive	15	475
I-15	1,183	5,684

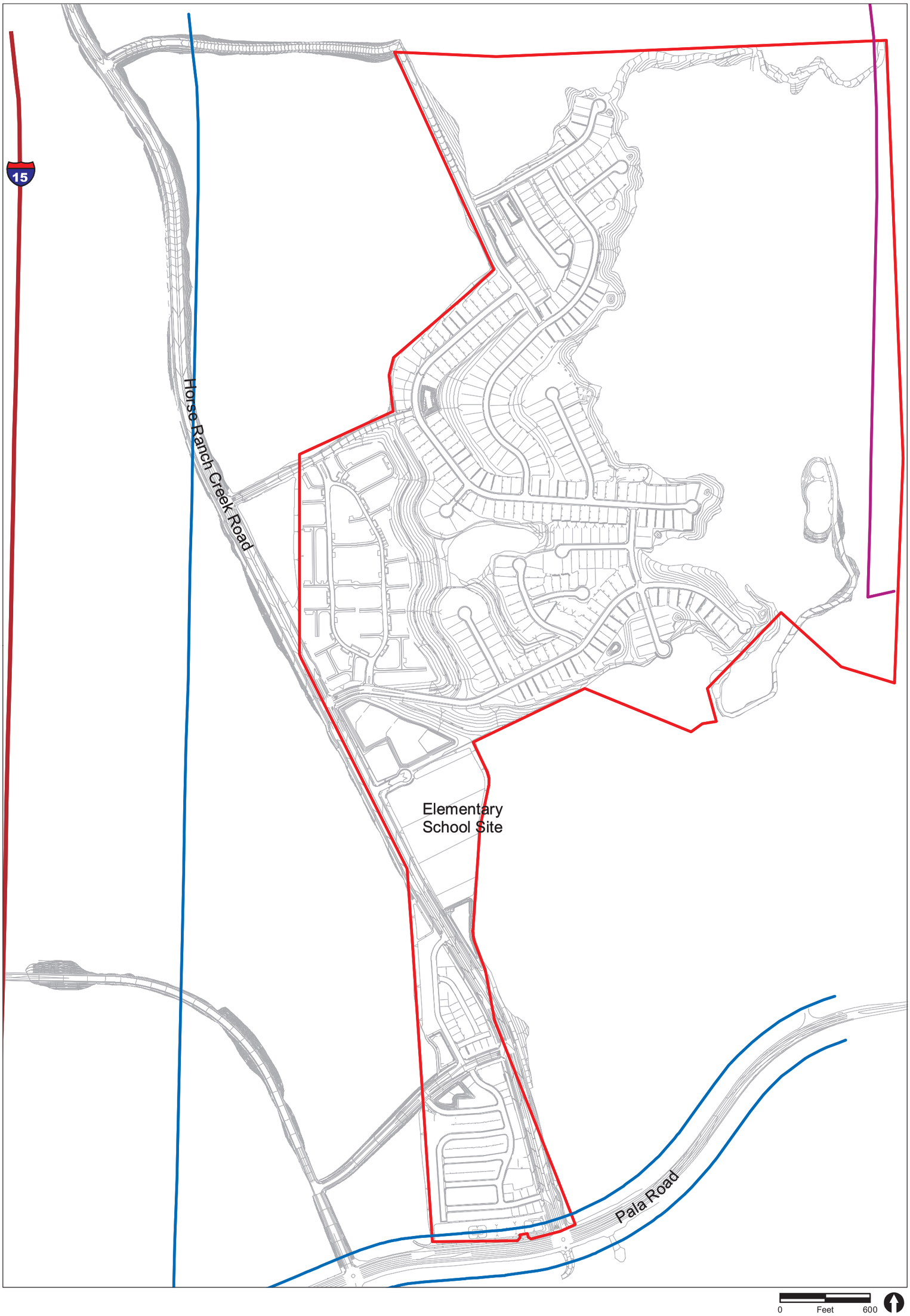

FIGURE 4

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Flat-Site Roadway Noise Contours

Noise levels were modeled for a series of receivers located throughout the Proposed Project area to determine the future noise contours over the Project Site due to traffic on the surrounding roadways. Unlike the flat-site noise contours, these noise contours include the effects of future grading on the property and existing topography between I-15 and the Project Site. These contours do not take into account any noise mitigation measures or shielding provided by the proposed buildings or vegetation.

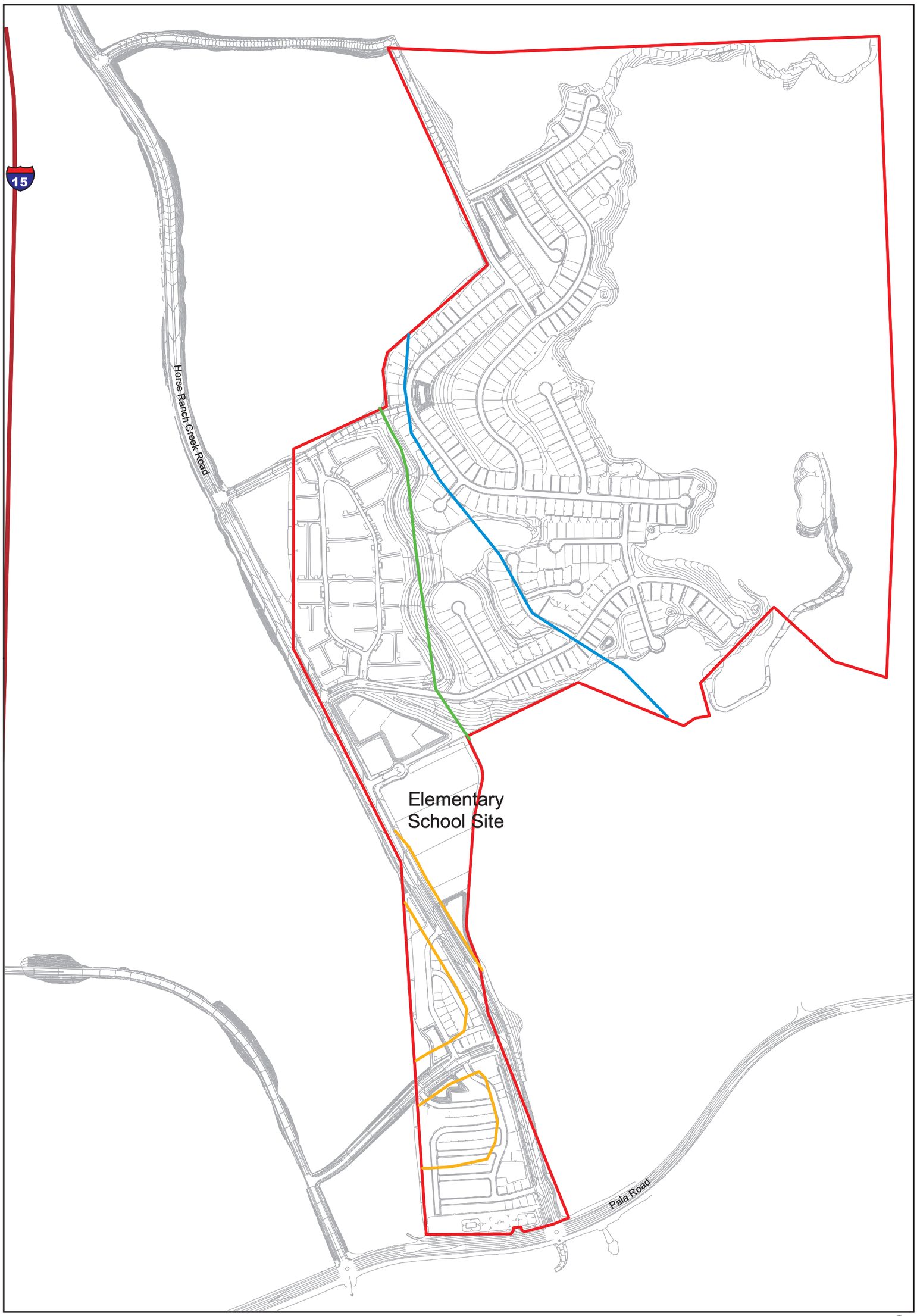
As discussed above, the STAMINA model is not accurate for predicting noise levels due to I-15. Therefore, future traffic noise levels for I-15 were based on the noise measurements discussed above (see Measurements A and B in Table 2) The source of noise at Measurement Location 1 was traffic on I-15. This measurement was used to predict future noise levels due to traffic on I-15 at the receivers located at the multi-family site within PA-4, the school site within PA-2, and the multi-family site within PA-1 since these uses have a similar topographic relationship to I-15. The measured noise level at Measurement Location 1 was 58.6 dB(A) L_{eq}. Using the equation in the Section 2.3.2, this results in a future daytime noise level 61 .3 dB(A) L_{eq}. This is equal to 65.0 CNEL.

The source of noise at Measurement Location A was also traffic on I-15. This measurement was used to predict future noise levels due to traffic on I-15 at the receivers located at the single-family portion within PA-5 of the Project Site since these uses are in the vicinity of Location A and have a similar elevated topographic relationship to I-15. The measured noise level at Measurement Location A was 53.2 dB(A) L_{eq}. Using the equation in the Section 2.3.2, this results in a future daytime noise level of 55.9 dB(A) L_{eq}. This is equal to 59.6 CNEL.

STAMINA was used to calculate the noise levels due to traffic on all roadways except I-15. STAMINA input and output are provided in Attachment 3. The noise levels due to traffic on I-15 discussed above were added to the noise levels calculated by STAMINA. The resulting noise contours at five feet above the ground are shown in Figure 5.

As shown in Figure 5, ground-level receivers closest to the area roadways could experience future traffic noise levels over 60 CNEL, which is the County's exterior residential noise standard. The multi-family area in PA-4 could experience noise levels greater than 65 CNEL and the multi-family area within PA-1 area could experience noise levels greater than 70 CNEL.

Noise levels were also modeled at 137 specific receiver locations in the backyards of the units and on the school site adjacent to the roadways. The locations of these 137 receivers are shown in Figure 6. Rows of buildings provide noise attenuation. The amount of attenuation depends on how much the road is blocked from sight of subsequent rows of buildings (FHWA 1979). Noise levels at subsequent rows of buildings are less than noise levels at the first row of buildings provided that the building is not elevated. Receivers were modeled only at the first row of residences adjacent to



RECON

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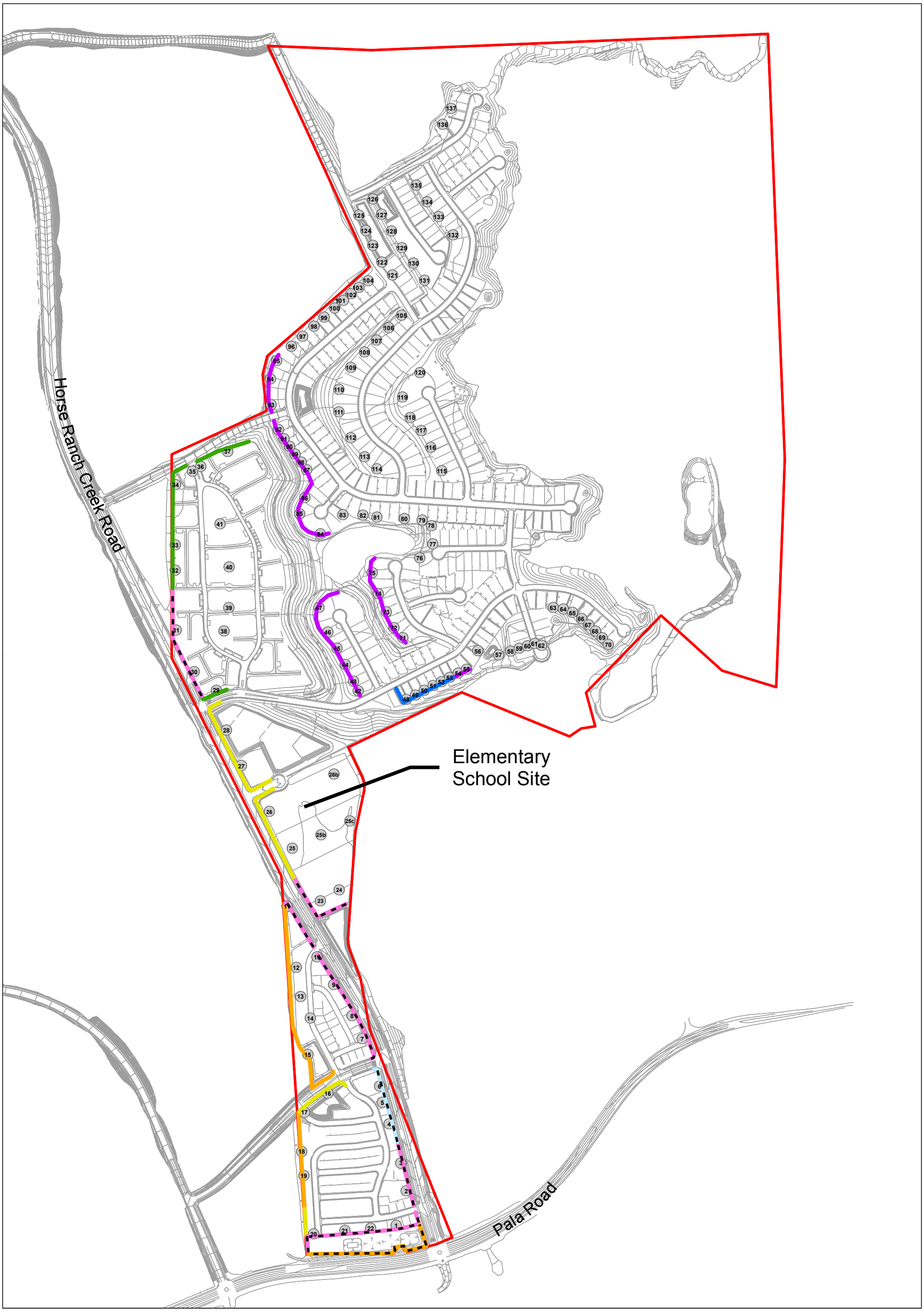
FIGURE 5

Future Projected Noise Contours without Mitigation



RECON

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FIGURE 6

Modeled Receivers and
Noise Barrier Locations

each roadway and at residences that are elevated above neighboring homes. Noise levels at other residences will be less than noise levels at these receivers.

STAMINA was used to calculate the noise levels due to traffic on all roadways except I-15. STAMINA input and output are provided in Attachment 4. The noise levels due to traffic on I-15 discussed above were added to the noise levels calculated by STAMINA. A CNEL of 65.0 was added to Receivers 1 through 41, and a CNEL of 59.6 was added to receivers 42 through 137.

For the multi-family area within PA-1 (Receivers 1 through 22), two-story buildings were modeled as barriers. For the multi-family area within PA-4 (Receivers 29 through 41) the buildings closest to Horse Ranch Creek Road were modeled as barriers. The resulting projected noise levels at all receivers are shown in Table 7. Again, as seen from Table 7, exterior noise levels for the lots adjacent to the major roadways are projected to exceed 60 CNEL and impacts would be significant. Table 8 lists the lots that correspond to the receivers and noise levels shown in Table 7 as well as the lot elevations and proposed barrier elevations. The barriers are discussed below in Section 5.1.

As seen in Figure 6 and Table 7, even after construction of the proposed barriers, second-floor exterior noise levels at the multi-family units are projected to exceed 60 CNEL. Therefore, interior noise levels cannot be assumed to be within the 45 CNEL standard. Additionally, second floor balconies are considered private usable open space and are required to be within the 60 CNEL standard. Where exterior noise levels on second-floor balconies exceed 60 CNEL impacts would be significant.

For the single-family area within PA-5, noise levels at receivers adjacent to roadways are not projected to exceed 65 CNEL after the construction of the proposed barriers. Assuming 20 decibels of exterior-to-interior reduction for single family uses, interior noise levels are projected to be within the 45 CNEL standard.

For the school site, noise levels were refined by placing more receivers within the site. These receivers are shown in Figure 6 and the exterior noise levels for these receivers are summarized in Table 7. Assuming 20 decibels of exterior-to-interior reduction would result in interior noise levels of 50 dB(A) L_{eq} or less when exterior noise levels are 70 dB(A) L_{eq} or less. As discussed above, the average daytime noise level is approximately two decibels less than the CNEL for this analysis. As seen in Table 7, exterior noise levels are not projected to exceed 60 CNEL with constructed barriers. Therefore, interior noise levels due to exterior sources are not projected to exceed 50 dB(A) L_{eq} at the school.

4.1.2 Cumulative Impacts

The Proposed Project will contribute traffic to off-site roads as well as on-site roads. An increase of 3 decibels is considered a perceptible increase in noise. In cases where

TABLE 7
PROJECTED TRAFFIC NOISE LEVELS
(CNEL)

Receiver	Noise Level: No Barrier First Floor	Noise Level: No Barrier Second Floor	Noise Level: Constructed Barrier First Floor	Noise Level: Constructed Barrier Second Floor
1	72~~70~~	73~~71~~	60~~60~~	73~~69~~
2	70~~69~~	71~~70~~	60~~60~~	69~~69~~
3	71~~70~~	71~~70~~	60~~60~~	71~~69~~
4	70~~70~~	70~~70~~	60~~60~~	69~~69~~
5	70~~70~~	70~~70~~	59~~60~~	68~~69~~
6	71~~70~~	71~~70~~	60~~60~~	71~~69~~
7	70~~70~~	71~~70~~	60~~60~~	68~~70~~
8	71~~70~~	71~~70~~	59~~60~~	70~~70~~
9	71~~70~~	71~~70~~	59~~60~~	70~~69~~
10	71~~70~~	71~~70~~	60~~60~~	71~~69~~
11	71~~69~~	72~~69~~	60~~60~~	71~~69~~
12	66~~67~~	66~~68~~	57~~60~~	66~~66~~
13	66~~67~~	66~~68~~	58~~58~~	66~~66~~
14	66~~67~~	66~~67~~	58~~59~~	66~~66~~
15	66~~66~~	67~~67~~	57~~58~~	66~~66~~
16	69~~66~~	71~~67~~	60~~59~~	69~~66~~
17	69~~67~~	70~~67~~	60~~59~~	68~~66~~
18	68~~67~~	68~~67~~	58~~59~~	68~~66~~
19	67~~68~~	68~~68~~	58~~59~~	68~~67~~
20	72~~69~~	72~~69~~	59~~60~~	72~~68~~
21	72~~71~~	72~~71~~	60~~60~~	72~~71~~
22	72~~71~~	72~~71~~	60~~60~~	72~~71~~
23	68~~69~~	70~~70~~	60~~60~~	67~~69~~
24	67~~69~~	67~~70~~	59~~60~~	66~~69~~
25	68~~69~~	69~~70~~	60~~60~~	67~~69~~
26	68~~69~~	70~~69~~	60~~60~~	67~~69~~
27	69~~69~~	71~~69~~	59~~60~~	69~~69~~
28	69~~70~~	70~~70~~	60~~60~~	68~~69~~
29	67~~69~~	67~~70~~	60~~59~~	67~~69~~
30	70~~69~~	71~~70~~	60~~60~~	69~~70~~
31	70~~69~~	70~~69~~	60~~60~~	69~~69~~
32	67~~68~~	67~~68~~	60~~59~~	67~~68~~
33	67~~67~~	67~~67~~	59~~59~~	67~~67~~
34	66~~67~~	66~~67~~	58~~59~~	66~~67~~
35	65~~67~~	65~~67~~	56~~59~~	65~~67~~
36	65~~66~~	65~~66~~	56~~59~~	65~~66~~
37	65~~66~~	65~~66~~	56~~58~~	65~~66~~
38	56~~66~~	57~~66~~	55~~59~~	56~~66~~
39	56~~66~~	56~~66~~	55~~59~~	56~~66~~
40	55~~66~~	56~~66~~	55~~60~~	55~~66~~
41	55~~66~~	56~~66~~	55~~60~~	55~~66~~
42	61~~61~~	62~~62~~	60~~60~~	62~~62~~
43	61~~61~~	62~~62~~	60~~60~~	62~~62~~
44	62~~61~~	62~~62~~	60~~60~~	62~~62~~
45	61~~62~~	62~~62~~	60~~60~~	62~~62~~
46	61~~62~~	62~~62~~	60~~60~~	62~~62~~
47	61~~61~~	62~~62~~	60~~60~~	61~~61~~

TABLE 7
PROJECTED TRAFFIC NOISE LEVELS
(CNEL)
(continued)

Receiver	Noise Level: No Barrier First Floor	Noise Level: No Barrier Second Floor	Noise Level: Constructed Barrier First Floor	Noise Level: Constructed Barrier Second Floor
48	61~~61~~	61~~61~~	60~~56~~	61~~61~~
49	61~~61~~	61~~61~~	59~~56~~	61~~61~~
50	61~~61~~	61~~61~~	59~~56~~	61~~61~~
51	61~~61~~	61~~61~~	60~~57~~	61~~61~~
52	61~~61~~	61~~61~~	59~~56~~	61~~61~~
53	61~~61~~	61~~61~~	60~~56~~	61~~61~~
54	61~~61~~	61~~61~~	60~~56~~	61~~61~~
55	61~~61~~	61~~61~~	60~~56~~	61~~61~~
56	60~~60~~	61~~60~~	60~~60~~	61~~60~~
57	60~~60~~	61~~61~~	60~~60~~	61~~61~~
58	60~~60~~	61~~61~~	60~~60~~	61~~61~~
59	60~~60~~	61~~61~~	60~~60~~	61~~61~~
60	60~~60~~	60~~61~~	60~~60~~	60~~61~~
61	60~~60~~	60~~61~~	60~~60~~	60~~61~~
62	60~~60~~	60~~61~~	60~~60~~	60~~61~~
63	60~~61~~	60~~61~~	60~~60~~	60~~61~~
64	60~~61~~	60~~61~~	60~~60~~	60~~61~~
65	60~~61~~	60~~61~~	60~~60~~	60~~61~~
66	60~~60~~	60~~61~~	60~~60~~	60~~61~~
67	60~~61~~	61~~61~~	60~~60~~	61~~61~~
68	60~~61~~	61~~61~~	60~~60~~	61~~61~~
69	60~~61~~	61~~61~~	60~~60~~	61~~61~~
70	60~~61~~	61~~61~~	60~~60~~	61~~61~~
71	61~~61~~	61~~61~~	60~~60~~	61~~61~~
72	61~~61~~	61~~61~~	60~~60~~	61~~61~~
73	61~~61~~	61~~61~~	60~~60~~	61~~61~~
74	61~~61~~	61~~61~~	60~~60~~	61~~61~~
75	61~~61~~	61~~61~~	60~~60~~	61~~61~~
76	60~~60~~	60~~60~~	60~~60~~	60~~60~~
77	60~~60~~	60~~60~~	60~~60~~	60~~60~~
78	60~~60~~	60~~60~~	60~~60~~	60~~60~~
79	60~~60~~	60~~60~~	60~~60~~	60~~60~~
80	60~~60~~	60~~60~~	60~~60~~	60~~60~~
81	60~~60~~	60~~60~~	60~~60~~	60~~60~~
82	60~~61~~	60~~61~~	60~~60~~	60~~60~~
83	60~~60~~	60~~60~~	60~~60~~	60~~60~~
84	61~~61~~	61~~61~~	60~~60~~	61~~61~~
85	61~~61~~	61~~61~~	60~~60~~	61~~61~~
86	61~~61~~	61~~61~~	60~~60~~	61~~61~~
87	60~~61~~	61~~61~~	59~~60~~	61~~61~~
88	60~~60~~	61~~61~~	59~~60~~	61~~61~~
89	61~~61~~	61~~61~~	60~~60~~	61~~61~~
90	60~~60~~	61~~61~~	59~~60~~	61~~61~~
91	61~~61~~	61~~61~~	60~~60~~	61~~61~~
92	61~~61~~	61~~61~~	60~~60~~	61~~61~~
93	61~~61~~	61~~61~~	60~~60~~	61~~61~~

TABLE 7
PROJECTED TRAFFIC NOISE LEVELS
(CNEL)
(continued)

Receiver	Noise Level: No Barrier First Floor	Noise Level: No Barrier Second Floor	Noise Level: Constructed Barrier First Floor	Noise Level: Constructed Barrier Second Floor
94	61~~61~~	61~~61~~	60~~60~~	61~~61~~
95	60~~61~~	61~~61~~	60~~60~~	61~~61~~
96	60~~60~~	60~~61~~	60~~60~~	60~~61~~
97	60~~60~~	60~~61~~	60~~60~~	60~~61~~
98	60~~60~~	60~~61~~	60~~60~~	60~~60~~
99	60~~60~~	60~~60~~	60~~60~~	60~~60~~
100	60~~60~~	60~~60~~	60~~60~~	60~~60~~
101	60~~60~~	60~~60~~	60~~60~~	60~~60~~
102	60~~60~~	60~~60~~	60~~60~~	60~~60~~
103	60~~60~~	60~~60~~	60~~60~~	60~~60~~
104	60~~60~~	60~~60~~	60~~60~~	60~~60~~
105	60~~60~~	60~~60~~	60~~60~~	60~~60~~
106	60~~60~~	60~~60~~	60~~60~~	60~~60~~
107	60~~60~~	60~~60~~	60~~60~~	60~~60~~
108	60~~60~~	60~~60~~	60~~60~~	60~~60~~
109	60~~60~~	60~~60~~	60~~60~~	60~~60~~
110	60~~61~~	60~~61~~	60~~60~~	60~~61~~
111	60~~61~~	60~~61~~	60~~60~~	60~~61~~
112	60~~61~~	60~~61~~	60~~60~~	60~~61~~
113	60~~60~~	60~~60~~	60~~60~~	60~~60~~
114	60~~60~~	60~~60~~	60~~60~~	60~~60~~
115	60~~60~~	60~~60~~	60~~60~~	60~~60~~
116	60~~60~~	60~~60~~	60~~60~~	60~~60~~
117	60~~60~~	60~~60~~	60~~60~~	60~~60~~
118	60~~60~~	60~~60~~	60~~60~~	60~~60~~
119	60~~60~~	60~~60~~	60~~60~~	60~~60~~
120	60~~60~~	60~~60~~	60~~60~~	60~~60~~
121	60~~60~~	60~~60~~	60~~60~~	60~~60~~
122	60~~60~~	60~~60~~	60~~60~~	60~~60~~
123	60~~60~~	60~~60~~	60~~60~~	60~~60~~
124	60~~60~~	60~~60~~	60~~60~~	60~~60~~
125	60~~60~~	60~~60~~	60~~60~~	60~~60~~
126	60~~60~~	60~~60~~	60~~60~~	60~~60~~
127	60~~60~~	60~~60~~	60~~60~~	60~~60~~
128	60~~60~~	60~~60~~	60~~60~~	60~~60~~
129	60~~60~~	60~~60~~	60~~60~~	60~~60~~
130	60~~60~~	60~~60~~	60~~60~~	60~~60~~
131	60~~60~~	60~~60~~	60~~60~~	60~~60~~
132	60~~60~~	60~~60~~	60~~60~~	60~~60~~
133	60~~60~~	60~~60~~	60~~60~~	60~~60~~
134	60~~60~~	60~~60~~	60~~60~~	60~~60~~
135	60~~60~~	60~~60~~	60~~60~~	60~~60~~
136	60~~60~~	60~~60~~	60~~60~~	60~~60~~
137	60~~60~~	60~~60~~	60~~60~~	60~~60~~
~~138~~	~~60~~	~~60~~	~~60~~	~~60~~
~~139~~	~~60~~	~~60~~	~~60~~	~~60~~

TABLE 7
PROJECTED TRAFFIC NOISE LEVELS
(CNEL)
(continued)

Receiver	Noise Level: No Barrier First Floor	Noise Level: No Barrier Second Floor	Noise Level: Constructed Barrier First Floor	Noise Level: Constructed Barrier Second Floor
~~140~~	~~60~~	~~60~~	~~60~~	~~60~~
~~141~~	~~60~~	~~60~~	~~60~~	~~60~~
~~142~~	~~60~~	~~60~~	~~60~~	~~60~~

TABLE 8
LOT AND BARRIER ELEVATIONS

Lot	Corresponding Receiver	Lot Elevation (feet)	Top of Barrier Elevation (feet)	Barrier Height (feet)
~~379~~LOT A	~~1~~11	~~279~~281	West barrier – 288 East barrier – 290~~289~~	West barrier – 7 East barrier – 9
~~HOA REC Lot 'V'~~359	~~2~~10	282~~280~~	~~290~~291	9
~~378~~360	~~3~~12	281~~282~~	~~292~~288	7
~~375~~361	~~4~~12	281~~283~~	~~293~~288	7
~~374~~362	~~5~~12	280~~279~~	~~288~~287	7
~~373~~363	~~6~~12	280~~280~~	~~289~~287	7
~~372~~364	~~7~~13	279~~279~~	~~288~~286	7
~~371~~365	~~8~~13	279~~279~~	~~288~~286	7
~~369~~366	~~9~~13	278~~282~~	~~291~~285	7
~~368~~367	~~10~~13	278~~282~~	~~291~~285	7
~~HOA SO Lot 'O'~~368	~~11~~14	277~~282~~	~~291~~284	7
~~368~~369	~~12~~14	277~~282~~	~~291~~284	7
~~369~~370	~~13~~14	276~~282~~	~~291~~283	7
~~370~~371	~~14~~14	276~~280~~	~~289~~283	7
~~389~~372	~~15~~15	276~~278~~	~~287~~283	7
373	15	275	282	7
~~HOA REC Lot 'R'~~374	~~16~~15	275~~274~~	~~283~~282	7
~~388~~375	~~17~~15	274~~277~~	~~286~~281	7
~~386~~376	~~18~~15	274~~274~~	~~283~~281	7
~~383~~391	~~19~~10	281~~274~~	~~283~~290	9
392	10	280	289	9
~~382~~394	~~20~~9	~~276~~279	~~286~~288	9
~~381~~395	~~21~~9	~~276~~279	~~286~~288	9
~~380~~396	~~22~~9	~~278~~279	~~288~~288	9
397	9	279	288	9
398	9	279	288	9
399	8	279	288	9
400	8	279	288	9
401	8	279	288	9
402	8	278	287	9
403	7	277	286	9
404	7	277	286	9
415	6	281	290	9
416	6	281	290	9
418	5	283	292	9
419	5	284	293	9
420	5	285	294	9
421	4	286	295	9
422	4	287	296	9
423	4	287	296	9
424	4	287	296	9
425	3	286	295	9
426	3	286	295	9
427	3	285	294	9
428	3	285	294	9
LOT Y	2	282	291	9
434	2	279	288	9
435	2	280	289	9
436	1	280	289	9
437	1	281	290	9

TABLE 8
LOT AND BARRIER ELEVATIONS
(continued)

Lot	Corresponding Receiver	Lot Elevation (feet)	Top of Barrier Elevation (feet)	Barrier Height (feet)
438	1	282	291	9
439	1	283	292	9
440	22	283	292	9
441	22	282	291	9
442	22	282	291	9
443	22	282	291	9
444	21	281	290	9
445	21	281	290	9
446	21	280	289	9
447	21	280	289	9
448	20	279	South barrier – 288 West barrier - 287	South barrier – 9 West barrier – 8
449	20	279	287	8
450	20	278	286	8
451	19	279	286	7
452	19	279	286	7
453	19	280	287	7
454	19	280	287	7
455	19	281	288	7
456	19	281	288	7
457	19	281	288	7
458	18	282	289	7
459	18	282	289	7
460	18	282	289	7
461	18	282	289	7
462	17	283	290	7
LOT M	16	280	West barrier – 287 North barrier - 288	West barrier – 7 North barrier - 8
School	23	280	~~289~~289	9
School	24	285	294	9
School	25	292	~~301~~300	8
School	26	298	~~307~~306	8
Park	27	305	~~South barrier – 313~~ ~~West barrier - 314~~313	8
Park	28	310	~~North barrier – 318~~ ~~West barrier - 319~~318	8
Multi-family lot	29	~~310~~314	South barrier – ~~317~~319 West barrier – ~~318~~323	South barrier – 5 West barrier – 9
Multi-family lot	30	~~309.5~~311	~~317.5~~320	9
Multi-family lot	31	~~312~~314	~~320~~323	9
Multi-family lot	32	317	~~324~~322	5
Multi-family lot	33	~~318.5~~319	~~325.5~~324	5
Multi-family lot—~~Children's Play Area~~	34	~~322~~322.5	~~329~~327.5	5
Multi-family lot	35	~~325~~324	~~331~~329	5
Multi-family lot	36	~~326~~325.5	~~332~~330.5	5
Multi-family lot	37	~~327~~325.5	~~333~~330.5	5
Multi-family lot—~~Children's Play Area~~	38	313	No barrier	No barrier

TABLE 8
LOT AND BARRIER ELEVATIONS
(continued)

Lot	Corresponding Receiver	Lot Elevation (feet)	Top of Barrier Elevation (feet)	Barrier Height (feet)
Multi-family lot~~–Paseo~~	39	~~315~~315.5	No barrier	No barrier
Multi-family lot~~—Recreation Center~~	40	318	No barrier	No barrier
Multi-family lot~~–Paseo~~	41	320	No barrier	No barrier
1	42	416.5	~~420.5~~319.5	3
2	43	~~419.5~~418.5	~~423.5~~421.5	3
3	43	421.5	~~425.5~~424.5	3
4	44	~~423.5~~424.5	427.5	3
5	44	~~423.5~~426.5	~~427.5~~429.5	3
6	45	~~428~~427	~~433~~430	3
7	45	~~430~~427	~~435~~430	3
8	46	~~432~~427	~~437~~430	3
9	46	~~433.5~~426.5	~~438.5~~429.5	3
10	47	~~434.5~~426.5	~~438.5~~429.5	3
11	47	~~434.5~~426.5	~~438.5~~429.5	3
~~12~~	~~47~~	~~434.5~~	~~438.5~~	
~~77~~78	48	425.5	~~430.5~~429.5	4
~~78~~79	49	430.5	~~435.5~~434.5	4
~~79~~80	50	437.5	~~442.5~~441.5	4
~~80~~81	51	446	~~451~~450	4
~~81~~82	52	451.5	~~456.5~~455.5	4
~~82~~83	53	456.5	~~461.5~~460.5	4
~~83~~84	54	460.5	~~465.5~~464.5	4
~~84~~85	55	462.5	~~467.5~~466.5	4
~~91~~92	56	471	No barrier	No barrier
~~90~~91	57	487	No barrier	No barrier
~~89~~90	58	498.5	No barrier	No barrier
~~88~~89	59	508	No barrier	No barrier
~~87~~88	60	513.5	No barrier	No barrier
~~86~~87	61	516.5	No barrier	No barrier
~~85~~86	62	517.5	No barrier	No barrier
~~100~~	~~53~~	~~528~~	~~531~~	
~~101~~102	63	534.5	No barrier~~537.5~~	No barrier
~~102~~103	64	542	No barrier~~545~~	No barrier
~~103~~104	65	558	No barrier~~561~~	No barrier
~~104~~105	66	573.5	No barrier~~576.5~~	No barrier
~~105~~106	67	584.5	No barrier~~588.5~~	No barrier
~~106~~107	68	592.5	No barrier~~595.5~~	No barrier
~~107~~108	69	600	No barrier~~603~~	No barrier
~~108~~109	70	605.5	No barrier~~608.5~~	No barrier
27	71	477	~~481~~480	3
28	72	479	~~483~~482	3
29	73	480.5	~~485.5~~483.5	3
30	73	483	~~488~~486	3
31	73	485	~~490~~488	3
32	74	487	~~491~~490	3
33	74	488.5	~~492.5~~491.5	3
34	75	490.5	493.5	3

TABLE 8
LOT AND BARRIER ELEVATIONS
(continued)

Lot	Corresponding Receiver	Lot Elevation (feet)	Top of Barrier Elevation (feet)	Barrier Height (feet)
35	75	493	496	3
36	76	493	No barrier~~496, 496.5~~	No barrier
~~68~~69	76	493.5	No barrier	No barrier
~~69~~70	77	494	No barrier	No barrier
~~274~~273	78	465	No barrier	No barrier
272	79	~~457.5~~461	No barrier	No barrier
~~273~~271	79	~~461~~457.5	No barrier	No barrier
~~271~~270	80	453.5	No barrier	No barrier
~~270~~269	80	450	No barrier	No barrier
268	80	~~443~~446.5	No barrier	No barrier
~~269~~267	81	~~446.5~~443	No barrier	No barrier
266	82	~~436.5~~439.5	No barrier	No barrier
~~267~~265	82	~~439.5~~436.5	No barrier~~442.5~~	No barrier
~~263~~264	83	~~424.5~~433	No barrier	No barrier
~~264~~463	83	426.5	No barrier	No barrier
~~261~~262	~~84~~83	424.5	No barrier~~427.5~~	No barrier
~~262~~261	84	424.5	~~427.5~~427.5	3
260	85	424.5	427.5	3
~~258~~259	86	~~425.5~~424.5	~~428.5~~427.5	3
~~259~~258	86	424.5	427.5	3
~~254~~257	~~87~~86	~~416.5~~425.5	~~419.5~~428.5	3
~~255~~254	87	420	423	3
253	87	416.5	419.5	3
~~253~~252	88	412.5	415.5	3
~~252~~251	89	409	412	3
~~251~~250	90	405.5	408.5	3
~~250~~249	91	402	405	3
~~249~~248	92	399	402	3
247	93	394.5	397.5	3
~~248~~246	93	394~~.5~~	397~~.5~~	3
245	~~93~~94	~~395~~394.5	~~402, 401.5~~397.5	3
~~246~~244	94	~~394.5~~395	~~397.5~~398	3
243	~~96~~95	~~400~~397	~~No barrier~~400	3
~~244~~	~~95~~	~~397~~	~~400~~	
242	96	~~403.5~~400	No barrier	No barrier
~~240~~241	~~97~~96	~~412~~403.5	No barrier	No barrier
~~241~~240	97	407.5	No barrier	No barrier
239	98	~~416.5~~412	No barrier	No barrier
~~237~~238	~~99~~98	~~425.5~~416.5	No barrier	No barrier
~~238~~237	99	421	No barrier	No barrier
236	100	~~430~~425.5	No barrier	No barrier
235	~~101~~100	~~434~~430	No barrier	No barrier
234	101	434	No barrier	No barrier
~~234~~233	102	438	No barrier	No barrier
~~233~~232	103	442	No barrier	No barrier
231	104	~~446.5~~445.5	No barrier	No barrier
~~232~~230	104	~~445.5~~446.5	No barrier	No barrier
~~183~~182	105	463.5	No barrier	No barrier
~~184~~183	105	463	No barrier	No barrier
~~185~~184	106	462	No barrier	No barrier

TABLE 8
LOT AND BARRIER ELEVATIONS
(continued)

Lot	Corresponding Receiver	Lot Elevation (feet)	Top of Barrier Elevation (feet)	Barrier Height (feet)
~~186~~185	106	461.5	No barrier	No barrier
~~187~~186	107	461	No barrier	No barrier
~~188~~187	107	460.5	No barrier	No barrier
~~189~~188	108	459.5	No barrier	No barrier
~~190~~189	108	459	No barrier	No barrier
~~191~~190	109	458.5	No barrier	No barrier
~~192~~191	109	458	No barrier	No barrier
~~193~~192	110	457.5	No barrier~~460.5~~	No barrier
~~194~~193	110	457	No barrier~~460~~	No barrier
~~195~~194	111	456.5	No barrier~~459.5~~	No barrier
~~196~~195	111	456	No barrier~~459~~	No barrier
~~197~~196	112	455.5	No barrier~~458.5~~	No barrier
~~198~~197	112	455	No barrier~~458~~	No barrier
~~199~~198	112	454.5	No barrier~~457.5~~	No barrier
~~200~~199	113	453.5	No barrier	No barrier
~~201~~200	113	453	No barrier	No barrier
~~202~~201	114	452.5	No barrier	No barrier
~~203~~202	114	452	No barrier	No barrier
146	115	478	No barrier	No barrier
147	115	477	No barrier	No barrier
148	115	476.2	No barrier	No barrier
144	116	480	No barrier	No barrier
145	116	479	No barrier	No barrier
142	117	482	No barrier	No barrier
143	117	481	No barrier	No barrier
140	118	484	No barrier	No barrier
141	118	483	No barrier	No barrier
138	119	486	No barrier	No barrier
139	119	485	No barrier	No barrier
136	120	486	No barrier	No barrier
137	120	486	No barrier	No barrier
~~282~~283	121	456.5	No barrier	No barrier
~~283~~284	121	453	No barrier	No barrier
~~284~~285	121	449.5	No barrier	No barrier
~~285~~286	121	447	No barrier	No barrier
~~286~~287	122	445.5	No barrier	No barrier
~~287~~288	122	444	No barrier	No barrier
~~288~~289	123	442.5	No barrier	No barrier
~~289~~290	123	~~441.5~~442	No barrier	No barrier
~~290~~291	124	441.8~~5~~	No barrier	No barrier
~~291~~292	124	~~440~~442.5	No barrier	No barrier
~~292~~293	125	~~442.5~~443.7	No barrier	No barrier
~~293~~294	125	~~444.5~~445.7	No barrier	No barrier
~~294~~295	125	447.3	No barrier	No barrier
~~295~~296	126	~~462.5~~465	No barrier	No barrier
~~296~~297	126	~~461.5~~265.6	No barrier	No barrier
~~297~~298	127	~~461~~466.2	No barrier	No barrier
~~298~~299	127	~~462~~466.8	No barrier	No barrier
~~299~~300	128	~~463.5~~467.5	No barrier	No barrier
~~300~~301	128	~~466~~469	No barrier	No barrier

TABLE 8
LOT AND BARRIER ELEVATIONS
(continued)

Lot	Corresponding Receiver	Lot Elevation (feet)	Top of Barrier Elevation (feet)	Barrier Height (feet)
~~301~~302	129	~~468.5~~471.1	No barrier	No barrier
~~302~~303	129	~~471~~472.5	No barrier	No barrier
~~303~~304	130	~~473.5~~474.5	No barrier	No barrier
~~304~~305	130	476	No barrier	No barrier
~~305~~306	131	~~478.5~~477.5	No barrier	No barrier
~~306~~307	131	~~479.5~~478.5	No barrier	No barrier
~~327~~326	132	~~490~~490.5	No barrier	No barrier
~~328~~325	132	~~491~~489	No barrier	No barrier
~~325~~324	133	~~485.5~~487.5	No barrier	No barrier
~~326~~323	133	~~488~~486.5	No barrier	No barrier
~~323~~322	134	~~481.5~~486.9	No barrier	No barrier
~~324~~321	134	~~483.5~~485.9	No barrier	No barrier
~~321~~320	135	~~480.5~~485	No barrier	No barrier
~~322~~319	135	~~480.5~~484	No barrier	No barrier
318	135	483.1	No barrier	No barrier
~~361~~355	136	502.5	No barrier	No barrier
~~360~~354	~~136~~137	~~514~~513	No barrier	No barrier
~~359~~353	137	~~520.5~~518	No barrier	No barrier

existing noise levels already exceed the applicable noise guideline, a project-related increase of 3 decibels or more may is significant.

A significant impact would occur if project implementation will expose on- or off-site, existing and planned NSLU to road noise 3 decibels over existing noise levels and are not to exceed 65 CNEL. The specified existing noise levels are for NSLU with site conditions greater than 58 CNEL. Additionally, a potentially cumulatively considerable impact could occur if the project is shown to produce more than a one decibel increase in noise levels.

Table 9 summarizes the existing ADT, the existing plus Proposed Project ADT, the existing plus cumulative ADT, the existing plus cumulative plus Proposed Project ADT, the year 2030 without Proposed Project ADT, the year 2030 plus Proposed Project ADT, and the corresponding increases in noise. The year 2030 plus Proposed Project ADT includes the future projected traffic volumes as well as the buildout traffic volumes associated with this Proposed Project and other pending projects in the vicinity. Traffic volumes were obtained from the traffic report prepared for the Proposed Project (LOS Engineering 2009).

As shown in Table 9, the greatest direct increase in noise resulting from adding Proposed Project-related ADT to the existing ADT is 1.3 decibels and is located on SR-76 between the I-15 northbound ramps and Horse Ranch Creek Road and on Old Highway 395 between Reche Road and Stewart Canyon Road. The greatest increase in noise resulting from adding Proposed Project ADT to existing plus cumulative ADT is 1.1 decibels located on Horse Creek Ranch Road between Street A and the park/school area, and between the park/school area and Street R. The greatest increase in noise resulting from adding Proposed Project ADT to year 2030 ADT is also 1.1 decibels located on Horse Creek Ranch Road between Street A and the park/school area and between the park/school area and Street R. Although the 1.1 decibel increase introduces the potential of cumulatively considerable noise impacts, the levels are considered less than significant because there are no current residential structures along this roadway segment. All other direct noise increases are 1 decibel or less.

4.2 Construction Noise

Noise associated with the demolition, earthwork, construction, and surface preparation for the Proposed Project will result in short-term impacts to adjacent residential properties. A variety of noise-generating equipment would be used during the construction phase of the Proposed Project such as scrapers, dump trucks, backhoes, front-end loaders, jackhammers, and concrete mixers, along with others.

Table 10 indicates the types of construction equipment typically involved in construction projects. This type of equipment can individually generate noise levels that range

TABLE 9
TRAFFIC AND NOISE INCREASES TO OFF-SITE ROADWAYS

Roadway	Location		Existing ADT	Existing + Project ADT	Change in Noise from Existing to Existing + Project	Existing + Cumulative ADT	Existing + Cumulative + Project ADT	Change in Noise from Existing + Cumulative to Existing + Cumulative + Project	Year 2030 ADT	Year 2030 + Project ADT	Change in Noise From Year 2030 to Year 2030 + Project
	Between	And									
I-15	South of SR-76		120,000	122,261	0.1	144,343	145,252	0.0	230,091	231,000	0.0
	SR-76	Mission Road	127,000	127,904	0.0	134,408	134,560	0.0	250,849	251,000	0.0
	North of Mission Road		136,000	138,261	0.1	147,214	148,350	0.0	273,864	275,000	0.0
SR-76	South Mission Road	Via Monserate	22,025	19,722	0.2	43,970	44,500	0.1	47,470	48,000	0.0
	Via Monserate	Gird Road	20,957	22,816	0.2	43,770	44,300	0.1	45,470	46,000	0.1
	Gird Road	Sage Road	20,817	21,748	0.2	36,170	36,700	0.1	41,470	42,000	0.1
	Sage Road	Old Highway 395	24,579	21,608	0.2	38,570	39,100	0.1	42,470	43,000	0.1
	Old Highway 395	I-15 Southbound Ramps	17,274	24,805	0.0	39,349	39,500	0.0	40,849	41,000	0.0
	I-15 Southbound Ramps	I-15 Northbound Ramps	9,569	19,196	0.5	32,918	33,600	0.1	32,918	33,600	0.1
	I-15 Northbound Ramps	Pankey Road	9,439	12,960	1.3	31,288	32,500	0.2	31,288	32,500	0.2
	Pankey Road	Horse Ranch Creek Road	9,439	12,491	1.2	28,104	30,300	0.3	29,804	32,000	0.3
Old Highway 395	East Mission Road	Reche Road	5,155	6,738	1.2	18,764	19,900	0.3	18,764	19,900	0.3
	Reche Road	Stewart Canyon Road	5,646	7,681	1.3	21,861	23,300	0.3	21,861	23,300	0.3
	Stewart Canyon Road	Tecalote Lane	6,405	6,518	0.1	17,524	17,600	0.0	17,924	18,000	0.0
	Tecalote Lane	Pala Mesa Drive	6,603	6,716	0.1	19,324	19,400	0.0	19,324	19,400	0.0
	Pala Mesa Drive	SR-76	8,302	9,093	0.4	20,370	20,900	0.1	20,370	20,900	0.1
Pankey Road	Street 'R'	SR-76	0	565	N/A	8,244	8,622	0.2	8,521	8,900	0.2
	SR-76	Dulin Road	936	1,162	0.9	10,538	11,902	0.5	18,637	20,000	0.3
Horse Ranch Creek Road	Stewart Canyon Road	Baltimore Oriole	40	2,188	N/A	5,745	7,260	1.0	6,385	7,900	0.9
	Baltimore Oriole	Longspur Road	0	2,322	N/A	9,052	11,119	0.9	9,333	11,400	0.9
	Longspur Road	Harvest Glen Lane	0	2,577	N/A	13,363	16,140	0.8	13,223	16,000	0.8
	Harvest Glen Lane	Pardee South Loop	0	3,834	N/A	16,955	20,995	0.9	16,760	20,800	0.9
	Pardee South Loop	Park/School	0	5,681	N/A	16,824	21,770	1.1	17,654	22,600	1.1
	Park/School	Street R	0	5,794	N/A	16,972	21,918	1.1	17,854	22,800	1.1
	Street R	SR-76	0	3,617	N/A	9,968	12,544	1.0	11,025	13,600	0.9
Pala Mesa Road	I-15	Street R	0	1,244	N/A	6,178	7,011	0.5	6,667	7,500	0.5
Pankey Place	Pala Mesa Drive	Horse Ranch Creek Road	0	1,809	N/A	8,398	10,367	0.9	8,331	10,300	0.9

N/A = Not Applicable; roadway segment added or removed.

between 78 and 91 dB(A) L_{eq} at 50 feet from the source, as listed in Table 10. Ground-clearing activities generally generate the greatest average construction noise levels.

These activities are estimated to generate average noise levels of 83 to 84 dB(A) L_{eq} 50 feet from the site of construction (Bolt, Beranek, and Newman, Inc. 1971). This value is based on empirical data on the number and types of equipment at a construction site and their average cycle of operation.

Construction noise generally can be treated as a point source and would attenuate at approximately 6 decibels for every doubling of distance. A grading noise level of 84 dB(A) L_{eq} would attenuate to 75 dB(A) L_{eq} at approximately 140 feet from the noise source.

TABLE 10
MEASURED NOISE LEVELS OF
COMMON CONSTRUCTION EQUIPMENT

Equipment	Approximate Noise Level (dB(A) L_{eq})
Air compressor	81
Backhoe	85
Concrete Mixer	85
Dozer	80
Generator	78
Grader	85
Jackhammer	88
Loader	79
Paver	89
Pneumatic tool	86
Saw	78
Scraper	88
Truck	91

SOURCE: Bolt, Beranek, and Newman 1971.

NOTE: Noise levels at 50 feet from the source.

As can be seen in Figure 2, the nearest residential property line is located adjacent to the southeast boundary of the Project Site adjacent to Rosemary's Mountain Rock Quarry. Grading activities will occur over the entire site and would not be situated at any one location for a long period of time. Up to 41 acres of the site would be disturbed on any given day (Rick Engineering 2009). If the acoustical center of grading activities in an eight-hour period were centered in a 41-acre area, then the center would be no closer than approximately 670 feet from the property line. For a worst-case scenario, it was assumed that grading in an eight hour period would be centered in a two-acre area. Then the center of this small grading area would be located no closer than 150 feet from the property line. A noise level of 84 dB(A) L_{eq} at 50 feet would attenuate to 74 dB(A) L_{eq} at 150 feet. Therefore, construction noise levels due to grading do not have the potential

to exceed County standards in Section 36.409 of the Noise Ordinance at the property line of neighboring residences.

During grading operations, volumes would be balanced on-site and there would be no import or export of soil. Therefore, existing residences would not be exposed to noise associated with the transportation of soil.

All grading activities utilizing heavy construction equipment would be completed prior to Proposed Project occupancy. Therefore, there would be no on-site receivers during Proposed Project grading. Building construction, however, would occur in phases. Residences constructed during earlier phases would be exposed to on-site building construction noise during later phases of the Proposed Project. However, construction work that could occur adjacent to newly occupied residences would primarily involve the use of hand tools and small machinery. Although the noise could be a nuisance to occupants of adjacent residences, it would not be expected to violate any standards.

Existing residences would be exposed to noise due to off-site construction that could be required as a result of the Proposed Project. A new signal would be installed at the intersection of Reche Road and Old Highway 395. This improvement would be a responsibility of the Proposed Project if the Proposed Project is constructed before the adjacent projects. The closest sensitive receptor is more than 600 feet away and installation would not generate significant noise levels. Due to the absence of sensitive receptors adjacent to the preferred connection to the Second Aqueduct and associated pipelines, construction of this required off-site infrastructure would not significantly affect residents. Noise impacts due to off-site construction are less than significant.

All construction would be limited to the hours of 7:00 A.M. to 7:00 P.M. Monday through Saturday as stated in the County of San Diego's Noise Abatement and Control Ordinance.

4.3 Rosemary's Mountain Rock Quarry

The future site of the Rosemary's Mountain Rock Quarry is located directly east of the Project Site. Noise levels due to operations at Rosemary's Mountain Rock Quarry were analyzed to ensure that levels would not exceed the applicable limits in the County Noise Ordinance. The County Noise Ordinance states that the sound level limit at the property line for extractive industries, such as the Rosemary's Mountain Rock Quarry, is an hourly average noise level of 75 dB(A) $L_{eq(1)}$. Noise levels are also discussed in terms of the CNEL to ensure that levels do not exceed 60 CNEL and, therefore, comply with County Noise Element 4b.. The quarry documentation includes typical weekday hours of operation between 6:00 A.M. and 10 P.M. with the noisier activities stopping by 4:00 P.M.

The EIR for the Rosemary's Mountain Rock Quarry (Mooney & Associates 1997) includes a mitigation measure and monitoring program to ensure that future residential development does not experience an hourly noise level in excess of 60 dB(A) $L_{eq(1)}$ due to mining and processing operations. The EIR indicates the location of the worst case average hourly 60 dB(A) $L_{eq(1)}$ contour. Taking into account the typical hours of operation, the CNEL was calculated by adding 10 decibels to the noise that occurs between 6:00 A.M. and 7:00 A.M. and adding 5 decibels to the noise that occurs between 7:00 P.M. and 10:00 P.M. The CNEL is approximately 1.2 decibels greater than the average hourly noise level. In addition, the average hourly 50 dB(A) $L_{eq(1)}$ contour would be located approximately 870 feet from the average hourly 60 dB(A) $L_{eq(1)}$ contour. Figure 7 shows the worst case average hourly 60 dB(A) $L_{eq(1)}$ noise contour from the Rosemary's Mountain Rock Quarry EIR, an estimate of the average hourly 50 dB(A) $L_{eq(1)}$ contour, and an estimate of the location of the 60 CNEL noise contour. As shown, noise levels are not projected to exceed the hourly noise level of 60 dB(A) $L_{eq(1)}$ and, therefore, the Rosemary's Mountain Rock Quarry complies with the County Noise Ordinance for extractive industries. As also shown, noise levels are not projected to exceed 60 CNEL at the proposed residences and, therefore, are in compliance with the County Noise Element 4b and impacts would be less than significant.

Noise from the Quarry may be considered a nuisance to future residences. Lots within the average hourly 50 dB(A) $L_{eq(1)}$ contour would be affected by Quarry operations. Lots near modeled receivers 42 through 44 and 48 through 73 would notice Quarry operations more because of their location and the lower traffic noise conditions. Lots near Horse Ranch Creek Road would notice noise due to Quarry operations less because of the higher traffic noise levels. As a project design consideration, lots within the hourly 50 dB(A) $L_{eq(1)}$ contour would receive the following notice prior to purchase:

> This property is located adjacent to Rosemary's Mountain Rock Quarry. Noise levels due to operations at the Quarry are projected to exceed 50 decibels at this property, but will not exceed 60 decibels.

Blasting would occur once a week at the Quarry. The duration of an individual blast is on the order seconds or less than a second. At a distance removed from the Quarry, a blast would likely be heard as an indistinct rumbling sound. With the Quarry's compliance with its mitigation and monitoring program, and notification described above, noise levels at Proposed Project residences due to Quarry operations will be less than significant.

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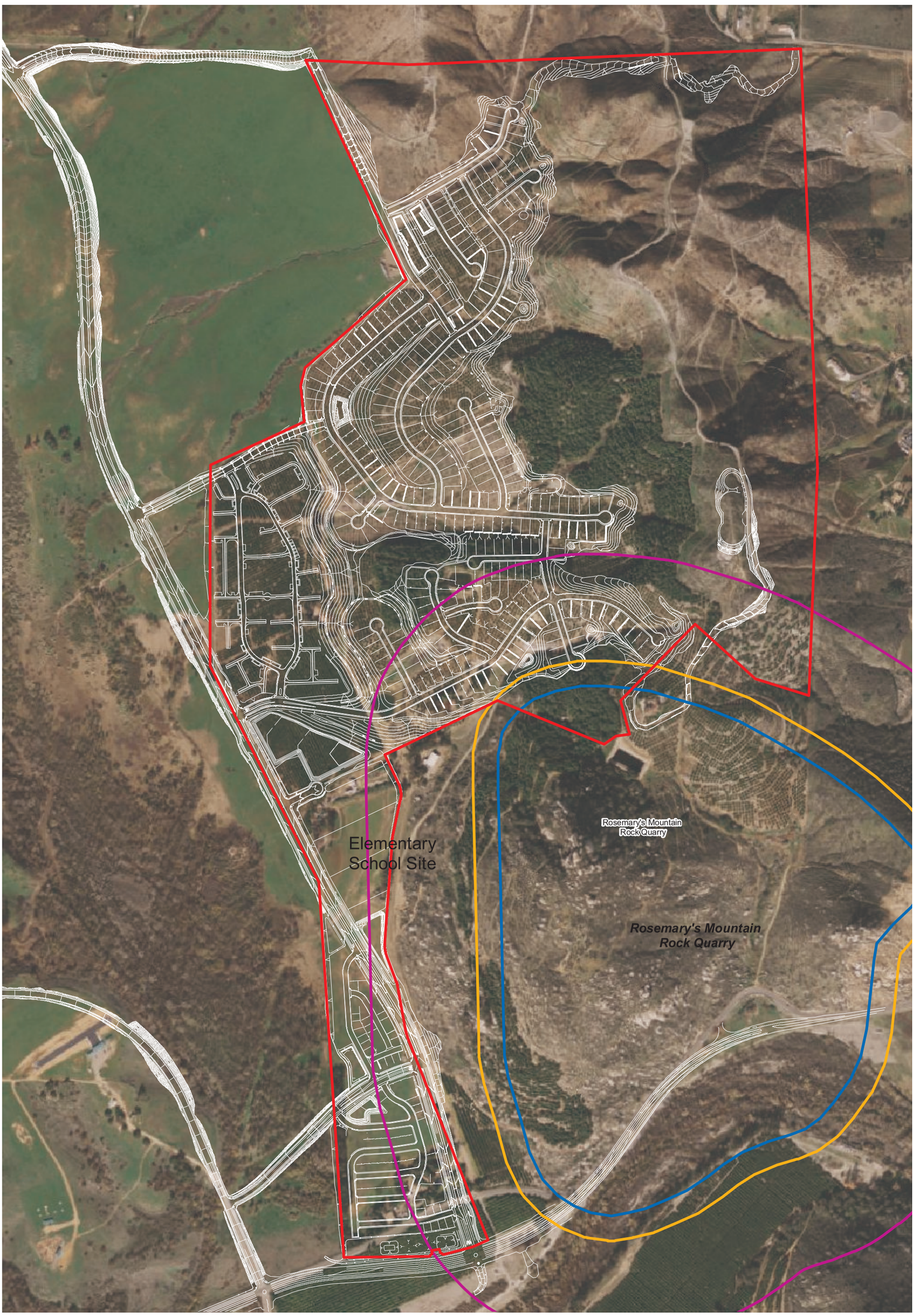

FIGURE 7

Rosemary's Mountain Rock Quarry Noise Contours

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4.4 Wastewater Treatment Plant

The Proposed Project includes the construction and operation of a WWTP on an approximately one acre site. The WWTP would treat 0.25 million gallons of wastewater per day (MGD). Figure 8 shows the location of the proposed on-site facility. Noise associated with operation of the on-site WWTP was analyzed to ensure that noise levels would not exceed the applicable County Noise Ordinance standards. The Proposed Project is zoned residential and has noise limits of 50 dB(A) L_{eq} from 7:00 A.M. to 10:00 P.M. and 45 dB(A) L_{eq} from 10:00 P.M. to 7:00 A.M. The WWTP site would be subject to these hourly average noise limits.

A noise analysis to address potential noise impacts to adjacent residential units from the WWTP was performed. A reference noise level of 70 dB(A) L_{eq} was used for the WWTP. This is based on a noise analysis done for a 25 MGD facility located in the city of Oceanside (RECON 2006). This facility is larger than the proposed WWTP. The noise-producing equipment at the 25 MGD facility, which included a blower room, odor scrubbers, screens and augers, mixers, exhaust fans, air compressors, and air conditioners, is similar to the equipment that would be used at the proposed facility. This noise level does not account for noise reduction provided by locating any equipment inside enclosed buildings. This noise level is also based on data from a facility much larger than the proposed facility. Therefore, 70 dB(A) L_{eq} at 50 feet is a conservative reference noise level.

This analysis assumed that the main noise source associated with the operation of the WWTP would be located at the center of the building at the west end of the site (see Figure 8). The closest on-site residential property line is located approximately 95 feet north of the center of the WWTP building. Assuming 6 decibels reduction for every doubling of distance, 70 dB(A) L_{eq} at 50 feet would attenuate to 64 dB(A) L_{eq} at 95 feet. Therefore, the noise level at the residential property line due to the WWTP would be 64 dB(A) L_{eq} without mitigation. The property line to the south of the WWTP on the south side of SR-76 is located approximately 225 feet from the center of the WWTP building. The noise level at this property line would be 57 dB(A) L_{eq} without mitigation.

5.0 Mitigation

5.1 Traffic Noise

As indicated above, noise levels at the ground-floor receivers for units adjacent to the major Proposed Project roadways are projected to exceed 60 CNEL without mitigation. With the construction of barriers ranging from three to ten feet high along the edge of the residential pads adjacent to the roadways as shown in Figure 6, exterior noise levels for

ground-floor noise sensitive areas will be reduced to a level at or below the County's standards. Table 7 shows the projected exterior noise level at the first- and second-floor

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0 Feet 400

Project Boundary

Wastewater Treatment Plant

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FIGURE 8

Wastewater Treatment Plant Location

levels after construction of these recommended barriers. STAMINA input and output are provided in Attachment 4.

The Proposed Project will not likely be the only project that is built in the northeast quadrant of I-15 and SR-76; therefore, modeling was also conducted incorporating the noise barriers and building configurations proposed by the Campus Park Project. Figure 9 shows the barriers that would be required if the Campus Park Project was constructed before the Proposed Project. As shown in Figure 9, several noise barriers at the southwest portion of the PA-1 area as proposed in Figure 6 would not be required with development of the Campus Park Project.

The effectiveness of a barrier is dependent upon the quality of construction and the barrier material mass and acoustical properties. Barriers should be free of cracks and holes. The transmission loss through a barrier should be at least 10 decibels greater than the estimated barrier attenuation (Federal Highway Administration 1979:34). If a barrier attenuates noise levels by 10 decibels at a receiver location, the barrier transmission loss must be at least 20 decibels to prevent audible noise from traveling through the barrier and adding to the acoustical environment. Examples of acceptable barrier materials include, but are not limited to, masonry block, wood frame with stucco, 0.5-inch-thick Plexiglas, or 0.25-inch-thick plate glass. If transparent barrier materials are used, no gaps should occur between the panels.

As seen in Figure 6 and Table 7, with the construction of the proposed barriers, first-floor exterior noise levels would not exceed 60 CNEL. However, second-floor exterior noise levels are projected to exceed 60 CNEL for the lots adjacent to the roadways. For multi-family units located where exterior noise levels exceed 60 CNEL, the State Building Code requires an interior acoustical analysis demonstrating that interior noise levels do not exceed 45 CNEL. Therefore, at such time as architectural plans are available, and prior to the issuance of building permits, an interior acoustical analysis shall be conducted for the perimeter multi-family units of the Proposed Project corresponding to Receivers 1 through 22 and 27 through 41 in accordance with the State Building Code and County standards. If interior allowable noise levels are met by requiring that windows be unopenable or closed, the design for the structure must also specify a ventilation or air-conditioning system to provide a habitable interior environment, as specified in the State Building Code. Additionally, to assure that noise levels at exterior balconies do not exceed 65 CNEL, a noise protection easement shall be placed on those lots where exterior noise levels at second floor balconies could exceed 60 CNEL to assure that at such time as architectural plans are available, and prior to the issuance of building permits, additional acoustical analysis is performed to determine the height and make up of acoustical barriers. The analysis shall be conducted in accordance with the State Building Code and County standards

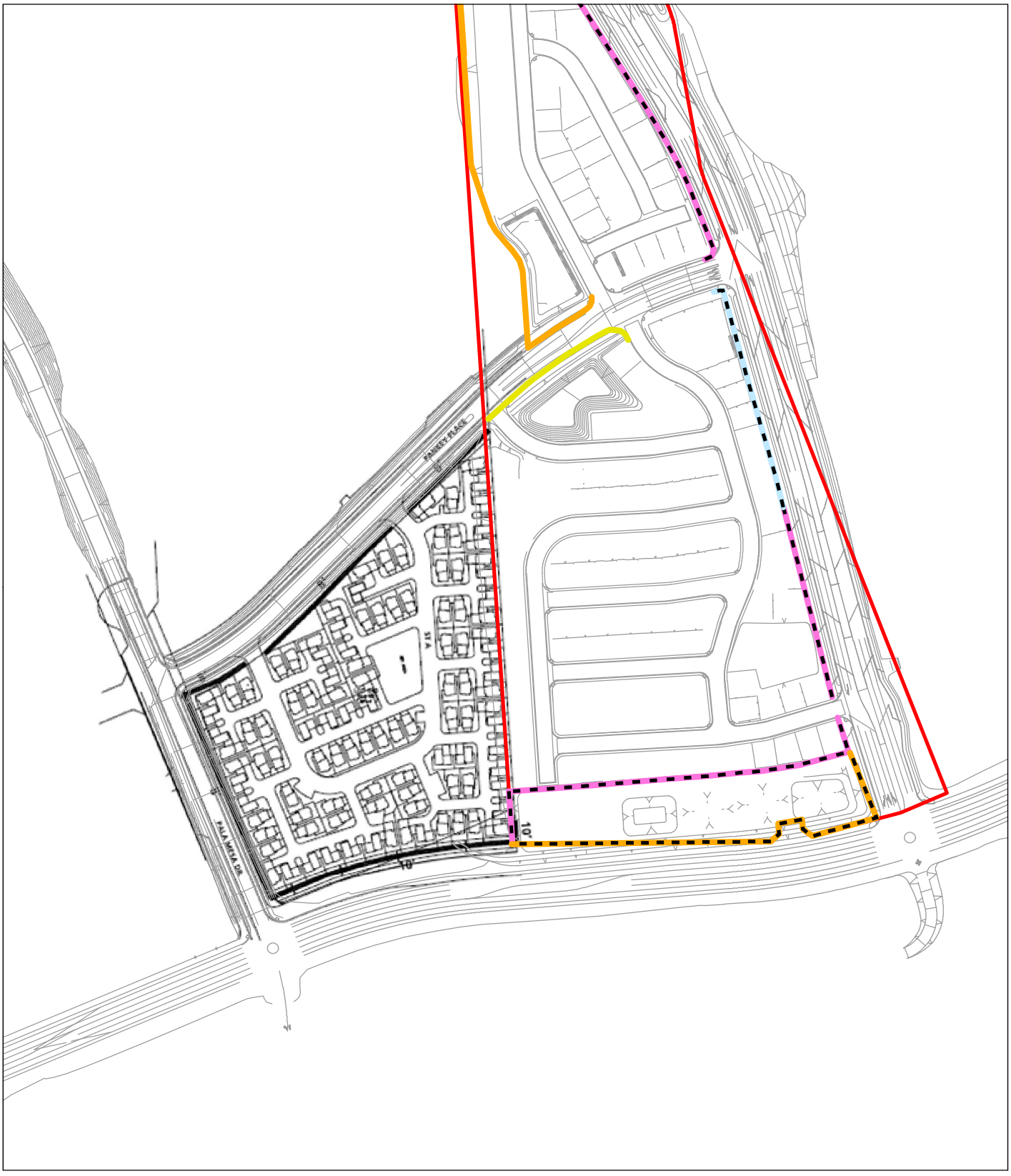

FIGURE 9

Proposed Noise Barriers with
Construction of Campus Park Project

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For the singe-family portion of the Proposed Project, standard construction techniques can be assumed to provide 20 decibels of exterior to interior noise reduction. As shown in Table 7, noise levels are not projected to exceed 65 CNEL at the single-family lots (Receivers 42 through 137). Therefore, interior noise levels are not projected to exceed 45 CNEL. An analysis of specific building requirements is not required.

For the school site, assuming 20 decibels of exterior to interior reduction would result in interior noise levels of 50 dB(A) L_{eq} or less when exterior noise levels are 70 dB(A) L_{eq} or less. As discussed above, the average daytime noise level is approximately two decibels less than the CNEL for this analysis. As seen in Table 7, exterior noise levels are not projected to exceed 70 CNEL. Therefore, interior noise levels due to exterior sources are not projected to exceed 50 dB(A) L_{eq}.

The identified Parcels (Lots 1 through 11, 27 through 35, 78 though 85, 243 through 261, 356 through 382, and the Multi-Family Lot within PA-4 are projected to be subjected to potentially significant noise impacts at exterior and/or interior NSLU that can be mitigated and, therefore, require a Noise Protection Easement to ensure future compliance to the San Diego County General Plan Noise Element.

Prior to the issuance of any Certificate of Occupancy for a residential use within the noise protection easement, the applicant shall:

1. Complete to the satisfaction of the Director of the Department of Planning and Land Use, an acoustical analysis performed by a County-certified acoustician, demonstrating that the anticipated future noise levels for the interior and exterior of the residential dwelling(s) will not exceed the allowable sound level limits of the Noise Element of the San Diego County General Plan [exterior (60 CNEL, interior (45 CNEL)].

2. Incorporate to the satisfaction of the Director of the Department of Planning and Land Use all of the recommendations or noise reduction measures of the acoustical analysis into the Proposed Project design and building plans.

Mitigation Under the Campus Park Noise Modeling Option

In order to account for the additional noise attenuation likely to be provided by the Campus Park Project and so as to not build unnecessary noise barriers at the Project Site, one of the following mitigation threshold conditions would be applied as a condition of approval:

1. Prior to occupancy of any structure within each planning area, noise mitigation shall be completed as if the Campus Park tentative map has been approved. Figure 9 shows the required barriers if the Campus Park Tentative Map is approved.

OR

2. Prior to occupancy of any structure within the Proposed Project, noise mitigation shall be completed as if the Campus Park Project has not yet obtained Board of Supervisor's approval of its tentative map.

5.2 Construction Noise

Construction shall be limited to the hours of 7:00 A.M. to 7:00 P.M. Monday through Saturday as stated in the County of San Diego's Noise Abatement and Control Ordinance. In accordance with the County's noise ordinance, no construction shall take place on Sundays or on legal holidays specified in Section 36.409 the San Diego County Code of Regulatory Ordinances.

As discussed above, construction noise levels are not projected to exceed the County's noise ordinance standard at sensitive receptors.

5.3 Rosemary's Mountain Rock Quarry

Noise levels due to operations at Rosemary's Mountain Rock Quarry would not exceed an hourly noise level of 60 dB(A) $L_{eq(1)}$ at the proposed residences. With the Quarry's compliance with its mitigation and monitoring program, noise levels at Proposed Project residences due to quarry operations will be less than significant.

5.4 Wastewater Treatment Plant

The noise level at the residential property line due to the WWTP would be 64 dB(A) L_{eq} at the residential uses to the north and 57 dB(A) L_{eq} at the property line south of Pala SR-76 without mitigation. As discussed above in *Mitigation for Traffic Generated Noise*, a ~~10~~9-foot barrier is proposed south of PA-1 and north of the WWTP site ~~SR-76~~ to reduce vehicle traffic noise at the PA-1 receivers. This barrier would also serve to reduce noise due to operation of the on-site WWTP. Using FHWA algorithms, it was calculated that a ~~10~~9-foot barrier would reduce noise levels by 19 decibels, resulting in a noise level of 45 dB(A) L_{eq} at the PA-1 residences. This is equal to the County nighttime noise level limit of 45 dB(A) L_{eq}. To reduce noise levels at the western property boundary, this 9-foot barrier would also be required at the western boundary of the WWTP. It was calculated that a 7-foot barrier would be required to reduce WWTP noise levels at the property to the south. A 7-foot barrier would reduce noise levels by 12 decibels, resulting in a noise level of 45 dB(A) L_{eq} at the property to the south. This barrier shall consist of a

6-foot wall on top of a 1-foot landscaped berm. The barrier insertion loss calculations for the WWTP are contained in Attachment 5.

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