

**PRELIMINARY NOISE STUDY
HOSKINGS RANCH SUBDIVISION
TM 5312 RPL2**

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TABLE OF CONTENTS

TABLE OF CONTENTS.....	II
LIST OF FIGURES.....	II
LIST OF TABLES.....	III
ATTACHMENTS	III
GLOSSARY OF TERMS	IV
EXECUTIVE SUMMARY	V
1.0 INTRODUCTION.....	1
1.1 PROJECT DESCRIPTION	1
1.2 ENVIRONMENTAL SETTINGS & EXISTING CONDITIONS.....	1
1.3 METHODOLOGY AND EQUIPMENT	5
2.0 NOISE SENSITIVE LAND USES (NSLU).....	9
2.1 GUIDELINES FOR THE DETERMINATION OF SIGNIFICANCE	9
2.2 POTENTIAL NOISE IMPACTS	9
2.3 OFF-SITE NOISE IMPACTS.....	15
2.4 CONCLUSIONS	15
3.0 CONSTRUCTION ACTIVITIES.....	16
3.1 GUIDELINES FOR THE DETERMINATION OF SIGNIFICANCE	16
3.2 POTENTIAL PROPERTY LINE NOISE IMPACTS.....	16
3.3 CONCLUSIONS	18
4.0 OPERATIONAL ACTIVITIES	19
4.1 GUIDELINES FOR THE DETERMINATION OF SIGNIFICANCE	19
4.2 CONCLUSIONS	20
5.0 SUMMARY OF PROJECT IMPACTS, MITIGATION & CONCLUSIONS	21
6.0 CERTIFICATIONS.....	22

LIST OF FIGURES

FIGURE 1-A: PROJECT VICINITY MAP.....	2
FIGURE 1-B: PROPOSED PROJECT SITE PLAN	3
FIGURE 1-C: CONSOLIDATED PROJECT SITE PLAN	4
FIGURE 1-D: NOISE MEASUREMENT LOCATIONS.....	6
FIGURE 2-A: FUTURE NOISE CONTOUR LOCATIONS (PROPOSED PROJECT)	13
FIGURE 2-B: FUTURE NOISE CONTOUR LOCATIONS (ALTERNATIVE PROJECT)	14

LIST OF TABLES

TABLE 1-1: EXISTING NOISE LEVELS..... 5
TABLE 2-1: EXISTING TRAFFIC PARAMETERS10
TABLE 2-2: NOISE MODEL CALIBRATION11
TABLE 2-3: BUILDOUT 2030 TRAFFIC PARAMETERS11
TABLE 3-1: REFERENCE NOISE LEVELS17
TABLE 3-2: CONSTRUCTION NOISE LEVELS (INDIVIDUAL LOTS)18
TABLE 4-1 SAN DIEGO COUNTY CODE SECTION 36.404.....19

ATTACHMENTS

MODEL CALIBRATION INPUT AND OUTPUT FILES.....23
FUTURE NOISE CONTOUR MODEL INPUT AND OUTPUT FILES.....25

GLOSSARY OF TERMS

Sound Pressure Level (SPL): a ratio of one sound pressure to a reference pressure (L_{ref}) of 20 μ Pa. Because of the dynamic range of the human ear, the ratio is calculated logarithmically by $20 \log (L/L_{ref})$

A-weighted Sound Pressure Level (dBA): Some frequencies of noise are more noticeable than others. To compensate for this fact, different sound frequencies are weighted more.

Minimum Sound Level (L_{min}): Minimum SPL or the lowest SPL measured over the time interval using the A-weighted network and slow time weighting.

Maximum Sound Level (L_{max}): Maximum SPL or the highest SPL measured over the time interval the A-weighted network and slow time weighting.

Equivalent sound level (L_{eq}): the true equivalent sound level measured over the run time. L_{eq} is the A-weighted steady sound level that contains the same total acoustical energy as the actual fluctuating sound level.

Day Night Sound Level (LDN): Representing the Day/Night sound level, this measurement is a 24 –hour average sound level where 10 dB is added to all the readings that occur between 10 pm and 7 am. This is primarily used in community noise regulations where there is a 10 dB “Penalty” for night time noise. Typically LDN’s are measured using A weighting.

Community Noise Exposure Level (CNEL): The accumulated exposure to sound measured in a 24-hour sampling interval and artificially boosted during certain hours. For CNEL, samples taken between 7 pm and 10 pm are boosted by 5 dB; samples taken between 10 pm and 7 am are boosted by 10 dB.

Octave Band: An octave band is defined as a frequency band whose upper band-edge frequency is twice the lower band frequency.

Third-Octave Band: A third-octave band is defined as a frequency band whose upper band-edge frequency is 1.26 times the lower band frequency.

Response Time (F,S,I): The response time is a standardized exponential time weighting of the input signal according to fast (F), slow (S) or impulse (I) time response relationships. Time response can be described with a time constant. The time constants for fast, slow and impulse responses are 1.0 seconds, 0.125 seconds and 0.35 milliseconds, respectively.

EXECUTIVE SUMMARY

This noise study has been completed to determine the noise impacts associated with the development of the proposed residential project and consolidated alternative. The project known as "Hoskings Ranch" consists of a tentative map (TM 5312 RPL2). The project proposes an agricultural subdivision that will create 28 lots of 40-acre minimum lot size and approximately 305 acres of agricultural area. Lots will be used primarily for agricultural use as required in the Hosking Ranch's Land Conservation Contract. An alternative project design consisting of a consolidated or clustered 35 lot residential development and no agricultural use is also proposed. The project is located south of State Route 78 (SR-78) and west of Pine Hills Road near Julian. The project is located in the northeastern portion of the unincorporated community of Julian in north San Diego County, CA.

The results of this analysis indicate that future vehicle noise from State Route 78 and Pine Hills Road are the principal sources of community noise that could impact the site. The noise contours for both the proposed project and alternative project show that noise sensitive land use (NSLU) areas will not exceed the County of San Diego 60 dBA CNEL exterior noise standard for more than 10% of the entire pad or lot areas. Based on this finding, no additional exterior noise analysis is required for either design that accounts for noise shielding from proposed grading changes and no mitigation measures is required. The noise contours for both the proposed project and alternative project show that noise sensitive land use (NSLU) areas will not exceed the County of San Diego 60 dBA CNEL exterior noise standard for more than 10% of the entire pad or lot areas. Based on this finding, no additional exterior noise analysis is required for either design that accounts for noise shielding from proposed grading changes and no mitigation measures is required.

Lots 17 and 18 in the alternative project configuration were found to exceed 60 dBA CNEL at the building facades. An interior noise assessment would be required prior to the approval of building plan permits. This is to ensure that interior noise levels for the proposed residential structures comply with the interior noise level requirement of 45 dBA pursuant to the County Noise Element, Policy 4b.

A noise restriction easement is needed for the Lots along both roadways. If habitable structures are ever proposed within these Buildout noise contours lines a specific noise assessment would be required to determine compliance with the County requirements.

The project or the project alternative do not create a direct impact of more than 3 dBA CNEL on any roadway segment and no cumulative noise increase of 3 dBA CNEL or more were found. Therefore, the proposed project's direct and cumulative contributions to off-site roadway noise increases will not cause any significant impacts to any existing or future noise sensitive land uses.

The project will most likely may be developed on a lot-by-lot basis, which may result in some lots undergoing grading and construction simultaneously. All the internal roadways will be graded prior to the grading of any proposed Lots under. The development of individual lots graded separately are located at least 90 feet any existing or proposed occupied property line. It was determined, based on the proposed grading operations for each lot that at a distance of 90 feet or greater the noise levels would be below the County's 75 dBA threshold and no noise impacts will occur.

Normal residential activities are anticipated to comply with the County's Noise Ordinance 36.404. The agricultural operations are exempt and no impacts are anticipated. Therefore the project related operations are anticipated to comply with the County's Noise Ordinance without any mitigation.

1.0 INTRODUCTION

1.1 Project Description

This noise study was completed to determine the noise impacts associated with the development of the proposed Hoskings Ranch (TM 5312 RPL2) Residential Project. The project is located at 33° 04' 27" N and 116° 37' 30" W, south of State Route 78 (SR-78) and west of Pine Hills Road near Julian. The Project is within the northeastern portion of the unincorporated area or San Diego County CA. The general location of the project is shown on the Vicinity Map, Figure 1-A.

The project proposes an agricultural subdivision that will create 28 lots of 40-acre minimum lot size. Lots will be used for agricultural purposes and residential use of the lots will be incidental to the agricultural use, as required in the Hosking Ranch's Land Conservation Contract (Williamson Act Contract). No pads or residences are proposed. Open Space for the protection of sensitive biological and cultural resources is proposed. If homes are built on the site, they will be developed on an individual lot basis. An alternative project consisting of 35 consolidated residential units and no agricultural use is also proposed. For purposes of this report, it is conservatively assumed that the site will be constructed with either the 28 rural estates or the 35 residential consolidated cluster design which would be the on-site noise sensitive land uses (NSLU). The site plans for the proposed project 28 lot and alternative 35 lot cluster design used for this analysis are shown on Figures 1-B and 1-C, respectively.

1.2 Environmental Settings & Existing Conditions

a) Settings & Locations

The project site covers an area including Daley Flat Road, Orinoco Drive, Tahoe Lane, Bear Run Lane, Lilac Blossom Lane, and Daley Flat Trail. The project site is located south of and adjacent to State Route 78 (SR-78) and west of Pine Hills Road. Befitting the overall rural setting, the community is served by one major roadway to the north, SR-78 connecting State Routes 76 and 79. Existing land uses surrounding the site are primarily agricultural, residential and open space areas.

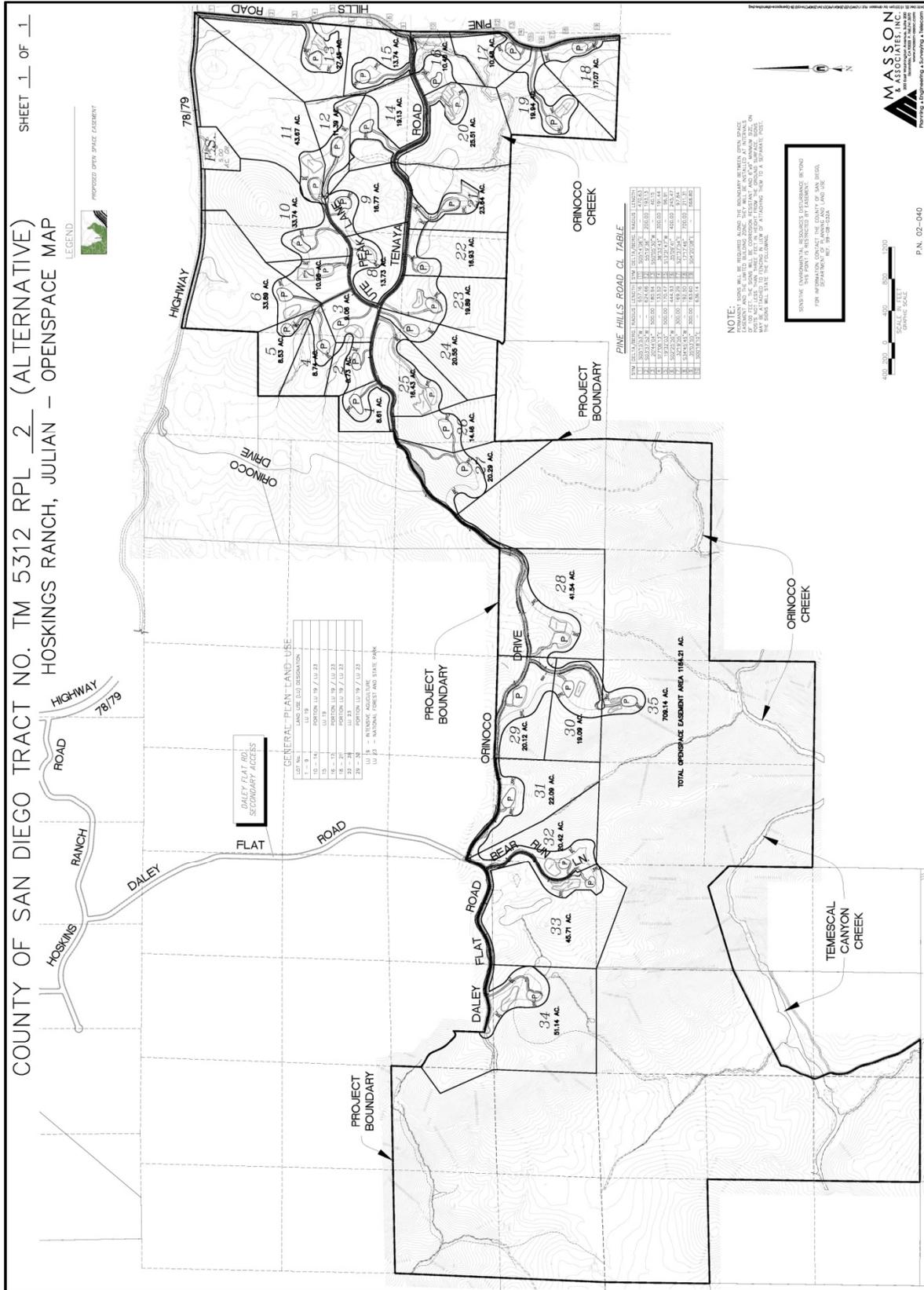
b) Existing Noise Conditions

The project is located adjacent to SR-78 and Pine Hills Road; both are described as a light collector roadway in the County of San Diego's Circulation Element. Existing noise occurs mainly from traffic traveling along SR-78 and to a lesser extent from Pine Hills Road.

Figure 1-A: Project Vicinity Map



Figure 1-C: Consolidated Project Site Plan



1.3 Methodology and Equipment

a) Noise Measuring Methodology and Procedures

To determine the existing noise environment and to assess potential noise impacts, measurements were taken at a single location on the project having a direct line of site to SR-78 having a relatively flat terrain and no obstruction from trees or rock outcroppings. This was done to determine the worst case conditions at the nearest proposed NSLU. The noise measurements were recorded on February 5, 2010 by Ldn Consulting, Inc. between approximately 9:45 a.m. and 10:10 a.m.

Noise measurements were taken using a Larson-Davis Model LxT Type 1 precision sound level meter, programmed, in "slow" mode, to record noise levels in "A" weighted form. The sound level meter and microphone were mounted on a tripod, five feet above the ground and equipped with a windscreen during all measurements. The sound level meter was calibrated before and after the monitoring using a Larson-Davis calibrator, Model CAL 200.

The noise measurement locations were determined based on site access and noise impact potential to the proposed residences. Monitoring location 1 (M1) was located roughly 100-feet from SR-78 near the boundaries of proposed Lots 2 & 3. The noise monitoring location is provided graphically in Figure 1-C on the following page.

The results of the noise level measurements are presented in Table 1-1. The noise measurements were monitored for a time period of 25 minutes. The ambient Leq noise levels measured in the area of the project during the late morning hour were found to be roughly 56 dBA Leq. The existing noise levels in the project area consisted primarily of traffic along SR-78 and to a lesser extent from minimal traffic along Pine Hills Road.

Table 1-1: Existing Noise Levels

Location	Time	One Hour Noise Levels (dBA)					
		Leq	Lmin	Lmax	L10	L50	L90
M1	9:45–10:10 a.m.	56.3	25.7	69.2	60.9	47.6	33.4

Source: Ldn Consulting, Inc. February 5, 2010

b) Noise Modeling Software

The expected roadway noise levels from State Route 78 and Pine Hills Road were projected using Caltrans Sound32 Traffic Noise Prediction Model. Sound32 is a peak hour based traffic noise prediction model. The results of this analysis are based on the California Vehicle Noise Emission Levels (CALVENO). The Sound 32 model was calibrated in accordance with the FHWA Highway Traffic Noise Prediction Manual (Report RD-77-108) and in accordance with Caltrans Technical Noise Supplement (TeNS) section N-5400. The critical model input parameters, which determine the projected vehicular traffic noise levels, include vehicle travel speeds, the percentages of automobiles, medium trucks and heavy trucks in the roadway volume, the site conditions ("hard" or "soft") and the peak hour traffic volume.

The peak hour traffic volumes range between 6-12% of the average daily traffic (ADT) and 10% is generally acceptable for noise modeling purposes. The required coordinate information necessary for the Sound32 traffic noise prediction model input was taken from the preliminary site plans provided by Masson & Associates received on April 8, 2010. To predict the future noise levels the preliminary site plans were used to identify the pad elevations, the roadway elevations, and the relationship between the noise source(s) and the NSLU areas. Traffic was consolidated into a single lane located along the centerline of each roadway. Longer roadway segments were subdivided into a series of adjoining segments for analysis. For this analysis, the roadway segments were extended a minimum of 300 feet beyond the observer locations. No grade correction or calibration factor (according to Caltrans Policy TAN-02-01 dated January 17, 2002) was included as part of the Sound32 traffic noise prediction model analysis.

To evaluate the potential noise impacts on the proposed development, outdoor observers were located in NSLU areas and placed five feet above the pad elevation and near the center of the rear yard a minimum of ten feet from the top/bottom of slope. All second floor observers were located fifteen feet above the proposed pad elevation at the anticipated building facades.

c) Noise Calculations and Factors

Noise is defined as unwanted or annoying sound which interferes with or disrupts normal activities. Exposure to high noise levels has been demonstrated to cause hearing loss. The individual human response to environmental noise is based on the sensitivity of that individual, the type of noise that occurs and when the noise occurs.

Sound is measured on a logarithmic scale consisting of sound pressure levels known as a decibel (dB). The sounds heard by humans typically do not consist of a single frequency but of a broadband of frequencies having different sound pressure levels. The method for evaluating all the frequencies of the sound is to apply an A-weighting to reflect how the

human ear responds to the different sound levels at different frequencies. The A-weighted sound level adequately describes the instantaneous noise whereas the equivalent sound level depicted as Leq represents a steady sound level containing the same total acoustical energy as the actual fluctuating sound level over a given time interval.

The Community Noise Equivalent Level (CNEL) is the 24 hour A-weighted average for sound, with corrections for evening and nighttime hours. The corrections require an addition of 5 decibels to sound levels in the evening hours between 7 p.m. and 10 p.m. and an addition of 10 decibels to sound levels at nighttime hours between 10 p.m. and 7 a.m. These additions are made to account for the increased sensitivity during the evening and nighttime hours when sound appears louder.

A vehicle's noise level is from a combination of the noise produced by the engine, exhaust and tires. The cumulative traffic noise levels along a roadway segment are based on three primary factors: the amount of traffic, the travel speed of the traffic, and the vehicle mix ratio or number of medium and heavy trucks. The intensity of traffic noise is increased by higher traffic volumes, greater speeds and increased number of trucks.

Because mobile/traffic noise levels are calculated on a logarithmic scale, a doubling of the traffic noise or acoustical energy results in a noise level increase of 3 dBA. Therefore the doubling of the traffic volume, without changing the vehicle speeds or mix ratio, results in a noise increase of 3 dBA. Mobile noise levels radiate in an almost oblique fashion from the source and drop off at a rate of 3 dBA for each doubling of distance under hard site conditions and at a rate of 4.5 dBA for soft site conditions. Hard site conditions consist of concrete, asphalt and hard pack dirt while soft site conditions exist in areas having slight grade changes, landscaped areas and vegetation. On the other hand, fixed/point sources radiate outward uniformly as sound travels away from the source. Their sound levels attenuate or drop off at a rate of 6 dBA for each doubling of distance.

The most effective noise reduction methods consist of controlling the noise at the source, blocking the noise transmission with barriers or relocating the receiver. Any or all of these methods may be required to reduce noise levels to an acceptable level.

2.0 NOISE SENSITIVE LAND USES (NSLU)

2.1 Guidelines for the Determination of Significance

Project implementation will result in the exposure of any on-site or off-site, existing or reasonably foreseeable future NSLU to exterior or interior noise (including noise generated from the project, together with noise from the roads [existing and planned], railroads, airports, heliports and all other noise sources) in excess of any of the following:

- a) Exterior Locations:
 - i. 60 dBA (CNEL); or
 - ii. An increase of 10 dBA (CNEL) over pre-existing noise.

In the case of single-family residential detached NSLUs, exterior noise shall be measured at an outdoor living area which adjoins and is on the same lot as the dwelling, and which contains at least the following minimum area:

(1) Net lot area up to 4,000 square feet:	400 square feet
(2) Net lot area 4,000 square feet to 10 acres:	10% of net lot area
(3) Net lot area over 10 acres:	1 acre

For all other projects, exterior noise shall be measured at all exterior areas provided for group or private usable open space.

b) Interior Locations:

45 dBA (CNEL) except for the following cases:

- i. Rooms which are usually occupied only a part of the day (schools, libraries, or similar facilities); the interior one-hour average sound level due to noise outside should not exceed 50 decibels (A).
- ii. Corridors, hallways, stairwells, closets, bathrooms, or any room with a volume less than 490 cubic feet.

2.2 Potential Noise Impacts

It is expected that the primary source of potential noise impacts to the project site will occur from traffic noise along State Route 78 and Pine Hills Road. To determine the future noise environment and impact potentials the Sound32 model first needs to be calibrated using the ambient noise measurements results. The existing conditions were modeled to compare

against the noise measurements described in Section 1.3.a of this report. Section N-5440 of the Caltrans Technical Noise Supplement provides detailed procedures for calibrating the Sound32 traffic noise prediction model. The comparison is made to ensure that predicted traffic noise levels accurately reflect the actual measured noise levels. Section N-5460 suggests that model calibration should not be performed when calculated and measured noise levels are within 1 dBA. Differences of 3 to 4 dBA are routinely calibrated to adjust for site conditions the Sound32 model did not account for including topographic features, soft site conditions and existing structures or barriers.

During the aforementioned ambient noise measurements, traffic counts were taken to determine the existing vehicle mix for the model calibration. Based on the results, the existing traffic noise model utilizes a vehicle mix of 87.9% Autos, 9.2% Medium Trucks and 2.9% Heavy Trucks along SR-78. Table 2-1 presents the roadway parameters used in the analysis including the calculated hourly traffic volumes, vehicle speeds and the traffic flow distribution (vehicle mix) for the existing conditions. The vehicle mix provides the hourly distribution percentages of automobile, medium trucks and heavy trucks for input into the Sound32 Model.

Table 2-1: Existing Traffic Parameters

Roadway ¹	Observed Traffic Volume	Observed Speeds (MPH)	Vehicle Mix %		
			Auto	Medium Trucks	Heavy Trucks
State Route 78	240	45	87.9	9.2	2.9

¹ All roadway parameters were observed during the ambient noise measurement period.

The ambient measurement location was modeled in Sound32 to compare with the noise monitoring locations presented previously in Table 1-1. The modeled existing noise level comparison is provided in Table 2-2. The model is over predicting the noise levels 3.1 dBA using hard-site conditions and is within 0.3 dBA using soft-site conditions. This slight under prediction is due to the slight variations in the topography, roadway grade changes and the vehicular speeds. Therefore, the roadways were modeled using soft site conditions for the future noise environment and no calibration factor was applied to predict the first/ground floor areas. Second floor areas were modeled using hard site conditions based upon Caltrans Protocol. The existing model input parameters for calibration and output file are provided as Attachment A to this report.

Table 2-2: Noise Model Calibration

Receptor	Location	Site Conditions	Calibration Results (dBA)		
			Measured Noise Levels	Modeled Noise Levels	Difference
M1	~100-Feet from Old River Road	Hard	56.3	59.4	+3.1
		Soft		56.0	-0.3 ¹

¹ Model is within 1 dBA and no calibration is needed.

a) Potential Build Out Noise Conditions

The Buildout scenario includes the future year 2030 traffic volume forecasts provided by SANDAG Series 11 Traffic Prediction Model and the peak hour traffic volumes. The future traffic along SR-78 adjacent to the project site is estimated to be 8,000 ADT. The future traffic along Pine Hill Road is anticipated to be 4,000 ADT in the year 2030. The future roadway parameters and inputs utilized in this analysis are provided in Table 2-3. To assess the peak hour traffic noise conditions for both roadways, 10% of the ADT was utilized and the observed vehicle mix was also utilized.

Table 2-3: Buildout 2030 Traffic Parameters

Roadway	Average Daily Traffic (ADT)	Peak Hour Volume ¹	Modeled Speeds (MPH)	Vehicle Mix % ²		
				Auto	Medium Trucks	Heavy Trucks
State Route 78	8,000	800	55	87.9	9.2	2.9
Pine Hills Road	4,000	400	40	87.9	9.2	2.9

¹ 10% of the ADT.
² Observed vehicle mix.

State Route 78 and Pine Hills Road are considered Light Collectors based on the County of San Diego Department of Public Works Public Road Standards with a designed traffic speed of 40 MPH. To determine the future noise levels a speed limit of 40 MPH along Pine Hills Road was utilized and a conservative worst-case speed limit of 55 MPH along SR-78 was utilized. The future traffic noise model also utilizes the observed vehicle mix for both roadways.

b) Potential Noise Impact Identification

Noise contours are lines that when drawn from a noise source indicate a continuous or

equivalent level of noise exposure. Noise contour lines are generally used as a planning tool to assess potential impacts and the need for additional analysis. The noise contour lines that may affect the project site were developed for the unshielded future Buildout conditions. No barriers or structures were included as part of the noise contour analysis. The Sound32 traffic noise prediction model was used to calculate the noise contours perpendicular to the roadways. No natural topography or road edges were incorporated in the contour model to determine the worst-case future noise levels. The model input parameters and results for the first and second noise contours are provided in Attachment B.

The 75 dBA CNEL contours are all located within the right-of-way (ROW) along the road edges. The worst-case first floor 60 dBA CNEL contour extends approximately 220-feet along State Route 78 and 100-feet along Pine Hills Road. The second floor unshielded 60 dBA CNEL contour extends 560-feet from State Route 78 and 175-feet from Pine Hills Road.

Proposed Project Site

Figure 2-A provides the location of the future first and second floor 75 and 60 dBA CNEL noise contours for the proposed project layout. The noise contours provided in Figure 2-A show that noise sensitive land use (NSLU) areas will not exceed the County of San Diego 60 dBA CNEL exterior noise standard. Based on the findings, no additional exterior noise analysis is required for the proposed project and no mitigation measures that are required. Additionally, no first or second floor areas were found to be above the 60 dBA CNEL. Therefore an interior noise assessment will not be required for this project prior to the approval of building plan permits.

Alternative Project Site

Figure 2-B provides the location of the future first and second floor 75 and 60 dBA CNEL noise contours for the alternative project site layout. The only proposed residential pads located in the 60 dBA CNEL contours are Lots 17 and 18. As can be seen in Figure 2-B, approximately 50-60% of the pads and lot areas of Lots 17 and 18 are outside the ground level 60 dBA CNEL contour. Therefore Lots 17 and 18 and the rest of the proposed lots will meet the 60 dBA CNEL standard at more than the 10% minimum net lot area.

Based on the findings, no additional exterior noise analysis is required for the proposed project alternative and no mitigation measures that are required. First or second floor areas were found to be above the 60 dBA CNEL for Lots 17 and 18 and an interior noise assessment will be required for Lots 17 and 18 prior to the approval of building plan permits. This is to ensure that interior noise levels for the proposed residential structures comply with the interior noise level requirement of 45 dBA pursuant to the County Noise Element, Policy 4b.

Figure 2-A: Future Noise Contour Locations (Proposed Project)

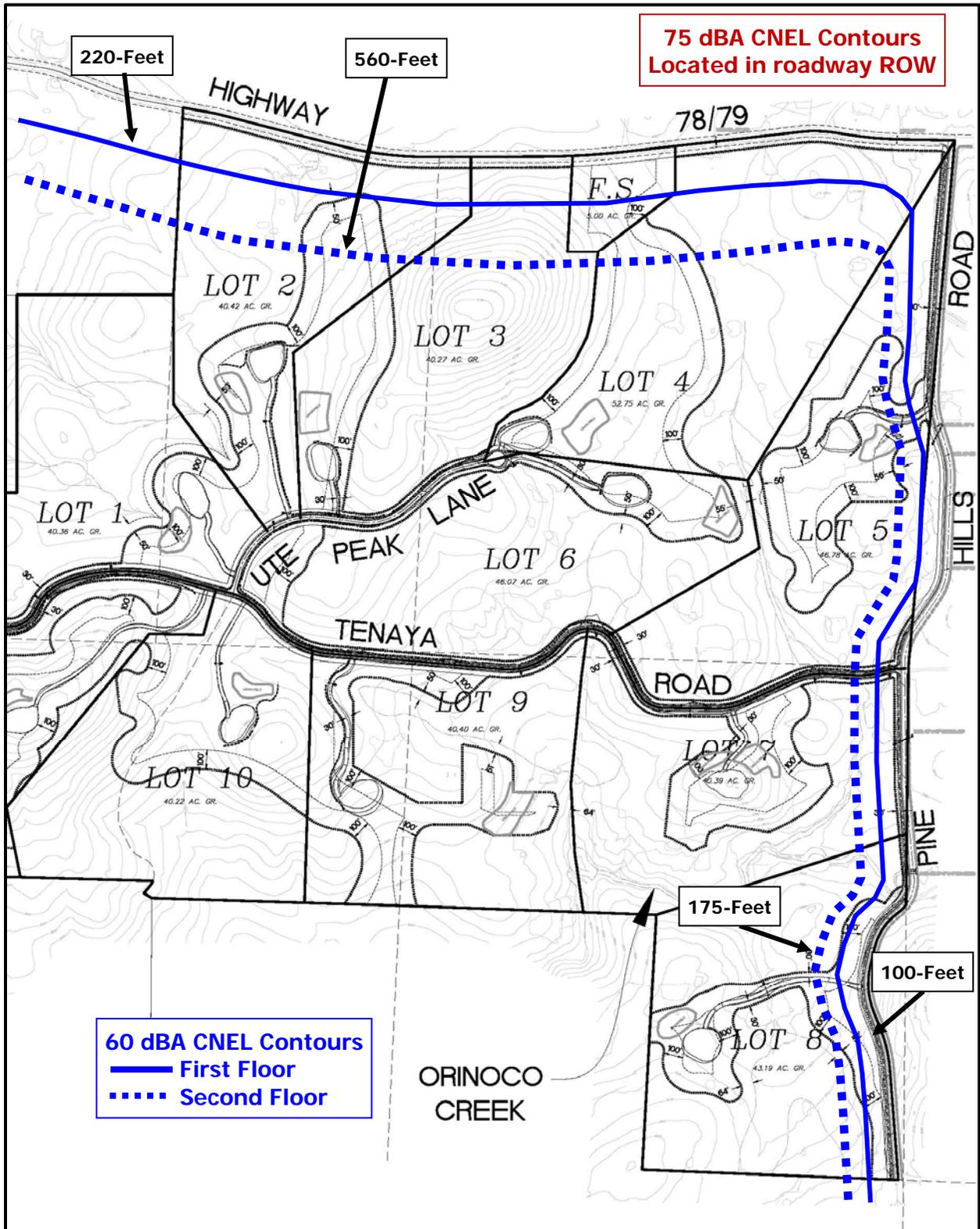
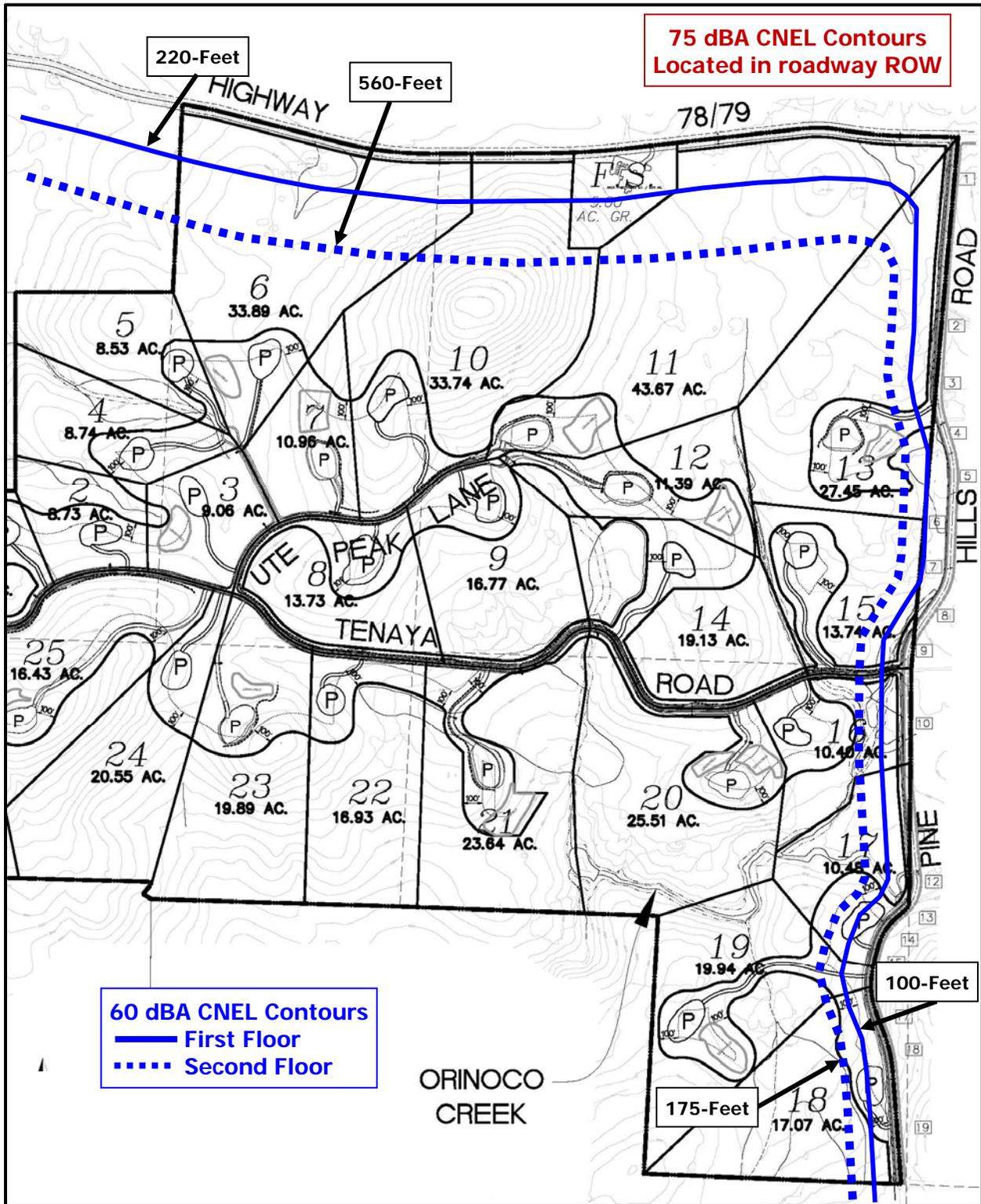


Figure 2-B: Future Noise Contour Locations (Alternative Project)



2.3 Off-site Noise Impacts

To determine if direct or cumulative off-site noise level increases associated with the development of the proposed project would create noise impacts. The traffic volumes for the existing conditions were compared with the traffic volume increase of existing plus the proposed project. The project's traffic assessment states that the proposed 28 lot and agricultural project site only generates 946 daily trips with a peak hour volume of 34 trips and the alternative 35 lot cluster project generates 420 daily trips with a peak hour volume of 42 trips (Source: Hoskings Ranch Traffic Analysis, KOA Corporation, 2/11). The existing average daily traffic (ADT) volumes are 4,095 along SR-78 and 1,651 along Pines Hills Road. Typically it requires a project to double (or add 100%) the traffic volumes to have a direct impact of 3 dBA CNEL or be a major contributor to the cumulative traffic volumes. The project will add less than a 10% increase to the exiting roadway volumes and no direct impacts are anticipated. Cumulatively the traffic volumes along both roadways is expected to potentially double but the project related increase would be minimal (less than 5%) of the overall increase and therefore no impacts are anticipated.

2.4 Conclusions

The noise contours show that the 75 dBA CNEL contours are all located within the right-of-way (ROW) along the road edges. The worst-case first floor 60 dBA CNEL contour extends approximately 220-feet along State Route 78 and 100-feet along Pine Hills Road. The second floor unshielded 60 dBA CNEL contour extends 560-feet from State Route 78 and 175-feet from Pine Hills Road. The noise contours for both the proposed project and alternative project show that noise sensitive land use (NSLU) areas will not exceed the County of San Diego 60 dBA CNEL exterior noise standard for more than 10% of the entire pad or lot areas. Based on this finding, no additional exterior noise analysis is required for either design that accounts for noise shielding from proposed grading changes and no mitigation measures is required.

Lots 17 and 18 in the alternative project configuration were found to exceed 60 dBA CNEL at the building facades. An interior noise assessment would be required prior to the approval of building plan permits. This is to ensure that interior noise levels for the proposed residential structures comply with the interior noise level requirement of 45 dBA pursuant to the County Noise Element, Policy 4b.

Neither the project nor the project alternative do not create a direct impact of more than 3 dBA CNEL on any roadway segment and no cumulative noise increase of 3 dBA CNEL or more were found. Therefore, the proposed project's direct and cumulative contributions to off-site roadway noise increases will not cause any significant impacts to any existing or future noise sensitive land uses.

3.0 CONSTRUCTION ACTIVITIES

3.1 Guidelines for the Determination of Significance

Construction Noise: Noise generated by construction activities related to the project will exceed the standards listed in San Diego County Code Section 36.410, Construction Equipment.

Section 36.410 states:

Except for emergency work,

- a) It shall be unlawful for any person to operate construction equipment between the hours of 7 p.m. of any day and 7 a.m. of the following day.
- b) It shall also be unlawful for any person to operate construction equipment on Sundays, and days appointed by the President, Governor, or the Board of Supervisors for a public fast, Thanksgiving, or holiday, but a person may operate construction equipment on the above-specified days between the hours of 10 a.m. and 5 p.m. at his residence or for the purpose of constructing a residence for himself, provided that the average sound level does not exceed 75 decibels during the period of operation and that the operation of construction equipment is not carried out for profit or livelihood.
- c) It shall also be unlawful to operate any construction equipment so as to cause at or beyond the property line of any property upon which a legal dwelling unit is located an average sound level greater than 75 decibels between the hours of 7 a.m. and 7 p.m.

For temporary activities, the County considers the 75 decibel (A) average to be based on a period of eight hours.

3.2 Potential Property Line Noise Impacts

a) Potential Build Out Noise Conditions

Construction noise represents a short-term impact on the ambient noise levels. Noise generated by construction equipment includes haul trucks, water trucks, graders, dozers, loaders and scrapers can reach relatively high levels. Grading activities typically represent one of the highest potential sources for noise impacts. The most effective method of controlling construction noise is through local control of construction hours and by limiting the hours of construction to normal weekday working hours.

The U.S. Environmental Protection Agency (U.S. EPA) has compiled data regarding the noise generating characteristics of specific types of construction equipment. Noise levels generated by heavy construction equipment can range from 60 dBA to in excess of 100 dBA when

measured at 50 feet. However, these noise levels diminish rapidly with distance from the construction site at a rate of approximately 6 dBA per doubling of distance. For example, a noise level of 75 dBA measured at 50 feet from the noise source to the receptor would be reduced to 69 dBA at 100 feet from the source to the receptor, and reduced to 63 dBA at 200 feet from the source.

b) Potential Noise Impact Identification

Using a point-source noise prediction model, calculations of the expected construction noise impacts were completed. The essential model input data for these performance equations include the source levels of each type of equipment, relative source to receiver horizontal and vertical separations, the amount of time the equipment is operating in a given day, also referred to as the duty-cycle and any transmission loss from topography or barriers.

The project will most likely may be developed on a lot-by-lot basis, which may result in some lots undergoing grading and construction simultaneously. All the internal roadways will be graded prior to the grading of any proposed Lots.

The construction equipment needed for each individual lot will consist of one dozer, a compactor and a water truck during the preparation and grading of each pad. A backhoe and cement truck are anticipated for the installation of utilities and driveways. These operations will not occur simultaneously. Based on the EPA noise emissions, empirical data and the amount of equipment needed, worst case noise impacts from this construction equipment for site preparation would occur during the grading operations. Reference noise levels for each piece of equipment during the individual lot grading operations are provided in Table 3-1 below.

Table 3-1: Reference Noise Levels

Construction Phase	Construction Equipment	Quantity	Source Level @ 50-Feet (dBA Leq) ¹
Grading Operations	Dozer	2	75
	Compactor	1	75
	Water Truck	2	70
¹ Source: EPA 1971 and Empirical Data			

The nearest proposed residential property line for the proposed 28 lot project site is located 140 feet or more from the pad grading operations for Lot 26. The nearest residential property line for the alternative 35 lot project layout is 90 feet or more, from Lot 11, from the center of the grading activities. All other property lines, existing and proposed, are located further from the acoustic center of proposed pad grading operations. As can be seen in Table 3-2, at the closest distance of 90 feet the point source noise attenuation from construction activities at the nearest property line is 5.1 dBA. Given this, the noise levels will comply with the County of San Diego's 75 dBA Leq standard at all project property lines.

Table 3-2: Construction Noise Levels (Individual Lots)

Construction Equipment	Quantity	Source Level @ 50-Feet (dBA Leq)	Duty Cycle (Hours/Day)	Cumulative Noise Level @ 50-Feet (dBA Leq)
Compactor	1	75	8	75
Dozer	1	75	8	75
Water Truck	1	70	8	70
Cumulative Levels @ 50 Feet (dBA)				78.6
Distance To Nearest Property Line				90
Noise Reduction Due To Distance				-5.1
NEAREST PROPERTY LINE NOISE LEVEL				73.5

3.3 Conclusions

The development of individual lots graded separately are located at least 90 feet any existing or proposed occupied property line. It was determined, based on the proposed grading operations for each lot that at a distance of 90 feet or greater the noise levels would be below the County's 75 dBA threshold and no noise impacts will occur.

4.0 OPERATIONAL ACTIVITIES

4.1 Guidelines for the Determination of Significance

According to Section 36.404 of the County Noise Ordinance, it shall be unlawful for any person to cause or allow the creation of any noise to the extent that the one-hour average sound level, at any point on or beyond the boundaries of the property exceeds the applicable limits on Table 4-1. An impact would occur and mitigation would be needed if the project will generate airborne noise which, together with noise from all sources, will be in excess of either of the following:

**Table 4-1 San Diego County Code Section 36.404
SOUND LEVEL LIMITS IN DECIBELS (dBA)**

ZONE		APPLICABLE LIMIT ONE-HOUR AVERAGE SOUND LEVEL (DECIBELS)
R-S, R-D, R-R, R-MH, A-70, A-72, S-80, S-81, S-87, S-88, S-90, S-92, R-V, and R-U Use Regulations with a density of less than 11 dwelling units per acre.	7 a.m. to 10 p.m.	50
	10 p.m. to 7 a.m.	45
R-RO, R-C, R-M, C-30, S-86, R-V, R-U and V5. Use Regulations with a density of 11 or more dwelling units per acre.	7 a.m. to 10 p.m.	55
	10 p.m. to 7 a.m.	50
S-94, V4, and all other commercial zones.	7 a.m. to 10 p.m.	60
	10 p.m. to 7 a.m.	55
V1, V2	7 a.m. to 7 p.m.	60
V1, V2	7 p.m. to 10 p.m.	55
V1	10 p.m. to 7 a.m.	55
V2	10 p.m. to 7 a.m.	50
V3	7 a.m. to 10 p.m.	70
	10 p.m. to 7 a.m.	65
M-50, M-52, M-54	Anytime	70
S-82, M-58, and all other industrial zones.	Anytime	75

(a) If the measured ambient level exceeds the applicable limit noted above, the allowable one hour average sound level shall be the ambient noise level, plus three decibels. The ambient noise level shall be measured when the alleged noise violation source is not operating.

(b) The sound level limit at a location on a boundary between two zones is the arithmetic mean of the respective limits for the two zones; provided however, that the one-hour average sound level limit applicable to extractive industries, including but not limited to borrow pits and mines, shall be 75 decibels at the property line regardless of the zone which the extractive industry is actually located.

The applicant's property and all surrounding properties are zoned A-70 and A-72. According to Section 36.404 of the County of San Diego Noise Ordinance, all areas zoned A-70 and A-72 have a most restrictive property line standard of 50 dBA Leq for the daytime hours of 7 a.m. to 10 p.m. and 45 dBA Leq for the nighttime hours of 10 p.m. to 7 a.m. Onsite noise generation due to the proposed residential or alternative clustered development project would primarily consist of normal residential activities and potential agricultural operations.

Agricultural operations are exempt under Section 36.417 Subsection b item 2 of the County Noise Ordinance. Therefore no impacts will occur and no mitigation is needed for the agricultural operations. The relevant section language is provided below:

(b) Section 36.404 shall not apply to:

- (2) Equipment associated with agricultural operations, provided that each piece of equipment and machinery powered by an internal-combustion engine is equipped with an appropriate muffler and air intake silencer in good working order and one of the following applies:
 - (A) Operations do not take place between 7 p.m. and 7 a.m. of the following day.
 - (B) The operations and equipment are utilized for the preparation, planting, harvesting, protection or salvage of agricultural crops during periods of potential or actual frost damage or other adverse weather conditions.
 - (C) The operations and equipment are used for agricultural pest control in accordance with regulations and procedures administered by the County Department of Agriculture.

4.2 Conclusions

Normal residential activities are anticipated to comply with the County's Noise Ordinance 36.404. The agricultural operations are exempt and no impacts are anticipated. Therefore the project related operations are anticipated to comply with the County's Noise Ordinance without any mitigation.

5.0 SUMMARY OF PROJECT IMPACTS, MITIGATION & CONCLUSIONS

- On-Site Noise Analysis

The noise contours for both the proposed project and alternative project show that noise sensitive land use (NSLU) areas will not exceed the County of San Diego 60 dBA CNEL exterior noise standard for more than 10% of the entire pad or lot areas. Based on this finding, no additional exterior noise analysis is required for either design that accounts for noise shielding from proposed grading changes and no mitigation measures is required.

Lots 17 and 18 in the alternative project configuration were found to exceed 60 dBA CNEL at the building facades. An interior noise assessment would be required prior to the approval of building plan permits. This is to ensure that interior noise levels for the proposed residential structures comply with the interior noise level requirement of 45 dBA pursuant to the County Noise Element, Policy 4b.

- Off-Site Noise Analysis

The project or the project alternative do not create a direct impact of more than 3 dBA CNEL on any roadway segment and no cumulative noise increase of 3 dBA CNEL or more were found. Therefore, the proposed project's direct and cumulative contributions to off-site roadway noise increases will not cause any significant impacts to any existing or future noise sensitive land uses.

- Construction Noise Analysis

The project will most likely may be developed on a lot-by-lot basis, which may result in some lots undergoing grading and construction simultaneously. All the internal roadways will be graded prior to the grading of any proposed Lots. The development of individual lots graded separately are located at least 90 feet any existing or proposed occupied property line. It was determined, based on the proposed grading operations for each lot that at a distance of 90 feet or greater the noise levels would be below the County's 75 dBA threshold and no noise impacts will occur.

- Operational Noise Analysis

Normal residential activities are anticipated to comply with the County's Noise Ordinance 36.404. The agricultural operations are exempt and no impacts are anticipated. Therefore the project related operations are anticipated to comply with the County's Noise Ordinance without any mitigation.

6.0 CERTIFICATIONS

The contents of this report represent an accurate depiction of the future acoustical environment and impacts within and surrounding the Hoskings Ranch (TM 5312RPL2) residential development. The report was prepared by Jeremy Loudon; a County approved CEQA Consultant for Acoustics.



Jeremy Loudon
Principal
Ldn Consulting, Inc.

Date September 24, 2015

ATTACHMENT A

MODEL CALIBRATION INPUT AND OUTPUT FILES

0944 Hoskings Ranch - Existing Conditions

T-PEAK HOUR TRAFFIC CONDITIONS, 1

211 , 45 , 22 , 45 , 7 , 45

T-PEAK HOUR TRAFFIC CONDITIONS, 2

211 , 45 , 22 , 45 , 7 , 45

L-SR-78, 1

N,1522.,4310,3860,

N,1930.,4093,3894,

N,2000.,4069,3898,

N,2231.,4036,3914,

N,2431.,3969,3924,

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N,3901.,3604,3958,

N,4099.,3582,3964,

N,4596.,3579,3980,

N,4755.,3581,3982,

N,5088.,3595,3978,

L-SR-78 cont, 2

N,5088.,3595,3978,

N,5426.,3631,3970,

N,5733.,3667,3962,

N,5968.,3695,3964,

N,6221.,3715,3970,

N,6553.,3673,3968,

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2725,3720,3939.,M1-HARD

R, 2 , 67 ,500

2725,3720,3939.,M1-SOFT

D, 4.5

ALL,2

C,C

SOUND32 - RELEASE 07/30/91

TITLE:

0944 Hoskings Ranch - Existing Conditions

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER LEQ

M1-HARD 59.4

M1-SOFT 56.0

ATTACHMENT B

FUTURE NOISE CONTOUR MODEL INPUT AND OUTPUT FILES

0944 Hoskings Ranch - First Level Contours along SR78

T-PEAK HOUR TRAFFIC CONDITIONS, 1

703 , 55 , 74 , 55 , 23 , 55

T-PEAK HOUR TRAFFIC CONDITIONS, 2

703 , 55 , 74 , 55 , 23 , 55

T-PEAK HOUR TRAFFIC CONDITIONS, 3

352 , 40 , 37 , 40 , 12 , 40

T-PEAK HOUR TRAFFIC CONDITIONS, 4

352 , 40 , 37 , 40 , 12 , 40

L-SR-78, 1

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L-SR-78 cont, 2

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N,7193.,3668,3980,

L-Pine Hills Road, 3

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R, 40 , 67 ,500
3110,3281,3987.,
D, 4.5
ALL,ALL
C,C

SOUND32 - RELEASE 07/30/91

TITLE:
0944 Hoskings Ranch - First Level Contours along SR78

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
R-1	64.3
R-2	64.4
R-3	64.0
R-4	64.2
R-5	64.5
R-6	64.2
R-7	64.2
R-8	63.9
R-9	64.0
R-10	64.6
R-11	60.9
R-12	59.6
R-13	59.6
R-14	59.6
R-15	59.5
R-16	59.5
R-17	59.5
R-18	59.3
R-19	59.6
R-20	59.8
R-21	56.9
R-22	56.8
R-23	56.5
R-24	56.6
R-25	56.6
R-26	56.7
R-27	56.8
R-28	56.9
R-29	57.2
R-30	59.4
R-31	59.0
R-32	55.4
R-33	55.1
R-34	54.9
R-35	54.7
R-36	54.6
R-37	54.6
R-38	54.5
R-39	54.7
R-40	54.8

0944 Hoskings Ranch - First Level Contours along PHR

T-PEAK HOUR TRAFFIC CONDITIONS, 1

703 , 55 , 74 , 55 , 23 , 55

T-PEAK HOUR TRAFFIC CONDITIONS, 2

703 , 55 , 74 , 55 , 23 , 55

T-PEAK HOUR TRAFFIC CONDITIONS, 3

352 , 40 , 37 , 40 , 12 , 40

T-PEAK HOUR TRAFFIC CONDITIONS, 4

352 , 40 , 37 , 40 , 12 , 40

L-SR-78, 1

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L-Pine Hills Road, 3

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L-Pine Hills Road cont, 4

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 D, 4.5
 ALL,ALL
 C,C

SOUND32 - RELEASE 07/30/91

TITLE:

0944 Hoskings Ranch - First Level Contours along PHR

BASED ON FHWA-RD-108 AND
 CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
R-1	59.3
R-2	58.8
R-3	58.4

R-4	58.7
R-5	58.8
R-6	58.3
R-7	58.6
R-8	59.3
R-9	58.3
R-10	57.8
R-11	58.8
R-12	58.3
R-13	53.9
R-14	54.3
R-15	53.3
R-16	53.7
R-17	54.5
R-18	54.1
R-19	54.0
R-20	54.0
R-21	54.4
R-22	54.2
R-23	54.7
R-24	55.6
R-25	53.9
R-26	52.6
R-27	51.9
R-28	52.0
R-29	51.3
R-30	51.2
R-31	51.4
R-32	51.8
R-33	50.9
R-34	50.5
R-35	51.4
R-36	50.9

0944 Hoskings Ranch - Second Level Contours along SR78

T-PEAK HOUR TRAFFIC CONDITIONS, 1

703 , 55 , 74 , 55 , 23 , 55

T-PEAK HOUR TRAFFIC CONDITIONS, 2

703 , 55 , 74 , 55 , 23 , 55

T-PEAK HOUR TRAFFIC CONDITIONS, 3

352 , 40 , 37 , 40 , 12 , 40

T-PEAK HOUR TRAFFIC CONDITIONS, 4

352 , 40 , 37 , 40 , 12 , 40

L-SR-78, 1

N,1522.,4310,3860,

N,1930.,4093,3894,

N,2000.,4069,3898,

N,2231.,4036,3914,

N,2431.,3969,3924,

N,2674.,3882,3932,

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N,3729.,3640,3952,

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N,4099.,3582,3964,

N,4596.,3579,3980,

N,4755.,3581,3982,

N,5088.,3595,3978,

L-SR-78 cont, 2

N,5088.,3595,3978,

N,5426.,3631,3970,

N,5733.,3667,3962,

N,5968.,3695,3964,

N,6221.,3715,3970,

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N,6750.,3668,3968,

N,7193.,3668,3980,

L-Pine Hills Road, 3

N,6898.,3660,3972,

N,6871.,3367,3985,

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N,6799.,2349,3942,

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R, 29 , 67 ,500

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R, 31 , 67 ,500
6712,3123,3990.,
R, 32 , 67 ,500
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5912,3179,3992.,
R, 34 , 67 ,500
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R, 36 , 67 ,500
4712,3079,4102.,
R, 37 , 67 ,500
4310,3081,4093.,
R, 38 , 67 ,500
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R, 39 , 67 ,500
3513,3182,3991.,
R, 40 , 67 ,500
3110,3281,3997.,
C,C

SOUND32 - RELEASE 07/30/91

TITLE:
0944 Hoskings Ranch - Second Level Contours along SR78

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
R-1	67.3
R-2	67.4
R-3	67.0
R-4	67.2
R-5	67.4
R-6	67.2
R-7	67.3
R-8	67.0
R-9	67.1
R-10	67.6
R-11	64.9
R-12	64.1
R-13	64.1
R-14	64.1
R-15	64.0
R-16	64.0
R-17	64.0
R-18	63.8
R-19	64.1
R-20	64.1
R-21	62.1
R-22	62.1
R-23	61.8
R-24	61.9
R-25	61.9
R-26	62.0
R-27	62.1
R-28	62.2
R-29	62.4
R-30	63.6
R-31	63.1
R-32	61.1
R-33	60.9
R-34	60.7
R-35	60.6
R-36	60.5
R-37	60.5
R-38	60.4

R-39 60.6
R-40 60.6

0944 Hoskings Ranch - Second Level Contours along PHR

T-PEAK HOUR TRAFFIC CONDITIONS, 1

703 , 55 , 74 , 55 , 23 , 55

T-PEAK HOUR TRAFFIC CONDITIONS, 2

703 , 55 , 74 , 55 , 23 , 55

T-PEAK HOUR TRAFFIC CONDITIONS, 3

352 , 40 , 37 , 40 , 12 , 40

T-PEAK HOUR TRAFFIC CONDITIONS, 4

352 , 40 , 37 , 40 , 12 , 40

L-SR-78, 1

N,1522.,4310,3860,

N,1930.,4093,3894,

N,2000.,4069,3898,

N,2231.,4036,3914,

N,2431.,3969,3924,

N,2674.,3882,3932,

N,3131.,3796,3954,

N,3364.,3736,3956,

N,3530.,3692,3952,

N,3729.,3640,3952,

N,3901.,3604,3958,

N,4099.,3582,3964,

N,4596.,3579,3980,

N,4755.,3581,3982,

N,5088.,3595,3978,

L-SR-78 cont, 2

N,5088.,3595,3978,

N,5426.,3631,3970,

N,5733.,3667,3962,

N,5968.,3695,3964,

N,6221.,3715,3970,

N,6553.,3673,3968,

N,6750.,3668,3968,

N,7193.,3668,3980,

L-Pine Hills Road, 3

N,6898.,3660,3972,

N,6871.,3367,3985,

N,6809.,2525,3950,

N,6799.,2349,3942,

N,6841.,2233,3938,

N,6877.,2010,3930,

N,6881.,1897,3926,

N,6857.,1417,3908,

N,6809.,1310,3904,

N,6684.,1130,3896,

N,6652.,1036,3894,

N,6649.,850,3890,

N,6649.,387,3880,

N,6670.,-92,3870,

N,6686.,-200,3877,

L-Pine Hills Road cont, 4

N,6686.,-200,3877,

N,6643.,-269,3882,

N,6531.,-393,3894,

N,6464.,-600,3906,

N,6458.,-700,3910,

N,6565.,-1045,3926,

N,6611.,-1637,3962,

N,6620.,-1758,3962,

N,6653.,-2180,3944,

R, 1 , 67 ,500

6713,2903,3986.,

R, 2 , 67 ,500

6683,2500,3981.,

R, 3 , 67 ,500

6726,2101,3947.,

R, 4 , 67 ,500

6745,1705,3937.,

R, 5 , 67 ,500

6653,1303,3917.,

R, 6 , 67 ,500

6520,902,3895.,

R, 7 , 67 ,500
6523,500,3879.,
R, 8 , 67 ,500
6547,102,3883.,
R, 9 , 67 ,500
6447,-297,3896.,
R, 10 , 67 ,500
6331,-700,3899.,
R, 11 , 67 ,500
6443,-1096,3931.,
R, 12 , 67 ,500
6471,-1500,3950.,
R, 13 , 67 ,500
6350,-1497,3947.,
R, 14 , 67 ,500
6320,-1095,3923.,
R, 15 , 67 ,500
6209,-700,3904.,
R, 16 , 67 ,500
6300,-300,3901.,
R, 17 , 67 ,500
6421,99,3885.,
R, 18 , 67 ,500
6399,501,3885.,
R, 19 , 67 ,500
6400,891,3907.,
R, 20 , 67 ,500
6498,1301,3925.,
R, 21 , 67 ,500
6621,1703,3950.,
R, 22 , 67 ,500
6589,2105,3955.,
R, 23 , 67 ,500
6559,2500,3983.,
R, 24 , 67 ,500
6590,2900,3997.,
R, 25 , 67 ,500
6462,2900,4005.,
R, 26 , 67 ,500
6435,2501,3977.,
R, 27 , 67 ,500
6460,2100,3965.,
R, 28 , 67 ,500
6495,1702,3956.,
R, 29 , 67 ,500
6355,1300,3930.,
R, 30 , 67 ,500
6272,903,3905.,
R, 31 , 67 ,500
6272,500,3901.,
R, 32 , 67 ,500
6296,98,3881.,
R, 33 , 67 ,500
6160,-302,3905.,
R, 34 , 67 ,500
6084,-700,3899.,
R, 35 , 67 ,500
6192,-1098,3916.,
R, 36 , 67 ,500
6222,-1500,3937.,
C,C

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TITLE:
0944 Hoskings Ranch - Second Level Contours along PHR

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER LEQ

R-1 62.9

R-2	62.2
R-3	61.9
R-4	62.0
R-5	62.0
R-6	61.6
R-7	61.8
R-8	62.2
R-9	61.5
R-10	61.1
R-11	61.9
R-12	61.4
R-13	58.3
R-14	58.7
R-15	58.0
R-16	58.4
R-17	59.0
R-18	58.8
R-19	58.7
R-20	58.9
R-21	59.3
R-22	59.3
R-23	59.8
R-24	60.8
R-25	59.8
R-26	58.6
R-27	57.9
R-28	57.8
R-29	57.2
R-30	56.9
R-31	57.0
R-32	57.2
R-33	56.5
R-34	56.1
R-35	56.7
R-36	56.2