NOISE ASSESSMENT

Ocean Breeze Residential Development
PDS2016-TM-5615, PDS2015-MPA-15-011
County of San Diego CA

Lead Agency:

County of San Diego
Planning & Development Services
Contact: Souphie Sakdarak
5510 Overland Avenue #110
San Diego, CA 92123
858-495-5214

Prepared by:

Jeremy Louden
Ldn Consulting, Inc.
42428 Chisolm Trail
Murrieta, CA 92562
760-473-1253

Prepared For:

Ocean Breeze Ranch, LLC
1550 S. Coast Hwy. Ste. 201
Laguna Beach, CA 92651

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GLOSSARY OF COMMON TERMS

Sound Pressure Level (SPL): a ratio of one sound pressure to a reference pressure (L_{ref}) of 20 µPa. 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. Leq 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 project. The project known as "Ocean Breeze Ranch" envisions providing 396 single-family detached lots of which 15 lots will be estate-sized or 5-acres or larger lots. The Project proposes a Tentative Map to develop approximately 312 acres of the site for residential uses which would include approximately 16 acres of local parks which would be designed for use by the development and the public. Additionally, the Project proposes to dedicate and conserve approximately 833 acres for biological preservation on-site along with approximately 10 acres of right-of-way dedication along West Lilac Road and a 30 acre vacant remainder parcel within the 1,402 acre site. The project also seeks to obtain a Major Use Permit (MUP) for an existing equestrian facility has been operational since about 1980 and is considered part of the baseline conditions. The existing facility is an estimated 375 acres, the proposed MUP would reduce the size of the operations to approximately 203 acres and would require some improvements to include permitting additional horse shade structures, a horse aquatic therapy pool, relocating employee manufactured homes and as well as an equipment maintenance shop. Since the equestrian facility is an existing use and intensity is not increasing, the proposed modifications would be allowed under CEQA without further analysis.

The project is located at 5820 West Lilac Road, south of State Highway 76, and approximately 1-mile west of Interstate 15. The project is located in the northern portion of the unincorporated community of Bonsall in north San Diego County, CA.

- On-Site Traffic Noise Analysis

It was determined from the analysis that the single-family NSLU's will comply with the County of San Diego 60 dBA CNEL exterior noise standard without mitigation measures. Based on this finding, no mitigation measures and no additional exterior or interior noise analysis is required.

- Off-Site Traffic Noise Analysis

The project does not create a direct impact of more than 3 dBA CNEL on any roadway segment. Therefore, the proposed project's direct contributions to off-site roadway noise increases will not cause any significant impacts to any existing noise sensitive land uses.

The Project does contribute to a cumulative noise level increase of 3 dBA CNEL along West Lilac Road. It was identified through more in-depth research that the existing plus project plus cumulative noise contours are below a level of significance at the existing off-site sensitive uses. Therefore, no offsite Project related traffic noise impacts are anticipated from the Project's cumulative contributions. The anticipated increase in the ambient noise levels from the Project are based on the Project and cumulative projects being fully built and will occur over a period of ten years or more. Therefore, the increases will be incremental and not instantaneously perceivable. Additionally, the

Project is consistent with the General Plan land use and will not result in an increase in the future year buildout traffic noise conditions.

- Operational Noise

Onsite operational would consist of mechanical equipment (HVAC), the continued equestrian facility operations and normal residential activities are anticipated to comply with the County's Noise Ordinance 36.404. Therefore, no impacts will occur and no mitigation is needed for the project operations to comply with the County's standards and no impacts are anticipated and no mitigation is required.

- Construction Noise Analysis

At a distance as close as 180-feet the point source noise attenuation or reduction from construction activities and the nearest property line is -11.1 dBA and would result in an anticipated worst-case noise level of 75 dBA. Given this and the spatial separation of the equipment, the noise levels are projected to comply with the County of San Diego's Noise Ordinance Section 36.409 standard of 75 dBA at all Project property lines and no significant impacts would occur.

In the event that the rock drills are staged within 200 feet of any occupied noise sensitive land use, implusive noise may exceed the County Noise Ordinance Section 36.410 standard of 82 dBA. As stated above, the rock drill need to be 225 feet from any occupied noise sensitive land use to meet the 75 dBA standard in the County Noise Ordinance Section 36.409. Therefore, if the rock drills are staged within 225 feet of any occupied noise sensitive land it is recommended that a specific mitigation plan based upon the location of the construction equipment, topography and construction schedule be identified by a County certified acoustical engineer. The mitigation plan may include a temporary noise barrier along any property line where the impacts could occur. Based on previous projects, a barrier ranging from 8 to 12 feet in height maybe needed. The proposed noise barrier will need to be of solid non-gapping material to adequately reduce construction noise levels below the County's threshold. The mitigation plan can also restrict the usage of the equipment (amount of time used and/or the location in respect to the property line). The mitigation plan would determine the final height and location of a temporary barrier, or equipment usage as necessary. Blasting operations must comply with the County's Consolidated Fire Code (2011) Section 3301.2 which establishes permitting and notification procedures.

If clearing, grubbing, and grading activities are proposed during the nesting/breeding season of any year, and the biological monitor has determined that there are sensitive bird nests within the projected 60 dBA Leq construction noise contour, the following recommendations would apply: a County approved acoustical consultant shall perform noise measurements within the projected contour to assess the ambient noise levels in the absence of construction activities. The intent of these measurements is to establish baseline noise levels in the occupied habitat without construction.

If the construction noise levels at nest sites during the breeding season are anticipated to exceed 60 dBA Leq or the ambient condition, whichever is higher, noise attenuation measures including, but not limited to, noise barriers and noise reducing features on construction equipment shall be implemented as necessary to maintain construction noise at acceptable levels at nest sites.

- Vibration Analysis

There are no existing or proposed frequent activities on or near the proposed project site at this time which would cause any significant vibration levels to existing buildings near the project site. Blasting operations must comply with the County's Consolidated Fire Code (2011) Section 3301.2 which establishes permitting and notification procedures. Therefore, no additional analysis or mitigation is required.

1.0 INTRODUCTION

1.1 Project Description

This noise study was completed to determine the noise impacts associated with the development of the proposed Ocean Breeze Ranch Residential Project. The project is located at 33° 18′ 16″ N and 117° 11′ 18″ W, along West Lilac Road, south of State Highway 76, and approximately 1-mile west of Interstate 15 in the northern portion of the unincorporated community of Bonsall in San Diego County CA. A general project vicinity map is shown in Figure 1-A on the following page.

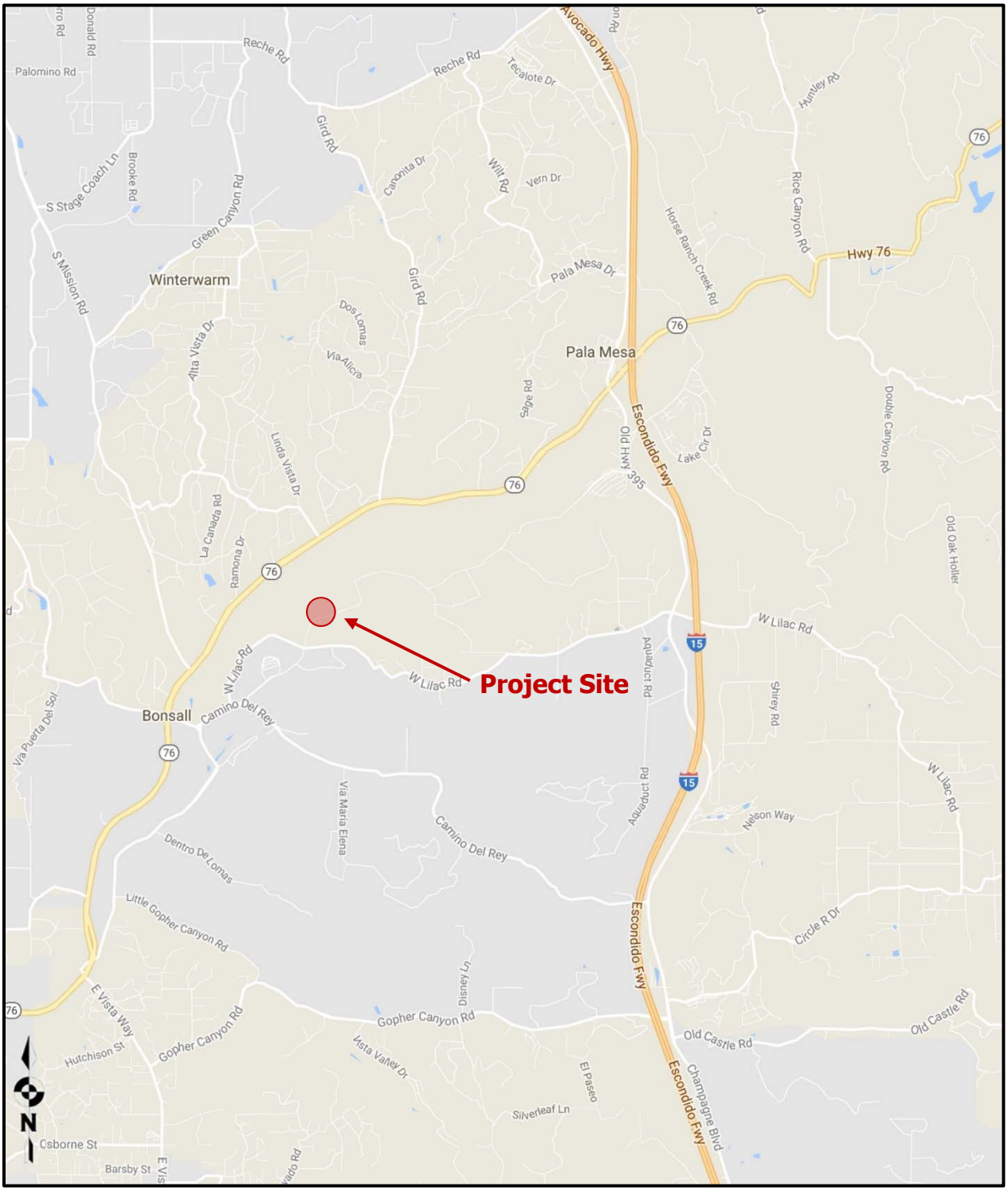
The Project envisions providing 396 single-family detached lots of which 15 lots will be estate-sized or 5-acres or larger lots. The Project proposes a Tentative Map to develop approximately 312 acres of the site for residential uses which would include approximately 16 acres of local parks which would be designed for use by the development and the public. Additionally, the Project proposes to dedicate and conserve approximately 833 acres for biological preservation on-site along with approximately 10 acres of right-of-way dedication along West Lilac Road and a 30 acre vacant remainder parcel.

The project also seeks to obtain a Major Use Permit (MUP) for an existing equestrian facility has been operational since about 1980 and is considered part of the baseline conditions. The existing facility is an estimated 375 acres, the proposed MUP would reduce the size of the operations to approximately 203 acres and would require some improvements to include permitting additional horse shade structures, a horse aquatic therapy pool, relocating employee manufactured homes and as well as an equipment maintenance shop. Since the equestrian facility is an existing use and intensity is not increasing, the proposed modifications would be allowed under CEQA without further analysis.

The Project property has multiple zoning and land use designations and the proposed project would be consistent with overall densities allowed by the General Plan for the site. The Project seeks a major use permit for the residential uses and one for the equestrian uses which will formalize the operational requirements for each set of uses. The Project's zoning designations are A70 (Limited Agricultural Use), S80 (Open Space), and RV (Variable Family Residential). No amendments to zoning designations are needed to accommodate the project.

To meet fire safety requirements, each planning area is proposed to have two emergency access roads, accessible from West Lilac Road to the south or State Highway 76 to the northeast. Another secondary access road would link the property to Pala/Temecula Road to the east.

Figure 1-A: Project Vicinity Map



Source: Google Maps, 2018

Preparation of the site for development would involve the mass grading of approximately 312 acres which would be expected to require approximately 1,900,000 CY of balanced cut / fill of which 945,000 Cubic Yards of that same material will be hauled onsite 1,500 feet away within Planning Areas 1 and 2. All construction phases of the proposed Project are anticipated to start in 2022 and completion is expected in 2029 with full operations in 2030. The proposed site development plan is shown in Figure 1–B on the following Page.

1.2 Environmental Settings & Existing Conditions

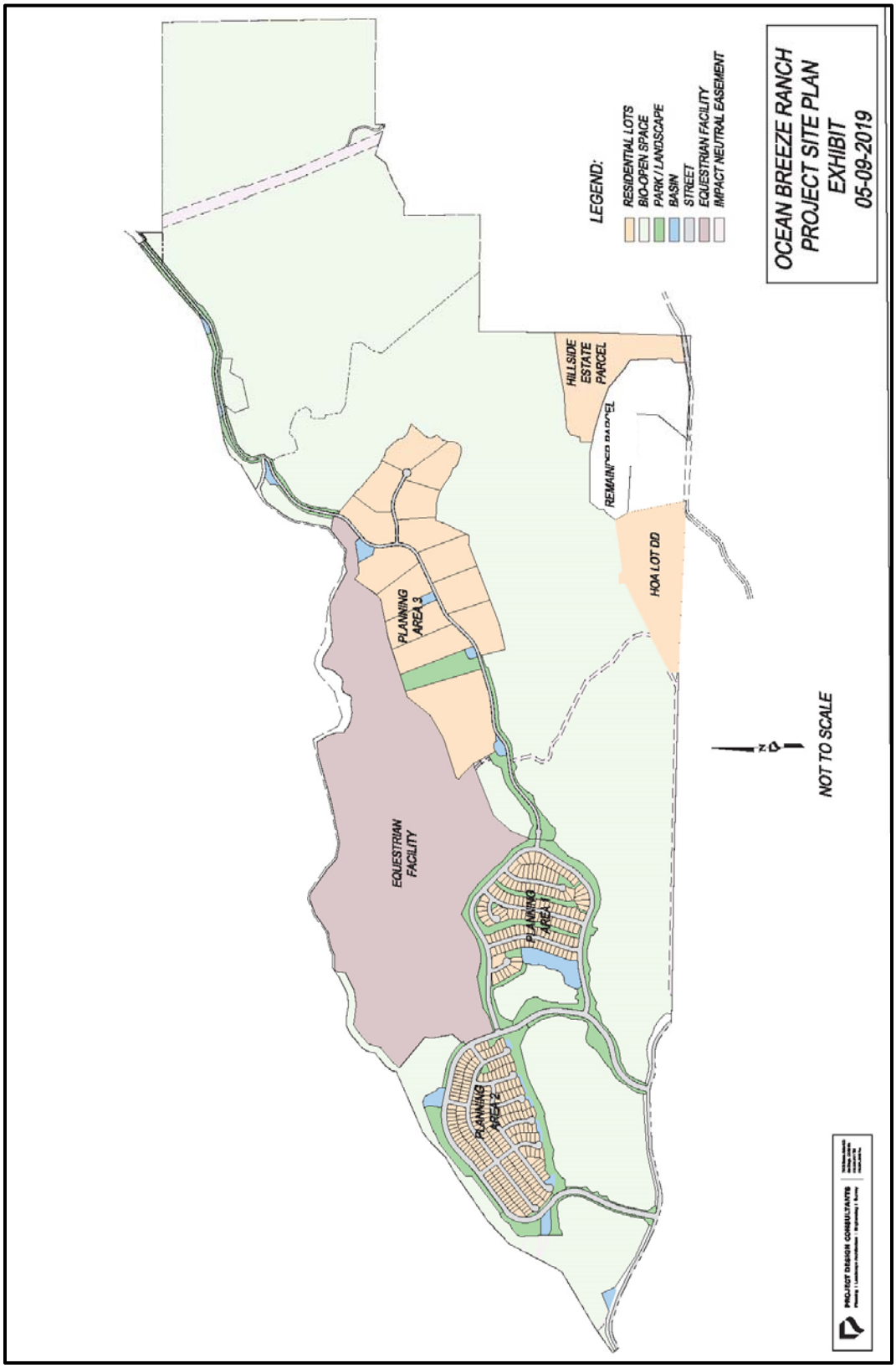
a) Settings & Locations

The project is at 5820 West Lilac Road, south of State Highway 76, and approximately 1-mile west of Interstate 15. State Route 76 and West Lilac Road are arterials that connect the project to other arterials. Existing land uses surrounding the site are primarily agricultural, residential and open space areas.

b) Existing Noise Conditions

The project is located south of SR-76 which varies in its classification from a 2 lane collector to a 4 lane major roadway in the County of San Diego's Circulation Element with a posted speed limit of 55 miles per hour (MPH). Existing noise occurs mainly from traffic traveling along SR-76 and to a lesser extent from West Lilac Road to the south and nearby agricultural operations.

Figure 1-B: Proposed Project Site Layout



Source: Project Design Consultants, 2019

1.3 Methodology and Equipment

a) Noise Measuring Methodology and Procedures

To determine the existing noise environment and to assess potential noise impacts, 24-hour measurements were taken at two locations on the project 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 April 19-20, 2018 by Ldn Consulting between approximately 3:00 p.m. and 12:00 a.m. the following day.

Noise measurements were taken using two Larson-Davis Spark Model 706 Type 2 precision sound level meters, 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.

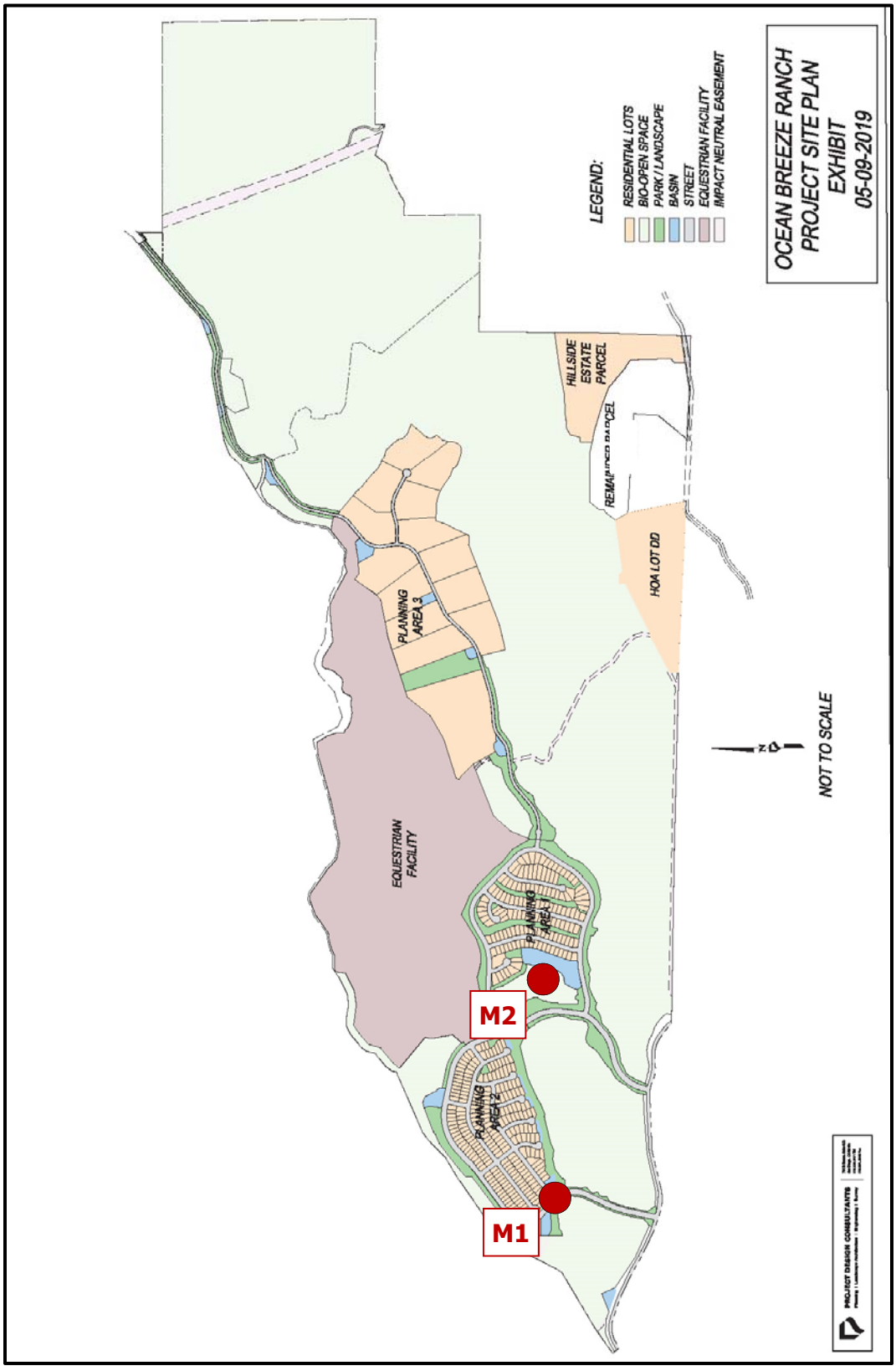
The noise measurement locations were determined based on site access and noise impact potential to the proposed sensitive uses. Monitoring location 1 (M1) was located within Planning Area 2 and monitoring location 2 (M2) was located within Planning Area 1. The noise monitoring locations are provided graphically in Figure 1-C on the following page.

The results of the noise level measurements are presented in Table 1-1. The ambient 24-hour CNEL noise levels measured in the area of the project were found to be roughly 44 dBA CNEL at Planning Area 2 and roughly 52 dBA CNEL at Planning Area 1. The existing noise levels in the project area consisted primarily of traffic along SR-76 and West Lilac Road, and background noise from agricultural and equestrian operations in the distance. Noise levels were higher at M2 due to its location near increased equestrian operations.

Table 1-1: Existing Noise Levels

Location	Date/Time	Noise Levels (dBA)	
		Leq	CNEL
M1	April 19, 2018 3:00 p.m. – April 20, 2018 12:00 a.m.	44.1	49.5
M2	April 19, 2018 3:00 p.m. – April 20, 2018 12:00 a.m.	52.1	55.0

Figure 1-C: Noise Measurement Locations



b) Noise Modeling Software

The primary source of noise impacts to the project site will be vehicular noise from SR-76 to the north and West Lilac Road to the south. The projected roadway noise levels from vehicular traffic were calculated using the methods in the Highway Noise Model published by the Federal Highway Administration (FHWA Highway Traffic Noise Prediction Model, FHWA-RD-77-108, December 1978). The FHWA Model uses the traffic volume, vehicle mix, speed, and roadway geometry to compute the equivalent noise level. A spreadsheet calculation was used which computes equivalent noise levels for each of the time periods used in the calculation of CNEL. Weighting these equivalent noise levels and summing them gives the CNEL for the traffic projections.

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

The County's General Plan Chapter 8 Noise Element uses the Noise Compatibility Guidelines listed in Table N-1 of the General Plan Noise Element (provided below) to determine the compatibility of land use when evaluating proposed development projects. The Noise Compatibility Guidelines indicate ranges of compatibility and are intended to be flexible enough to apply to a range of projects and environments. For example, a commercial project would be evaluated differently than a residential project in a rural area or a mixed-use project in a more densely developed area of the County.

TABLE N-1: NOISE COMPATIBILITY GUIDELINES (CNEL)

Table N-1 Noise Compatibility Guidelines

Land Use Category		Exterior Noise Level (CNEL)						
		55	60	65	70	75	80	
A	Residential—single family residences, mobile homes, senior housing, convalescent homes							
B	Residential—multi-family residences, mixed-use (commercial/residential)							
C	Transient lodging—motels, hotels, resorts							
D*	Schools, churches, hospitals, nursing homes, child care facilities							
E*	Passive recreational parks, nature preserves, contemplative spaces, cemeteries							
F*	Active parks, golf courses, athletic fields, outdoor spectator sports, water recreation							
G*	Office\professional, government, medical\dental, commercial, retail, laboratories							
H*	Industrial, manufacturing, utilities, agriculture, mining, stables, ranching, warehouse, maintenance/repair							

	ACCEPTABLE—Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal construction, without any special noise insulation requirements.
	CONDITIONALLY ACCEPTABLE—New construction or development should be undertaken only after a detailed noise analysis is conducted to determine if noise reduction measures are necessary to achieve acceptable levels for land use. Criteria for determining exterior and interior noise levels are listed in Table N-2, Noise Standards. If a project cannot mitigate noise to a level deemed Acceptable, the appropriate county decision-maker must determine that mitigation has been provided to the greatest extent practicable or that extraordinary circumstances exist.
	UNACCEPTABLE—New construction or development shall not be undertaken.

* Denotes facilities used for part of the day; therefore, an hourly standard would be used rather than CNEL (refer to Table N-2).

Note: For projects located within an Airport Influence Area of an adopted Airport Land Use Compatibility Plan (ALUCP), additional Noise Compatibility Criteria restrictions may apply as specified in the ALUCP.

A land use located in an area identified as "acceptable" indicates that standard construction methods would attenuate exterior noise to an acceptable indoor noise level and that people can carry out outdoor activities with minimal noise interference. Land uses that fall into the "conditionally acceptable" noise environment should have an acoustical study that considers the type of noise source, the sensitivity of the noise receptor, and the degree to which the noise source may interfere with sleep, speech, or other activities characteristic of the land use. For land uses indicated as "conditionally acceptable," structures must be able to attenuate the exterior noise to the indoor noise level as indicated in the Noise Standards listed in Table N-2 of the General Plan Noise Element (provided below). For land uses where the exterior noise levels fall within the "unacceptable" range, new construction generally should not be undertaken.

TABLE N-2: NOISE STANDARDS

Table N-2 Noise Standards[Note]
1. The exterior noise level (as defined in Item 3) standard for Category A shall be 60 CNEL, and the interior noise level standard for indoor habitable rooms shall be 45 CNEL.
2. The exterior noise level standard for Categories B and C shall be 65 CNEL, and the interior noise level standard for indoor habitable rooms shall be 45 CNEL.
3. The exterior noise level standard for Categories D and G shall be 65 CNEL and the interior noise level standard shall be 50 dBA L_{eq} (one hour average).
4. For single-family detached dwelling units, "exterior noise level" is defined as the noise level 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 net lot area: *(i)* for lots less than 4,000 square feet in area, the exterior area shall include 400 square feet, *(ii)* for lots between 4,000 square feet to 10 acres in area, the exterior area shall include 10 percent of the lot area; *(iii)* for lots over 10 acres in area, the exterior area shall include 1 acre.
5. For all other residential land uses, "exterior noise level" is defined as noise measured at exterior areas which are provided for private or group usable open space purposes. "Private Usable Open Space" is defined as usable open space intended for use of occupants of one dwelling unit, normally including yards, decks, and balconies. When the noise limit for Private Usable Open Space cannot be met, then a Group Usable Open Space that meets the exterior noise level standard shall be provided. "Group Usable Open Space" is defined as usable open space intended for common use by occupants of a development, either privately owned and maintained or dedicated to a public agency, normally including swimming pools, recreation courts, patios, open landscaped areas, and greenbelts with pedestrian walkways and equestrian and bicycle trails, but not including off-street parking and loading areas or driveways.
6. For non-residential noise sensitive land uses, exterior noise level is defined as noise measured at the exterior area provided for public use.
7. For noise sensitive land uses where people normally do not sleep at night, the exterior and interior noise standard may be measured using either CNEL or the one-hour average noise level determined at the loudest hour during the period when the facility is normally occupied.
8. The exterior noise standard does not apply for land uses where no exterior use area is proposed or necessary, such as a library.
9. For Categories E and F the exterior noise level standard shall not exceed the limit defined as "Acceptable" in Table N-1 or an equivalent one-hour noise standard.

Note: Exterior Noise Level compatibility guidelines for Land Use Categories A-H are identified in Table N-1, Noise Compatibility Guidelines.

2.2 Potential Noise Impacts

It is expected that the primary source of potential noise impacts to the project site will occur from vehicular traffic noise along SR-76 and West Lilac Road.

a) Future Onsite Roadway Noise

The Buildout scenario includes the future year 2030 traffic volume forecasts provided by the County's General Plan Update for 2030. The future traffic along SR-76 and West Lilac Road is estimated to be 42,500 and 5,500 ADT, respectively, in the year 2030. The future roadway parameters and inputs utilized in this analysis are provided in Table 2-1. Based on the County of San Diego Department of Public Works Public Road Standards, the segment of the SR-76 nearest the project is considered a 4-lane major roadway with a designed traffic speed of 55 MPH. West Lilac Road in the project vicinity is considered a light collector with a designed traffic speed of 45 MPH. To assess the peak hour traffic noise conditions, 10% of the ADT was utilized and a conservative vehicle mix was also utilized to predict the worst case noise levels.

Table 2-1: Buildout 2030 Traffic Parameters

Roadway	Average Daily Traffic (ADT)	Peak Hour Volume[1]	Modeled Speeds (MPH)	Vehicle Mix %[2]		
				Auto	Medium Trucks	Heavy Trucks
SR-76	42,500	4,250	55	95	3	2
West Lilac Road	5,500	550	45	95	3	2

[1] 10% of the ADT.
[2] Conservative vehicle mix.

To account for the topographic features between the roadways and the noise sensitive land uses, soft site conditions were used in the calculations. Based on the exterior noise model, the worst-case noise level from the SR-76 and West Lilac Road was found to be 54.1 dBA CNEL at the site. The modeling results are provided in Figure 2-A. Based on this finding, outdoor NSLU areas are anticipated to be below the County of San Diego 60 dBA CNEL threshold with no mitigation measures and no additional exterior or interior noise analysis is required.

Figure 2-A: Future Noise Levels

Project Name:	Ocean Breeze Ranch		Date:	11-May-18
Project Number:	16-111		Location:	Bonsall

Traffic Volumes, Mix and Speeds

	Autos	Med. Trucks	Heavy Trucks
Mix Ratio by Percent	95.0	3.0	2.0
Propagation Rule	Soft		

Roadway	**ADT**	**Speed MPH**	**CNEL @ 50 Feet**	**60 CNEL (Feet)**
SR-76	42,500	55	77.7	755
West Lilac Road	5,500	45	66.8	142

Noise Reduction due to Distance

	Distance	**Reduction**	**Resultant Level**
SR-76	2,030	-24.13	**53.6**
West Lilac Road	1,500	-22.16	**44.6**

Cumulative Noise Level	**54.1**	**dBA CNEL**

2.3 Off-site Noise Impacts

The off-site project related roadway segment noise levels projected in this report were calculated using the methods in the Highway Noise Model published by the Federal Highway Administration (FHWA Highway Traffic Noise Prediction Model, FHWA-RD-77-108, December, 1978). The FHWA Model uses the traffic volume, vehicle mix, speed, and roadway geometry to compute the equivalent noise level.

A spreadsheet calculation was used which computes equivalent noise levels for each of the time periods used in the calculation of CNEL. Weighting these equivalent noise levels and summing them gives the CNEL for the traffic projections. The noise contours are then established by iterating the equivalent noise level over many distances until the distance to the desired noise contour(s) are found. For this project the 60 dBA CNEL contour was calculated based upon the County of San Diego thresholds.

Soft site conditions were used along all roadway segments to develop the worst-case noise contours and to analyze noise impacts. The future traffic noise model utilizes a conservative

vehicle mix of 95% Autos, 3% Medium Trucks and 2% Heavy Trucks for all analyzed roadway segments to account for additional truck traffic. The vehicle mix provides the hourly distribution percentages of automobile, medium trucks and heavy trucks for input into the FHWA Model.

Direct and cumulative roadway noise impacts would be considered significant if the project increases noise levels for a noise sensitive land use by 3 dBA CNEL and if: (1) the existing noise levels already exceed the 60 dBA CNEL residential standard, or (2) the project increases noise levels from below the 60 dBA CNEL standard to above 60 dBA CNEL in the area adjacent to the roadway segment. The County of San Diego requires that the Cumulative without Project scenario and the cumulative with project scenario be compared to determine if significant impacts occur. Project generated cumulative roadway noise impacts would be considered significant if the project raises the Cumulative without Project noise level by greater than 1 dBA.

a) Direct Noise Impacts

To determine if direct off-site noise level increases associated with the development of the proposed project will create noise impacts. The noise levels for the existing conditions were compared with the noise level increase of existing plus the proposed project. Utilizing the project's traffic assessment (Source: LSA, 2019) noise contours were developed for the following traffic scenarios:

Existing: Current day noise conditions without construction of the proposed project.

Existing Plus Project: Current day noise conditions plus the completion of the proposed project.

Existing vs. Existing Plus Project: Comparison of the direct project related noise level increases in the vicinity of the proposed project site.

The noise levels and the distances to the 60 dBA CNEL contours for the roadways in the vicinity of the Project site are given in Table 2-2 for the Existing Scenario and in Table 2-3 for the Existing plus Project Scenario. Note that the values given do not take into account the effect of any noise barriers or topography that may affect ambient noise levels.

Table 2-2: Existing Roadway Noise Levels

Roadway and Roadway Segment	ADT[1]	Vehicle Speeds (MPH)[1]	Noise Level @ 50-Feet (dBA CNEL)	60 dBA CNEL Contour Distance (Feet)
East Dulin Road				
Old Hwy 395 to Lake Circle Drive	4,258	45	65.7	120
West Lilac Road				
Camino Del Rey to Vessels Ranch Road	2,928	40	63.0	79
Rawhide Ranch Road to Bobritt Lane	2,735	40	62.7	75
Old Hwy 395 to Ranchos Ladera Road	2,633	40	62.5	73
I-15 to Standel Lane	1,606	40	60.3	53
Circle R Drive to Lal Bagh Lane	1,010	40	58.3	39
Diaz Road to North Berry Road	1,351	40	59.6	47
Camino Del Rey				
Old River Road to West Lilac Road	11,166	40	68.8	192
W/O Via Maria Elena	6,517	40	66.4	134
Lilac Road				
West Lilac Road to Old Castle Road	3,614	40	63.9	91
Old River Road				
Golf Club Drive to Dentro De Lomas Road	2,409	40	62.1	69
Old Highway 395				
SR-76 to Dulin Road	7,046	45	67.9	168
Dulin Road (north) to Dulin Road (south)	6,698	45	67.7	162
West Lilac Road to Via Urner Road	6,416	45	67.5	158
I-15 SB Ramps to I-15 NB Ramps	5,216	55	68.6	186
Camino Del Rey to Nelson Way	4,967	55	68.4	180
Circle R Drive to Camino Del Rey	11,948	56	72.4	333
Circle R Drive to Gopher Canyon Road	13,933	55	72.8	359

[1] Source: Project Traffic study prepared by Source: LSA, 2019

Table 2-3: Existing + Project Noise Levels

Roadway and Roadway Segment	ADT[1]	Vehicle Speeds (MPH)[1]	Noise Level @ 50-Feet (dBA CNEL)	60 dBA CNEL Contour Distance (Feet)
East Dulin Road				
Old Hwy 395 to Lake Circle Drive	4,258	45	65.7	120
West Lilac Road				
Camino Del Rey to Vessels Ranch Road	4,444	40	64.8	104
Rawhide Ranch Road to Bobritt Lane	4,889	40	65.2	111
Old Hwy 395 to Ranchos Ladera Road	4,787	40	65.1	109
I-15 to Standel Lane	1,766	40	60.8	56
Circle R Drive to Lal Bagh Lane	1,170	40	59.0	43
Diaz Road to North Berry Road	1,511	40	60.1	51
Camino Del Rey				
Old River Road to West Lilac Road	12,442	40	69.2	207
W/O Via Maria Elena	6,757	40	66.6	137
Lilac Road				
West Lilac Road to Old Castle Road	3,774	40	64.1	93
Old River Road				
Golf Club Drive to Dentro De Lomas Road	2,489	40	62.3	71
Old Highway 395				
SR-76 to Dulin Road	7,932	45	68.4	181
Dulin Road (north) to Dulin Road (south)	7,584	45	68.2	176
West Lilac Road to Via Urner Road	7,302	45	68.0	172
I-15 SB Ramps to I-15 NB Ramps	6,224	55	69.3	210
Camino Del Rey to Nelson Way	5,691	55	69.0	198
Circle R Drive to Camino Del Rey	12,632	56	72.6	346
Circle R Drive to Gopher Canyon Road	14,577	55	73.0	370

[1] Source: Project Traffic study prepared by Source: LSA, 2019

Table 2-4 presents the comparison of the Existing Year with and without project related noise levels. The roadway segment noise levels will increase from 0 dBA CNEL to 2.6 dBA CNEL with the development of the proposed project. The project does not create a direct noise level increase of more than 3 dBA CNEL on any roadway segment as shown in Table 2-4. Therefore, the proposed project's direct contributions to off-site roadway noise increases will not cause any direct significant impacts to any existing noise sensitive land uses. Typically, it requires a project to double (or add 100%) to the traffic volumes to be a perceivable difference to the human ear and result in a direct impact of 3 dBA CNEL. Roadway noise impacts are considered less than significant if the project does not increase noise levels by 3 dBA CNEL and the NSLU threshold.

Table 2-4: Existing vs. Existing + Project Noise Levels

Roadway and Roadway Segment	Existing Noise Level @ 50-Feet (dBA CNEL)	Existing + Project Noise Level @ 50-Feet (dBA CNEL)	Project Related Direct Noise Level Increase (dBA CNEL)
East Dulin Road			
Old Hwy 395 to Lake Circle Drive	65.7	65.7	0.0
West Lilac Road			
Camino Del Rey to Vessels Ranch Road	63.0	64.8	1.8
Rawhide Ranch Road to Bobritt Lane	62.7	65.2	2.5
Old Hwy 395 to Ranchos Ladera Road	62.5	65.1	2.6
I-15 to Standel Lane	60.3	60.8	0.5
Circle R Drive to Lal Bagh Lane	58.3	59.0	0.7
Diaz Road to North Berry Road	59.6	60.1	0.5
Camino Del Rey			
Old River Road to West Lilac Road	68.8	69.2	0.6
W/O Via Maria Elena	66.4	66.6	0.2
Lilac Road			
West Lilac Road to Old Castle Road	63.9	64.1	0.2
Old River Road			
Golf Club Drive to Dentro De Lomas Road	62.1	62.3	0.2
Old Highway 395			
SR-76 to Dulin Road	67.9	68.4	0.5
Dulin Road (north) to Dulin Road (south)	67.7	68.2	0.5
West Lilac Road to Via Urner Road	67.5	68.0	0.5
I-15 SB Ramps to I-15 NB Ramps	68.6	69.3	0.7
Camino Del Rey to Nelson Way	68.4	69.0	0.6
Circle R Drive to Camino Del Rey	72.4	72.6	0.2
Circle R Drive to Gopher Canyon Road	72.8	73.0	0.2
Sound Levels provided are worst-case and do not take into account topography or shielding from barriers.			

b) Cumulative Noise Impacts

To determine if cumulative off-site noise level increases associated with the development of the proposed project and other planned or permitted projects in the vicinity will create noise impacts, the noise levels for the near-term project Buildout and other planned and permitted projects were compared with the existing conditions. Utilizing the project's traffic assessment (Source: Source: LSA, 2019) noise contours were developed for the following traffic scenarios:

Existing Plus Cumulative Projects Plus Project: Current noise conditions plus the completion of the project and the completion of other permitted, planned projects or approved ambient growth factors.

Existing vs. Existing Plus Cumulative Plus Project: Comparison of the existing noise levels and the related noise level increases from the combination of the proposed project and all other planned or permitted projects in the vicinity of the site.

The existing noise levels and the distances to the 60 dBA CNEL contours for the roadways in the vicinity of the Project site are given in Table 2-2 above for the Existing Scenario. The near-term cumulative noise conditions are provided in Table 2-5 below. No noise barriers or topography that may affect noise levels were incorporated in the calculations. Table 2-6 presents the comparison of the Existing Year and the Cumulative noise levels.

Table 2-5: Existing + Project + Cumulative Noise Levels

Roadway and Roadway Segment	ADT[1]	Vehicle Speeds (MPH)[1]	Noise Level @ 50-Feet (dBA CNEL)	60 dBA CNEL Contour Distance (Feet)
East Dulin Road				
Old Hwy 395 to Lake Circle Drive	9,758	45	69.3	208
West Lilac Road				
Camino Del Rey to Vessels Ranch Road	5,504	40	65.7	120
Rawhide Ranch Road to Bobritt Lane	6,279	40	66.3	131
Old Hwy 395 to Ranchos Ladera Road	6,177	40	66.2	129
I-15 to Standel Lane	5,461	40	65.7	119
Circle R Drive to Lal Bagh Lane	3,310	40	63.5	85
Diaz Road to North Berry Road	3,911	40	64.2	95
Camino Del Rey				
Old River Road to West Lilac Road	15,762	40	70.3	242
W/O Via Maria Elena	9,577	40	68.1	173
Lilac Road				
West Lilac Road to Old Castle Road	4,964	40	65.2	112
Old River Road				
Golf Club Drive to Dentro De Lomas Road	4,339	40	64.7	102
Old Highway 395				
SR-76 to Dulin Road	15,204	45	71.2	280
Dulin Road (north) to Dulin Road (south)	12,161	45	70.3	241
West Lilac Road to Via Urner Road	14,184	45	70.9	267
I-15 SB Ramps to I-15 NB Ramps	13,968	55	72.9	359
Camino Del Rey to Nelson Way	7,960	55	70.4	247
Circle R Drive to Camino Del Rey	16,466	55	73.6	401
Circle R Drive to Gopher Canyon Road	19,191	55	74.2	444

[1] Source: Project Traffic study prepared by Source: LSA, 2019

Table 2-6: Existing vs. Existing + Project + Cumulative Noise Levels

Roadway and Roadway Segment	Existing Noise Level @ 50-Feet (dBA CNEL)	Existing + Project Noise Level @ 50-Feet (dBA CNEL)	Project Related Direct Noise Level Increase (dBA CNEL)
East Dulin Road			
Old Hwy 395 to Lake Circle Drive	65.7	69.3	**3.6**
West Lilac Road			
Camino Del Rey to Vessels Ranch Road	63.0	65.7	2.7
Rawhide Ranch Road to Bobritt Lane	62.7	66.3	**3.6**
Old Hwy 395 to Ranchos Ladera Road	62.5	66.2	**3.7**
I-15 to Standel Lane	60.3	65.7	**5.3**
Circle R Drive to Lal Bagh Lane	58.3	63.5	**5.2**
Diaz Road to North Berry Road	59.6	64.2	**4.6**
Camino Del Rey			
Old River Road to West Lilac Road	68.8	70.3	1.5
W/O Via Maria Elena	66.4	68.1	1.7
Lilac Road			
West Lilac Road to Old Castle Road	63.9	65.2	1.4
Old River Road			
Golf Club Drive to Dentro De Lomas Road	62.1	64.7	2.6
Old Highway 395			
SR-76 to Dulin Road	67.9	71.2	**3.3**
Dulin Road (north) to Dulin Road (south)	67.7	70.3	2.6
West Lilac Road to Via Urner Road	67.5	70.9	**3.4**
I-15 SB Ramps to I-15 NB Ramps	68.6	72.9	**4.3**
Camino Del Rey to Nelson Way	68.4	70.4	2.0
Circle R Drive to Camino Del Rey	72.2	73.6	1.4
Circle R Drive to Gopher Canyon Road	72.8	74.2	1.4
Sound Levels provided are worst-case and do not take into account topography or shielding from barriers.			

There are cumulative noise increases of more than 3 dBA CNEL on several roadway segments as can be seen in Table 2-6. To determine if the project has a cumulatively considerable noise increase (1 dBA CNEL or more) on any of these roadway segments the existing plus cumulative conditions were compared with and without the Project to establish the Project contributions. Table 2-7 shows the Project related cumulative contributions. The Project related increases are above 1 dBA CNEL along West Lilac Road east of the Project site. Therefore, the proposed project's contributions to cumulative off-site roadway noise increases could cause significant impacts to existing noise sensitive land uses. Therefore, the proposed project's cumulative contributions to off-site roadway noise increases will require a more in-depth subsequent analysis to determine if impacts will occur. That in-depth subsequent analysis is provided below.

Table 2-7: Existing + Cumulative vs. Existing + Project + Cumulative Noise Levels

Roadway Segment	Existing + Cumulative Noise Level @ 50-Feet (dBA CNEL)	Existing + Project + Cumulative Noise Level @ 50-Feet (dBA CNEL)	Project Related Direct Noise Level Increase (dBA CNEL)
East Dulin Road			
Old Hwy 395 to Lake Circle Drive	69.3	69.3	0.0
West Lilac Road			
Rawhide Ranch Road to Bobritt Lane	64.4	66.3	**1.8**
Old Hwy 395 to Ranchos Ladera Road	64.3	66.2	**1.9**
I-15 to Standel Lane	65.5	65.7	0.2
Circle R Drive to Lal Bagh Lane	63.3	63.5	0.2
Diaz Road to North Berry Road	64.0	64.2	0.2
Old River Road			
SR-76 to Dulin Road	70.3	71.2	0.9
Old Highway 395			
West Lilac Road to Via Urner Road	70.6	70.9	0.3
I-15 SB Ramps to I-15 NB Ramps	72.5	72.9	0.4
Sound Levels provided are worst-case and do not take into account topography or shielding from barriers.			

c) Detailed Offsite Project Related Noise Impacts

The noise contours described above are used only as a planning tool to assess the need for additional analysis. Since a potential noise increase of 3 dBA CNEL were found due to the Buildout of the Project and buildout of cumulative projects, a more detailed analysis is required to more accurately identify the location of the 60 dBA CNEL contours as it pertains to the existing NSLUs. Based on the traffic noise modeling, existing receivers along West Lilac Road between the project site and Interstate 15 would experience a potentially overall increase in cumulative noise levels of 3.7 dBA CNEL. However, based on worst-case flat terrain modeling, the noise levels at 131 feet of the roadway centerline would be 60 CNEL or less.

Based on aerial and zoning maps, most lots are 2 plus acres and have amble area outside the 131 feet from the center line as exterior NSLU areas with noise levels below 60 dBA CNEL and would comply with the compatibility standard of the County General Plan. With a few exceptions, several existing residences are located on smaller lots next to West Lilac Road. These residential uses generally have 5-20 feet of vertical offset from the roadway along with the residential structures that reduces the noise levels at least 5 decibels and below 60 dBA CNEL at distances of roughly 60 feet from the roadway centerline. Therefore, it is anticipated that exterior NSLU areas would have noise levels below 60 dBA CNEL and would comply with the compatibility standard of the County General Plan. The anticipated increase in the ambient

noise levels from the Project are based on the Project and cumulative projects being fully built and will occur over a period of ten years or more. Therefore, the increases will be incremental and not instantaneously perceivable. Additionally, the Project is consistent with the General Plan land use and will not result in an increase in the future year buildout traffic noise conditions.

2.4 Conclusions

It was determined from the analysis that the single-family NSLU's will comply with the County of San Diego 60 dBA CNEL exterior noise standard without mitigation measures. Based on this finding, no additional exterior or interior noise analysis is required.

The project does not create a direct impact of more than 3 dBA CNEL on any roadway segment. Therefore, the proposed project's direct contributions to off-site roadway noise increases will not cause any significant impacts to any existing noise sensitive land uses.

The Project does contribute to a cumulative noise level increase of 3 dBA CNEL along West Lilac Road. It was identified through more in-depth research that the existing plus project plus cumulative noise contours are below a level of significance at the existing off-site sensitive uses. Therefore, no offsite Project related traffic noise impacts are anticipated from the Project's cumulative contributions. The anticipated increase in the ambient noise levels from the Project are based on the Project and cumulative projects being fully built and will occur over a period of ten years or more. Therefore, the increases will be incremental and not instantaneously perceivable. Additionally, the Project is consistent with the General Plan land use and will not result in an increase in the future year buildout traffic noise conditions.

3.0 PROJECT-GENERATED AIRBORNE NOISE

3.1 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 3-1. 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 3-1: 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. 10 p.m. to 7 a.m.	50 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. 10 p.m. to 7 a.m.	55 50
S-94, V4, and all other commercial zones.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	60 55
V1, V2 V1, V2 V1 V2	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m. 10 p.m. to 7 a.m.	60 55 55 50
V3	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	70 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 Project's zoning designations are A70 (Limited Agricultural Use), S80 (Open Space), and RV (Variable Family Residential). The surrounding properties are zoned A70 and RR (Rural Residential). 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 development project would primarily consist of normal residential activities.

Construction Noise: Noise generated by construction activities related to the project will exceed the standards listed in San Diego County Code Sections as follows.

Section 36.408: Hours of Operation of Construction Equipment

Except for emergency work, it shall be unlawful for any person to operate or cause to be operated, construction equipment:

a. Between 7 p.m. and 7 a.m.

b. On a Sunday or a holiday. For purposes of this section, a holiday means January 1st, the last Monday in May, July 4th, the first Monday in September, December 25th and any day appointed by the President as a special national holiday or the Governor of the State as a special State holiday. A person may, however, operate construction equipment on a Sunday or holiday between the hours of 10 a.m. and 5 p.m. at the person's residence or for the purpose of constructing a residence for himself or herself, provided that the operation of construction equipment is not carried out for financial consideration or other consideration of any kind and does not violate the limitations in sections 36.409 and 36.410.

Section 36.409: Sound Level Limitations on Construction Equipment

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 decibels for an eight-hour period, between 7 a.m. and 7 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.

Section 36.410: Sound Level Limitations on Impulsive Noise

In addition to the general limitations on sound levels in section 36.404 and the limitations on construction equipment in section 36.409, the following additional sound level limitations shall apply:

(a) Except for emergency work or work on a public road project, no person shall produce or cause to be produced an impulsive noise that exceeds the maximum sound level shown in Table 36.410A (provided below), when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is received, for 25 percent of the minutes in the measurement period, as described in subsection (c) below. The maximum sound level depends on the use being made of the occupied property. The uses in Table 36.410A are as described in the County Zoning Ordinance.

TABLE 36.410A: MAXIMUM SOUND LEVEL (IMPULSIVE) MEASURED AT OCCUPIED PROPERTY IN DECIBELS (dBA)

OCCUPIED PROPERTY USE	DECIBELS (dBA)
Residential, village zoning or civic use	82
Agricultural, commercial or industrial use	85

(b) Except for emergency work, no person working on a public road project shall produce or cause to be produced an impulsive noise that exceeds the maximum sound level shown in Table 36.410B, when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is received, for 25 percent of the minutes in the measurement period, as described in subsection (c) below. The maximum sound level depends on the use being made of the occupied property. The uses in Table 36.410B are as described in the County Zoning Ordinance.

TABLE 36.410B: MAXIMUM SOUND LEVEL (IMPULSIVE) MEASURED AT OCCUPIED PROPERTY IN DECIBELS (dBA) FOR PUBLIC ROAD PROJECTS

OCCUPIED PROPERTY USE	dB(A)
Residential, village zoning or civic use	85
Agricultural, commercial or industrial use	90

(c) The minimum measurement period for any measurements conducted under this section shall be one hour. During the measurement period a measurement shall be conducted every minute from a fixed location on an occupied property. The measurements shall measure the maximum sound level during each minute of the measurement period. If the sound level caused by construction equipment or the producer of the impulsive noise exceeds the maximum sound level for any portion of any minute, it will be deemed that the maximum sound level was exceeded during that minute.

3.2 Potential Operational Noise Impacts (Non-Construction Noise)

Onsite operational would consist of mechanical equipment (HVAC), the continued equestrian facility operations and normal residential activities. The proposed cluster of homes are located more than 1,400 from the nearest existing sensitive uses. The estate homes are located over 2,000 feet from the nearest existing sensitive uses and the large 22-acre lot would have 400 to 1,200 feet of separation from the adjacent land uses. The HVAC and residential activities are anticipated to comply with the County's Noise Ordinance 36.404 at these distances. Therefore, no impacts will occur and no mitigation is needed for the project operations to comply with the County's standards and no impacts are anticipated and no mitigation is required. The existing equestrian facility, that will continue to operate as part of the proposed Project, is located at similar distances of 400 to 2,000 feet from the nearest existing sensitive land uses and no impacts are anticipated.

3.3 Potential General Construction Noise Impacts

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 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.

The County's Noise Ordinance states that 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. The properties surrounding the Project site are mostly occupied and are separated by distances over 900 feet.

According to the project applicant; a total of four scrapers, three dozers, three loaders, three graders and three tracked excavators with rock breaker during grading activities will be required to complete the proposed grading operations. Project construction activities also include blasting that will require two rock drills. The blasting operations are anticipated to control the material size so that the excess rock and grading debris will be manageable and utilized onsite in the areas that fill material is needed using a portable rock crushing machine. As mass grading is completed, underground trenching would occur and then the utility construction phases and paving of internal roadways would be completed.

The anticipated equipment will be spread out over the site working in different areas for 1-4 weeks and then relocating to a different portion of the site as cut or fill material is needed. For example: the rock drills may be working in the eastern portion of the site while the dozers, tractors and scrapers are operating in the western or southern portions of the site. Some of the equipment will then move to bring the blasted material to areas where fill is needed. Due to the size of the site and the need to bring cut and blasted material from the one area to where fill in needed, none of the equipment is anticipated to be operating more than 30 days in the same location. The list of equipment and the associated noise levels utilized in this analysis are shown in Table 3-2. The anticipated construction noise levels during construction are characterized below for each piece of equipment.

Table 3-2: Reference Construction Noise Levels and Equipment

Construction Phase	Construction Equipment	Quantity	Source Level @ 50 Feet (dBA)[1]
Grading and Blasting Operations	Dozer – D8	3	74
	Loader/Tractor	3	73
	Water Truck	2	70
	Excavator	3	73
	Scrapers	4	75
	Graders	3	73
	Rock Drill	2	85
[1] Source: EPA and Empirical Data			

Using a point-source noise prediction model with a standard 6 dBA reduction per doubling of

distance, 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. The point-source modeling does not account for any transmission loss from topography or barriers.

Grading Operations

The grading equipment listed in Table 3-2 will be spread out over the site working in different phases or areas as described above. The majority of the grading operations would be located 900-feet from the nearest property lines. Some equipment may be operating at or near the property line for grading of the proposed access roads. This would result in an acoustical center for the grading operation at approximately 450-feet to the nearest property line. As can be seen in Table 3-3 below, if all the equipment was operating in the same location, which is not physically possible, at a distance as close as 180-feet from the nearest property line, the point source noise attenuation from construction activities is -11.1 dBA. This would result in an anticipated worst-case combined noise level of 75 dBA at the property line. Given this and the spatial separation of the equipment, the noise levels will comply with the County of San Diego's 75 dBA standard at all Project property lines.

Table 3-3: Grading Operation Noise Levels

Construction Equipment	Quantity	Source Level @ 50 Feet (dBA)	Duty Cycle (Hours/Day)	Cumulative Noise Level @ 50 Feet (dBA)
Dozer – D8	3	74	8	78.8
Loader/Tractor	3	73	8	77.8
Water Truck	2	70	8	73.0
Excavator	3	73	8	77.8
Scrapers	4	75	8	81.0
Graders	3	72	8	76.8
			Cumulative Levels @ 50 Feet (dBA)	86.0
			Average Distance	180
			Noise Reduction Due to Distance	-11.1
			NEAREST PROPERTY LINE NOISE LEVEL	**74.9**

3.4 Potential Impulsive Noise Impacts

Areas of the project site that require deeper cuts and where the native material is not easily ripable (graded) may require blasting and the use of rock drills. The two rock drills would be

moved around the site on an as needed basis dependent upon the site characteristics. The use of two rock drills would occur independently of all other proposed equipment. The drilling and blasting activities would occur in one area then the grading equipment would relocate or remove the debris. To determine the worst-case noise levels from the drilling operations both rock drills were assumed to be placed in the same location on the site, which is not physically possible. The cumulative noise level from the equipment would be 88.0 dBA at 50 feet. Utilizing a 6 dBA reduction per doubling of distance, at distances of 225 feet from any property line, the noise levels will comply with the County of San Diego's 75 dBA standard as shown in Table 3-4.

Table 3-4: Construction Noise Levels from Rock Drills

Construction Equipment	Quantity	Source Level @ 50 Feet (dBA)	Duty Cycle (Hours/Day)	Cumulative Noise Level @ 50 Feet (dBA)
Rock Drill	2	85	8	88.0
			Noise Reduction Needed To Comply	-13.0
			Distance Required to Reduce Noise Levels	225
			NEAREST PROPERTY LINE NOISE LEVEL	**75.0**

Rock drilling and blasting will occur on an as-needed basis on site. In the event that the rock drills are staged within 225 feet of any occupied noise sensitive land use, it is recommended that a specific mitigation plan based upon the location of the construction equipment, topography and construction schedule be identified by a County certified acoustical engineer. A mitigation plan should be developed that may include a temporary noise barrier along any property line where the impacts could occur. Based on previous projects, a barrier ranging from 8 to 12 feet in height maybe needed. The proposed noise barrier will need to be of solid non-gapping material to adequately reduce construction noise levels below the County's threshold. The mitigation plan can also incorporate the usage of the equipment (amount of time used and/or the location in respect to the property line). The mitigation plan would determine the final height and location of a temporary barrier, if one is necessary.

Additionally, the County Noise Ordinance Section 36.410, states that except for emergency work or work on a public road project, no person shall produce or cause to be produced an impulsive noise that exceeds the maximum sound level shown of 82 dBA (at residential uses), when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is received, for 25 percent of the minutes in the measurement period. The maximum sound level and uses are shown above in Table 36.410A as described in the County Zoning Ordinance.

The rock drills that will be utilized can produce impulsive noise. Based upon normal procedures the two rock drills are anticipated to be separated but working in the same area on the site. Rock drills can produce maximum noise levels (Lmax) of 87-91 dBA at a distance of 50 feet based on the orientation of the equipment (Source: Rancho Cielo Rock Drill Measurements, Ldn Consulting March 2011). Typically, a rock drill is not continuously operating at full power; this is referred to as the usage factor. The usage factor is the percentage of time that a piece of construction equipment is operating at full power. Since the maximum noise level from a rock drive exceeds the County's maximum noise level threshold of 82 dBA, the following recommendations are presented. To reduce the maximum noise level of 94 dBA (cumulative noise level from both rock drills) to 82 dBA, the rock drills would need to be located 200 feet from the nearest occupied residential property line or only operate 25% of the hourly or daily duration (15 minutes of any hour and 2 hours of a 8 hour work day) when located within that distance.

In the event that the rock drills are staged within 200 feet of any occupied noise sensitive land use, implusive noise may exceed the County Noise Ordinance Section 36.410 standard of 82 dBA. As stated above, the rock drill need to be 225 feet from any occupied noise sensitive land use to meet the 75 dBA standard in the County Noise Ordinance Section 36.409. Therefore, if the rock drills are staged within 225 feet of any occupied noise sensitive land it is recommended that a specific mitigation plan based upon the location of the construction equipment, topography and construction schedule be identified by a County certified acoustical engineer. The mitigation plan may include a temporary noise barrier along any property line where the impacts could occur. Based on previous projects, a barrier ranging from 8 to 12 feet in height maybe needed. The proposed noise barrier will need to be of solid non-gapping material to adequately reduce construction noise levels below the County's threshold. The mitigation plan can also restrict the usage of the equipment (amount of time used and/or the location in respect to the property line). The mitigation plan would determine the final height and location of a temporary barrier, or equipment usage as necessary. Blasting operations must comply with the County's Consolidated Fire Code (2011) Section 3301.2 which establishes permitting and notification procedures.

Biological Impacts

In 1991, the U.S. Fish and Wildlife Service (USFWS) recommended that hourly noise levels not exceed 60 dBA Leq or ambient conditions, whichever is greater, to protect the California Gnatcatcher and other bird species. The County of San Diego has adopted this standard for all sensitive species. Therefore, the 60 dBA Leq or ambient was used as the noise criteria to assess noise impacts on sensitive wildlife both on-site and off-site. Construction activities may occur during a sensitive habitat nesting/breeding season. If construction activities occur within 925 feet or rock drilling occurs within 1,250 feet of an identified sensitive habitat location the noise

levels may be above 60 dBA Leq and impacts could occur.

This is a worst-case scenario that does not take into account topography, duty-cycles or the separation of the anticipated equipment. As a design measure during the nesting/breeding season the proposed project applicant may be required to install a temporary noise barrier if a sensitive habitat or nest is found by the project's biologist and construction equipment is located within aforementioned distances. The temporary barrier would need to be installed between the identified sensitive habitat or nest site and the current grading operations. The proposed noise barrier will need to be of solid non-gapping wood construction to comply with the County of San Diego's standard for sensitive habitats.

If clearing, grubbing, and grading activities are proposed during the nesting/breeding season of any year, and the biological monitor has determined that there are sensitive bird nests within the projected 60 dBA Leq construction noise contour, the following recommendations would apply: a County approved acoustical consultant shall perform noise measurements within the projected contour to assess the ambient noise levels in the absence of construction activities. The intent of these measurements is to establish baseline noise levels in the occupied habitat without construction. If the construction noise levels at nest sites during the breeding season are anticipated to exceed 60 dBA Leq or the ambient condition, whichever is higher, noise attenuation measures including, but not limited to, noise barriers and noise reducing features on construction equipment shall be implemented as necessary to maintain construction noise at acceptable levels at nest sites.

Periodic monitoring during the breeding season of noise levels at nest sites shall be performed to verify that construction noise levels are maintained at acceptable levels. The Project's Biological Monitor shall notify the County Department of Public Works Construction Inspector if noise measurements exceed the standard at any nest. These recommendations should be placed on the face of the grading or improvement plans.

3.5 Conclusions

Onsite operational would consist of mechanical equipment (HVAC), the continued equestrian facility operations and normal residential activities. The proposed cluster of homes are located more than 1,400 from the nearest existing sensitive uses. The estate homes are located over 2,000 feet from the nearest existing sensitive uses and the large 22-acre lot would have 400 to 1,200 feet of separation from the adjacent land uses. The HVAC and residential activities are anticipated to comply with the County's Noise Ordinance 36.404 at these distances. Therefore, no impacts will occur and no mitigation is needed for the project operations to comply with the County's standards and no impacts are anticipated and no mitigation is required. The existing equestrian facility, that will continue to operate as part of the proposed Project, is located at similar distances of 400 to 2,000 feet from the nearest existing sensitive

land uses and no impacts are anticipated.

At a distance as close as 180-feet the point source noise attenuation or reduction from construction activities and the nearest property line is -11.1 dBA and would result in an anticipated worst-case noise level of 75 dBA. Given this and the spatial separation of the equipment, the noise levels are projected to comply with the County of San Diego's Noise Ordinance Section 36.409 standard of 75 dBA at all Project property lines and no significant impacts would occur.

In the event that the rock drills are staged within 200 feet of any occupied noise sensitive land use, implusive noise may exceed the County Noise Ordinance Section 36.410 standard of 82 dBA. Additionally, the rock drill need to be 225 feet from any occupied noise sensitive land use to meet the 75 dBA standard in the County Noise Ordinance Section 36.409. Therefore, if the rock drills are staged within 225 feet of any occupied noise sensitive land it is recommended that a specific mitigation plan based upon the location of the construction equipment, topography and construction schedule be identified by a County certified acoustical engineer. The mitigation plan may include a temporary noise barrier along any property line where the impacts could occur. Based on previous projects, a barrier ranging from 8 to 12 feet in height maybe needed. The proposed noise barrier will need to be of solid non-gapping material to adequately reduce construction noise levels below the County's threshold. The mitigation plan can also restrict the usage of the equipment (amount of time used and/or the location in respect to the property line). The mitigation plan would determine the final height and location of a temporary barrier, or equipment usage as necessary. Blasting operations must comply with the County's Consolidated Fire Code (2011) Section 3301.2 which establishes permitting and notification procedures.

If clearing, grubbing, and grading activities are proposed during the nesting/breeding season of any year, and the biological monitor has determined that there are sensitive bird nests within the projected 60 dBA Leq construction noise contour, the following recommendations would apply: a County approved acoustical consultant shall perform noise measurements within the projected contour to assess the ambient noise levels in the absence of construction activities. The intent of these measurements is to establish baseline noise levels in the occupied habitat without construction. If the construction noise levels at nest sites during the breeding season are anticipated to exceed 60 dBA Leq or the ambient condition, whichever is higher, noise attenuation measures including, but not limited to, noise barriers and noise reducing features on construction equipment shall be implemented as necessary to maintain construction noise at acceptable levels at nest sites.

4.0 GROUND-BORNE VIBRATION AND NOISE IMPACTS

4.1 Guidelines for the Determination of Significance

Project implementation will expose uses to ground-borne vibration or noise levels equal to or in excess of the levels listed in Table 4 of the County of San Diego Guidelines for the Determination of Significance. For simplicity, the pertaining Table 4 is shown below.

Table 4
Guideline for Determining the Significance of
Ground-borne Vibration and Noise Impacts

Land Use Category	Ground-Borne Vibration Impact Levels (inches/sec rms)		Ground-Borne Noise Impact Levels (dB re 20 micro Pascals)	
	Frequent Events[1]	Occasional or Infrequent Events[2]	Frequent Events[1]	Occasional or Infrequent Events[2]
Category 1: Buildings where low ambient vibration is essential for interior operations. (research & manufacturing facilities with special vibration constraints)	0.0018 [3]	0.0018 [3]	Not applicable[5]	Not applicable[5]
Category 2: Residences and buildings where people normally sleep. (hotels, hospitals, residences, & other sleeping facilities)	0.0040	0.010	35 dBA	43 dBA
Category 3: Institutional land uses with primarily daytime use. (schools, churches, libraries, other institutions, & quiet offices)	0.0056	0.014	40 dBA	48 dBA

Source: U.S Department of Transportation, Federal Transit Administration, "Transit Noise and Vibration Impact Assessment," May 2006.

Notes to Table 4:

1. "Frequent Events" is defined as more than 70 vibration events per day. Most rapid transit projects fall into this category.
2. "Occasional or Infrequent Events" are defined as fewer than 70 vibration events per day. This combined category includes most commuter rail systems.
3. This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration sensitive manufacturing or research will require detailed evaluation to define acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the HVAC systems and stiffened floors.
4. Vibration-sensitive equipment is not sensitive to ground-borne noise.
5. There are some buildings, such as concert halls, TV and recording studios, and theaters that can be very sensitive to vibration and noise but do not fit into any of the three categories. Table 5 gives criteria for acceptable levels of ground-borne vibration and noise for these various types of special uses.
6. For Categories 2 and 3 with occupied facilities, isolated events such as blasting are significant when the peak particle velocity (PPV) exceeds one inch per second. Non-transportation vibration sources such as impact pile drivers or hydraulic breakers are significant when their PPV exceeds 0.1 inch per second. More specific criteria for structures and potential annoyance were developed by Caltrans (2004) and will be used to evaluate these continuous or transient sources in San Diego County.

4.2 Potential Impacts & Conclusions

There are no existing or proposed frequent activities on or near the proposed project site at this time which would cause any significant vibration levels to existing buildings near the project site. Blasting operations must comply with the County's Consolidated Fire Code (2011) Section 3301.2 which establishes permitting and notification procedures. Therefore, no additional analysis or mitigation is required.

5.0 SUMMARY OF PROJECT IMPACTS, MITIGATION & CONCLUSIONS

- On-Site Traffic Noise Analysis

It was determined from the analysis that the single-family NSLU's will comply with the County of San Diego 60 dBA CNEL exterior noise standard without mitigation measures. Based on this finding, no mitigation measures and no additional exterior or interior noise analysis is required.

- Off-Site Traffic Noise Analysis

The project does not create a direct impact of more than 3 dBA CNEL on any roadway segment. Therefore, the proposed project's direct contributions to off-site roadway noise increases will not cause any significant impacts to any existing noise sensitive land uses.

The Project does contribute to a cumulative noise level increase of 3 dBA CNEL along West Lilac Road. It was identified through more in-depth research that the existing plus project plus cumulative noise contours are below a level of significance at the existing off-site sensitive uses. Therefore, no offsite Project related traffic noise impacts are anticipated from the Project's cumulative contributions. The anticipated increase in the ambient noise levels from the Project are based on the Project and cumulative projects being fully built and will occur over a period of ten years or more. Therefore, the increases will be incremental and not instantaneously perceivable. Additionally, the Project is consistent with the General Plan land use and will not result in an increase in the future year buildout traffic noise conditions.

- Operational Noise

Onsite operational would consist of mechanical equipment (HVAC), the continued equestrian facility operations and normal residential activities are anticipated to comply with the County's Noise Ordinance 36.404. Therefore, no impacts will occur and no mitigation is needed for the project operations to comply with the County's standards and no impacts are anticipated and no mitigation is required.

- Construction Noise Analysis

At a distance as close as 180-feet the point source noise attenuation or reduction from construction activities and the nearest property line is -11.1 dBA and would result in an anticipated worst-case noise level of 75 dBA. Given this and the spatial separation of the equipment, the noise levels are projected to comply with the County of San Diego's Noise Ordinance Section 36.409 standard of 75 dBA at all Project property lines and no significant impacts would occur.

In the event that the rock drills are staged within 200 feet of any occupied noise sensitive land use,

implusive noise may exceed the County Noise Ordinance Section 36.410 standard of 82 dBA. As stated above, the rock drill need to be 225 feet from any occupied noise sensitive land use to meet the 75 dBA standard in the County Noise Ordinance Section 36.409. Therefore, if the rock drills are staged within 225 feet of any occupied noise sensitive land it is recommended that a specific mitigation plan based upon the location of the construction equipment, topography and construction schedule be identified by a County certified acoustical engineer. The mitigation plan may include a temporary noise barrier along any property line where the impacts could occur. Based on previous projects, a barrier ranging from 8 to 12 feet in height maybe needed. The proposed noise barrier will need to be of solid non-gapping material to adequately reduce construction noise levels below the County's threshold. The mitigation plan can also restrict the usage of the equipment (amount of time used and/or the location in respect to the property line). The mitigation plan would determine the final height and location of a temporary barrier, or equipment usage as necessary. Blasting operations must comply with the County's Consolidated Fire Code (2011) Section 3301.2 which establishes permitting and notification procedures.

If clearing, grubbing, and grading activities are proposed during the nesting/breeding season of any year, and the biological monitor has determined that there are sensitive bird nests within the projected 60 dBA Leq construction noise contour, the following recommendations would apply: a County approved acoustical consultant shall perform noise measurements within the projected contour to assess the ambient noise levels in the absence of construction activities. The intent of these measurements is to establish baseline noise levels in the occupied habitat without construction. If the construction noise levels at nest sites during the breeding season are anticipated to exceed 60 dBA Leq or the ambient condition, whichever is higher, noise attenuation measures including, but not limited to, noise barriers and noise reducing features on construction equipment shall be implemented as necessary to maintain construction noise at acceptable levels at nest sites.

- Vibration Analysis

There are no existing or proposed frequent activities on or near the proposed project site at this time which would cause any significant vibration levels to existing buildings near the project site. Blasting operations must comply with the County's Consolidated Fire Code (2011) Section 3301.2 which establishes permitting and notification procedures. Therefore, no additional analysis or mitigation is required.

6.0 CERTIFICATIONS

The contents of this report represent an accurate depiction of the future acoustical environment and impacts within and surrounding the Ocean Breeze Ranch residential development. This report was prepared utilizing the latest guidelines and reduction methodologies. This report was prepared by Jeremy Louden; a County approved CEQA Consultant for Acoustics.

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Jeremy Louden, Principal
Ldn Consulting, Inc.
760-473-1253
jlouden@ldnconsulting.net

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