VALIANO PROJECT

APPENDIX G

ACOUSTICAL SITE ASSESSMENT REPORT

for the

DRAFT ENVIRONMENTAL IMPACT REPORT

PDS2013-SP-13-001, PDS2013-GPA-13-001,
PDS2013-STP-13-003, PDS2013-TM-5575,
PDS2013-REZ-13-001, PDS2013-ER-12-08-002

APRIL 2015

Prepared for:
COUNTY OF SAN DIEGO
PLANNING & DEVELOPMENT SERVICES
5510 OVERLAND AVENUE, SUITE 310
SAN DIEGO, CALIFORNIA 92123

COVER PAGE

VALIANO PROJECT ENVIRONMENTAL IMPACT REPORT APPENDIX G ACOUSTICAL SITE ASSESSMENT REPORT

Since circulation of the Draft Valiano Project Environmental Impact Report (DEIR), Recirculated Draft EIR (RDEIR), and associated technical reports, there have been several changes in the project description.

The site plan has been revised to eliminate the northern single-loaded street in Neighborhood 3 which included four single-family dwelling units. The overall residential lot count remains at 326 due to slight re-configuration within Neighborhoods 1, 3 and 4 to accommodate the four lots. Elimination of this street resulted in reduced grading quantity. In addition, firewalls and other enhanced fire safety measures have been incorporated into the Project design to eliminate the requirement for off-site revegetation clearing.

None of these changes would result in new impacts or increased impacts to noise. Therefore, the technical report has not been revised since circulation of the DEIR and RDEIR.

Acoustical Site Assessment Report

Valiano Project

PDS2013-SP-13-001, PDS2013-GPA-13-001,
PDS2013-STP-13-003, PDS2013-TM-5575,
PDS2013-REZ-13-001, PDS2013-ER-12-08-002

Lead Agency:
County of San Diego
Planning & Development Services
5510 Overland Avenue, Suite 310
San Diego, California 92123

Project Proponent:
Eden Hills Project Owner, LLC
2235 Encinitas Boulevard, Suite 216
Encinitas, California 92024

Prepared by:
Charles Terry, County-approved Noise Consultant
HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
La Mesa, California 91942

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GLOSSARY OF TERMS AND ACRONYMS

ADT	Average Daily Trips (roadway traffic)
ANSI	American National Standards Institute
CAD	Computer Aided (engineering and architectural) Design
CADNA	Computer Aided Noise Abatement
County	County of San Diego
CNEL	Community Noise Equivalent Level
CMU	Concrete Masonry Unit
dB	Decibel
dBA	A-weighted decibels
DU	dwelling unit
FHWA	Federal Highway Administration
HVAC	Heating, ventilating, and air conditioning
Hz	Hertz
kHz	kilohertz
L_{EQ}	The equivalent sound level, or the continuous sound level, that represents the same sound energy as the varying sound levels, over a specified monitoring period
L_{DN}	Day-Night level: A 24-hour average, where sound levels during the nighttime hours of 10:00 p.m. to 7:00 a.m. have an added 10 dB weighting
mPa	micro-Pascals
M1	Noise measurement location adjacent to Ingraham Street
mph	miles per hour
ms	millisecond
NSLU	Noise-sensitive land use

GLOSSARY OF TERMS AND ACRONYMS (cont.)

PDS	Planning & Development Services (County of San Diego)
PPV	peak particle velocity
SPL	Sound pressure level
S_{WL}	Sound power level
SR	State Route
STC	Sound transmission control
SW	Sound Wall
TNM	Traffic Noise Model
USFWS	U.S. Fish and Wildlife Service
WTWRF	wastewater treatment and water reclamation facility

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EXECUTIVE SUMMARY

The proposed Valiano Project ("Project" or "Proposed Project") includes a residential community on an approximately 239-acre site in an unincorporated portion of San Diego County (County) near the cities of San Marcos and Escondido. The Project site is located approximately 1.7 miles west of Interstate 15 (I-15) and 0.8 mile south of State Route (SR-) 78 at its closest points.

The Proposed Project consists of a residential community with 326 single-family dwelling units (DUs) and related facilities within a total disturbance area of approximately 127 acres. The residential development is divided into five distinct neighborhoods. The proposed development also incorporates a number of related amenities and facilities, including a community recreation area, an on-site wastewater treatment and water reclamation facility (WTWRF) and wet weather storage area, three pump (lift) stations, an existing barn complex in the southeastern portion of the site that would be retained, a small booster pump station (as part of the water circulation system), and a number of off-site roadway improvements.

Activities associated with project construction, including grading and blasting, would result in potentially significant short-term noise impacts and would require mitigation. For the construction of the Project, no blasting shall occur at a distance of less than 600 feet from any off-site structure without specific analysis by the blasting contractor showing less than significant vibration impacts to the structure. If ripping, drilling, or excavation is required within 180 feet of a residentially occupied property line, a 12-foot high barrier shall be erected along the length of the property line. If a breaker is required on-site, then it shall not be used within 300 feet of property lines of occupied off-site residences.

The Project would include an on-site WTWRF, along with three pump stations, for the sewer needs of the development. Noise generated by the backup power generator and other stationary equipment could have the potential to exceed allowable levels, and would require noise control. WTWRF equipment noise may be controlled by equipment enclosures; increasing setbacks between noise-generating equipment and residences; locating equipment such that noise shielding would be provided from on-site buildings or structures; and incorporating acoustical louvers or paneling into the design of the equipment.

Diesel generator noise (associated with the WTWRF generator, the booster pump and wastewater pump station generators) may be controlled by the following methods: enclosing the diesel generator within a custom designed noise control structure (such as a steel enclosure), or placing the diesel generator within a concrete masonry unit (CMU) building that includes noise control features.

The applicant shall be required to provide a final noise impact analysis as part of the facilities design submittal package for the WTWRF and pump stations prepared by a County-approved noise consultant. The final noise impact analysis shall demonstrate compliance for with the County 45 dBA L_{EQ} nighttime property line noise limit.

Residential HVAC noise may exceed allowable levels if the condenser is installed within 45 feet of a property line. A 5.5–foot-tall sound wall would reduce noise impacts in the outdoor use area from an adjacent residential air conditioning condenser to less than 45 dBA L_{EQ}.

Future traffic noise levels for off-site residences are forecasted to exceed 60 CNEL at both structural façades and exterior use locations in both the Existing plus Cumulative condition, and the Existing plus Project plus Cumulative condition (worst-case near-term year); however, the Project's contribution to the cumulative noise impact would be less than cumulatively considerable. If the additional access option (which includes Project access on Hill Valley Drive) is incorporated, the potential impacts to off-site residences are comparable.

Future traffic noise levels at some exterior use areas facing Country Club Drive may exceed 60 CNEL. A sound wall would also be required to abate noise levels at exterior use areas associated with residences fronting Country Club Drive in Neighborhood 5 (6 feet in height).

Additionally, as noise levels at the Project's residential building façades (with second stories) facing Country Club Drive may exceed 60 CNEL, they would require an exterior-to-interior analysis to demonstrate that interior noise levels would be below 45 CNEL. This analysis would be submitted with the final building plan submittal for the residential units along Country Club Drive.

With regard to the off-site wastewater options, none of the proposed options (connecting to the City of Escondido Hale Avenue Resource Recovery Facility [HARRF], the Vallecitos Water District [VWD] Facility, or Harmony Grove Treatment Plant) would result in construction noise impacts.

Operations associated with connecting to the City of Escondido HARRF would involve a reliance upon gravity flow with the utilization of the three described and analyzed Project wastewater pump stations; this off-site option would not result in operational noises levels in excess of thresholds, and impacts would be less than significant.

The off-site options that include either connecting to the VWD facility or to the Harmony Grove Treatment Plant would require an additional wastewater pump station (four in total). The pump station, like the three previously described Project pump stations, would be a submersible package sewer system with potential impacts that would be comparable to the previously discussed Project pump stations and diesel generator noise. Mitigation for the off-site VWD option or Harmony Grove Treatment Plan option would be comparable to mitigation required for the three on-site pump stations. The diesel generator noise may be controlled by the following methods: enclosing the diesel generator within a custom designed noise control structure (such as a steel enclosure) or placing the diesel generator within a CMU building that includes noise control features. The applicant would be required to provide a final noise impact analysis as part of the facilities design submittal package for the pump station backup power generators prepared by a County-approved noise consultant. The final noise impact analysis would need to demonstrate compliance with the County 45 dBA nighttime noise limit.

1.0 INTRODUCTION

The proposed Valiano Project ("Project" or "Proposed Project") includes a residential community on an approximately 239-acre site in an unincorporated portion of San Diego County (County) near the cities of San Marcos and Escondido. The Project site is located approximately 1.7 miles west of Interstate 15 (I-15) and 0.8 mile south of State Route (SR) 78 at its closest points. Principal site access is from SR-78, Nordhal Road and Country Club Drive, from which a number of smaller surface streets (e.g., Eden Valley Lane and Mt. Whitney Road) extend along or near the northern and eastern property boundaries.

1.1 Noise and Sound Level Descriptors and Terminology

1.1.1 Descriptors

All noise level or sound level values presented herein are expressed in terms of decibels (dB), with A-weighting (dBA) to approximate the hearing sensitivity of humans. Time-averaged noise levels are expressed by the symbol L_{EQ}, with a specified duration. The Community Noise Equivalent Level (CNEL) is a 24-hour average, where noise levels during the evening hours of 7:00 p.m. to 10:00 p.m. have an added 5 dB weighting, and sound levels during the nighttime hours of 10:00 p.m. to 7:00 a.m. have an added 10 dB weighting. This is similar to the Day-Night sound level (L_{DN}), which is a 24-hour average with an added 10 dB weighting on the same nighttime hours but no added weighting on the evening hours. Sound levels expressed in CNEL are always based on dBA. These metrics are used to express noise levels for both measurement and municipal regulations, as well as for land use guidelines and enforcement of noise ordinances.

1.1.2 Terminology

Sound, Noise, and Acoustics

Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air) to a hearing organ, such as a human ear. Noise is defined as loud, unexpected, or annoying sound.

In the science of acoustics, the fundamental model consists of a sound (or noise) source, a receiver, and the propagation path between the two. The loudness of the noise source and obstructions or atmospheric factors affecting the propagation path to the receiver determine the sound level and characteristics of the noise perceived by the receiver. The field of acoustics deals primarily with the propagation and control of sound.

Frequency

Continuous sound can be described by frequency (pitch) and amplitude (loudness). A low-frequency sound is perceived as low in pitch. Frequency is expressed in terms of cycles per second, or Hertz (Hz) (e.g., a frequency of 250 cycles per second is referred to as 250 Hz). High

frequencies are sometimes more conveniently expressed in kilohertz (kHz), or thousands of Hertz. The audible frequency range for humans is generally between 20 Hz and 20,000 Hz.

Sound Pressure Levels and Decibels

The amplitude of pressure waves generated by a sound source determines the loudness of that source. Sound pressure amplitude is measured in micro-Pascals (mPa). One mPa is approximately one hundred billionth (0.00000000001) of normal atmospheric pressure. Sound pressure amplitudes for different kinds of noise environments can range from less than 100 to 100,000,000 mPa. Because of this huge range of values, sound is rarely expressed in terms of mPa. Instead, a logarithmic scale is used to describe sound pressure level (SPL) in terms of dB. The threshold of hearing for the human ear is about 0 dB, which corresponds to 20 mPa.

Addition of Decibels

Because decibels are logarithmic units, SPL cannot be added or subtracted through ordinary arithmetic. Under the decibel scale, a doubling of sound energy corresponds to a 3-dB increase. In other words, when two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dB higher than one source under the same conditions. For example, if one automobile produces an SPL of 70 dB when it passes an observer, two cars passing simultaneously would not produce 140 dB: rather, the SPL of two cars would combine to produce 73 dB. Under the decibel scale, three sources of equal loudness together produce a sound level 5 dB louder than one source.

To create an overall 3 dBA L_{EQ} change in traffic noise, the traffic volume must double while maintaining the same speed.

Under controlled conditions in an acoustical laboratory, the trained, healthy human ear is able to discern 1-dB changes in sound levels, when exposed to steady, single-frequency ("pure-tone") signals in the mid-frequency (1,000 Hz–8,000 Hz) range. In typical noisy environments, changes in noise of 1 to 2 dB are generally not perceptible. It is widely accepted, however, that people begin to detect sound level increases of 3 dB in typical noisy environments. Further, a 5-dB increase is generally perceived as a distinctly noticeable increase, and a 10-dB increase is generally perceived as a doubling of loudness.

The CNEL is a 24-hour average A-weighted hourly sound level for a given day, after addition of 5 dB to sound levels for the evening hours of 7:00 p.m. to 10:00 p.m., and 10 dB to sound levels during the nighttime hours of 10:00 p.m. to 7:00 a.m. CNEL is used to evaluate transportation noise sources. The result of this weighting is that noise levels produced during the evening and nighttime hours are factored in more significantly due to the disruption of an otherwise quiet time of the day. This is similar to the Day-Night Sound Level (L_{DN}), which is a 24-hour average with 10 dB added weighting on the same nighttime hours but no added weighting on the evening hours. These data unit metrics are used to express noise levels for both measurement and municipal noise ordinances and regulations, for land use guidelines, and enforcement of noise ordinances.

No known studies have directly correlated the ability of a healthy human ear to discern specific levels of change in traffic noise over a 24-hour period. Many ordinances, however, specify a change of 3 CNEL as the significant impact threshold. This is based on the concept of a doubling in noise energy resulting in a 3-dBA change in noise (which is the amount of change in noise necessary for the increase to be perceptible to the average healthy human ear).

1.2 Project Location

The Proposed Project is located in the unincorporated portion of northern San Diego County, near the cities of Escondido and San Marcos. Please see Figures 1 and 2, for the regional location and an aerial photograph of the Project site, respectively. The site includes 13 individual parcels, with the following Assessor's Parcel Numbers (APNs): 228-313-13, 232-013-01 through 232-013-03, 232-020-55, 232-492-01, 232-500-18 through 232-500-23, and 232-500-24. The approximately 239-acre Project site is generally divided into two areas, a larger northwestern portion of approximately 191 acres and a smaller southeastern portion of approximately 48 acres. The two areas connect corner to corner at Mt. Whitney Road. Country Club Drive is the primary north-south roadway in the vicinity of the Proposed Project; the southwestern portion of the Project site borders this roadway. State Route (SR-) 78) is located approximately 0.8 mile to the north and Interstate 15 (I-15) is located approximately 1.7 miles to the east. The Project site is zoned Semi-Rural Residential, with one dwelling unit (DU) allowed either per acre (zoned SR-1) or per 2 acres (zoned SR-2), depending on the parcel. Development would be primarily located on the more gentle slopes and valley portion contained between the hills to the west and Country Club Drive to the east. A few residences would be located on the steeper western hills. As a conservative (worst-case) projection, the Proposed Project would grade approximately 127 acres, or approximately 52 percent, of the overall Project site, resulting in a total of 928,000 cubic yards (cy) of balanced cut and fill for the site proper. Grading would be done by individual neighborhood, beginning with Neighborhood 5, followed by Neighborhoods 1, 2, 3 and 4.

1.3 Project Description

The Proposed Project consists of a residential community with 326 single-family dwelling units (DUs) and related facilities within a total disturbance area of approximately 127 acres. Note that some single family units may include small Second Dwelling Units. Second Dwelling Units within the Valiano Specific Plan could provide one parking space instead of two because they are expected to house extended family members instead of two-car families.

The residential development is divided into five distinct neighborhoods. The proposed development also incorporates a number of related amenities and facilities, including a community recreation area, an on-site wastewater treatment and water reclamation facility (WTWRF) and wet weather storage area, three pump (lift) stations, an existing barn complex in the southeastern portion of the site that would be retained, a small booster pump station (as part of the water circulation system), and a number of off-site roadway improvements. Refer to Appendix A, *Site Plan Including Pump/Lift Stations*, for the Project's planning areas.

1.3.1 Community Recreation Areas

The Project would include a 2.7-acre public neighborhood park in the southeastern corner of the site within Neighborhood 5 and adjacent to Country Club Drive. The park would include turf areas, picnic facilities, a group shade structure, half-court basketball, a small tot-lot or playground, connections to multi-use trails, and a parking lot.

The existing equestrian complex previously used in association with the Harmony Grove Equestrian Center, located in the southern portion of Neighborhood 5, would be retained, open to the public and privately maintained. Portions of the existing equestrian training and boarding facility would accommodate private horse boarding. The site would be reconfigured to allow public horse trailer parking and use of an exercise ring for the public to access the multi-use trail.

Additionally, an approximately 2.3-acre private community recreation center would be located within Neighborhood 1, and an existing grove of mature oaks within Neighborhood 2 (approximately 1.2 acres) would be retained and protected as a private park, "Central Oak Park."

1.3.2 Water Booster Pump Station

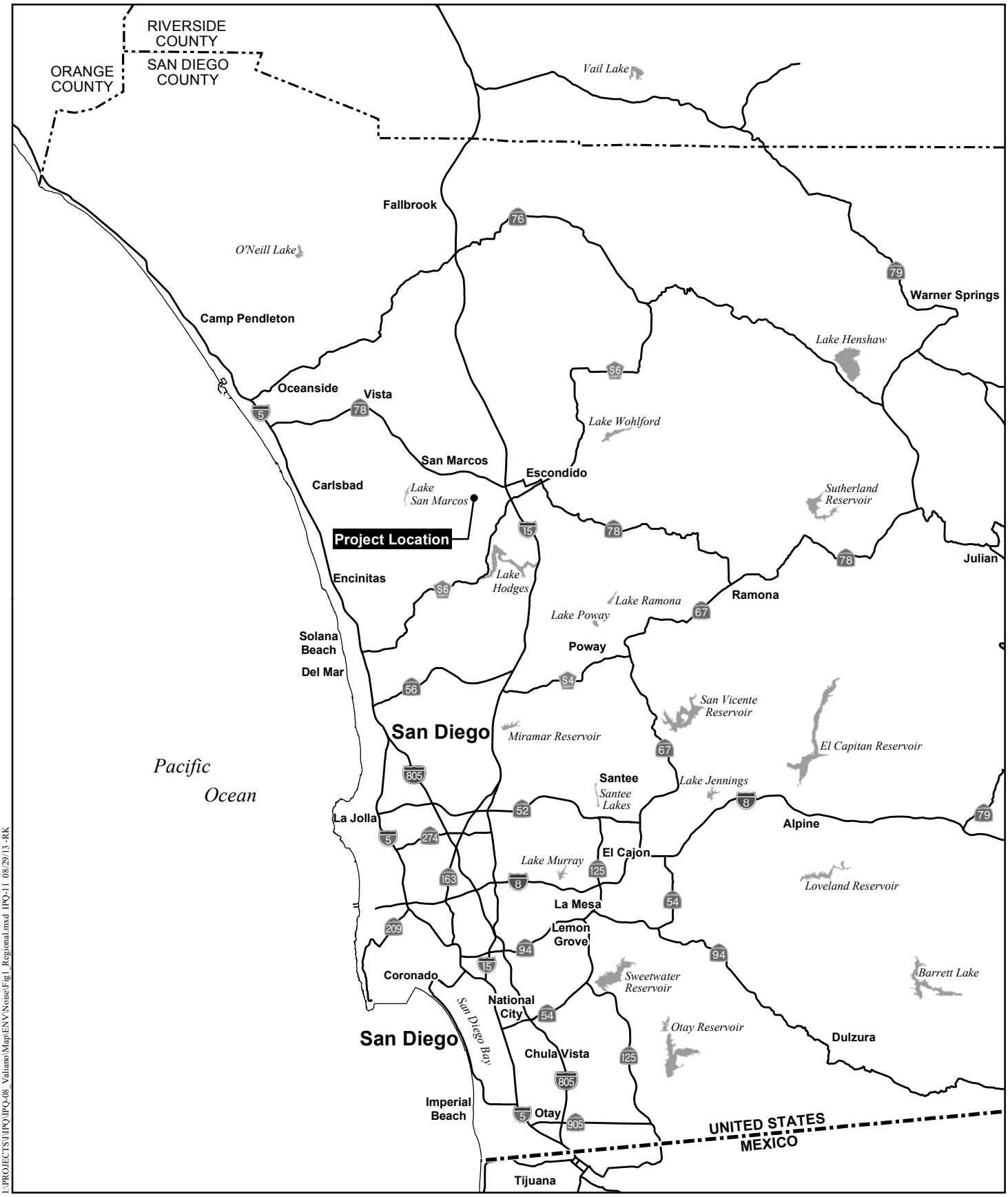
A small booster pump station would be required to service approximately 75 homes. The pump station would be owned and operated by Rincon MWD and would be housed in a small building. The pump station would include a total of four pumping units, two small domestic pumps (100 gallons per minute [gpm] each) and two dedicated fire flow pumps (2,500 gpm each). A generator would be housed in an enclosure adjacent to the pump building.

1.3.3 WTWRF/Pump Stations and Wet Weather Storage Area

The Project design includes a 0.4-acre on-site WTWRF and pump station located in the southeastern-most portion of the site, within Neighborhood 5. This facility would provide treatment for all wastewater generated on site, and would produce reclaimed effluent per applicable regulatory standards for irrigation of on-site landscaping. Based on the loading and design criteria used in the 180,000 gallons per day (gpd) Harmony Grove plant design, a scaled-down version could be constructed to serve the Proposed Project. Such a plant (with three active treatment trains and one standby train), as is provided in the design for the Harmony Grove WTWRF, would include numerous very small tanks at the Proposed Project's WTWRF.

In addition, a wet weather storage area would be located in the northwest corner of Neighborhood 5, to provide storage for excess treated effluent when required (e.g., during winter months when irrigation demand is lower).

In addition to the pump station located at the WTWRF noted above, two additional lift (pump) stations would be located in the northern and eastern portions of the site. Each of these sites would include an area of approximately 400 square feet and would contain a building housing the pump equipment to deliver wastewater flows to the on-site plant. The building would be approximately 200 square feet in size, no higher than 16 feet, and would resemble a barn or other farm outbuilding consistent with architectural treatments proposed for the WTWRF. The pump



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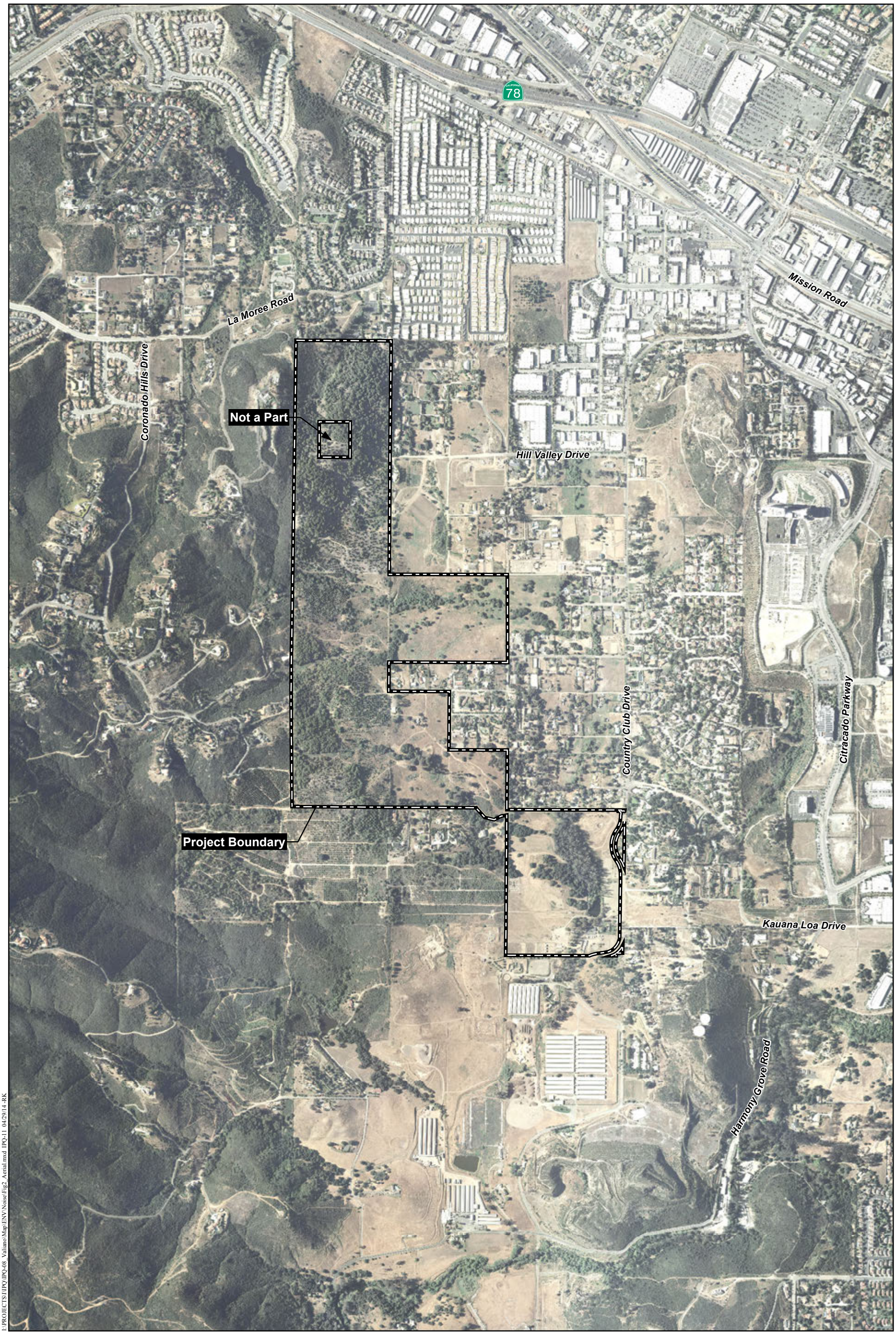
Regional Location Map

VALIANO

HELIX Environmental Planning

0 8 Miles

Figure 1



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Project Location Map

VALIANO

HELIX Environmental Planning

0 1,000 Feet

Figure 2

stations would be equipped with backup generators to provide power to the pumps in case of a power outage.

Alternative service options to the on-site WTWRF are described under Section 5.2.4 of this report, *Wastewater Treatment Options*.

1.3.4 Off-site Improvements

The Project design includes a number of off-site improvements associated with relatively minor modifications along existing roadways. Specifically, these include minor widening, turn pockets and/or other modifications to Hill Valley Drive, Eden Valley Lane, Mt. Whitney Road and Country Club Drive in the vicinity of the Project site.

1.4 Noise-sensitive Receptors

Noise-sensitive land uses (NSLU) are land uses that may be subject to stress and/or interference from excessive noise. Noise receptors are individual locations that may be affected by noise. Existing residential development occurs north, east and west of the Project site. The area to the south of the Project site is currently being developed with the residential, 742-unit, Harmony Grove Village Specific Plan. All existing residential sites, the planned residential units within the Harmony Grove Village, and the proposed on-site housing units associated with this Project would be considered sensitive noise receptors. Additionally, livestock are located in the general vicinity of the Project site and could be potentially sensitive to noise generated during construction activities.

1.5 Applicable Noise Regulations and Standards

Applicable noise standards for the Project are codified in the following San Diego County code and regulations.

NSLUs are defined as any residence, hospital, school, hotel, resort, library, or similar facility where quiet is an important attribute of the environment.

Noise impacts would be considered significant if Project implementation would result in the exposure of any on- or off-site, existing or reasonably foreseeable future NSLUs to exterior or interior noise (including noise generated from the Project, together with noise from roads [existing and planned Mobility Element roadways], railroads, airports, heliports, and all other noise sources) in excess of any of the following:

San Diego County General Plan Noise Guidelines (Noise Element)

The Noise Element of the County of San Diego General Plan includes guidelines for noise compatibility (Tables N-1 and N-2 from the County of San Diego General Plan), as detailed below in Table 1-1, *San Diego County Noise Compatibility Guidelines*, and noise standards, as detailed below in Table 1-2, *San Diego County General Plan Noise Standards.*

Table 1-1
SAN DIEGO COUNTY 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[(1)]	Schools, churches, hospitals, nursing homes, child care facilities						
E[(1)]	Passive recreational parks, nature preserves, contemplative spaces, cemeteries						
F[(1)]	Active parks, golf courses, athletic fields, outdoor spectator sports, water recreation						
G[(1)]	Office/professional, government, medical/dental, commercial, retail, laboratories						
H[(1)]	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 3, 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.						

Source: DPLU 2009a

(1) Denotes facilities used for part of the day; therefore, an hourly standard would be used rather than CNEL

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.

Table 1-2 COUNTY OF SAN DIEGO GENERAL PLAN NOISE STANDARDS
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

The Noise Element states that noise impacts would be considered significant if Project implementation would result in the exposure of any on- or off-site, existing or reasonably foreseeable future NSLUs to exterior or interior noise (including noise generated from the Project, together with noise from roads [existing and planned Mobility Element roadways], railroads, airports, heliports, and all other noise sources) in excess of any of the following:

Exterior Locations:

i. 60 (CNEL) Single-Family; or 65 CNEL Multi-Family or Mixed Use,[1] or

ii. A significant cumulative impact would occur if the Project would contribute to a cumulative scenario that would result in the exposure of any on- or off-site, existing or reasonably foreseeable NSLU, to: (1) an increase of 10 CNEL over pre-existing noise levels of less than 50 CNEL resulting in a combined exterior noise level of 60 CNEL of greater, (2) an increase of 3 CNEL in existing plus project plus cumulative conditions if that total is above 60 CNEL, or (3) interior noise in excess of 45 CNEL. A "cumulatively considerable" project contribution to an identified significant cumulative noise impact would occur if the project would contribute more than a 1 dB increase.[2]

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 sq. ft. to 10 acres: 10 percent of net lot area
3. Net lot area over 10 acres: 1 acre

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

Interior Locations:

45 dB (CNEL) except for the following cases:

i. Rooms which are usually occupied only a part of the day (schools, libraries, or similar facilities); in such cases, the interior one-hour average sound level due to noise outside should not exceed 50 dBA.

ii. Corridors, hallways, stairwells, closets, bathrooms, or any room with a volume less than 490 cubic feet.

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 will exceed the applicable limits in Table 1-3.

[1] County General Plan 2011
[2] Report Format and Content Requirements 2009

Table 1-3 SAN DIEGO COUNTY CODE SECTION 36.404: SOUND LEVEL LIMITS		
Zone	**Time**	**One-Hour Average Sound Level Limits (dBA)**
(1) R-S, R-D, R-R, R-MH, A-70, A-72, S-80, S-81, S-87, S-90, S-92 and R-V and R-U with a density of less than 11 dwelling units per acre.	7:00 a.m. to 10:00 p.m. 10:00 p.m. to 7:00 a.m.	50 45
(2) R-RO, R-C, R-M, S-86, V5 and R-V and R-U with a density of 11 or more dwelling units per acre.	7:00 a.m. to 10:00 p.m. 10:00 p.m. to 7:00 a.m.	55 50
(3) S-94, V4 and all other commercial zones.	7:00 a.m. to 10:00 p.m. 10:00 p.m. to 7:00 a.m.	60 55
(4) V1, V2	7:00 a.m. to 7:00 p.m.	60
V1, V2	7:00 p.m. to 10:00 p.m.	55
V1	10:00 p.m. to 7:00 a.m.	55
V2	10:00 p.m. to 7:00 a.m.	50
V3	7:00 a.m. to 10:00 p.m. 10:00 p.m. to 7:00 a.m.	70 65
(5) M-50, M-52 and M-54	Anytime	70
(6) S-82, M-56 and M-58	Anytime	75
(7) S88 (see subsection (c) below)	-	-

(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 3 dB. 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 dB at the property line regardless of the zone which the extractive industry is actually located.

(c) S88 zones are Specific Planning Areas which allow for different uses. The sound level limits in Table 1-3 above that apply in an S88 zone depend on the use being made of the property. The limits in Table 1-3, subsection (1) apply to property with a residential,

agricultural, or civic use. The limits in subsection (5) apply to property with an industrial use that would only be allowed in an M50, M52, or M54 zone. The limits in subsection (6) apply to all property with an extractive use or a use that would only be allowed in an M56 or M58 zone.

(d) A fixed-location public utility distribution or transmission facility located on or adjacent to a property line shall be subject to the sound level limits of this section, measured at or beyond 6 feet from the boundary of the easement upon which the facility is located.

Section 36.409 states:

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 8-hour period, between 7:00 a.m. and 7:00 p.m., when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is being received.

Section 36.410 states:

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:

(e) 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 1-4, 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 1-4 are as described in the County Zoning Ordinance.

Table 1-4
SAN DIEGO COUNTY CODE SECTION 36.410:
MAXIMUM SOUND LEVEL (IMPULSIVE) MEASURED AT OCCUPIED PROPERTY

Occupied Property Use	Decibels (dBA)
Residential, village zoning or civic use	82
Agricultural, commercial or industrial use	85

(f) 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 1-5, 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 1-5 are as described in the County Zoning Ordinance.

Table 1-5
SAN DIEGO COUNTY CODE SECTION 36.410:
MAXIMUM SOUND LEVEL (IMPULSIVE) MEASURED AT OCCUPIED PROPERTY FOR PUBLIC ROAD PROJECTS

Occupied Property Use	Decibels (dBA)
Residential, village zoning or civic use	85
Agricultural, commercial or industrial use	90

(g) 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 deemed that the maximum sound level was exceeded during that minute.

Impacts associated with ground-borne vibration and noise would be significant if Project implementation would expose the uses listed in Tables 1-6 and 1-7 to ground-borne vibration or noise levels equal to or in excess of the levels shown. Note that the County guidelines for ground-borne vibration impacts state (in the footnote for Table 1-6 below) that "more specific criteria for structures and potential annoyance were developed by Caltrans (2004) and would be used to evaluate these continuous or transient sources in San Diego County." Table 1-8 presents the more specific Caltrans vibration impact criteria.

Table 1-6
GUIDELINES 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]	Infrequent Events[2]	Frequent Events[1]	Infrequent Events[2]
Category 1: Buildings where low ambient vibration is essential for interior operations (research and 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, and other sleeping facilities). [6]	0.0040	0.010	35 dBA	43 dBA
Category 3: Institutional land uses with primarily daytime use (schools, churches, libraries, other institutions, and quiet offices). [6]	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:

[1] "Frequent Events" is defined as more than 70 vibration events per day. Most rapid transit Projects fall into this category.

[2] "Infrequent Events" is defined as fewer than 70 vibration events per day. This 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 1-6 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 are significant when the peak particle velocity (PPV) exceeds one inch per second. Continuous or frequent intermittent vibration sources such as impact pile drivers 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.

Table 1-7
GUIDELINES FOR DETERMINING SIGNIFICANCE OF GROUND-BORNE VIBRATION AND NOISE IMPACTS FOR SPECIAL BUILDINGS

Type of Building or Room	Ground-borne Vibration Impact Levels (inches/sec rms)		Ground-borne Noise Impact Levels (dB re 20 micro Pascals)	
	Frequent Events[1]	Infrequent Events[2]	Frequent Events[1]	Infrequent Events[2]
Concert Halls, TV Studios and Recording Studios	0.0018	0.0018	25 dBA	25 dBA
Auditoriums	0.0040	0.010	30 dBA	38 dBA
Theaters	0.0040	0.010	35 dBA	43 dBA

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

Notes:

[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] If the building will rarely be occupied when the trains are operating, there is no need to consider impact.

[4] For historic buildings and ruins, the allowable upper limit for continuous vibration to structures is identified to be 0.056 inches/second root mean square (rms). Transient conditions (single-event) would be limited to approximately twice the continuous acceptable value.

Table 1-8
CALTRANS GUIDELINE VIBRATION ANNOYANCE POTENTIAL CRITERIA

Human Response	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.1
Severe	2.0	0.4

Source: Transportation and Construction-Induced Vibration Guidance Manual, California Department of Transportation Environmental Program Environmental Engineering (2004).

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibrator pile drivers, and vibratory compaction equipment.

Sensitive Biological Species Noise Guidelines

Some studies, such as that completed by the Bioacoustics Research Team (1997), have concluded that 60 dBA is a single, simple criterion to use as a starting point for passerine impacts until more specific research is done (County 2010). Associated guidelines produced by the U.S. Fish and Wildlife Service (USFWS) require that noise be limited to a level not to exceed an hourly limit of 60 dBA L_{EQ} or the average ambient noise level, whichever is greater, at the edge of habitat during the breeding season. This threshold has consistently been applied to sensitive avian species by various jurisdictions, including San Diego County. Therefore, if proposed construction or operation occurs adjacent to an occupied habitat during the breeding season, planning for the control of potential noise impacts would be required.

2.0 ENVIRONMENTAL SETTING

2.1 Surrounding Land Uses

The area surrounding the Project site consists predominantly of single-family homes. Located to the northeast of the site is a light industrial business park, to the west are single-family homes, to the east are semi-rural single family homes, and to the south is the planned 742-residential unit Harmony Grove Village Specific Plan currently under construction.

2.2 Surrounding Roadway Descriptions

Eden Valley Lane, which runs between Country Club Drive and the Project entrance at Neighborhood 3, would provide primary access to the Project. Mt. Whitney Road, which lies immediately to the south of Neighborhoods 1 and 2, would provide secondary access to the Project site. Additionally, two new access roads would be paved in the southernmost section of the Project site (Street 5A [N] and Street 5A [S]), and would provide access to Neighborhood 5 from Country Club Drive. All of the aforementioned currently existing and planned access roads for this site are accessed via Country Club Drive, which lies to the east of the Project site. Country Club Drive is a two-lane roadway with a 45-mile per hour (mph) posted speed limit. Neither Eden Valley Lane nor Mt. Whitney Road has posted speed limit signs; however, the speed limit on these residential roads is assumed to be 25 mph.

2.3 Airport Noise

The Project site is not located near any active airports. The closest airport is the McClellan-Palomar Airport in Carlsbad, California, which is approximately 19 miles away from the Project site.

2.4 Existing Noise Environment

The dominant noise source in the vicinity of the Project site is the moderate traffic noise on Country Club Drive.

2.5 Future Noise Environment

The surrounding area is partially developed, and many of the roads in the immediate vicinity are currently dirt roads. It is reasonable to assume that the area would experience an increase in future roadway noise levels due to the development of nearby areas that currently consist largely of open space. The completion of the Harmony Grove Village Project, a large multi-family housing development immediately to the south of the Project site, would increase traffic volumes in the surrounding area. The traffic volume increases related to the Harmony Grove Village Project are included in the most recent draft of the Traffic Impact Analysis (TIA; Linscott, Law, and Greenspan [LLG], March, 2015) for the Project, and were incorporated in the modeling in this report.

3.0 STUDY METHODS, EQUIPMENT AND PROCEDURES

This section discusses the methods and procedures used in this Acoustical Report, including the selection of noise measurement and receiver locations, noise measurement procedures, and noise impact evaluation.

3.1 Methodology

A "one-hour" equivalent sound level measurement (L_{EQ}, A-Weighted) was recorded for two locations near the Project site. During the on-site noise measurements, start and end times were recorded and vehicle counts were made for cars, medium trucks (double-tires/two axles), and heavy trucks (three or more axles) for the corresponding road segment(s).

The measurement time was sufficiently long for a representative traffic volume to occur and the noise level (L_{EQ}) to stabilize. A 10-minute measurement was taken at the first noise monitoring site, and a 15-minute measurement was taken at the second site. The vehicle counts were then converted to one-hour equivalent volumes by applying an appropriate factor. Other field data gathered included measuring or estimating distances.

3.2 Equipment

The following equipment was used to measure existing noise levels at the Project site:

- Larson Davis System LxT Integrating Sound Level Meter
- Larson Davis Model CA250 Calibrator
- Windscreen and tripod for the sound level meter
- Digital camera

The sound level meter was field-calibrated immediately prior to the noise measurements to ensure accuracy. All sound level measurements conducted and presented in this report were made with a sound level meter that conforms to the American National Standards Institute (ANSI) specifications for sound level meters (ANSI SI.4-1983 R2001). All instruments were maintained with National Bureau of Standards traceable calibration per the manufacturers' standards.

3.3 Noise Modeling Software

Modeling of the outdoor noise environment for this report was accomplished using two computer noise models: Computer Aided Noise Abatement (CADNA) version 3.6 and Traffic Noise Model (TNM) version 2.5. CADNA is a model-based computer program developed by *DataKustik* for predicting noise impacts in a wide variety of conditions. CADNA assists in the calculation, presentation, assessment, and mitigation of noise exposure. It allows for the input of project-related information, such as noise source data, barriers, structures, and topography to create a detailed CADNA model, and uses the most up-to-date calculation standards to predict outdoor noise impacts. CADNA traffic noise prediction is based on the data and methodology used in the TNM. The TNM was released in February 2004 by the U.S. Department of

Transportation, and calculates the daytime average Hourly L_{EQ} from three-dimensional model inputs and traffic data. The TNM used in this analysis was developed from Computer Aided Design (CAD) plans provided by the Project Applicant. Input variables included road alignment, elevation, lane configuration, area topography, existing and planned noise control features, projected traffic volumes, estimated truck composition percentages, and vehicle speeds.

The one-hour L_{EQ} noise level is calculated utilizing peak-hour traffic; peak-hour traffic volumes can be estimated based on the assumption that 8 to 10 percent of the average daily traffic would occur during a peak hour. The model-calculated one-hour L_{EQ} noise output is the equivalent to the CNEL (Caltrans Technical Noise Supplement, November 2009).

3.4 Summary of Site-Specific Features Included in CADNA Model

The CADNA and TNM computer noise models include the existing area topography. Please refer to Appendix A for locations of on-site structures.

4.0 EXISTING NOISE ENVIRONMENT

As described in Section 2.4, the dominant existing noise source at the Project site is traffic noise from Country Club Drive to the east of the Project site.

4.1 Site Noise Measurements and Comparison Calculations

Traffic volumes for Country Club Drive at Mt. Whitney Road, and Country Club Drive just south of Hill Valley Drive near Dinara Drive were recorded for automobiles, medium-size trucks, and heavy trucks during the measurement period. Two locations were measured in the Project vicinity, because traffic volumes were too low to use for model correlation. After a continuous 5 to 15-minute sound level measurement, minimal changes in the L_{EQ} were detectable and the results were recorded. The measurement at each site was allowed to stabilize, and then was stopped; the measurement and count only provide background information, and will not be utilized in model correlation. The measured noise level and related weather conditions are shown in Table 4-1. Traffic counts for the timed measurement and the one-hour equivalent volumes are shown in Table 4-2.

Table 4-1
ON-SITE NOISE MEASUREMENT CONDITIONS AND RESULTS

Date	January 21, 2013
Conditions	Sunny, clear skies, 9 mph breeze from the west, temperature in the mid-70s with low humidity
Time: Measurement 1	12:45 p.m. – 12:55 p.m.
Location 1	Country Club Drive and Mt. Whitney Road
Distance to Edge of Roadway from Noise Monitor Microphone	~37 feet
Measured Noise Level 1	56.6 dBA L_{EQ}
Time: Measurement 2 (site visit 1)	1:30 p.m. – 1:35 p.m.
Location 2 (site visit 1)	Country Club Drive south of Hill Valley Drive (near Dinara Drive).
Distance to Edge of Roadway from Noise Monitor Microphone	~37 feet
Measured Noise Level 2 (site visit 1)	52.5 dBA
Date	February 7, 2013
Conditions	Low Fog, 3 mph breeze from the west-northwest, temperature in the low 40s
Time: Measurement 3 (site visit 2)	8:15 p.m. – 8:30 a.m.
Distance to Edge of Roadway from Noise Monitor Microphone	Approximately 32 feet

Table 4-1 (cont.) ON-SITE NOISE MEASUREMENT CONDITIONS AND RESULTS	
Location 2 (site visit 2)	Country Club Drive south of Hill Valley Drive (near Dinara Drive)
Measured Noise Level 2 (site visit 2)	56.4 dBA

*Noise Measurements conducted at Location 2 on two different days to provide a comparison
Note: A noise measurement was taken at Country Club Drive South of Hill Valley Drive on January 21, 2013 but repeated on February 7, 2013 as the first measurement was terminated after only 5 minutes. The traffic composition was calculated utilizing the two January 21 measurements; however most of the planning was based on the February 7 measurement at Country Club Drive South of Hill Valley Drive, and the January 21 measurement at the Country Club Drive and Mt. Whitney Road intersection.

Table 4-2
TRAFFIC COUNTS FROM SITE VISIT

Roadway	Traffic	Autos	MT[1]	HT[2]
January 21, Southern Measurement				
Country Club Drive and Mt. Whitney Road	10-minute Count	20	2	1
	One-hour Equivalent	120	12	6
Percent		87%	9%	4%
January 21, Northern Measurement				
Country Club Drive south of Hill Valley Drive (Near Dinara Drive)	5-minute Count	16	0	0
	One-hour Equivalent	192	0	0
Percent		100%	0%	0%
Average January 21 Traffic Composition – Country Club Drive		**94%**	**4%**	**2%**
February 7, Northern Measurement[3]				
Country Club Drive south of Hill Valley Drive (Near Dinara Drive)	15-minute Count	42	2	4
	One-hour Equivalent	168	8	16
Percent		**88%**	**4%**	**8%**

[1] Medium Trucks (double tires/two axles)
[2] Heavy Trucks (three or more axles)
[3] Traffic count from February 7,2013 site visit not utilized to calculate traffic composition for modeling

To determine the existing traffic composition percentages for the street segments analyzed, the composition data collected during the two noise measurements from the original site visit was utilized. These two noise measurements were both conducted on Country Club Drive approximately 0.6 miles apart. The traffic composition used for modeling was calculated by finding the average number of cars, medium trucks, and heavy trucks that were present on Country Club Drive at the two examined intersections during a one hour equivalent interval. This yielded a composition of 94 percent cars, 4 percent medium trucks, and 2 percent heavy trucks. Some of the truck traffic on this road could likely be attributed to the current

construction underway south of the Project site at the Harmony Grove Village project site; however to account for the worst-case scenario, all of these potentially temporary truck trips were included. Since Eden Valley Lane, Kauana Loa Drive, and Mt. Whitney Drive are currently residential roads and no trucks were seen traveling on these segments, these roadways were assumed to have 100 percent automobile vehicle traffic for existing conditions. Table 4-3 outlines the vehicle composition percentages utilized for modeling the existing conditions in the vicinity of the Project.

Table 4-3
EXISTING TRAFFIC COMPOSITION

Roadway	Cars (%)	MT (%)	HT (%)
Eden Valley Lane	100%	0%	0%
Country Club Drive	94%	4%	2%
Kauana Loa Drive	100%	0%	0%
Mt. Whitney Road	100%	0%	0%

MT = Medium truck, HT = Heavy truck

Future traffic composition was assumed to be the same as existing for Country Club Drive, as the existing conditions take into consideration truck trips that are likely occurring due to current construction (are already "worst-case" conditions). The other residential segments are assumed to have slightly more truck trips with future conditions than with existing conditions, so a worst-case vehicle mix assumption of 97 percent cars, 2 percent medium trucks, and 1 percent heavy trucks was used for modeling. Table 4-4 outlines the traffic composition percentages utilized for modeling the future conditions in the vicinity of the Project.

Table 4-4
FUTURE TRAFFIC COMPOSITION

Roadway	Cars (%)	MT (%)	HT (%)
Eden Valley Lane	97%	2%	1%
Country Club Drive	94%	4%	2%
Kauana Loa Drive	97%	2%	1%
Mt. Whitney Road	97%	2%	1%

Future Conditions with Project: Existing + Project, Existing + Cumulative + Project, Existing + cumulative projects (2020), Year 2035 w/project land use traffic volumes, Year 2035 w/general plan land use project traffic volumes.
MT = Medium truck, HT = Heavy truck

4.2 Calculated Noise Levels

As noted in the roadway description, Country Club Drive has a 45 mph posted speed limit, although observed traffic on this street typically travels at lower speeds and was modeled at 30 mph. Estimated and measured noise levels along Country Club Drive, as well as the difference between the two levels, are shown in Table 4-5. A difference of less than 2 dBA is

considered sufficiently accurate without an adjustment to the CADNA model. Accordingly, no correction was applied for this model.

Table 4-5
CALCULATED VERSUS MEASURED TRAFFIC NOISE DATA

Receiver Position	Calculated	Measured	Difference	Correction Factor
Country Club Drive and Mt. Whitney Road January 21, 2013	57.9 dBA L_{EQ}	56.6 dBA L_{EQ}	1.3 dBA L_{EQ}	none needed
Country Club Drive south of Hill Valley Drive (near Dinara Drive) January 21, 2013	54.4 dBA L_{EQ}	52.5 dBA L_{EQ}	1.9 dBA L_{EQ}	none needed

5.0 IMPACTS

5.1 Significance Thresholds

Section 1.5 above presents the overall County significance thresholds, this section is a brief summary and explanation of those pertinent to the Project analysis.

5.1.1 Construction Noise Impact Significance Thresholds

Construction noise impacts would be significant if the Project would exceed the following County Code requirement:

- As stated in Section 36.409 of the San Diego County Code: 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 8-hour period, between 7:00 a.m. and 7:00 p.m., when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is being received.

5.1.2 Construction Vibration Impact Significance Thresholds

Ground-borne vibration during the construction process and would be considered significant if it exceeds the severe criteria, as specified by Caltrans (2004), for residences of 0.4 inches/sec peak particle velocity (PPV).

5.1.3 Operational Noise Impact Significance Thresholds

Operational noise impacts are typically associated with two aspects of a proposed project. First, noise generated by activities associated with a proposed project including transportation and stationary sources could adversely impact surrounding land uses. In this scenario, the project would function as a "noise generator." Second, noise from surrounding land uses and transportation sources could adversely affect occupants of a proposed project. The most common example is traffic noise from surrounding roadways. In this scenario, the project would function as a "noise receptor."

Transportation Noise

i. A significant noise impact would occur if the exterior noise level would exceed 60 CNEL for single family residential uses or 65 CNEL for multi-family or mixed use.[3]

ii. A significant cumulative impact would occur if the Project would contribute to a cumulative scenario that would result in the exposure of any on- or off-site, existing or reasonably foreseeable NSLU, to: (1) an increase of 10 CNEL over pre-existing noise levels of less than 50 CNEL resulting in a combined exterior noise level of 60 CNEL of

[3] County General Plan 2011

greater, (2) an increase of 3 CNEL in existing plus project plus cumulative conditions if that total is above 60 CNEL, or (3) interior noise in excess of 45 CNEL. A "cumulatively considerable" Project contribution to an identified significant cumulative noise impact would occur if the Project would contribute more than a 1-dB increase.[4]

Stationary Sources

Noise generated by the Project would be significant if the Project would generate noise that would result in noise levels at a common property line with a single-family residential use that would exceed the following one-hour average exterior noise levels: 50 dBA from 7:00 a.m. to 10:00 p.m.; 45 dBA from 10:00 p.m. to 7:00 a.m.

5.2 Construction Noise Impacts

This section addresses potential construction-period noise impacts on human receptors. Noise impacts to sensitive biological species are addressed in the Project Biological Technical Report.

5.2.1 Construction Noise Analysis Assumptions

Construction of the Project would generate elevated noise levels that may disrupt nearby noise sensitive receptors. The magnitude of the impact would depend on the type of construction activity, equipment, duration of each construction phase, distance between the noise source and receiver, and any intervening structures. Construction activities would be divided into approximately nine phases; these phases could include some overlap depending on location, timing, and project phasing. The construction phases would likely include the following:

1. Rough Grading
   This phase typically consists of the use of heavy equipment, potentially including large dozers, excavators, scrapers, rock drills, blasting, compactors, water trucks, and a variety of smaller equipment to create the basic building, road, and outdoor elevations.

2. Foundation Excavation
   This phase typically involves the use of medium-sized equipment, which may include a small dozer, backhoe or excavator, compactor, water truck, and a variety of smaller equipment to create the finished pad elevation and foundation excavations.

3. Utilities Excavation
   This phase typically includes the use of excavator(s), backhoe(s) and/or trencher(s) throughout the site to construct trenches for underground utilities.

4. Foundation Pour
   This phase typically involves the creation of individual building pads; concrete is delivered from an off-site mixing facility, and is pumped throughout the foundation area with a reed boom truck to create a finished building pad.

[4] Report Format and Content Requirements 2009

5. Building Construction
   This phase typically includes the manual construction of the building framing and exterior with the use of forklifts, light mobile cranes or sky lifts, as well as a variety of specific tools including welders, metal shears, and light hand tools.

6. Building Interior and HVAC
   This phase typically consists of the rough framing and finishing of the building interior with all utilities, power, and HVAC systems including rooftop equipment.

7. Finish Grading
   This phase typically includes the preparation of the site for paving and landscaping using a grader, water truck, compactor and sometimes a small dozer and/or skidsteer.

8. Paving
   This phase typically includes the spreading of concrete or blacktop, delivered to the site from an off-site mixing facility, over the planned hard surface areas; it is then either compacted or allowed to cure.

9. Landscaping
   This phase typically involves the installation of planters, watering systems, exterior lighting, fencing, walls, gating and vegetation using a skidsteer, mini excavator, trencher, and a backhoe.

5.2.2 Construction Noise Impacts and Mitigation

On-site Construction

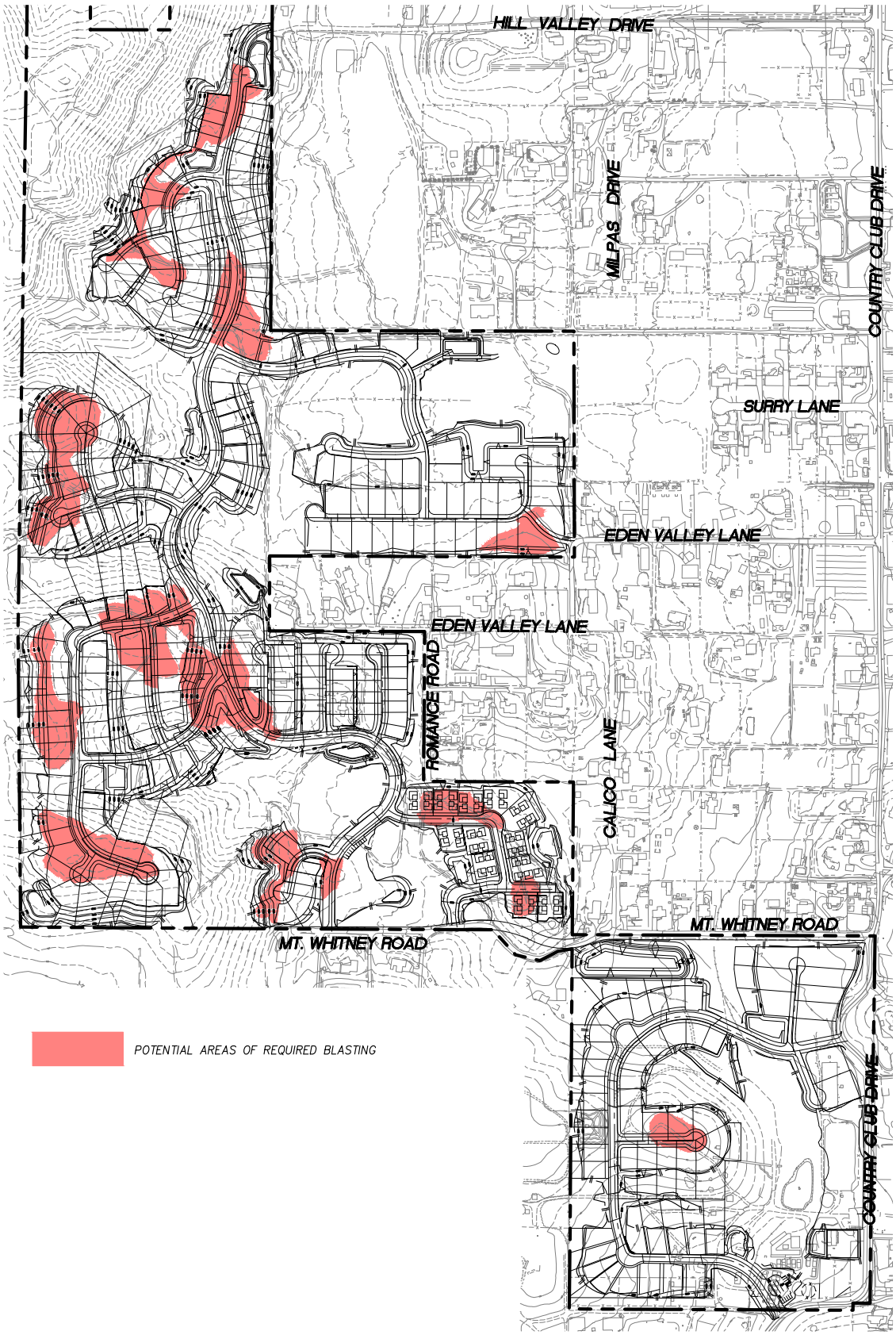
This noise impact analysis focuses on the mass grading, which is typically significantly louder than other activities and has the greatest potential to create impacts to off-site NSLUs; the Project would require extensive material excavation and/or fill. The Project's geotechnical report notes that the site is underplayed with granitic rock formations, and that portions of the site may experience difficult ripping; additionally, other areas are anticipated to require blasting after the rippable mantle is removed (GEOCON, 2012).

Figure 3 shows the areas where extensive cut/fill with likely blasting would occur. The map shows numerous areas throughout the Project area with potential ripping, drilling, and blasting.

Hard Rock Handling

Impacts

This portion of the analysis will review the requirements and planning for the ripping of materials, the drilling of non-rippable materials, and the breaking of oversize materials via the use of a large dozer.



Source: Fuscoe Engineering 2014

Rock Cut Map Areas Potentially Requiring Blasting

VALIANO

Figure 3

HELIX Environmental Planning

Data for construction equipment noise planning is extracted from three sources: The Federal Highway Administration (FHWA) Construction Noise Database, The Department of Food and Rural Affairs (DEFRA) Construction Noise Database (England), and in-situ construction site noise measurements. Table 5-1 provides the octave spectrum of the equipment used in this analysis.

Table 5-1
CONSTRUCTION EQUIPMENT NOISE LEVELS

Source	Noise Levels in decibels[1] (dB) Measured at Octave Frequencies in Hertz (Hz)									Overall Noise Level in A-weighted Scale (dBA)
	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1,000 Hz	2,000 Hz	4,000 Hz	8,000 Hz	
Breaker	119.5	113.5	118.5	116.5	118.5	122.5	119.5	118.5	116.5	126.7
Excavator	121.0	126.0	119.0	118.0	118.0	114.0	112.0	109.0	104.0	120.0
Dozer	130.0	125.5	114.5	116.5	113.5	112.5	118.5	102.5	96.5	121.2

[1] Based on Sound Power Levels (S_{WL})

Typically a D8, D9 or similar size dozer may be used for ripping the harder subsurface materials, as well as removing large boulders during the site rough grading.

Analysis will focus on areas shown in red highlight in Figure 3 as most likely to require heavy ripping with a focus on areas within an impact to existing NSLUs. Figure 4 shows one of these areas, based on a D9 moving at 1.25 mph at the highest on-site elevations, making nine passes at varying distances from the southwestern property line. The highest impact level at the adjacent property, east of the on-site areas which might require ripping, is 83.5 dBA L_{EQ} which exceeds the County's 8-hour noise level limits if operations are longer than 1.25 hours in duration. Therefore, impacts from ripping would be potentially significant. (**Impact Noi-1)**

A hydraulically operated impact hammer attached to a tracked excavator is commonly called a breaker. These units are used in site preparation to reduce large granitic materials to a size where they can either be transported off site, buried on site for fill, or used as rip rap or landscaping materials.

Breakers create an impulsive noise. The County's noise limit for impulsive noise is 82 dBA L_{MAX}. If a breaker operates within 300 feet of the nearest property line of an occupied residence, the breaker noise may exceed the County noise level limit, and impacts would be potentially significant. (**Impact Noi-2)**

Mitigation

M-Noi-1 **Ripping Noise Barrier:** If ripping, drilling, or excavation is required within 180 feet of a residentially occupied off-site or on-site property line, a 12-foot-high barrier shall be erected along a length of the property line. This barrier shall be of sufficient length to block the line of sight between the occupied property and any ripping operations within 180 feet of the property. Additionally, the barriers shall extend at least 10 feet beyond the horizontal line of sight in each direction. Figure 5 shows the 12-foot barrier noise mitigation noise contours. The final barrier must break the line of sight between the top of the equipment exhaust and the residential receiver at all visible locations, and when taking into consideration all topography in relevant areas.

If new information is provided to prove and certify that the construction equipment and noise measures being used is different prior to grading plan approval, then then a new construction noise analysis may be reviewed to the satisfaction of the [PDS, PCC]. The supplemental noise analysis shall be prepared by a County Approved Noise Consultant and the report shall comply with the Noise Report Format and Content Requirements. Any proposed alternative methods, or the reduction or modification of measures may be approved if the construction activities are reduced to 75 dB and below at the occupied property line.

M-Noi-2 **Breaker Equipment Operation Limit:** If a breaker is required on-site, then it shall not be used within 300 feet of property lines of occupied residences.

Blasting

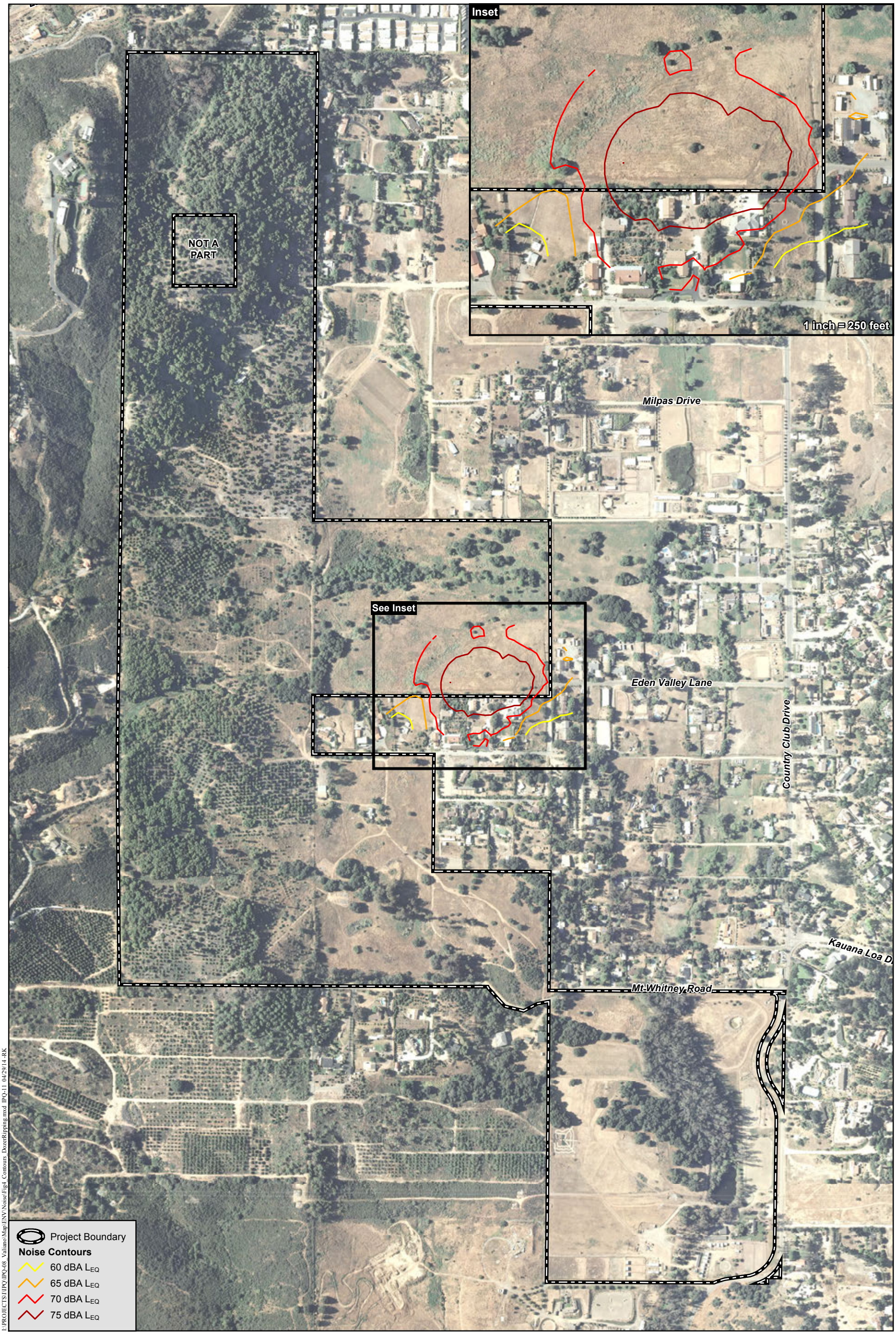
A full blasting analysis cannot be done until after the site is cleared of all surface material including any rippable material to expose the specific type of material to be blasted, the extent of the area of blasting, and the required blasting charge type is known. This evaluation is based on a reasonable minimum blast size and its closest allowable off-site residential distance based on available standards. As the blast charge size is increased, so is the allowable distance to prevent residential structural damage.

Definitions and Assumptions

Blasting has three separate types of potential impacts: flyrock, vibration, and airblast.

Flyrock: Flyrock is debris (smaller and potentially larger chunks of rock) ejected from the blast. Outside the immediate area of the blast itself, flyrock is potentially the most dangerous portion of blasting; it has the ability to damage structures, and maim or kill humans or other animals at great distances from the blast.

Flyrock cannot be allowed at this site, beyond the direct area of the blast, under any circumstances. This analysis assumes that proper blast planning would be used, that all flyrock



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Noise Contours: Dozer Ripping Hard Soils

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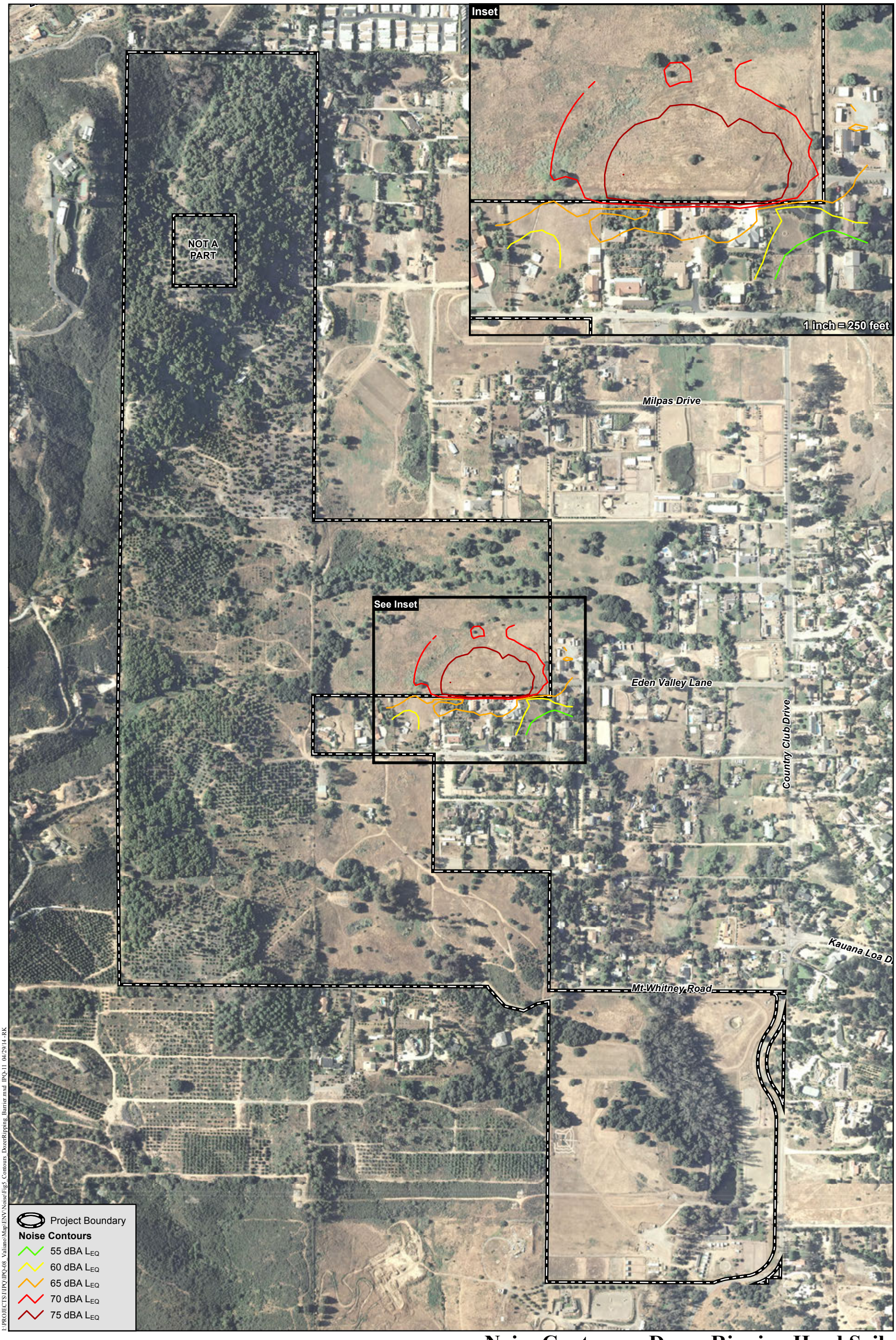
HELIX Environmental Planning

Figure 4



Noise Contours: Dozer Ripping Hard Soils with 12-foot Noise Control Barrier

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Figure 5

HELIX Environmental Planning

would be controlled with blast mats or other flyrock control techniques, and proper stemming materials for the charge hole would be utilized. No further analysis will be provided.

Vibration: Both air and ground vibrations create waves that disturb the material in which they travel. When these waves encounter a structure, they cause it to shake and may cause structural damage. Ground vibrations enter the house through the foundation.

Airblast: Airblast is a pressure wave that creates a push (positive pressure) and pull (negative pressure) effect; it may be audible (noise) or inaudible (concussion). A blast occurring outside of a residence may be heard inside because of the audible noise; however, noise has little impact on the structure. The concussion wave causes the structure to shake and rattle and can break windows at higher pressure levels.

As with flyrock, control of airblast is dependent on the skill of the Blasting Supervisor, along with many factors including but not limited to: the depth of the charge, the type of rock, the amount of fractures in the rock, and the length of correct stemming materials.

An analysis of airblast is not provided in this report; however, airblast is regulated by the limits from the Code of Federal Regulations (30 CFR 816.61-68), which are provided below under the discussion of Airblast Impacts.

The following analysis is based on a general description of potential impacts that would be incurred by the Project as a result of blasting activities. The information is based on guidance provided by the Office of Surface Mining Reclamation and Enforcement including the document, *Controlling the Adverse Effects of Blasting* (OSM website http://www.osmre.gov/) for calculating the scaled distance in blasting.

Final blasting calculations are typically done by the blasting company using a commercial calculator using the Ground Transmission Constant "K."

Based on an assumption of 0.5 pounds of explosive material required per ton of material removed and a typical granite weight of 166.5 pounds per cubic foot, or 2.25 tons per cubic yard, a typical shot designed to break up 10 cubic yards of material (typical truck load) would require about 11.25 pounds of explosive charge. The charge would typically consist of a 0.5-pound or less of detonation charge per hole, and the remainder of the charge would be provided by TOVEX or other similar water gel explosive slurry.

The following planning material is based on a maximum charge weight analysis per 8-millisecond (ms) delay (that is a single blast session may use multiple charges if the charges are timed to detonate at greater than 8-ms delays between each successive charge ignition). Given the probable small size of any blasting at this site, it is assumed that a single blasting shot would occur in this time period. Further, this planning is based on the use of small holes of approximately 1.5 inches in diameter or less. This assumes up to 12 holes for the minor explosive activities at each blasting location with up to five blasting operations per day.

If a shock tube or detonating cord is used for the blast ignition, it must be covered with at least 8 inches of sand or soil.

Vibration Impacts

The following scaled distance factors (Table 5-2) are based on the relationship between peak particle velocity and frequency. Analysis of scaled distance for the charge weight is based on the following:

Table 5-2
SCALED DISTANCE FACTORS

Distance from the Blasting Site (feet)	Scaled Distance Factor
0 to 300	50
300 to 5,000	55
5,001 and Beyond	65

The allowable charge weight is calculated by: $W = (D/D_S)^2$

W = Allowable charge weight in pounds
D = Distance to the nearest structure in Feet
D_S = Value from table based on D

If D = 100 Feet the maximum charge weight would be 4 pounds
If D = 150 Feet the maximum charge weight would be 9 pounds
If D = 200 Feet the maximum charge weight would be 16 pounds

Therefore, the minimum distance by this analysis from any blast for this site should be 200 feet for the control of ground borne vibration impacts to the closest residence.

Airblast Impacts

The airblast limits at any man-made structure shall not exceed the levels specified in the Table 5-3, below.

Table 5-3 MAXIMUM ALLOWABLE AIRBLAST LIMITS	
Lower Frequency Limit of Measuring System (in Hz)	**Maximum Level (in ±3 dB)**
0.1 Hz or lower	134 peak
2 Hz or lower	133 peak
6 Hz or lower	128 peak
C-weighted	105 dBC

The previous analysis is based on typical and normal requirements. The basic planning for blasting charge weight limits at distances greater than 200 feet from an off-site structure does not provide final project-specific analysis for allowable blasting charges, nor is it intended to limit the blasting company to this as a minimum distance or maximum or minimum charge weights. This planning analysis is provided as general guidance and is not intended to provide final blasting planning for any specific blast nor does it imply acceptance of any liability for the proper or improper planning of any blasting and/or responsibility for any damages caused by the blaster.

All blasting planning and impacts and/or damages that may occur are the sole responsibility of the owner and blasting planning company.

Because there are residences within 200 feet from blasting, impacts from blasting would be potentially significant. (**Impact Noi-3)**

An additional access option would be provided via Hill Valley Drive. This may result in off-site roadway improvements along this segment connecting to Country Club Drive. Typical roadway improvement activities are temporary in nature, and would not result in a substantial noise generating activity for a long period of time. The road improvement work would be accomplished segment by segment and would not require any impulsive type of construction equipment. Based on the short duration of roadway improvement operations, roadway construction-related improvements would be less than significant.

Mitigation

M-Noi-3 **Blasting Plan and Noise Ordinance Compliance:** Prior to and during construction activities, the applicant shall be required to prepare and implement a blast plan to reduce impacts associated with air blast over-pressure generated by project-related construction activities and to incorporate any required noise reducing measures to comply with County Noise Ordinance regulations. The project applicant shall conform to the blast plan which would be comprised of the following (but not limited to): No blasting shall occur at a distance of less than 600 feet from any off-site structure without specific analysis by the blasting contractor showing less than significant vibration impacts to the structure. All blast planning must be done by a San Diego County Sheriff approved blaster, with

the appropriate San Diego County Sheriff blasting permits, and all other applicable local, state, and federal permits, licenses, and bonding. The blasting contractor or owner must conducts all notifications, inspections, monitoring, major or minor blasting requirements planning, with seismograph reports as necessary.

Construction equipment associated with blasting (i.e. drilling, pre and post blasting work) shall comply with the County Noise Ordinance, Section 36.408, 36.409, and 36.410. The blast plan shall include any necessary noise measures such as (but not limited to) temporary noise barriers and blankets, increased setbacks, limiting construction equipment operations, and any other methods specified within the blasting plan must be implemented to comply with County Noise Ordinance requirements.

Off-site Construction

Some construction activities associated with the Project would take place off site. Project off-site construction includes grading, compacting, paving, and undergrounding of utilities.

Impacts

These light construction activities are routine and do not include the use of large heavy equipment for an extended period of time adjacent to any existing residence, and impacts would therefore be less than significant.

Note that potential construction impacts related to the off-site options to the on-site WTWRF are discussed in Chapter 7 of this report, *Off-site Wastewater Options*.

5.2.3 Construction Vibration Impacts Other than Blasting

The Project is not expected to utilize any pile driving. The most likely source of vibration during the Project construction (excluding blasting discussed above) would be a vibratory roller, which may be used to achieve soil compaction as part of the foundation construction (and possibly for on-site driveways at a later time).

Impacts

A vibratory roller creates approximately 0.210 inches/sec PPV at 25 feet. The County provides for the use of the Caltrans standards (2004) for construction vibration impacts in the footnotes of Table 4 (Guideline for Determining the Significance of Ground-borne Vibration and Noise Impacts) of the County of San Diego Guidelines for Determining Significance, Noise (Table 1-4 in this report). Using the Caltrans criterion of 0.4 inches/sec PPV, the approximately 0.210 inches/sec PPV vibration impact would be less than what is considered to be a "severe" impact. Therefore, although vibration may be perceptible by nearby residences, temporary impacts associated the vibratory roller (and other potential equipment) would be less than significant.

5.3 Operational Noise Impacts – Stationary Sources

The known or anticipated Project site stationary noise sources include the residential air conditioners, booster pump station, wastewater pump stations, and WTWRF. Potential impacts from these noise sources are discussed below.

5.3.1 Stationary Noise Analysis Assumptions

Residential Air Conditioners (HVAC)

Specific planning data for the future heating, ventilation, and air conditioning (HVAC) systems is not available at this stage of Project design; however, analysis using a typical to larger-sized residential condenser mounted on ground level pads provides a reasonable basis for analysis. A worst-case modeling scenario has been used to provide analysis of the potential impacts. For the purposes of this analysis, it is assumed that a residential building would be set back 10 feet from the property line and the condenser is positioned at the side of the building, at a distance of 7 feet from the property line.

Booster Pump Station for the Water Circulation System

The pump station would include a total of two domestic supply pumps and two emergency fire pumps with a backup power diesel generator. Unlike the pump stations for wastewater treatment, this pump is not assumed to be submersible. It is assumed that the backup generator for this pump would sometimes be operational during nighttime hours (as it will run whenever the power goes out), and potential impacts must be analyzed in the context of the nighttime maximum allowable noise level of 45 dBA.

Wastewater Pump Stations

The Project would utilize three on-site pump stations for the sewer needs of the development. The pump stations would be submersible package sewers. An above-grade motor control center and electrical panel would be required for each. These would be located on a pad not to exceed 10 by 10 feet in size. According to the Project applicant, stations would include backup power generation. It is assumed that this backup pump generator would, at times, be operational during nighttime hours, as it will be running anytime the power has gone out. Thus, potential impacts must be analyzed in the context of the nighttime maximum allowable noise level of 45 dBA.

Wastewater Treatment and Water Reclamation Facility

The Project design includes a 0.7-acre on-site WTWRF and pump station located in the southeastern-most portion of the site (within Neighborhood 5) to provide treatment for all wastewater generated on site. Based on the loading and design criteria used in the 180,000 gpd Harmony Grove plant design, a scaled-down version could be constructed to serve the Proposed Project.

A summary of major plant components includes:

- **Headworks** to provide fine screening of the influent wastewater.

- **Equalization basin** to balance out variations in flow by storing a portion of the peak flows received for treatment in the plant during low-flow periods.

- **Aeration basins and anoxic basins** to perform the activated sludge process along with biological nitrogen removal.

- **Clarifier basins** to settle most of the solids out of the wastewater in order to yield a clarified flow that goes to filters for further turbidity removal.

- **Filters** to further remove turbidity to produce reclaimed water meeting Title 22 standards for effluent clarity.

- **Chlorine contact basins** to disinfect the reclaimed water by chlorine solution.

- **Residual solids processing** to further reduce the settled solids produced by the treatment process; the Aero-Mod process typically includes digester basins. As the Proposed Project's plant would be small, however, it would probably be more efficient to thicken the solids and transfer them by truck to the Harmony Grove WTWRF for further processing.

- **Operations/laboratory building** to provide space for employees to store their personal items, restrooms and showers for employees, some desk space and a small laboratory for use in operational control of the plant. All mechanical equipment would be housed within the building or noise-attenuating covers or walls including air compressors, vacuum pumps, odor control facilities, and the backup power generator.

The typical noise sources in the process area are a pre-screening unit, submersible pumps, and an aerobic mixing system. The loudest noise source is typically the screen, which has been measured at other locations, including the Santa Fe Valley WTWRF, at 50 dBA at 50 feet.[5]

Wastewater treatment facilities, such as the proposed WTWRF, also typically include:

- Air compressor(s)
- Standby diesel generator(s)
- Odor control facility
- Centrifuge(s)
- Pumps and Blowers

[5] Pacific Noise Control, Harmony Grove Village Project, July 24, 2006.

The odor control facility may also be located within the dewatering and equipment building. Excluding the generator set, this group of equipment would generate a noise level of approximately 62 dB at a distance of 25 feet.

The piece of equipment from the above list that would be anticipated to generate the most noise would be the standby diesel generator.

5.3.2 Residential Air Conditioners (HVAC)

Impacts

The unit used in this analysis is a Carrier 38HDR060 split system condenser (see Appendix B). The manufacturer's noise data is provided below in Table 5-4.

Table 5-4
CARRIER HDR060 CONDENSER NOISE

Noise Levels in Decibels[1] (dB) Measured at Octave Frequencies							Overall Noise Level in A-weighted Scale (dBA)[1]
125 Hz	250 Hz	500 Hz	1 KHz	2 KHz	4 KHz	8 KHz	
63.0	61.5	64.0	66.5	66.0	64.5	55.5	72.0

[1] Sound Power Levels (S_{WL})
KHz = kilohertz

As mentioned in the assumptions section, modeling assumed that a residential building would be set back 10 feet from the property line and that the condenser would positioned at the side of the building, at a distance of 7 feet from the property line. As this distance, the condenser would generate a noise level of 56 dBA, which is in excess of the County's nighttime allowable hourly limit of 45 dBA and would therefore create a potentially significant noise impact. (**Impact Noi-4)**

Mitigation

M-Noi-4 **HVAC Noise Barrier:** If a residential air conditioning condenser is installed within 35 feet of a property line, a 5.5 foot-high noise control barrier shall be installed between the residential use areas and the condensers to reduce related noise impacts in the outdoor use areas to less than 45 dBA L_{EQ}. The barrier shall extend in each direction beyond the condenser location so that any location without a barrier at the adjacent property is at least 35 feet from the condenser unit. The applicant must provide proof that the installed condensers have a manufacturer's sound power noise rating of less than 75 dBA. If the condenser is placed beyond a distance of 35 feet from the property line, no mitigation would be required.

5.3.3 Booster Pump Station for the Water Circulation System

Impacts

This type of booster pump could produce up to 75 dBA at 23 feet and a typical backup power generator required for the pump and control operations may create noise levels ranging from 90 to 105 dBA at 23 feet. A noise source that generates noise levels of 105 dBA at 23 feet would generate noise levels of 45 dBA (nighttime allowable limit) at 23,000 feet (approximately 4.3 miles), without consideration for other factors (such as air and ground plane damping) that could reduce this noise level. A noise source that generates noise levels of 90 dBA at 23 feet would generate noise levels of 45 dBA at 4,090 feet (0.7 mile) without consideration for other factors (such as air and ground plane damping) that could reduce this noise level. Therefore, impacts would be potentially significant. (**Impact Noi-5)**

Mitigation

M-Noi-5 **Booster Pumps Noise Control:** The booster pump and diesel generator noise may be controlled by various methods, including but not limited to: enclosing the diesel generator within a custom designed noise control structure (such as a steel enclosure); placing the pump equipment and diesel generator within a concrete masonry unit (CMU) construction building that includes noise control features, increase property line setbacks of the generator location, locating noise sources such that noise shielding would be provided from on-site intervening structures or topography.

The applicant shall provide a final noise impact analysis for the booster pump station backup power generators prepared by a County-approved noise consultant demonstrating compliance with the County 45 dBA property line requirement completed to the satisfaction of the County PDS.

5.3.4 Wastewater Pump Stations

Impacts

The only components of each wastewater pump station that would potentially produce audible noise are the exhaust piping for the pump (which would be located below grade in a covered pit) and the backup generator. The noise associated with the below-grade exhaust piping is generally experienced as a low humming sound, which is caused by vibration induced in the line by the submersible pump and motor; this noise would not be audible beyond a distance of 10 feet. Potential noise impacts related to the exhaust piping would therefore be less than significant at adjacent locations, as all NSLUs would be located more than 10 feet from the proposed pump stations.

Noise generated by the backup power generator could have the potential to exceed allowable levels, depending upon the proximity to NSLUs. As described for generator associated with the booster pump, typical noise levels from a backup power generator required for the pump and

control operation could range from 90 dBA to 105 dBA at 23 feet. A noise source that generates noise levels of 105 dBA at 23 feet could generate noise levels of 45 dBA (nighttime allowable limit) at distances of up to 23,000 feet (4.3 miles), without consideration for other factors (such as air and ground plane damping) that could reduce this noise level. A noise source that generates noise levels of 90 dBA at 23 feet could generate noise levels of 45 dBA at up to 4,090 feet (0.7 mile) without consideration for other factors (such as air and ground plane damping) that could reduce this noise level. Therefore, impacts would be potentially significant. (**Impact Noi-6)**

Mitigation

M-Noi-6 Diesel generator noise may be controlled by the various methods, including but not limited to: enclosing the diesel generator within a custom designed noise control structure (such as a steel enclosure); placing the pump equipment and diesel generator within a CMU construction building that includes noise control features, increase property line setbacks of the generator location, locating noise sources such that noise shielding would be provided from on-site intervening structures or topography.

The applicant shall be required to provide a final noise impact analysis for the pump station backup power generators prepared by a County-approved noise consultant. The final noise impact analysis shall demonstrate compliance with the County 45 dBA property line requirement completed to the satisfaction of the County PDS.

5.3.5 Wastewater Treatment and Water Reclamation Facility

Impacts

Although WTWRF equipment besides the diesel generator would have the potential to create noise in excess of allowable limits, the piece of equipment that would generate the most noise at the proposed WTWRF would be the standby diesel generator. The generator would generate similar noise levels to those described above for the pump stations backup generators (noise levels ranging from 90 to 105 dBA at 23 feet), and thus noise levels of 45 dBA (the nighttime allowable limit) could be experienced at distances of up to 23,000 feet (without consideration for other factors that could reduce this noise level). Thus, without additional noise control both the WTWRF equipment and generator may create a combined exterior noise level in excess of the allowed exterior one-hour average noise level of 45 dBA at the property line for residential uses, and may therefore have potentially significant impacts. (**Impact Noi-7)**

Mitigation

M-Noi-7 **WTWRF Noise Control:** In order to ensure compliance of the WTWRF with applicable noise regulations, design options shall be employed to reduce noise levels. These design measures could include the following:

1. Stationary equipment noise may be controlled by the following methods:

    a. Providing a tall exterior enclosure wall and gate to control offsite noise impacts for all WTWRF equipment (excluding the diesel generator),

    b. Enclosing the WTWRF equipment inside a noise control CMU structure or specific design enclosures.

    c. Increasing property line setbacks of WTWRF noise sources where feasible.

    d. Locating WTWRF noise sources such that noise shielding would be provided from on-site buildings or structures.

    e. Incorporating noise control measures such as acoustical louvers or paneling into the WTWRF design.

2. Diesel generator noise may be controlled by the following methods:

    a. Enclosing the diesel generator within a custom designed noise control structure (such as a steel enclosure).

    b. Placing the diesel generator within a CMU building that includes noise control features such as (but not limited to) acoustical louvers or paneling, etc.

The applicant shall be required to provide a final noise impact analysis as part of the facilities design submittal package for the WTWRF prepared by a County-approved noise consultant. The final noise impact analysis shall demonstrate compliance with the County 45 dBA L_{EQ} property line nighttime limit completed to the satisfaction of the County PDS. The conditions of approval of the MUP will ensure that the correct equipment/structural noise barriers will be properly installed to reduce noise levels to less than significant levels. The conditions of approval of the MUP will ensure that the correct equipment/structural noise barriers will be properly installed to reduce noise levels to less than significant levels.

5.4 Operational Noise Impacts – Transportation Sources

5.4.1 Transportation Noise Analysis Assumptions

As indicated in Section 2.4, transportation noise in the vicinity of the Project is only from street traffic. Anticipated future traffic noise levels are based on forecasted traffic volumes provided in the TIA, Valiano (2014). Table 5-5, below, summarizes the forecasted Average Daily Traffic (ADT) data for the existing and all potential future traffic conditions as presented in the TIA. These ADT values were utilized to conduct the traffic noise modeling for all conditions of the Project.

Table 5-5
TRAFFIC VOLUMES FOR ALL ANALYZED CONDITIONS

Roadway Segment	ADT						
	Existing	Project Traffic	Existing + Project	Existing + Cumulative projects	Existing + Cumulative + Project	2035 No Project	2035 + Project
Eden Valley Lane							
West of Country Club Drive	400	1,462	1,862	400	1,862	1,255	1,862
Country Club Drive							
Auto Park Way to Hill Valley Drive	5,710	2,711	8,421	7,983	10,694	7,500	8,423
Hill Valley Drive to Kauana Loa Drive	4,930	2,711	7,641	7,983	10,694	6,300	7,223
Kauana Loa to Mt. Whitney Road	3,150	2,096	5,246	6,367	8,463	3,600	4,319
Mt. Whitney Road to Future Street 5A(N)	3,150	1,043	4,193	6,367	7,410	3,600	3,964
Street 5A(N) to Street 5A (S)	3,150	719	3,869	6,367	7,086	3,600	3,852
Future Street 5A(S) to Harmony Grove Road	3,150	403	3,553	6,367	6,770	3,600	3,736
Kauana Loa Drive							
Citracado Parkway to Country Club Drive	1,480	849	2,329	4,036	4,885	3,700	3,988
Mt. Whitney Road							
Project Access to Country Club Drive	200	1,462	1,662	200	1,662	1,255	1,662
Street 5A (N)							
On-site Segment	DNE	426	426	DNE	426	DNE	426
Street 5A (S)							
On-site Segment	DNE	436	436	DNE	436	DNE	436

Note: DNE = does not exist

For general planning purposes, TNM software was utilized to calculate the distances to noise contour lines for four scenarios. Note that Year 2035 traffic volumes are lower than near-term traffic volumes due to traffic network changes; these expected network changes would result in a shift of traffic within the area from Country Club Drive to other surrounding streets. For this reason, the near-term conditions were modeled to provide a worst-case analysis.

It is currently anticipated that Project traffic would be distributed along the street segments listed above as described in Table 5-5, but an additional access option is also being assessed where Project access would be provided via Hill Valley Drive in addition to Eden Valley Lane, Mt. Whitney Road and the two future access driveways south or Mt. Whitney Road; all of these roadways connect to Country Club Drive. This portion of Hill Valley Drive is an existing dirt road that is proposed to be improved to a paved road approximately 24 feet wide, for a majority of the road length as part of the Proposed Project. One section of this road (approximately 185 to 195 feet) can only be improved to 20 feet wide due to easement access issues. In order for this roadway to meet private road standards set by the County, the entire road would need to be improved to a paved width of 24 feet with a corresponding speed limit of 30 miles per hour. Potential traffic noise levels along Hill Valley Drive were also separately modeled. With the additional access option, the traffic volumes at the following study roadway segments would be affected by the addition of Hill Valley Drive as an access point:

- Hill Valley Drive between Project access and Country Club Drive
- Eden Valley Lane between Project access and County Club Drive
- Country Club Drive between Hill Valley Drive and Eden Valley Lane

The traffic volumes at the remaining study locations would not change. Refer to Table 5-6 the ADT volumes for the additional access option along these roadway segments.

Table 5-6
ADDITIONAL ACCESS OPTION ROADWAY VOLUMES (ADT)

Roadway Segment	Existing	Project (additional access)	Existing + Project (additional access)
Hill Valley Drive			
Project access to Country Club Drive	270	877	1,147
Eden Valley Lane			
Project access to Country Club Drive	400	585	985
Country Club Drive			
Hill Valley Drive to Eden Valley Lane	4,930	2,067	6,997

Source: LLG, 2015. ADT= average daily trips

5.4.2 Off-site Transportation Noise

Proposed Project

Impacts

Modeling was conducted for the relevant street segments associated with the Project (Kauana Loa Drive, Mt. Whitney Road, various segments along Country Club Drive, among others). A comparison of near-term noise levels generated in the Existing, the Existing plus Project, the Existing plus Cumulative Projects (not including Project), and the Existing plus Cumulative plus Project conditions are shown below in Table 5-7.

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Table 5-7
TRAFFIC NOISE LEVELS AND CONTOURS FOR ALL ANALYZED CONDITIONS

Roadway/Segment	Existing Conditions (E)				Existing + Project (E+P)				Existing + Cumulative Projects (E+C) (Near-term)				Existing + Cumulative + Project (E+C+P) (Near-term)			
	CNEL @ 100 ft. (dBA)	70 CNEL (ft.)	65 CNEL (ft.)	60 CNEL (ft.)	CNEL @ 100 ft. (dBA)	70 CNEL (ft.)	65 CNEL (ft.)	60 CNEL (ft.)	CNEL @ 100 ft. (dBA)	70 CNEL (ft.)	65 CNEL (ft.)	60 CNEL (ft.)	CNEL @ 100 ft. (dBA)	70 CNEL (ft.)	65 CNEL (ft.)	60 CNEL (ft.)
Eden Valley Lane																
West of Country Club Drive	41.8	IRW	IRW	IRW	50.8	IRW	IRW	13	41.8	IRW	IRW	IRW	50.8	IRW	IRW	13
Country Club Drive																
Auto Park Way to Hill Valley Drive	62.2	20	58	150	63.9	30	81	204	63.7	29	79	194	64.9	37	98	240
Hill Valley Drive to Kauana Loa Drive	61.6	17	53	135	63.5	28	76	187	63.7	29	79	194	64.9	37	98	240
Kauana Loa Drive to Mt. Whitney Road	59.6	9	35	92	61.8	18	55	140	62.7	23	63	164	63.9	30	82	202
Mt. Whitney Road to Street 5A (N)	59.6	9	35	92	60.9	14	45	118	62.7	23	63	164	63.4	27	74	183
Street 5A (N) to Street 5A (S)	59.6	9	35	92	60.5	13	43	111	62.7	23	63	164	63.1	25	70	176
Street 5A (S) to Harmony Grove Road	59.6	9	35	92	60.1	11	39	102	62.7	23	63	164	63.0	25	68	171
Kauana Loa Drive																
Citracado Parkway to Country Club Drive	47.5	IRW	IRW	IRW	51.6	IRW	IRW	16	54.0	IRW	8	29	54.9	IRW	10	35
Mt. Whitney Road																
Mt. Whitney Road	40.8	IRW	IRW	IRW	50.3	IRW	IRW	12	38.8	IRW	IRW	IRW	50.3	12	IRW	IRW
Street 5A (N)																
On-site Segment	-	-	-	-	43.2	IRW	IRW	IRW	-	-	-	-	43.2	IRW	IRW	IRW
Street 5A (S)																
On-site Segment	-	-	-	-	43.3	IRW	IRW	IRW	-	-	-	-	43.3	IRW	IRW	IRW

- = Roadway does not exist at present
IRW = The CNEL contour indicated exists within the width of the roadway.
Note: Distances represent the distance to noise contour lines from the centerlines of roadways (with no topographical consideration)

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The Existing plus Project plus Cumulative traffic noise contours for Country Club Drive are provided in Figure 6. Modeling was also conducted to determine the off-site receiver noise levels for all nearby off-site NSLUs (predominantly single-family residential houses). The existing and proposed receiver locations are provided in Figure 7. The Existing, Existing plus Project, Existing plus Cumulative, and Existing plus Cumulative plus Project (worst-case near-term conditions, as 2035 traffic volumes are lower) CNEL values are presented below in Table 5-8. Additionally, when the predicted Existing plus Cumulative noise level is greater than 60 CNEL according to the modeling, the change between the Existing plus Cumulative condition to the Existing plus Cumulative plus Project condition is presented.

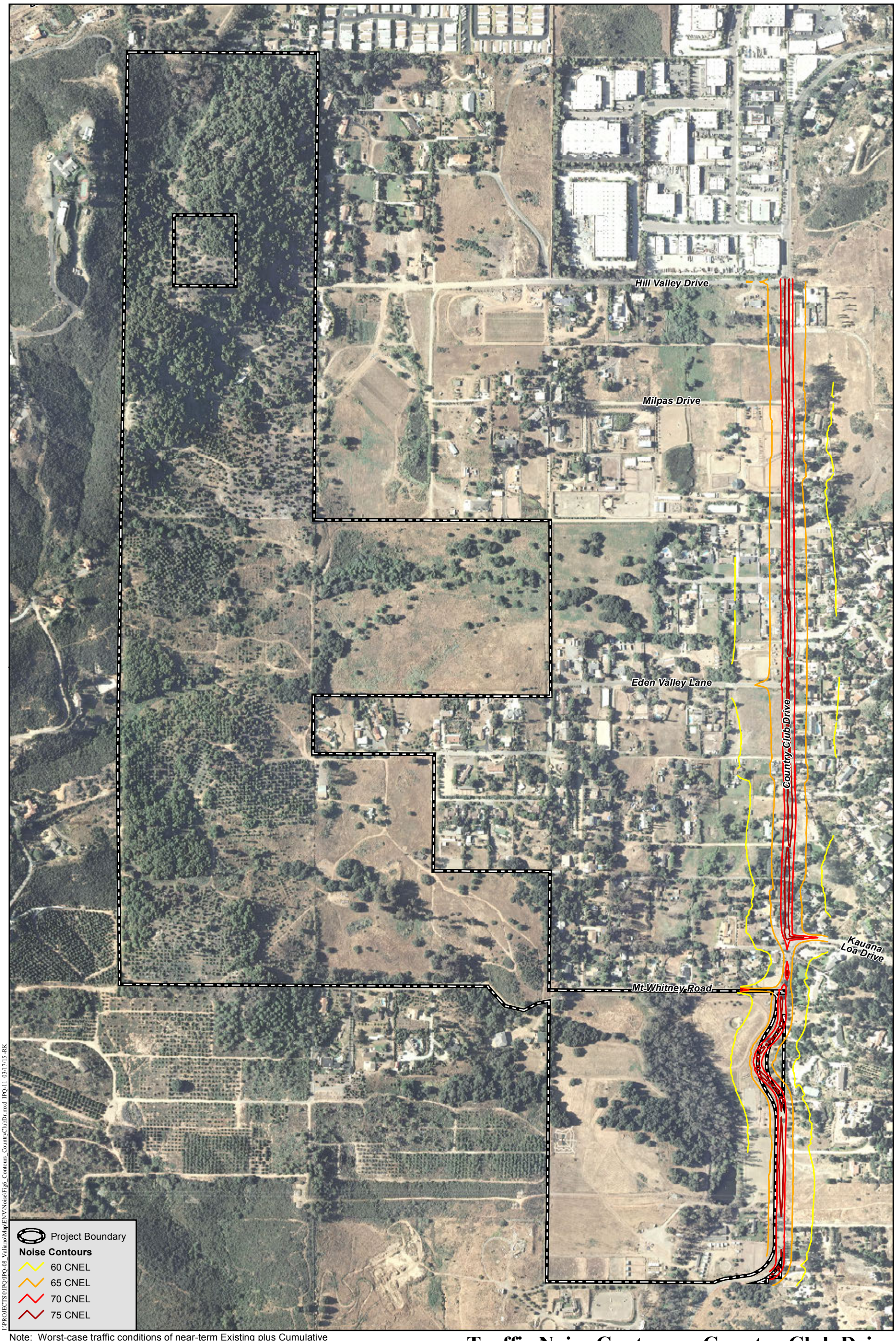
Future noise levels would exceed 60 CNEL at both structural façades and exterior use locations for off-site residences in the Existing plus Cumulative condition and the Existing plus Project plus Cumulative condition. The CNEL Value for the Existing plus Cumulative plus Project condition is never higher than 60 CNEL unless the Existing plus Cumulative only condition also exceeds 60 CNEL. In the instances where both of these conditions exceed 60 CNEL, the change from the Existing plus Cumulative condition to the Existing plus Project plus Cumulative condition does not exceed 1 dBA. Therefore, a "cumulatively considerable" project contribution (a greater than 1-dB increase due to Project-added noise to conditions that already exceed 60 CNEL) does not occur, and the cumulative impacts to off-site NSLUs would be less than significant.

Table 5-8
PREDICTED NOISE LEVELS FOR OFF-SITE RECEIVERS

Receiver	Location	CNEL					
		E	E+P	E vs E+P[1]	E+C	E+C+P	E+C vs E+C+P[1]
R 01	2869 Hill Valley Drive	48.0	49.5	N/A	49.5	50.6	N/A
R 02	2843 Hill Valley Drive	49.8	51.3	N/A	51.3	52.3	N/A
R 03	2805 Hill Valley Drive	50.6	52.0	N/A	52.0	53.1	N/A
R 04	809 Country Club Drive	60.7	62.5	1	62.6	63.9	1
R 05	820 Country Club Drive	62.8	64.6	1	64.8	66.0	1
R 06	825 Country Club Drive	63.1	65.0	1	65.1	66.4	1
R 07	916 Country Club Drive	59.7	61.6	1	61.8	63.1	1
R 08	932 Country Club Drive	61.2	63.1	1	63.3	64.6	1
R 09	1008 Country Club Drive	58.7	60.6	1	60.8	62.1	1
R 10	1012 Country Club Drive	59.4	61.3	1	61.5	62.8	1
R 11	1009 Country Club drive	60.6	62.5	1	62.7	63.9	1
R 12	2710 Surrey Lane	63.3	65.2	1	65.3	66.6	1
R 13		63.1	65.0	1	65.2	66.5	1
R 14	1040 Country Club Drive	61.2	63.1	1	63.3	64.6	1
R 15	1044 Country Club Drive	59.7	61.6	1	61.8	63.0	1
R 16	1110 Country Club Drive	60.1	62.0	1	62.2	63.5	1
R 18		64.8	66.7	1	66.8	68.1	1

Table 5-8 (cont.)
PREDICTED NOISE LEVELS FOR OFF-SITE RECEIVERS

Receiver	Location	CNEL					
		E	E+P	E vs E+P[1]	E+C	E+C+P	E+C vs E+C+P[1]
R 17	2709 Surrey Lane	63.9	65.8	1	66.0	67.2	1
R 19	2482 Live Oak Road	62.9	64.8	1	65.0	66.3	1
R 20		63.4	65.3	1	65.4	66.7	1
R 21	2472 Live Oak Road	58.6	60.6	2	60.7	62.0	1
R 22	1142 Country Club Drive	60.2	62.1	1	62.3	63.6	1
R 23	1206 Country Club Drive	61.4	63.4	2	63.5	64.8	1
R 24	1220 Country Club Drive	61.8	63.7	1	63.8	65.2	1
R 25	1230 Country Club Drive	61.0	62.9	1	63.1	64.4	1
R 26	1302 Country Club Drive	59.0	60.9	1	61.1	62.4	1
R 27	1318 Country Club Drive	59.7	61.6	1	61.8	63.0	1
R 28	1311 Country Club Drive	63.4	65.4	2	65.5	66.8	1
R 29	1322 Country Club Drive	58.7	60.6	1	60.8	62.1	1
R 30	1321 Country Club Drive	62.3	64.2	1	64.4	65.6	1
R 31	1345 Country Club Drive	62.0	63.9	1	64.1	65.3	1
R 32	1410 Country Club Drive	63.7	65.6	1	65.8	67.1	1
R 33	1417 Country Club Drive	62.1	64.0	1	64.2	65.5	1
R 34	1433 Country Club Drive	63.8	65.7	1	65.9	67.2	1
R 35	1498 Country Club Drive	64.7	66.6	1	66.8	68.1	1
R 36	1437 Country Club Drive	62.7	64.6	1	64.8	66.1	1
R 37	1449 Country Club Drive	60.9	62.9	2	63.2	64.4	1
R 38		63.1	65.0	1	65.2	66.5	1
R 39	1517 Country Club Drive	58.6	60.6	2	61.4	62.5	1
R 40	1534 Country Club Drive	56.2	57.8	N/A	59.1	60.0	N/A
R 41	1678 Country Club Drive	57.4	58.3	N/A	60.5	61.0	0
R 42	1805 Country Club Drive	58.8	59.7	N/A	61.9	62.4	0
R 43	2774 Harmony Heights Road	61.1	62.0	0	64.2	64.7	0
R 44	1776 Country Club Drive	59.9	60.8	0	62.9	63.4	0
R 45	2782 Kauana Loa Drive	58.1	60.0	N/A	60.7	61.9	1
R 46	2820 Mt. Whitney Road	54.4	56.5	N/A	57.2	58.5	N/A
R 47	2836 Mt. Whitney Road	51.6	54.5	N/A	54.5	56.2	N/A
R 48	2844 Mt. Whitney Road	50.7	53.6	N/A	53.4	55.2	N/A
R 49	2910 Mt. Whitney Road	50.6	54.4	N/A	53.2	55.8	N/A
R 50	2918 Mt. Whitney Road	49.2	53.5	N/A	51.6	54.6	N/A
R 51	2926 Mt. Whitney Road	48.6	53.0	N/A	50.9	54.0	N/A
R 52	2942 Mt. Whitney Road	48.4	53.4	N/A	50.5	54.2	N/A
R 53	2958 Mt. Whitney Road	47.9	53.2	N/A	49.9	54.0	N/A
R 54	1557 Calico Lane	46.3	51.1	N/A	48.4	51.9	N/A
R 55	2895 Eden Valley Lane	49.1	53.3	N/A	50.6	53.9	N/A
R56	2928 Eden Valley Lane	50.4	54.9	N/A	51.8	55.4	N/A
R 57	2890 Eden Valley Lane	51.4	55.8	N/A	52.8	56.3	N/A



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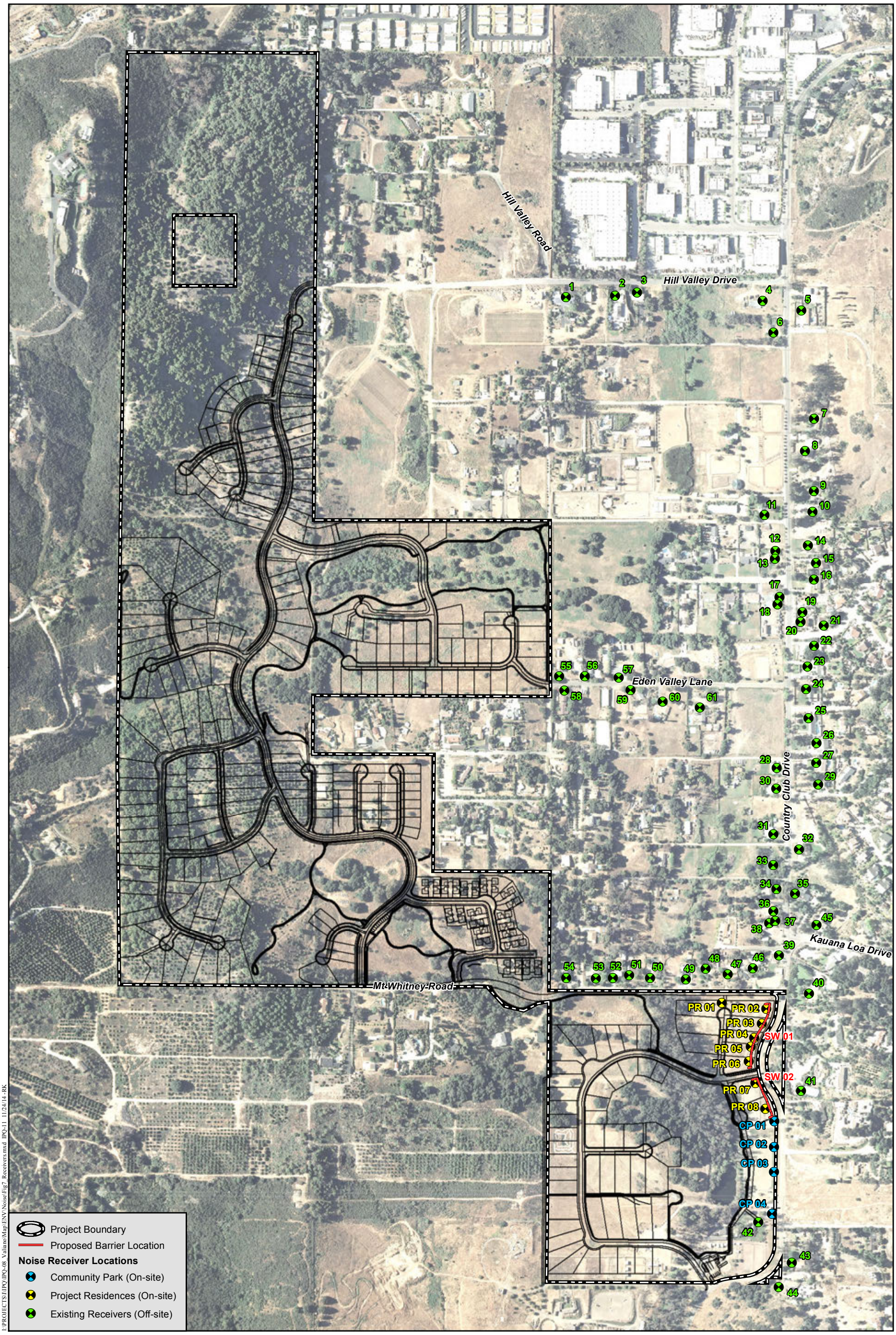
Note: Worst-case traffic conditions of near-term Existing plus Cumulative plus Project were analyzed (2035 conditions involve lower traffic volumes).

Traffic Noise Contours: Country Club Drive

VALIANO

HELIX Environmental Planning

Figure 6



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Receiver and Proposed Sound Wall Locations

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Figure 7

Table 5-8 (cont.)
PREDICTED NOISE LEVELS FOR OFF-SITE RECEIVERS

Receiver	Location	CNEL					
		E	E+P	E vs E+P[1]	E+C	E+C+P	E+C vs E+C+P[1]
R 58	2919 Eden Valley Lane	49.1	53.5	N/A	50.6	54.1	N/A
R 59	2867 Eden Valley Lane	51.9	56.2	N/A	53.4	56.8	N/A
R 60	2811 Eden Valley Lane	51.8	55.0	N/A	53.5	55.9	N/A
R 61	2835 Eden Valley Lane	53.7	56.2	N/A	55.6	57.4	N/A

[1] Results have been rounded down to nearest whole number per County standard practice.
E = Existing, E+P = Existing + Project, E+C = Existing + Cumulative, E+C+P = Existing + Cumulative + Project
N/A =Noise levels are below 60 CNEL; impacts are less than significant.

Additional Access Option

Impacts

The additional access option, where Project access would be provided via Hill Valley Drive in addition to Eden Valley Lane, Mt. Whitney Road and the two future access driveways south or Mt. Whitney Road, would increase traffic noise levels along Hill Valley Drive as compared to the currently proposed Project. Based on the Project traffic distribution, the traffic volumes at the following study roadway segments would be affected by the addition of Hill Valley Drive as an access point:

- Hill Valley Drive between Project access and Country Club Drive
- Eden Valley Lane between Project access and County Club Drive
- Country Club Drive between Hill Valley Drive and Eden Valley Lane

The traffic volumes at the remaining study locations would not change.

Modeling was conducted for these street segments under the additional access option. A comparison of near-term noise levels generated in the Existing, the Existing plus Project, the Existing plus Cumulative Projects (not including Project), and the Existing plus Cumulative plus Project conditions are shown below in Table 5-9.

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Table 5-9
TRAFFIC NOISE LEVELS AND CONTOURS FOR ADDITIONAL ACCESS OPTION

Roadway/Segment	Existing Conditions (E)				Existing + Project (E+P)				Existing + Cumulative Projects (E+C) (Near-term)				Existing + Cumulative + Project (E+C+P) (Near-term)			
	CNEL @ 100 ft. (dBA)	70 CNEL (ft.)	65 CNEL (ft.)	60 CNEL (ft.)	CNEL @ 100 ft. (dBA)	70 CNEL (ft.)	65 CNEL (ft.)	60 CNEL (ft.)	CNEL @ 100 ft. (dBA)	70 CNEL (ft.)	65 CNEL (ft.)	60 CNEL (ft.)	CNEL @ 100 ft. (dBA)	70 CNEL (ft.)	65 CNEL (ft.)	60 CNEL (ft.)
Hill Valley Drive																
Project access to Country Club Drive	42	IRW	IRW	IRW	49.7	IRW	IRW	9	42	IRW	IRW	IRW	49.7	IRW	IRW	9
Eden Valley Lane																
Project access to Country Club Drive	41.8	IRW	IRW	IRW	48.6	IRW	IRW	7	41.8	IRW	IRW	IRW	48.6	IRW	IRW	7
Country Club Drive																
Hill Valley Drive to Eden Valley Lane	61.6	17	53	135	63.1	24	70	176	63.7	29	79	194	64.8	36	97	236

IRW = The CNEL contour indicated exists within the width of the roadway.
Note: Distances represent the distance to noise contour lines from the centerlines of roadways (with no topographical consideration)

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The Existing, Existing plus Project, Existing plus Cumulative, and Existing plus Cumulative plus Project CNEL noise levels at nearby residential receivers for the additional access option (for roadways affected by the additional access option) are presented below in Table 5-10. Additionally, when the predicted Existing plus Cumulative noise level is greater than 60 CNEL according to the modeling, the change between the Existing plus Cumulative condition to the Existing plus Cumulative plus Project condition is presented.

With implementation of the additional access option, noise levels along Hill Valley Drive would increase. However, at currently existing receivers along this roadway, noise levels would remain below 60 CNEL with full build out (Existing + Project + Cumulative).

Noise levels at modeled receivers along County Club Drive between Hill Valley Drive and Eden Valley Lane, and along Eden Valley Lane between the Project entrance and Country Club Drive would be lower with this scenario than they would be under the proposed Project (which does not include Project access at Hill Valley Drive). However, future noise levels would still exceed 60 CNEL at both structural façades and exterior use locations for many off-site residences along Country Club Drive.

It is important to note that the CNEL value for the Existing plus Cumulative plus Project condition is never higher than 60 CNEL unless the Existing plus Cumulative only condition also exceeds 60 CNEL, as is the case with the proposed Project without this additional access. As with the proposed Project, in the instances where both of these conditions exceed 60 CNEL, the change from the Existing plus Cumulative condition to the Existing plus Project plus Cumulative condition does not exceed 1 dBA. Therefore, a "cumulatively considerable" project contribution (a greater than 1-dB increase due to Project-added noise to conditions that already exceed 60 CNEL) does not occur with the additional access option, and the cumulative impacts to off-site NSLUs would be less than significant.

Table 5-10
TRAFFIC NOISE LEVELS AND CONTOURS FOR ADDITIONAL ACCESS OPTION

Receiver	Location	CNEL					
		E	E+P	E vs E+P[1]	E+C	E+C+P	E+C vs E+P+C[1]
R 01	2869 Hill Valley Drive	48	51.9	N/A	49.5	51.9	N/A
R 02	2843 Hill Valley Drive	49.8	53.8	N/A	51.3	53.8	N/A
R 03	2805 Hill Valley Drive	50.6	54.7	N/A	52.0	54.7	N/A
R 04	809 Country Club Drive	60.7	62.3	1.8	62.6	63.8	1
R 05	820 Country Club Drive	62.8	64.3	1.8	64.8	65.8	1
R 06	825 Country Club Drive	63.1	64.6	1.9	65.1	66.2	1
R 07	916 Country Club Drive	59.7	61.2	1.9	61.8	62.8	1
R 08	932 Country Club Drive	61.2	62.7	1.9	63.3	64.3	1

Table 5-10 (cont.)
TRAFFIC NOISE LEVELS AND CONTOURS FOR ADDITIONAL ACCESS OPTION

Receiver	Location	CNEL					
		E	E+P	E vs E+P[1]	E+C	E+C+P	E+C vs E+P+C[1]
R 09	1008 Country Club Drive	58.7	60.3	1.9	60.8	61.8	1
R 10	1012 Country Club Drive	59.4	60.9	1.9	61.5	62.5	1
R 11	1009 Country Club drive	60.6	62.1	1.9	62.7	63.7	1
R 12	2710 Surrey Lane	63.3	64.8	1.9	65.3	66.3	1
R 13		63.1	64.6	1.9	65.2	66.2	1
R 14	1040 Country Club Drive	61.2	62.7	1.9	63.3	64.3	1
R 15	1044 Country Club Drive	59.7	61.2	1.9	61.8	62.8	1
R 16	1110 Country Club Drive	60.1	61.7	1.9	62.2	63.2	1
R 18		64.8	66.3	1.9	66.8	67.8	1
R 17	2709 Surrey Lane	63.9	65.4	1.9	66	67	1
R 19	2482 Live Oak Road	62.9	64.5	1.9	65	66	1
R 20		63.4	64.9	1.9	65.4	66.5	1
R 21	2472 Live Oak Road	58.6	60.2	2	60.7	61.8	1
R 22	1142 Country Club Drive	60.2	61.8	1.9	62.3	63.4	1
R 23	1206 Country Club Drive	61.4	63.1	2	63.5	64.6	1
R 24	1220 Country Club Drive	61.8	63.5	1.9	63.8	65	1
R 55	2895 Eden Valley Lane	49.1	51.7	N/A	50.6	52.6	N/A
R56	2928 Eden Valley Lane	50.4	53.1	N/A	51.8	53.9	N/A
R57	2890 Eden Valley Lane	51.4	54.1	N/A	52.8	54.9	N/A
R58	2919 Eden Valley Lane	49.1	51.9	N/A	50.6	52.7	N/A
R59	2867 Eden Valley Lane	51.9	54.6	N/A	53.4	55.4	N/A
R60	2811 Eden Valley Lane	51.8	54	N/A	53.5	55.1	N/A
R61	2835 Eden Valley Lane	53.7	55.6	N/A	55.6	57	N/A

[1] Results have been rounded down to nearest whole number per County standard practice.
E = Existing, E+P = Existing + Project, E+C = Existing + Cumulative, E+C+P = Existing + Cumulative + Project
N/A =Noise levels are below 60 CNEL; impacts are less than significant.

5.4.3 On-site Transportation Noise

The exterior noise levels were calculated for future on-site residences associated with the Project along Country Club Drive, and are shown in Table 5-11. The specific analysis locations are shown on Figure 7, along with the proposed barrier locations.

Exterior Noise

Impacts

Modeling was conducted utilizing CADNA software to determine if exterior noise levels (for Existing plus Cumulative plus Project conditions) for on-site exterior uses would be in excess of significance thresholds.

As seen on Table 5-11, roadway noise impacts may exceed the allowed 60 CNEL maximum at some future residential exterior use planning areas. Specifically, exterior uses areas for residences along the eastern perimeter of Neighborhood 5 (fronting Country Club Drive, Project Lots 283 through 289) are anticipated to experience noise levels greater than 60 CNEL. The proposed community park located immediately south of Project Lot 297 in Neighborhood 5, however, is not expected to be exposed to noise levels in excess of the allowable 70 CNEL noise level for this type of land use. Refer to Figure 7 for specific receiver locations. Residences located in other Project neighborhoods and in other parts of Neighborhood 5 were modeled to have noise levels far below the 60 CNEL allowable level, and no impacts were assessed for these residences. Therefore, impacts related to exterior use areas for the Project would be potentially significant for some Project residences, and mitigation is required. **(Impact Noi-8)**

Table 5-11
EXTERIOR USE AREA NOISE LEVELS (CNEL)
FOR ON-SITE EXTERIOR USE AREAS
EXISTING PLUS CUMULATIVE PLUS PROJECT
(NEAR-TERM) CONDITION

Receiver Number Location	Noise Level (CNEL)
PR 01 – Lot 282	57.2
PR 02 – Lot 283	**63.4**
PR 03 – Lot 284	**63.2**
PR 04 – Lot 285	**63.4**
PR 05 – Lot 286	**64.3**
PR 06 – Lot 287	**63.8**
PR 07 – Lot 288	**65.0**
PR 08 – Lot 289	**63.8**
CP 01 – Community Park	66.9
CP 02 – Community Park	67.3
CP 03 – Community Park	67.4
CP 04 – Community Park	66.6

Note: Near-term Existing Plus Cumulative Plus Project condition is expected to have greater traffic volumes on segments surrounding the Project site than Year 2035 with Project conditions (LLG 2014); Near-term conditions were modeled to provide a worst-case analysis.
Bold = over the applicable threshold (60 CNEL for residential uses, 70 CNEL for the community park)

Interior Noise

Impacts

Because building façade noise levels may exceed 60 CNEL (see Table 5-8), traditional architectural materials would not be expected to attenuate interior noise to a level of 45 CNEL. Traditional architectural materials are normally able to reduce exterior to interior noise by up to 15 dBA. If the new residential units have a second story, the upper story may be exposed to

noise in excess of 60 CNEL, which would result in interior noise levels in excess of 45 CNEL; impacts related to interior noise levels would therefore be potentially significant. **(Impact Noi-9)**

Mitigation

M-Noi-8 **Traffic Noise Barriers:** Existing plus Cumulative plus Project (worst-case near-term) traffic noise levels at the Proposed Project's residential exterior use areas facing Country Club Drive shall be mitigated to County Standards by the following measure:

A 6-foot high noise control wall shall be installed along the outer perimeter of the residential use areas for Lots 283 through 289 to reduce noise impacts in the outdoor use area to less than 60 CNEL (refer to Table 2.6-1). Please see Figure 7 for the locations of the proposed sound walls. The noise control wall must wrap around the ends of the property with 30-foot long returns wherever there is a break or terminus of the wall along Country Club Drive. Required sound attenuation barriers shall be solid and constructed of masonry, wood, plastic, fiberglass, steel, or a combination of those materials, with no cracks or gaps, through or below the wall. Any seams or cracks must be filled or caulked. If wood is used, it can be tongue and groove and must be at least one inch total thickness or have a density of at least 3½ pounds per square foot. Where architectural or aesthetic factors allow, glass or clear plastic 3/8 of an inch thick or thicker may be used on the upper portion, if it is desirable to preserve a view. Sheet metal of 18 gauge (minimum) may be used, if it meets the other criteria and is properly supported and stiffened so that it does not rattle or create noise itself from vibration or wind. Any door(s) or gate(s) must be designed with overlapping closures on the bottom and sides and meet the minimum specifications of the wall materials described above. The gate(s) may be of one inch thick or better wood, solid-sheet metal of at least 18-gauge metal, or an exterior-grade solid-core steel door with prefabricated door jambs.

M-Noi-9 **Interior Noise Control for Residences:** A final exterior-to-interior analysis shall be conducted to demonstrate that interior residential noise levels are below 45 CNEL. This analysis would be submitted with the final building plan submittal for the residential units along Country Club Drive.

5.5 Impact Summary

The following is a summary of Project noise impacts:

Impact Noi-1 Ripping or any heavy dozer activities, use of a large excavator, or use of a rock drill within 180 feet of an occupied off-site or future on-site residential structure may create significant impacts.

Impact Noi-2 Rock breaking within 300 feet of an occupied off-site or future on-site residential structure may create significant impacts.

Impact Noi-3 Blasting using even small charges within 200 feet of a residential structure may create a significant vibration impact. Larger blasts at greater distances may also create significant impacts.

Impact Noi-4 The use of air conditioning condensers at the Project site within 35 feet of a property line may create noise levels in excess of the County's nighttime allowable hourly limit of 45 dBA L_{EQ} at adjacent residences.

Impact Noi-5 Without additional noise control, the proposed fresh water booster pump and associate backup generator may create exterior noise levels in excess of the allowed exterior one-hour average noise level of 45 dBA L_{EQ} at residential property lines. Thus, noise impacts from the proposed booster pump to surrounding property lines could occur.

Impact Noi-6 Without additional noise control, the generators associated with the proposed on-site wastewater pump stations may create exterior noise levels in excess of the allowed exterior one-hour average noise level of 45 dBA L_{EQ} at residential property lines. Thus, noise impacts from the proposed pump stations to surrounding property lines could occur.

Impact Noi-7 Without additional noise control, the WTWRF equipment and associated generator may create a combined exterior noise level in excess of the allowed exterior one-hour average noise level of 45 dBA L_{EQ} at residential property lines. Thus, impacts from the proposed WTWRF to surrounding property lines could occur.

Impact Noi-8 Noise levels at the Project's residential exterior use areas facing Country Club Drive may exceed 60 CNEL. Thus, impacts from traffic noise would be significant and would require exterior use area noise control.

Impact Noi-9 Noise levels at the Project's residential building façades facing Country Club Drive may exceed 60 CNEL. Typically, with the windows closed, building shells provide approximately 15 dB CNEL of noise reduction. Thus, it is possible that interior noise levels would exceed the 45 CNEL threshold, resulting in a potentially significant impact.

6.0 SUMMARY OF PROJECT DESIGN CONSIDERATIONS AND MITIGATION MEASURES

6.1 Design Considerations

Proposed pump stations would be located more than 10 feet away from all on- and off-site residences.

6.2 Mitigation

M-Noi-1 **Ripping Noise Barrier:** If ripping, drilling, or excavation is required within 180 feet of a residentially occupied off-site or on-site property line, a 12-foot-high barrier shall be erected along a length of the property line. This barrier shall be of sufficient length to block the line of sight between the occupied property and any ripping operations within 180 feet of the property. Additionally, the barriers shall extend at least 10 feet beyond the horizontal line of sight in each direction. Figure 5 shows the 12-foot barrier noise mitigation noise contours. The final barrier must break the line of sight between the top of the equipment exhaust and the residential receiver at all visible locations, and when taking into consideration all topography in relevant areas.

If new information is provided to prove and certify that the construction equipment and noise measures being used is different prior to grading plan approval, then then a new construction noise analysis may be reviewed to the satisfaction of the [PDS, PCC]. The supplemental noise analysis shall be prepared by a County Approved Noise Consultant and the report shall comply with the Noise Report Format and Content Requirements. Any proposed alternative methods, or the reduction or modification of measures may be approved if the construction activities are reduced to 75 dB and below at the occupied property line.

M-Noi-2 **Breaker Equipment Operation Limit:** If a breaker is required on-site, then it shall not be used within 300 feet of property lines of occupied residences.

M-Noi-3 **Blasting Plan and Noise Ordinance Compliance:** Prior to and during construction activities, the applicant shall be required to prepare and implement a blast plan to reduce impacts associated with air blast over-pressure generated by project-related construction activities and to incorporate any required noise reducing measures to comply with County Noise Ordinance regulations. The project applicant shall conform to the blast plan which would be comprised of the following (but not limited to): No blasting shall occur at a distance of less than 600 feet from any off-site structure without specific analysis by the blasting contractor showing less than significant vibration impacts to the structure. All blast planning must be done by a San Diego County Sheriff approved blaster, with the appropriate San Diego County Sheriff blasting permits, and all other applicable local, state, and federal permits, licenses, and bonding. The blasting

contractor or owner must conducts all notifications, inspections, monitoring, major or minor blasting requirements planning, with seismograph reports as necessary.

Construction equipment associated with blasting (i.e., drilling, pre and post blasting work) shall comply with the County Noise Ordinance, Sections 36.408, 36.409, and 36.410. The blast plan shall include any necessary noise measures such as (but not limited to) temporary noise barriers and blankets, increased setbacks, limiting construction equipment operations, and any other methods specified within the blasting plan must be implemented to comply with County Noise Ordinance requirements.

M-Noi-4 **HVAC Noise Barrier:** If a residential air conditioning condenser is installed within 35 feet of a property line, a 5.5 foot-high noise control barrier shall be installed between the residential use areas and the condensers to reduce related noise impacts in the outdoor use areas to less than 45 dBA L_{EQ}. The barrier shall extend in each direction beyond the condenser location so that any location without a barrier at the adjacent property is at least 35 feet from the condenser unit. The applicant must provide proof that the installed condensers have a manufacturer's sound power noise rating of less than 75 dBA. If the condenser is placed beyond a distance of 35 feet from the property line, no mitigation would be required.

M-Noi-5 **Booster Pumps Noise Control:** The booster pump and diesel generator noise may be controlled by various methods, including but not limited to: enclosing the diesel generator within a custom designed noise control structure (such as a steel enclosure); placing the pump equipment and diesel generator within a CMU construction building that includes noise control features, increase property line setbacks of the generator location, locating noise sources such that noise shielding would be provided from on-site intervening structures or topography.

The applicant shall provide a final noise impact analysis for the booster pump station backup power generators prepared by a County-approved noise consultant demonstrating compliance with the County 45 dBA property line requirement completed to the satisfaction of the County PDS.

M-Noi-6 **Wastewater Pump Station Noise Control:** Diesel generator noise may be controlled by the various methods, including but not limited to: enclosing the diesel generator within a custom designed noise control structure (such as a steel enclosure); placing the pump equipment and diesel generator within a CMU construction building that includes noise control features, increase property line setbacks of the generator location, locating noise sources such that noise shielding would be provided from on-site intervening structures or topography.

The applicant shall be required to provide a final noise impact analysis for the pump station backup power generators prepared by a County-approved noise consultant. The final noise impact analysis shall demonstrate compliance with the

County 45 dBA property line requirement completed to the satisfaction of the County PDS.

M-Noi-7 **WTWRF Noise Control:** In order to ensure compliance of the WTWRF with applicable noise regulations, design options shall be employed to reduce noise levels. These design measures could include the following:

1. Stationary equipment noise may be controlled by the following methods:

    a. Providing a tall exterior enclosure wall and gate to control offsite noise impacts for all WTWRF equipment (excluding the diesel generator),
    b. Enclosing the WTWRF equipment inside a noise control CMU structure or specific design enclosures.
    c. Increasing property line setbacks of WTWRF noise sources where feasible.
    d. Locating WTWRF noise sources such that noise shielding would be provided from on-site buildings or structures.
    e. Incorporating noise control measures such as acoustical louvers or paneling into the WTWRF design.

2. Diesel generator noise may be controlled by the following methods:

    a. Enclosing the diesel generator within a custom designed noise control structure (such as a steel enclosure).
    b. Placing the diesel generator within a CMU building that includes noise control features such as (but not limited to) acoustical louvers or paneling, etc.

The applicant shall be required to provide a final noise impact analysis as part of the facilities design submittal package for the WTWRF prepared by a County-approved noise consultant. The final noise impact analysis shall demonstrate compliance with the County 45 dBA L_{EQ} property line nighttime limit completed to the satisfaction of the County PDS. The conditions of approval of the MUP will ensure that the correct equipment/structural noise barriers will be properly installed to reduce noise levels to less than significant levels. The conditions of approval of the MUP will ensure that the correct equipment/structural noise barriers will be properly installed to reduce noise levels to less than significant levels.

M-Noi-8 **Traffic Noise Barriers:** Existing plus Cumulative plus Project (worst-case near-term) traffic noise levels at the Proposed Project's residential exterior use areas facing Country Club Drive shall be mitigated to County Standards by the following measure:

A 6-foot high noise control wall shall be installed along the outer perimeter of the residential use areas for Lots 283 through 289 to reduce noise impacts in the outdoor use area to less than 60 CNEL (refer to Table 2.6-1). Please see Figure 7 for the locations of the proposed sound walls. The noise control wall must wrap around the ends of the property with 30-foot long returns wherever there is a break or terminus of the wall along Country Club Drive. Required sound attenuation barriers shall be solid and constructed of masonry, wood, plastic, fiberglass, steel, or a combination of those materials, with no cracks or gaps, through or below the wall. Any seams or cracks must be filled or caulked. If wood is used, it can be tongue and groove and must be at least one inch total thickness or have a density of at least 3½ pounds per square foot. Where architectural or aesthetic factors allow, glass or clear plastic 3/8 of an inch thick or thicker may be used on the upper portion, if it is desirable to preserve a view. Sheet metal of 18-gauge (minimum) may be used, if it meets the other criteria and is properly supported and stiffened so that it does not rattle or create noise itself from vibration or wind. Any door(s) or gate(s) must be designed with overlapping closures on the bottom and sides and meet the minimum specifications of the wall materials described above. The gate(s) may be of one inch thick or better wood, solid-sheet metal of at least 18-gauge metal, or an exterior-grade solid-core steel door with prefabricated door jambs.

M-Noi-9 **Interior Noise Control for Residences:** A final exterior-to-interior analysis shall be conducted to demonstrate that interior residential noise levels are below 45 CNEL. This analysis would be submitted with the final building plan submittal for the residential units along Country Club Drive.

6.3 Significance After Mitigation

With the implementation of Measures M-Noi-1, M-Noi-2 and M-Noi-3, construction impacts would be reduced to less than significant levels.

With the implementation of Measures M-Noi-4, M-Noi-5, M-Noi-6 and M-Noi-7, stationary noise impacts would be reduced to less than significant levels.

With the implementation of Measure M-Noi-8, noise impacts to exterior use areas associated with on-site NSLUs would be reduced to less than significant levels.

For the residences in the affected area of Neighborhood 5, a 6-foot sound wall along the outer perimeter of the residential outdoor use area would reduce noise levels in the outdoor use area to less than 60 CNEL (refer to Table 6-1, below).

Table 6-1
MITIGATED EXTERIOR USE AREA NOISE LEVELS (CNEL)
EXISTING PLUS CUMULATIVE PLUS PROJECT
(NEAR-TERM) CONDITION

Receiver Number	Noise Level (CNEL)		
Location	No Wall	5½-foot wall	6-foot wall
PR 02 – Lot 283	**63.4**	59.0	56.5
SW-1			
PR 03 – Lot 284	**63.2**	58.5	57.1
SW-1			
PR 04 – Lot 285	**63.4**	58.4	57.1
SW-1			
PR 05 – Lot 286	**64.3**	**60.2**	57.7
SW-1			
PR 06 – Lot 287	**63.8**	**61.7**	59.4
SW-1			
PR 07 – Lot 288	**65.0**	**61.1**	59.5
SW-2			
PR 08 – Lot 289	**63.8**	**60.4**	59.3
SW-2			

SW-1 = Sound Wall 1 (northern residential wall), SW-2 = Sound Wall 2 (southern residential wall)
Note: Near-term Existing Plus Cumulative Plus Project condition is expected to have greater traffic volumes on segments surrounding the Project site than Year 2035 with Project conditions (LLG 2014); Near-term conditions were modeled to provide a worst-case analysis.
Bold = over 60 CNEL

With the implementation of Measure M-Noi-9, interior noise levels for residential units (with a second story) fronting Country Club Drive in Neighborhood 5 would be reduced to less than significant levels.

7.0 OFF-SITE WASTEWATER TREATMENT OPTIONS

The options to the on-site WTWRF would involve the construction of the sewer pipeline and pump stations designed to convey wastewater from the Proposed Project to an off-site wastewater treatment facility. With implementation of these options, the Proposed Project would also need to install pipelines to convey recycled water from the Hale Avenue Resources Recovery Facility (HARRF).

Three potential options are possible for the provision of sewer service, in lieu of the proposed on-site WTWRF and related facilities described previously. These potential options are summarized below.

7.1 Description of Off-site Wastewater Options

7.1.1 Connection to the City of Escondido Hale Avenue Resource Recovery Facility (HARRF)

This potential option involves the following off-site facilities/activities: (1) installation of approximately 2,700 linear feet of sewer pipeline from an existing City pump station (LS-12) located just east of Country Club Drive and south of an unnamed street south of Eden Valley Lane southerly to an on-site location within Neighborhood 5 just south of the SDG&E easement, with these facilities to be located within existing City of Escondido (City) and County streets; (2) installation a of new force main pipeline from Neighborhood 5 to an existing City sewer line, with the new facilities to be located within an existing SDG&E easement; (3) abandonment of an approximately 1,600 linear feet of sewer pipeline located in City easement; (4) installation of approximately 200 linear feet of a new recycled water pipeline from an existing pipeline to the Project site, with the new facilities to be located within City streets; and (5) installation of approximately 1,000 linear feet of a new sewer return pipeline from the Project wet weather storage site to new gravity sewer main in Country Club Drive, with the new facilities to be located within existing County streets.

7.1.2 Connection to Vallecitos Water District (VWD) Facilities

This potential option would involve the installation of approximately 3,400 feet of new force main from the Project site to an existing VWD pipeline. New lines would be located between a pump station located in the southeastern portion of Neighborhood 5, trending northerly to Mt. Whitney Drive, then west to Project streets. From the north end of the Project, the new lines would trend east along Hill Valley Drive to Hill Valley Road. From the point at which Hill Valley Road trends due west, the lines would be installed using one of two routes, on either side of semi-rural residential (four homes) prior to passing along paved roads through the Casitas del Sol Mobile Home Park (past approximately 70 homes, regardless of route) and connecting to existing Vallecitos sewer line in Barham Drive, just south of SR-78. From Barham Drive, the Project would install approximately 500 linear feet of pipeline under SR-78 from Barham Drive to Rancheros Drive (a frontage road between commercial uses and SR-78) in the City of San Marcos.

This option also would require four on-site pump stations and back-up power generators. The on-site pump stations would be located along Project roadways within the development. Two would be sited Neighborhood 3: one (PS 1) on a cul-de-sac in the northeastern portion of the neighborhood between lots 146 and 147, and one (PS 2) along the street leading to Neighborhood 4 south of Lot 161. PS 3 would be sited at the northern extent of Neighborhood 4, just north of Lot 161. The fourth pump station would be located on the WTWRF in Neighborhood 5.

7.1.3 Connection to the Harmony Grove Treatment Plant

This potential option involves: (1) the installation of a force main from the Project site to the Harmony Grove treatment plant, with these facilities to be located within existing City/County streets; and (2) the construction of a new pump station and backup power generator at the Valiano.

The new pump station would be located on the Project, west of Country Club Drive. Located slightly downslope from Country Club Drive, the facility would be the size of a small outbuilding (such as a shed), common in this area.

A new 6-inch force main would be installed from Neighborhood 5, southerly within Country Club Drive, to the Harmony Grove treatment plant currently under construction. The construction period would require excavation and installation within existing roadbed followed by re-cover of the pipeline and removal of any excess soil along the pipeline right-of-way. Impacts would be to a linear right-or-way, with construction activities moving along the right-of-way (cut, install, cover) as installation occurs. Construction worker vehicles, excavation machinery, and water trucks, as well as potential specialty construction machinery or vehicles would be visible along different segments of the right-of-way during the installation process. Temporary storage of pipe may also occur within right-of-way, as appropriate. These effects would vary from the existing condition, but would be temporary in effect along the linear right-of-way.

7.2 Noise Impacts of Off-site Wastewater Options

Potential noise impacts of the off-site pipeline alternatives would vary by option. Specific impacts related to implementation of the three off-site options are described below.

7.2.1 Connection to the City of Escondido Hale Avenue Resource Recovery Facility

Construction Noise

The construction would include normal trenching activities to install eight to twelve inch force main pipeline at an assumed depth not to exceed 6 feet. This would entail the use of a small- to medium-sized excavator, medium-sized loader and dump truck for the excavation and closure of the trenches, with only small equipment being utilized during the installation. A small- to medium-sized excavator would create noise levels of 73.6 dBA L_{EQ} at a distance of 50 feet. Assuming normal excavation duration, the excavator or backhoe and loader would be expected

to be in front of any single home for no more than two hours. At a worst-case potential distance of 25 feet from the nearest property line distance (which is a typical street-work distance) for 2 hours (of an 8-hour day), the average noise level would be expected to be 73.6 dBA L_{EQ} (8-hour). Thus, noise levels from construction activities for this off-site wastewater option would not be in excess of the allowed levels.

Impacts

No construction noise impacts were identified related to this off-site wastewater option.

Mitigation

No construction noise mitigation measures are required for this off-site wastewater option.

Operation Noise

This off-site wastewater option assumes reliance upon gravity flow with the utilization of previously described and analyzed Project wastewater pump stations; this off-site option would not result in operational noises levels in excess of thresholds, and impacts would be less than significant.

Impacts

No operational noise impacts were identified related to this off-site wastewater option.

Mitigation

No operational noise mitigation measures are required for this off-site wastewater option.

7.2.2 Connection to Vallecitos Water District Facilities

Construction Noise

The off-site construction would be comparable to the option above for the connection to HARRF (City of Escondido, as described above). As described previously, at a worst-case potential distance of 25 feet from the nearest property line distance (which is a typical street-work distance) for 2 hours (of an 8-hour day), the average noise level would be expected to be 73.6 dBA L_{EQ} (8-hour). Thus, noise levels from construction activities for this off-site wastewater option would not be in excess of the allowed levels.

Impacts

No construction noise mitigation measures are required for this off-site wastewater option.

Mitigation

No construction noise mitigation measures are required for this off-site wastewater option.

Operation Noise

This off-site wastewater option would require an additional wastewater pump station (total of four).

Impacts

The pump station, like the three previously described Project pump stations, would be submersible a package sewer. Refer to Section 5.3.4 for a full description of the potential impacts associated with this type of wastewater pump and the associated backup diesel generator. As described in this section, the backup generate could generate noise levels of 45 dBA (nighttime allowable limit) at up to 23,000 feet, without consideration for other factors (such as air and ground plane damping) that could reduce this noise level. Therefore, impacts would be potentially significant. (previously described **Impact Noi-6**)

Mitigation

Diesel generator noise may be controlled by the methods described in measure **M-Noi-6.** As described in this measure, the applicant shall be required to provide a final noise impact analysis as part of the facilities design submittal package for the pump station backup power generators prepared by a County-approved noise consultant. The final noise impact analysis shall demonstrate compliance with the County 45 dBA L_{EQ} property line requirement completed to the satisfaction of the County PDS.

7.3 Connection to the Harmony Grove Treatment Plant

Construction Noise

The construction would be comparable to the option above for the connection to HARRF (City of Escondido, as described above). As described previously, at a worst-case potential distance of 25 feet from the nearest property line distance (which is a typical street-work distance) for 2 hours (of an 8-hour day), the average noise level would be expected to be 73.6 dBA L_{EQ} (8 hour). Thus, noise levels from construction activities for this off-site wastewater option would not be in excess of the allowed levels.

Impacts

No construction noise mitigation measures are required for this off-site wastewater option.

Mitigation

No construction noise mitigation measures are required for this off-site wastewater option.

Operation Noise

This off-site wastewater option would require an additional wastewater pump station (total of four).

Impacts

The pump station, like the three previously described Project pump stations, would be submersible a package sewer. Refer to Section 5.3.4 for a full description of the potential impacts associated with this type of wastewater pump and the associated backup diesel generator. As described in this section, the backup generate could generate noise levels of 45 dBA L_{EQ} (nighttime allowable limit) at up to 23,000 feet, without consideration for other factors (such as air and ground plane damping) that could reduce this noise level. Therefore, impacts would be potentially significant. (previously described **Impact Noi-6**)

Mitigation

Diesel generator noise may be controlled by the methods described in measure **M-Noi-6**; as described in this measure, the applicant shall be required to provide a final noise impact analysis as part of the facilities design submittal package for the pump station backup power generators prepared by a County-approved noise consultant. The final noise impact analysis shall demonstrate compliance with the County 45 dBA L_{EQ} property line requirement completed to the satisfaction of the County PDS.

8.0 CERTIFICATION

The findings and recommendations of this acoustical analysis report are based on the available information, and are a true and factual analysis of the potential acoustical issues associated with the proposed Valiano Project located in the Eden Valley area of the San Dieguito Planning Community San Diego County. This report was prepared by Charles Terry.

Charles Terry, Senior Acoustical Specialist — April 2015 Date

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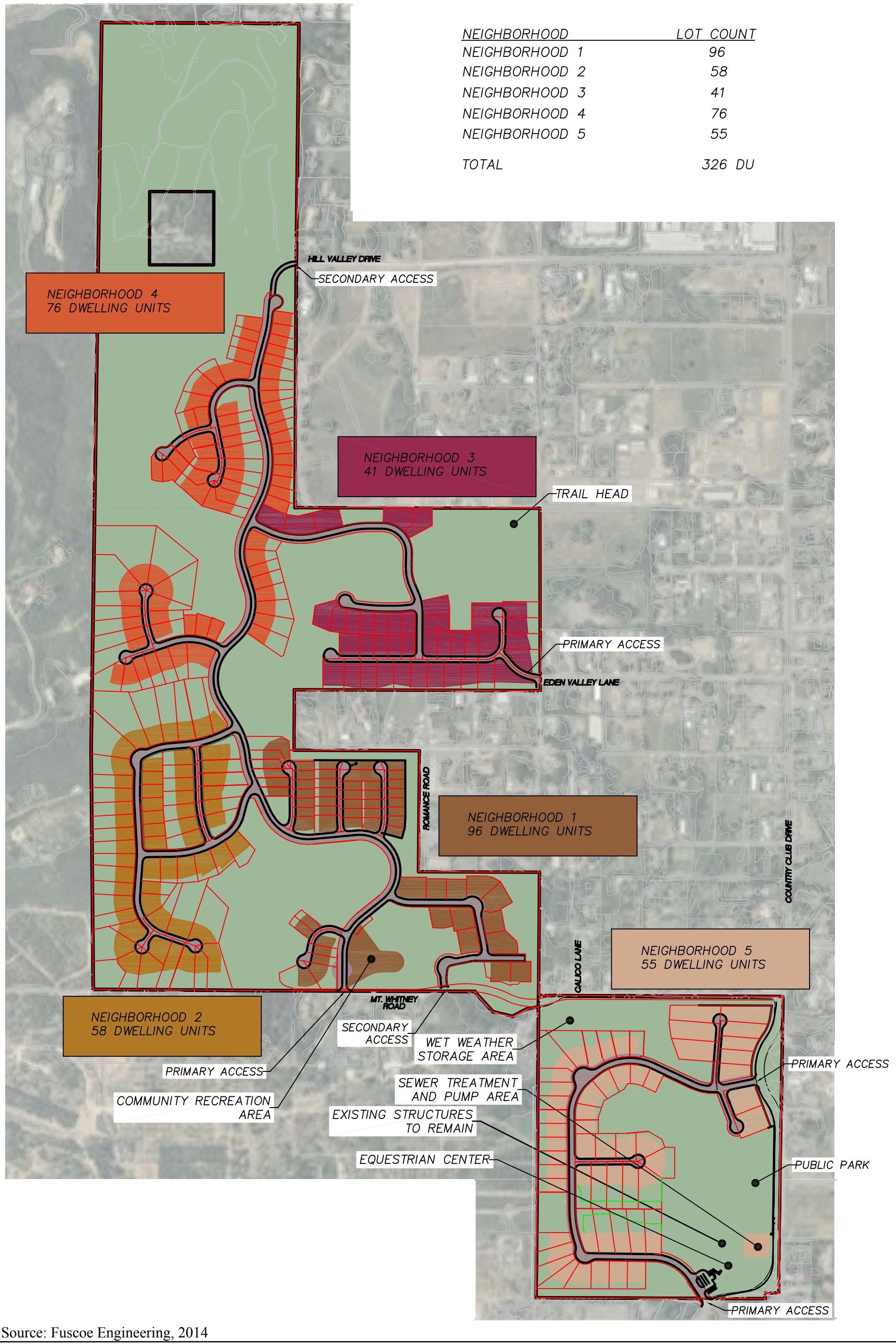
Appendix A

SITE PLAN INCLUDING PUMP/LIFT LOCATIONS

NEIGHBORHOOD	LOT COUNT
NEIGHBORHOOD 1	96
NEIGHBORHOOD 2	58
NEIGHBORHOOD 3	41
NEIGHBORHOOD 4	76
NEIGHBORHOOD 5	55
TOTAL	326 DU



Source: Fuscoe Engineering, 2014

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Site Plan including Pump/Lift Stations

VALIANO

Appendix B

CARRIER 38HDR060 SPLIT SYSTEM CONDENSER

ELECTRICAL DATA

38HDR UNIT SIZE	V–PH–Hz	VOLTAGE RANGE*		COMPRESSOR		OUTDOOR FAN MOTOR			MIN CKT AMPS	FUSE/ HACR BKR AMPS
		Min	Max	RLA	LRA	FLA	NEC Hp	kW Out		
018	208/230–1–60	187	253	9.0	48.0	0.80	0.125	0.09	12.1	20
024	208/230–1–60	187	253	12.8	58.3	0.80	0.125	0.09	16.8	25
030	208/230–1–60	187	253	14.1	73.0	1.45	0.25	0.19	19.1	30
036	208/230–1–60	187	253	14.1	77.0	1.45	0.25	0.19	19.1	30
	208/230–3–60	187	253	9.0	71.0	1.45	0.25	0.19	12.7	20
	460–3–60	414	506	5.6	38.0	0.80	0.25	0.19	7.8	15
048	208/230–1–60	187	253	21.8	117.0	1.45	0.25	0.19	28.7	50
	208/230–3–60	187	253	13.7	83.1	1.45	0.25	0.19	18.6	30
	460–3–60	414	506	6.2	41.0	0.80	0.25	0.19	8.6	15
060	208/230–1–60	187	253	26.4	134.0	1.45	0.25	0.19	34.5	60
	208/230–3–60	187	253	16.0	110.0	1.45	0.25	0.19	21.5	35
	460–3–60	414	506	7.8	52.0	0.80	0.25	0.19	10.6	15

* Permissible limits of the voltage range at which the unit will operate satisfactorily

FLA – Full Load Amps
HACR – Heating, Air Conditininng, Refrigeration
LRA – Locked Rotor Amps
NEC – National Electrical Code
RLA – Rated Load Amps (compressor)

NOTE: Control circuit is 24–V on all units and requires external power source. Copper wire must be used from service disconnect to unit.
All motors/compressors contain internal overload protection.

SOUND LEVEL

Unit Size	Standard Rating (dB)	Typical Octave Band Spectrum (dBA) (without tone adjustment)						
		125	250	500	1000	2000	4000	8000
018	68	52.0	57.5	60.5	63.5	60.5	57.5	46.5
024	69	57.5	61.5	63.0	61.0	60.0	56.0	45.0
030	72	56.5	63.0	65.0	66.0	64.0	62.5	57.0
036	72	65.0	61.5	63.5	65.0	64.5	61.0	54.5
048	72	58.5	61.0	64.0	67.5	66.0	64.0	57.0
060	72	63.0	61.5	64.0	66.5	66.0	64.5	55.5

CHARGING SUBCOOLING (TXV-TYPE EXPANSION DEVICE)

UNIT SIZE–VOLTAGE, SERIES	REQUIRED SUBCOOLING °F (°C)
018	12 (6.7)
024	12 (6.7)
030	12 (6.7)
036	12 (6.7)
048	12 (6.7)
060	12 (6.7)