CAMPUS PARK WEST PROJECT

APPENDIX F

ACOUSTICAL SITE ASSESSMENT REPORT

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for the

FINAL SUBSEQUENT ENVIRONMENTAL IMPACT REPORT

June 18, 2014

CAMPUS PARK WEST PROJECT

ACOUSTICAL SITE ASSESSMENT REPORT

SPA 05-001, GPA 05-003, REZ 05-005,
TM 5424, Log No. 05-02-009

JUNE 2010
UPDATED MAY 29, 2013

Lead Agency:

COUNTY OF SAN DIEGO
PLANNING AND DEVELOPMENT SERVICES
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Acoustical Site Assessment Report

Campus Park West Project

SPA 05-001, GPA 05-003, REZ 05-005, TM 5424, Log No. 05-02-009

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GLOSSARY OF TERMS AND ACRONYMS

ADT	Average daily trips
AMSL	Above mean sea level
ANSI	American National Standards Institute
APN	Assessor's parcel number
CAD	Computed Aided Design
CADNA	Computer Aided Noise Abatement
Caltrans	California Department of Transportation
CNEL	Community Noise Equivalent Level: A 24-hour average, where sound 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 and often used interchangeably with L_{DN}
County	County of San Diego
c.y.	cubic yards
dB	Decibel
dBA	A-weighted decibel
FHWA	Federal Highway Administration
HNL	Hourly noise level
HT	Heavy truck(s)
HVAC	Heating, ventilation, and air conditioning
Hz	Hertz
I-15	Interstate 15
in/sec	inch per second
kHz	kilohertz

GLOSSARY OF TERMS AND ACRONYMS (cont.)

L_{DN}	Day-Night Sound 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, but no added weighting on the evening hours
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. Unless a different time period is specified, L_{eq} implies a period of one hour.
mPa	micro-Pascals
mph	Miles per hour
MT	Medium truck(s)
NSLUs	Noise Sensitive Land Use(s)
PA	Planning Area
PPV	Peak particle velocity
RCNM	Roadway Construction Noise Model
rms	Root mean square
ROW	right-of-way
sec	Second
s.f.	Square foot or square feet
SPL	sound pressure level
SR	State Route
TNM	Traffic Noise Model

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EXECUTIVE SUMMARY

This acoustical analysis report is submitted to satisfy the acoustical requirements of the County of San Diego (County) for the proposed Campus Park West Project. Its purpose is to assess noise impacts to the Proposed Project's noise sensitive land uses (NSLUs) and impacts from the Proposed Project to surrounding properties. The County of San Diego Guidelines for Determining Significance – Noise (January 27, 2009) are used to determine if noise impacts are significant. Mitigation is included for impacts identified as potentially significant.

The approximately 116.5- to 118.6-acre Project site is located in the unincorporated portion of San Diego County in the community of Fallbrook. Two design scenarios are being evaluated for the property. The Proposed Project, as executed under either Scenario 1 or Scenario 2, would comprise a mixed-use community including multi-family residential, general commercial, limited-impact industrial, and mixed-use core development.

If the Project is approved, regardless of whether Scenario 1 or Scenario 2 is chosen, the Project site would consist of several properties that are currently undeveloped, with visible elements of past agriculture, as well as an area supporting hobbyist recreational activities. Scenario 2 would differ slightly from Scenario 1 as it would include two additional parcels of land located west of Pankey Road and adjacent to SR-76. The two parcels in question are currently Caltrans right-of-way (ROW); this scenario assumes that, based on recent improvements to SR-76 in conjunction with projected traffic volumes, Caltrans would release this current ROW that is no longer planned for potential SR-76 widening. Under this scenario, the project could purchase that decertified ROW, and the project would incorporate that additional acreage into general commercial uses as well as to accommodate Project entry signage. Potential off-site NSLUs include an existing residence to the northeast, an existing residence to the east, and a residence south of the site beyond State Route 76 (SR-76).

The primary noise source in the vicinity of the Project site is generated by automobile and truck traffic on Interstate 15 (I-15) and SR-76, which are adjacent to the Project site's western and southern property lines, respectively. Other existing sources of noise include traffic on local roadways (i.e., Pankey Road, unnamed dirt roads), intermittent agricultural noise associated with orchards, and recreational model plane noise. The measured noise level at the site (near the edge of I-15 approximately 170 feet south of the centerline of Pala Mesa Drive) was 76.8 "one-hour" equivalent A-weighted decibels (dBA L_{EQ}).

IMPACTS

The conclusions regarding potential impacts associated with Scenario 1 and Scenario 2 of the Proposed Project generally are identical and therefore are not separately discussed below. Where applicable, discussion relative to the two scenarios is provided.

On-site residences to the immediate east of Pankey Road along the perimeter of PA 3 and Pankey Road would have 2030 traffic noise impacts in excess of the County's exterior transportation noise impact level of 65 CNEL for multi-family uses. For the same reason, all

analyzed receivers located in the mixed-use core component in PA 2 (west of Pankey Road) demonstrate noise impacts in excess of 65 CNEL.

Compliance with the County's maximum property line noise impacts evaluated both individually and cumulatively for any potential site noise sources would ensure that no significant impacts would occur to associated property lines that would be impacted from operation of the development. Any business proposed in or adjacent to the mixed-use core area, would require subsequent analysis to demonstrate both individual and cumulative compliance with property line impacts relative to other on-site uses, and all multi-family residential uses. On-site direct and cumulative impacts from commercial sources are conservatively assessed as significant.

Project implementation would not result in a 60 CNEL or greater noise level at off-site NSLUs.

Pending identification of specific lessors, impacts to residential uses in areas PAs 2 and 3, along with other commercial uses in areas PAs 4 and 5, are conservatively assessed as significant.

Campus Park West would utilize an off-site pump station for the sewer needs of the development. This pump station (to be constructed by the adjacent and approved Campus Park project) would be sited on Campus Park property in the northeast quadrant of the Pankey Road/SR-76 intersection, and would not result in potentially significant noise impacts.

In addition to this project-required facility, RMWD has requested that the Project environmentally clear some actions proposed by RMWD for their overall system. Three alternative locations for a northerly pump station are being evaluated, but only one would be required. Of the three locations, one is located on site and two are located off site, all north of Pala Mesa Drive. The only portion of the pump station that would produce potentially audible noise is the piping for the pump, which would be in a covered sump. The noise associated with it would be inaudible from a distance greater than 10 feet away, and the nearest NSLU to any proposed pump station site is a residence located more than 50 feet away from the closest proposed pump location. Potential noise impacts would therefore be less than significant.

A sheriff's station could be sited in the limited impact industrial area of the Campus Park West. Siren noise from emergency vehicles leaving the sheriff's station would be exempted from County thresholds according to the Sections 36.402 and 36.417 of the County Noise Ordinance. Noise related to potential helicopter activity during emergency response is also exempted. Sirens of vehicles to be used during specified shifts must be tested at the start of every shift, however, and this would be considered part of normal business operations. As such, it would be subject to County noise thresholds. This siren testing may exceed the nighttime hourly allowable noise level at residences located near the sheriffs' station. Potential noise impacts are conservatively assessed as significant for proposed on-site receptors. The closest potential Sheriff station location to off-site NSLUs would range from 650 to 1,850 feet from off-site residences. At those distances, siren testing noise would not be above ambient noise levels (i.e., less than 50 dBA L_{EQ}). Therefore, although anticipated to be periodically audible, impacts to off-site residential uses west of I-15 or further away would not exceed the thresholds and would be less than significant.

Scenario 2 would potentially involve some additional noise sources as it includes more commercial development. Some of the uses in Scenario 2 could create additional noise in and of themselves (e.g., a potential car wash), while other aspects may cause an increase in traffic ADT through certain segments, resulting in an increase in traffic noise.

Project grading could occur in two phases. Phase 1 would include the commercial parcels south of SR-76, the commercial parcel north of SR-76 and west of Pankey Road, and Pankey Road and Pala Mesa Drive. Phase 2 of the grading plan includes cut and fill to complete the grading of the multifamily parcel and the light industrial parcels north of Pala Mesa Drive.

As part of a conservative analysis, it is assumed that the mixed use residential would be completed prior to the Phase 2 grading and that the residential area east of Pankey Road could be completed and occupied prior to the final grading of the light industrial area north of Pala Mesa Drive.

The loudest equipment operations for mass grading occur when a scraper is loading; often the loading operation will utilize tandem units to completely fill the pan of each scraper. In this worst case scenario, if the units were to continuously work for eight hours, it would result in a 72.5 dBA L_{EQ} (8 hour) impact to the closest residential area; therefore, the impacts would be less than significant.

All mass grading and vertical construction operations would have sufficient distance separation from any potentially occupied portions of the project site to limit construction noise impacts to less than significant levels.

The proposed off-site road and utilities improvements (i.e., along Old Highway 395, Pala Mesa Drive, SR-76, Pankey Road, and Shearer Crossing) would not create noise impacts in excess of allowed County of San Diego Construction Noise Ordinances. Potential noise impacts would not be significant.

There is a possibility that the Pankey Road bridge construction may utilize driven piles for the bridge footings. This work would be completed during backbone infrastructure development, prior to the construction of on-site residences. Since no residences would be on site during the potential pile driving, no impact would occur from pile driving. The highest potential impacts for potential on-site residences from the Phase 2 mass grading would come from a vibratory roller. A vibratory roller at the potential future residences would fall slightly over the classification of "Barely Perceptible." For short term construction, this impact would be less than significant.

General construction and ground-borne noise and vibration noise impacts associated with these utilities would be less than significant.

PROJECT DESIGN CONSIDERATIONS

There are no operational Project design considerations incorporated into the analysis. With regard to the construction period, all mass grading and the Pankey Road bridge would be completed prior to any residential construction.

MITIGATION MEASURES

The mitigation measures contained in this report would reduce potential noise impacts to below a level of significance. Should the Project be approved, the mitigation measures outlined would apply regardless of which project scenario was chosen.

To mitigate for 2030 traffic noise impacts to the residential units proposed in PA 3, a 5.5-foot-high sound attenuation barrier would be required along the eastern side of Pankey Road for the length of the multi-family housing area. The wall would be constructed with small breaks around the driveway entrances. At these breaks, the wall would curve with the driveway entrance, terminating at a location where it would run parallel to the entrance.

An acoustical analysis would be prepared by a County-approved noise consultant to demonstrate compliance with the County 45 CNEL interior noise threshold for all habitable spaces per Title 24 (California Building Code) for all multi-family (PA 3) and mixed-use core (PA 2) homes on the Project site as part of the building plan submittal. All planned elevated outdoor residential use areas, including decks and balconies, would require noise shielding by a 5.5-foot-high noise control wall.

This 5.5-foot balcony noise control barrier is proposed without consideration of any shielding provided by the buildings or additional attenuation due to distance. The final building design may provide substantial shielding, thus reducing the final required barrier heights necessary to provide compliance with the 65 CNEL exterior requirements. The applicant may provide an updated analysis by a County-approved noise consultant demonstrating compliance for all required exterior outdoor use areas with the County 65 CNEL requirement completed to the satisfaction of the Director of the DPLU with a lower height balcony noise control barrier.

Mitigation for on-site interior noise impacts would be accomplished through incorporation of enhanced building elements (i.e., thicker dual-paned windows with spacing of a ½ inch or greater and enhanced wall designs). If elevated exterior noise levels require that windows be in the closed position to provide interior noise control, building design would include a forced air ventilation system to provide a habitable interior environment without reliance on an open window condition, as specified in the State Building Code and IBC.

When specific business types are known and a preliminary site plan is available, cumulative property line noise impacts for the commercial and mixed-use core areas of PA 2, PA 4, and PA 5 would be analyzed by a County-approved noise consultant.

Siren test noise at the on-site Sheriff's station shall be controlled through site plan design process using one of the following two options:

1. Selecting the location of the sheriff's station such that it is not in close proximity to the residences, and using an assumed on-site building as an intervening noise control structure.

2. Constructing the parking area further away from the residences, and designating a specific siren test location. The location could be selected so that the sirens would face away from the residential structures, and a wall could be erected on both sides of the test area to further attenuate noise.

A final noise study for the sheriff's station shall be prepared during site plan approval. The report shall finalize the noise control requirements based on actual building design specifications.

CONCLUSION

With implementation of the Proposed Project design considerations and mitigation measures included in this report, the Project would be in compliance with the County Noise Ordinance, which would ensure that noise generated by the Project would be within acceptable dB levels. Accordingly, construction, operational, and traffic noise impacts from the Project would be less than significant following implementation of Project design considerations and mitigation measures.

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1.0 INTRODUCTION

This acoustical analysis report is submitted to satisfy the acoustical requirements of the County of San Diego (County) for the proposed Campus Park West Project. Its purpose is to assess noise impacts to the Proposed Project's noise sensitive land uses (NSLUs) and impacts from the Proposed Project to surrounding properties. The County of San Diego Guidelines for Determining Significance – Noise (January 27, 2009) are used to determine if noise impacts are significant. Where significant noise impacts are found to occur to the Project or as a result of the Project, mitigation is identified.

1.1 Project Description

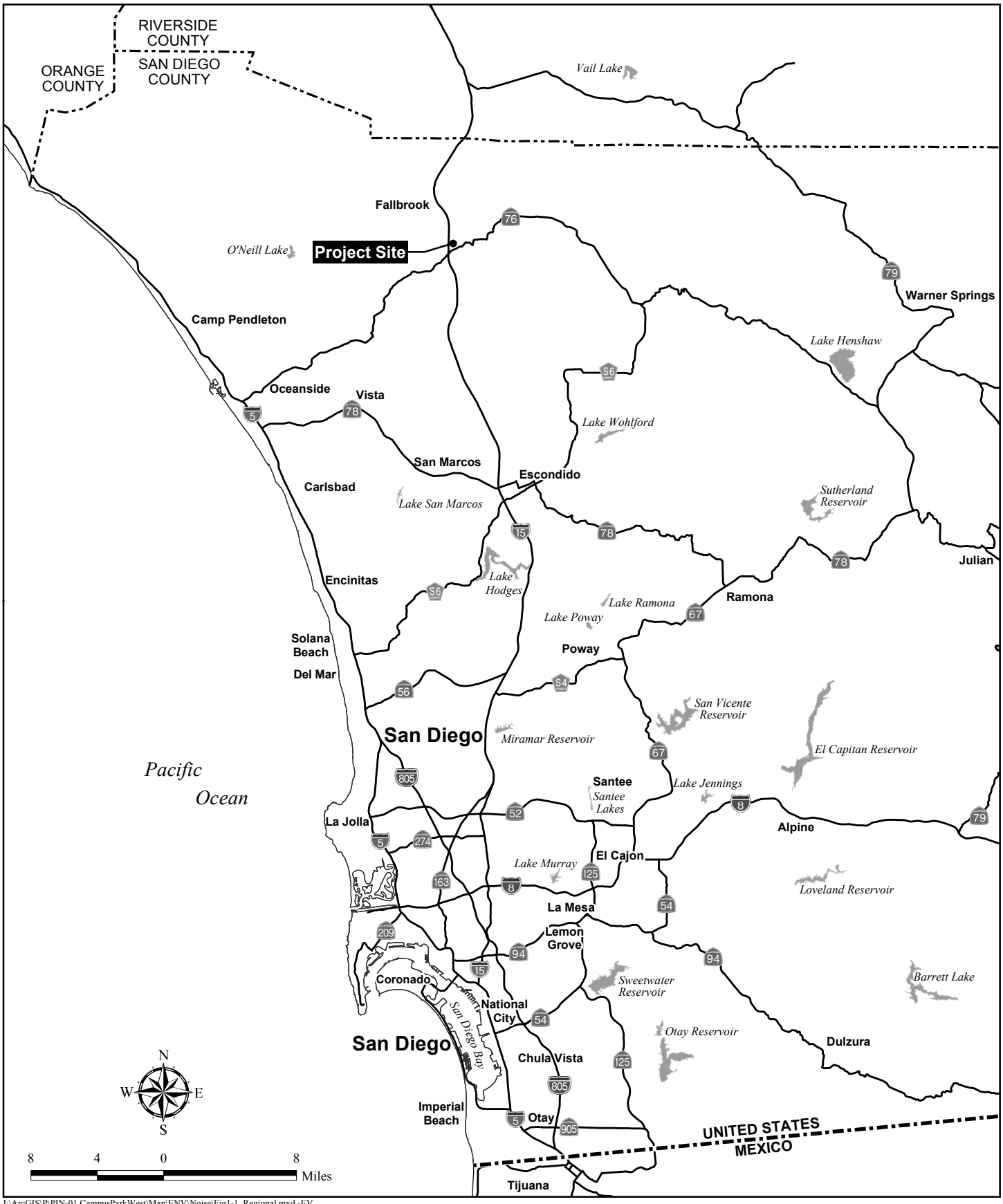
The approximately 116.5- to 118.6-acre Project site is located in the unincorporated portion of San Diego County in the community of Fallbrook, approximately 7 miles southeast of the Fallbrook town center and 46 miles north of downtown San Diego (Figure 1-1, Regional Location Map) in the northeastern and southeastern quadrants of the I-15/SR-76 interchange. The Project site consists of several non-contiguous parcels separated by Pankey Road, SR-76, and Shearer Crossing (Figure 1-2, Project Location Map), with approximately 85 percent of the site located north of SR-76 and approximately 15 percent located south of SR-76. The parcels are currently undeveloped, with visible elements of past agriculture, as well as an area supporting hobbyist recreational activities (Figure 1-2).

Two design scenarios are being evaluated for the property, differing slightly in total project size and total amount of general commercial project space. Should the Proposed Project be approved, it would consist of a mixed-use development that would include multi-family residential, general commercial with a mixed-use core component, limited impact industrial, homeowner association lots, and biological open space lots. The uses would be divided into six Planning Areas (PAs) (Figure 1-3, Land Use Plan).

For both scenarios, limited impact industrial uses (approximately 120,000 square feet [s.f.] of limited impact industrial/office space) would be located within PA 1 on 12.6 acres of land in the northern portion of the Project site, north of Pala Mesa Drive, with a maximum building height of 35 feet, with the potential for architectural projections up to 40 feet subject to North County Fire Protection District review.

PA 2 would consist of 476,000 s.f. of general commercial, along with a mixed-use core area. It would be sited on 46.1 acres in the southwestern portion of the site north of SR-76 and west of Pankey road, and may contain approximately 35 dwelling units within the mixed-use core. Residential uses would be allowed on upper floors, with non-residential uses on the ground floor within this district. This PA would have a maximum building height of 35 feet.

PA 3 would be sited on 12.4 acres of land in the southeastern portion of the site north of SR-76 and east of Pankey Road. A total of 248 multi-family dwelling units are proposed in PA 3. The maximum building height would be 35 feet for this PA.



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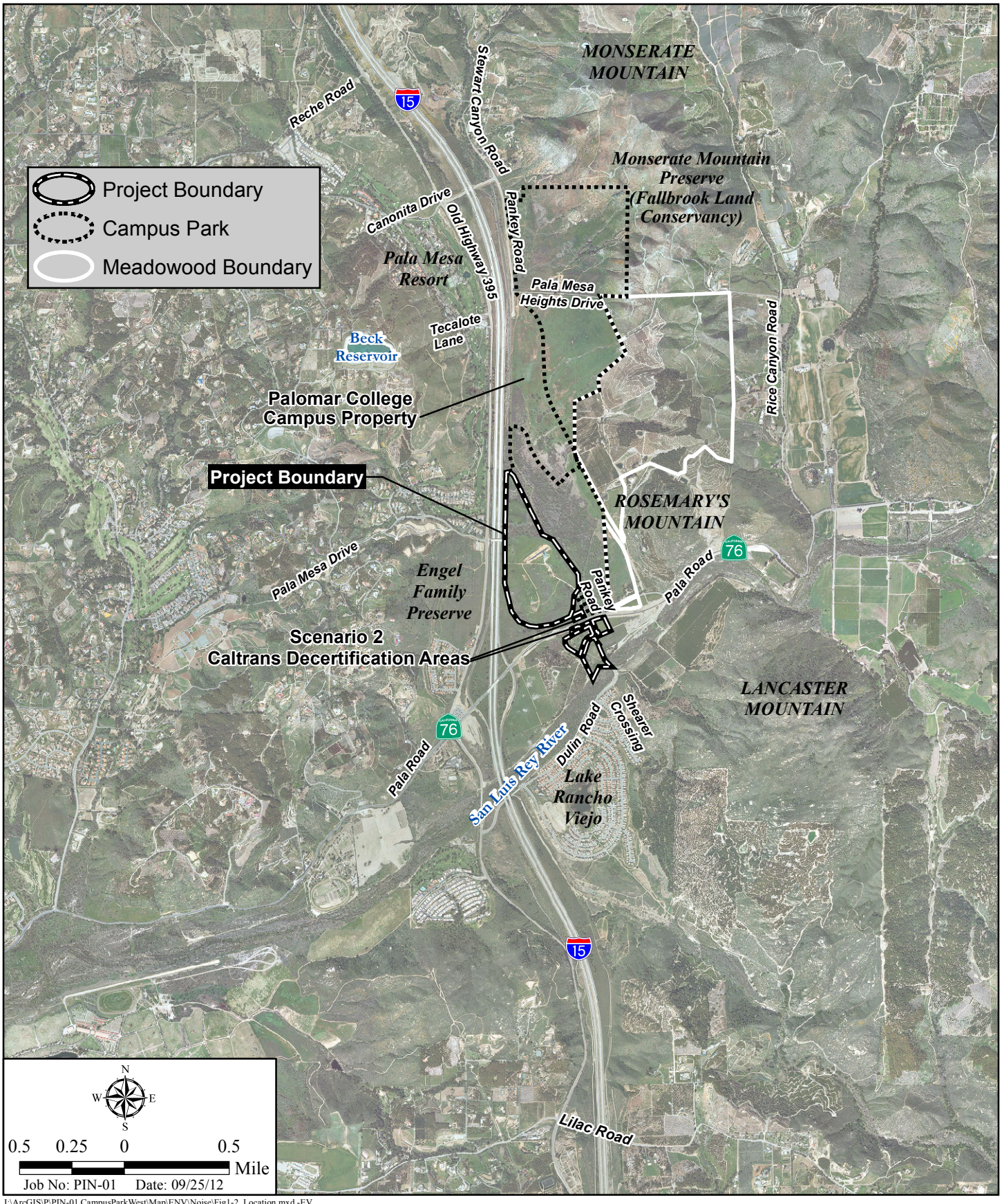
Regional Location Map

CAMPUS PARK WEST

HELIX Environmental Planning

Figure 1-1



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Project Location Map

CAMPUS PARK WEST

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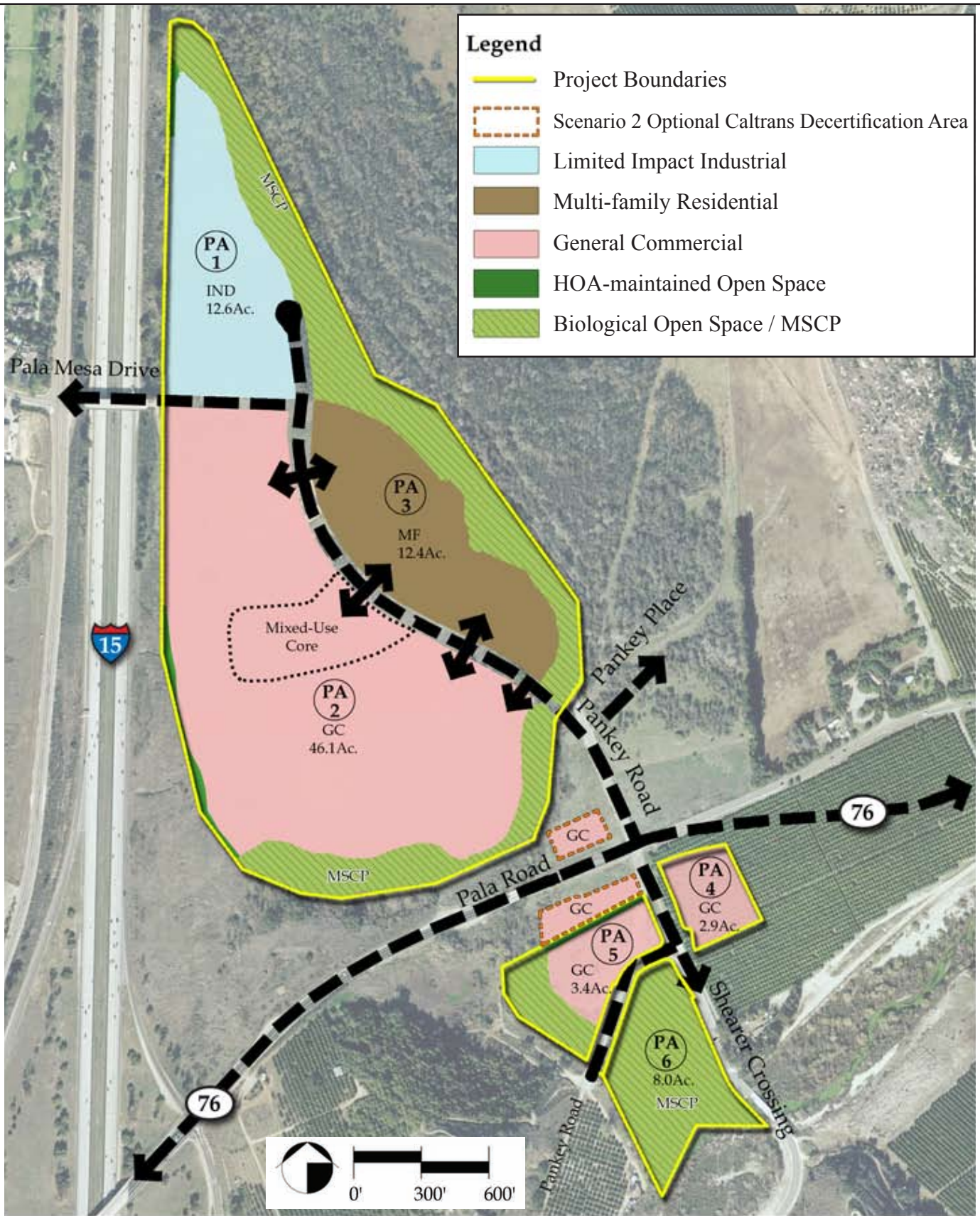
Figure 1-2



Source: PDC 2012

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Land Use Plan

CAMPUS PARK WEST

Figure 1-3

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The proposed general commercial areas in PA 4 and PA 5 would consist of approximately 27,000 s.f. of commercial space (9,000 s.f. and 18,500 s.f. respectively). These PAs also would have a maximum building height of 35 feet subject to the discussion above.

Three homeowner association-maintained lots (approximately 1.4 acres) would contain manufactured slopes, landscaped areas, and drainage facilities; and are shown as open space on Figure 1-3. Four biological open space lots would total approximately 31 acres. Table 1-1, Existing Traffic, provides a summary of the land uses proposed for the Project, and Figure 1-4, Grading Plan, depicts grading.

Scenario 2 for the Proposed Project would include all of the above, but would include slightly more land than Scenario 1. Scenario 2 assumes that based on recent improvements to SR-76 in conjunction with projected traffic volumes, Caltrans would release current right-of-way that is no longer planned for potential SR-76 widening. The potential for this to occur, and the subsequent inclusion of the decertified property into the Proposed Project, is addressed throughout this acoustical report as a design option. The amount of right-of-way subject to decertification totals 2.1 acres, with approximately 0.85 acre located north of SR-76 and 1.2 acres located south of SR-76, as depicted on Figure 1-3 (see sections designated Scenario 2 Optional Caltrans Decertification Area). Under that scenario, the project would incorporate that additional acreage into general commercial and open space uses. Decertified Caltrans right-of-way north of SR-76 would remain undeveloped except for a project monument sign to identify the entrance to Campus Park West. Decertified right-of-way south of SR-76 (1.2 acres) would be incorporated into PA 5 and developed with an additional 10,000 s.f. of general commercial uses.

The infrastructure necessary to support the development would include on- and off-site roadways, sewer lines, and water lines, as well as support for non-vehicular modes of transportation via bikeways and pedestrian paths.

A new sheriff's station may be located in the limited impact industrial area north of Pala Mesa Road. The Project would not build the station, but would provide a lot for purchase by the sheriff's department.

The project site requires grading and improvements. On-site earthwork would be balanced with an estimated 800,000 cubic yards (c.y.) of cut and 800,000 c.y. of fill. The slope ratio of manufactured slopes would not exceed 2:1 and the maximum cut and fill height will be 29.9 feet and 42.5 feet, respectively. The existing elevation for the Project site ranges from approximately 290 feet above mean sea level (AMSL) on the portion of the property located north of SR-76 to 261 feet AMSL on the property south of SR-76. Given the conservative (worst-case) nature of the grading projections, combined with the very small acreage variation between the development scenarios, the Proposed Project, if approved, would grade approximately 91.2 acres (or 78 percent) of the Project site.

Project geotechnical data (Geotechnics Incorporated 2004; Leighton and Associates, Incorporated 2012) indicate that soils are primarily alluvial (and therefore rippable) throughout the site. Because of these soil types, blasting is not anticipated.

Grading could occur in two phases. Phase 1 would include the commercial parcels south of SR-76, the commercial parcel north of SR-76 and west of Pankey Road, and Pankey Road and Pala Mesa Drive. Phase 1 includes approximately 500,000 cubic yards of cut and fill, which includes approximately 50,000 cubic yards of borrow from the multifamily parcel east of Pankey Road. Soil removed from the area north of SR-76 would be used to raise pad elevations above the floodplain in the southern portion of the project site. During earth-moving operations, grading quantities would be balanced on site and there would be no need to import or export soil off site. Construction vehicles would access the site via SR-76, with staging and storage areas located within the proposed grading areas for the project. Since the site is designed to balance, project-related traffic would be restricted to construction workers and supplies for construction.

Following the first grading phase, backbone infrastructure would be installed. This would consist of all the elements necessary to support developed uses on site, such as construction of Pankey Road, intersection improvements along SR-76, road connections to Pala Mesa Drive, off-site connections to a potable water source and sewer lines, and the connection of all utility lines between these facilities and the Project boundary. The sewer main in Pankey Road would be installed and detention basins and storm drains in Pankey Road, Pala Mesa Drive, and SR-76 would be completed during this phase.

Dedication of Project biological open space areas would also occur as a first action during this phase, with concurrent monitoring of construction activities adjacent to any surrounding open space.

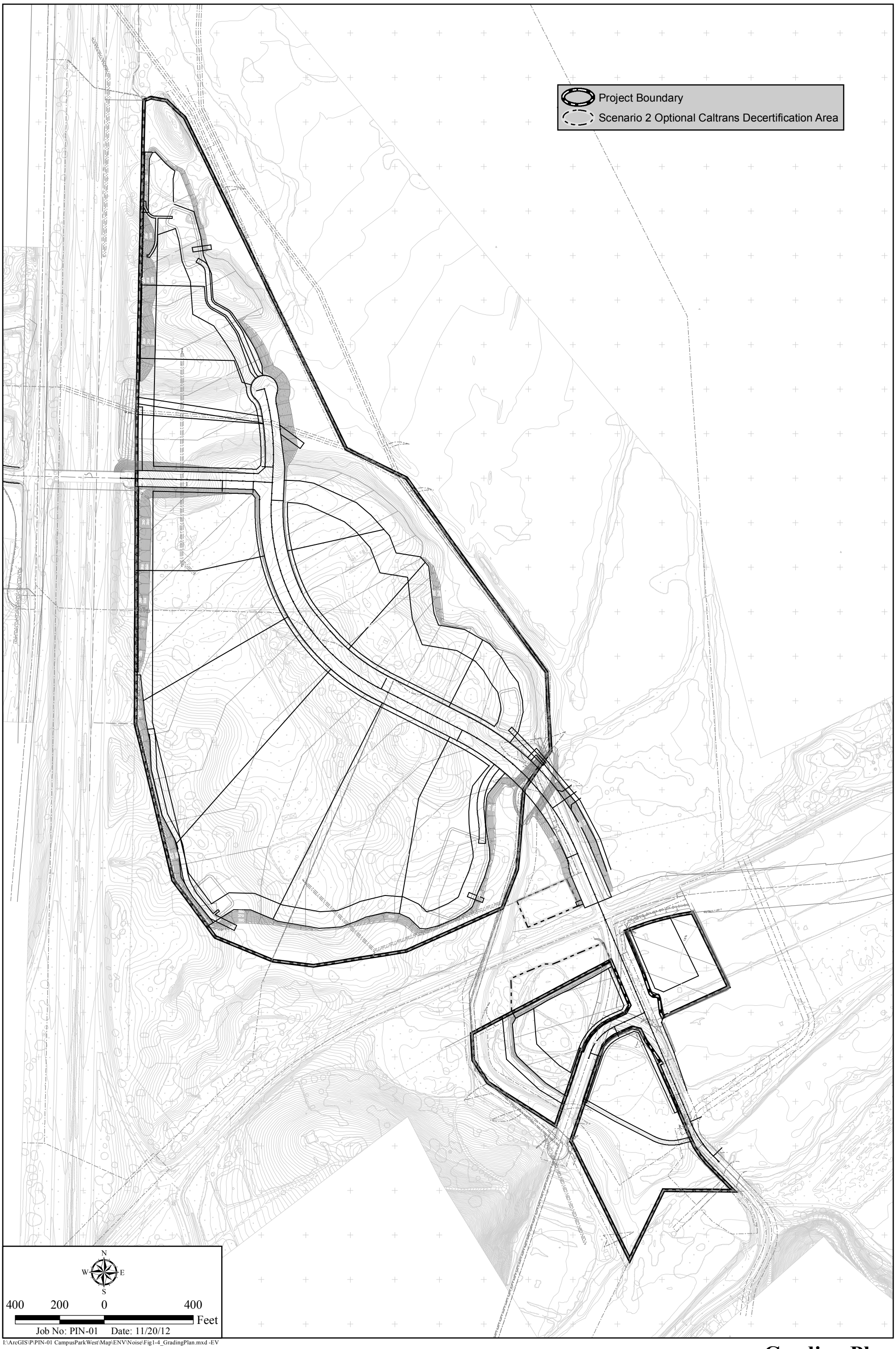
These efforts are anticipated to take between six months to a year and, depending on the timing of other projects, some of these improvements may be completed by either Campus Park or Meadowood prior to construction of the Campus Park West project.

Phase 2 of the grading plan includes approximately 300,000 cubic yards of cut and fill to complete the grading of the multifamily parcel and the light industrial parcels north of Pala Mesa Drive.

On-site development, including all structures, interior site roads, utilities, and storm drains within development sites, along with associated parking and landscape areas, would be implemented concurrently with build out of the specific use areas.

Although the specific order of development would be market driven and cannot be known with certainty at this time, a logical projection of the order of development has been identified. This plan anticipates that the commercial parcels south of SR-76 would be developed first (PAs 4 and 5), the general commercial area north of SR-76 (PA 2) would be developed second, the residential area (PA 3) would be developed third, and the limited impact industrial/office area (PA 1) would be developed last. Buildout of the on-site development is anticipated to take 10 to 15 years.

In order to provide a conservative assessment of noise impacts, the worst-case construction day was analyzed. This would include the largest possible area graded in a given day, along with the installation of utility lines occurring concurrently on the site. Similarly, Project analyses assume that residents associated with multi-family or mixed-use core portions of the Project would be on



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Grading Plan

CAMPUS PARK WEST

HELIX Environmental Planning

Figure 1-4

site while adjacent Project commercial, multi-family residential, or limited-impact industrial construction would be ongoing.

1.2 Environmental Setting and Existing Conditions

a. Settings and Location

The approximately 116.5-118.6-acre Project site is located in the unincorporated portion of San Diego County in the community of Fallbrook, approximately 7 miles southeast of the Fallbrook town center and 46 miles north of downtown San Diego (Figure 1-1). The Project site consists of non-contiguous properties separated by Pankey Road, SR-76, and Shearer Crossing to the east of Interstate (I-15) (Figure 1-2). The site Assessor's Parcel Numbers (APNs) are 108-121-14, 125-061-01, 125-063-01, 125-063-07, and 125-063-08.

The Project site primarily is comprised of fallow agricultural/grazing land, dirt roads, recreational uses, and native vegetation. The recreation center on site is for radio-controlled model aircraft hobbyists and includes an airstrip and miscellaneous features such as shade structures, fences, and storage located in the northern area of the property. The area to the north of SR-76 contains gently sloped knolls dissected by a south-flowing drainage and several east-flowing tributaries, which are steep-sided and densely vegetated. Topography in the acreage south of SR-76 is generally flat, but does steepen slightly to the south and east as the property approaches the San Luis Rey River, where riparian vegetation dominates.

The majority of the area adjacent to the Project is undeveloped open space or former grazing/agricultural land, with the exception of I-15 to the west and SR-76, which bisects the Project. South of SR-76 and further to the east, there are orchards, single-family residences, and additional open space areas. The area west of I-15 includes single-family homes, a golf course, a fire station, agriculture, and open space uses. Numerous single-family homes and some nursery facilities are located among the hills north of the Project site.

There are several residences to the east of the site, only one of which is planned to remain; the other residences have been or will be removed by other projects. The residence to remain is located approximately 1000 feet east of the planned alignment of Horse Ranch Creek Road, well beyond the potential noise impact distance from the road or the project. Therefore, it is not further considered in this report.

b. Existing Noise Conditions

The primary noise source in the vicinity of the Project site is generated by automobile and truck traffic on I-15 and SR-76. Other existing sources of noise include traffic on local roadways (i.e., Pankey Road, unnamed dirt roads), intermittent agricultural noise associated with orchards, and recreational model plane noise.

According to the Traffic Report (LLG 2012), I-15 is an eight-lane freeway with a posted speed limit of 70 miles per hour (mph). I-15 is located adjacent the western Project boundary.

SR-76 in the Project vicinity is a four-lane Major Road with a speed limit of 55 mph. SR-76 is located approximately 275 feet to the south of the northern portion of the site and directly adjacent to the southern area of the site. A distance of approximately 1.4 miles of eastbound SR-76 from the I-15 northbound ramp is four lanes in width. The SR-76 segment analyses used four total lanes for existing conditions.

The average daily trips (ADT) and roadway speed for SR-76, I-15 and other surrounding roadways relevant for the noise analysis are shown in Table 1-1.

Table 1-1
EXISTING TRAFFIC

Roadway			Existing ADT	Speed Limit (mph)
Road Type		**Segment**		
I-15				
	4M	E. Mission Road to SR-76	113,000	70
	4M	South of SR-76	107,000	
SR-76				
	4D	West of Old Highway 395 (Sage Road to 395)	22,700	55
	4D	I-15 Northbound Ramps to Pankey Road	10,600	
	4D	Pankey Road to Horse Creek Ranch Road	10,300	
	4D	Horse Creek Ranch Road to Rice Canyon Road	10,000	
Pankey Road				
	4.2A	SR-76 (Pala Road) to Shearer Crossing	3,700	25
	4.2A	Shearer Crossing to Old Highway 395	3,700	
Pala Mesa Drive				
	2.2F	Wilt/Sage Road to Old Highway 395	600	40
Old Highway 395				
	2.1A	Reche Road to Stewart Canyon Road	6,200	55
	2.1A	Stewart Canyon Road to Tecalote Drive	6,900	
	2.1A	Tecalote Drive to Pala Mesa Drive	7,100	

Composition information regarding I-15 and SR-76 was obtained from the truck traffic report on the Caltrans Traffic and Vehicle Data Systems Unit website (http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/index.htm).

The Caltrans information gives percentages of 3.0 percent medium truck (MT, double tires/two axles) traffic and 6.2 percent heavy truck (HT, three or more axles) traffic for I-15 and 8.6 percent medium and 4.65 percent heavy truck traffic for SR-76.

Consistent with the 2011- approved Campus Park and Meadowood projects, the traffic mix used for this noise analysis is shown in Table 1-2, Traffic Composition.

Table 1-2
TRAFFIC COMPOSITION

Roadway	Cars (%)	MT (%)	HT (%)
I-15	90	3	7
SR-76	86	9	5
Horse Ranch Creek Road	96	2	2
Pankey Road	96	2	2
Pala Mesa Drive	96	2	2
Old Highway 395	96	2	2

MT = Medium truck, HT = Heavy truck

Agricultural and on-site recreational noise sources are considered negligible due to distance and frequency of use.

The Rosemary's Mountain extractive facility is located east of the Project site, and is planned for expansion. The planned quarry extents are over 2,500 feet from the site, and would maintain a topographic intervening barrier between operations and the site. With the distance and the topographic barrier, quarry operation would produce less than significant noise at the site (trucks are part of the traffic noise considerations). As a result, quarry operations are not further discussed in this document.

1.3 Terminology, Methodology, and Equipment

a. Noise Measuring Methodology and Procedures

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 decibels (dB). The threshold of hearing for young people 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, they 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.

All noise level or sound-level values presented herein are expressed in terms of decibels with A-weighting, abbreviated "dBA," to approximate the hearing sensitivity of humans. Time-averaged noise levels are expressed by the symbol "L_{EQ}." L_{EQ} represents an average of the sound energy occurring over a specified period. In effect, L_{EQ} is the steady-state sound level containing the same acoustical energy as the time-varying sound that actually occurs during the same period. Unless a different time period is specified, L_{EQ} implies a period of one hour. Some of the data also may be presented as octave-band-filtered and/or A-octave-band-filtered data, which are a series of sound spectra centered about each stated frequency, with half of the bandwidth above and half of the bandwidth below each stated frequency. These data are typically used for machinery noise analysis and barrier-effectiveness calculations.

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 one-dB changes in sound levels, when exposed to steady, single-frequency ("pure-tone")

signals in the midfrequency (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 Community Noise Equivalent Level (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 produced during the evening and nighttime hours is factored in more significantly due to its disruption of an otherwise peaceful 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).

Measurement Methodologies

Typically, a "one-hour" equivalent sound level measurement (L_{EQ}, A-Weighted) is recorded for at least one noise-sensitive location on the site. During the on-site noise measurement, start and end times were recorded and vehicle counts were made for cars, medium trucks, and heavy trucks for the corresponding road segment(s). Supplemental sound measurements were made to further describe the noise environment of the site.

For measurements of less than one hour in duration, the measurement time must be long enough for a representative traffic volume to occur and the noise level (L_{EQ}) to stabilize; 15 minutes was sufficient for this purpose. The vehicle counts were then converted to one-hour equivalent volumes by using the appropriate multiplier. Other field data gathered include measuring or estimating distances, angles-of-view, slopes, elevations, roadway grades, and vehicle speeds. These data were checked against the available maps and records.

The following equipment was used to measure existing noise levels:

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

The sound level meter was field-calibrated immediately prior to the noise measurement, to ensure accuracy. All sound level measurements conducted and presented in this report, in accordance with the regulations, 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 are maintained with National Bureau of Standards traceable calibration, per the manufacturers' standards.

b. Noise Modeling Software

Traffic Noise Model

The Traffic Noise Model software, TNM Version 2.5, released in February 2004 by the U.S. Department of Transportation, was used for all traffic modeling in the preparation of this report. TNM calculates the daytime average Hourly Noise Level (HNL) from traffic data including road alignment, elevation, lane configuration, projected traffic volumes, estimated truck composition percentages, and vehicle speeds. Because much of the Project area would be paved should the project be approved, hard surface noise attenuation (resulting in less "softening" of noise than soft surface assumptions) is used in the analysis.

The model-calculated noise output is the one-hour L_{EQ}. This is equivalent to CNEL, with the use of 8 to 10 percent of the average daily traffic (considered to represent peak hour traffic; Caltrans Technical Noise Supplement, November 2009).

CADNA Computer Aided Noise Abatement

Modeling of the outdoor noise environment was accomplished using Computer Aided Noise Abatement (CADNA) Ver. 4.01, which 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 information (e.g., noise source data, barriers, structures, and topography) to create a detailed CAD model and uses the most up-to-date calculation standards to predict outdoor noise impacts.

c. Noise Calculations

A field traffic noise measurement was conducted at the Project site during the day on Wednesday, June 13, 2008. A second on-site noise measurement update was made on Monday, October 1, 2012. Both measurements were "one-hour" equivalent noise measurements. The original measurement made was for I-15 and was taken at the near the edge of I-15 approximately 170 feet south of the centerline of Pala Mesa Drive (currently unused overpass). The updated measurement was taken along SR-76 in open space north of SR-76 and east of Pankey Road. Both locations provided publicly accessible location with traffic viewing angles as unobstructed as reasonably possible at the site. The location was at grade, with the microphone positioned five feet above grade. Please refer to the aerial photo showing the noise measurement location (Figure 1-5, Off-site Noise Measurement Locations). A 15-minute continuously recorded sound level measurement was used to obtain an integrated and stable L_{EQ}

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Off-site Noise Measurement Locations

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Figure 1-5

to adjust and test the traffic noise model for reliability with site conditions. The calculated equivalent hourly traffic count during noise measurement, a complete tabular listing of all traffic data recorded during the sound measurement, and the TNM modeling comparison to the measurement are presented in Table 1-3, On-site Noise Measurement Conditions and Results, Table 1-4, On-site Traffic Count During Noise Measurement, and Table 1-5, Calculated Versus Measured Traffic Noise Data.

The noise measured on the original site visit adjacent the I-15 was 76.8 dBA L_{EQ}. The measurement near SR-76 conducted during the secondary site visit was 63.9 dBA.

The measurement and associated field data for the I-15 and SR-76 are shown in Table 1-3. Table 1-4 gives the on-site traffic counts for both measurements and Table 1-5 gives the modeling to traffic noise measurement comparison for the I-15 measurement.

Table 1-3
ON-SITE NOISE MEASUREMENT CONDITIONS AND RESULTS

I-15 (~170 feet south of Pala Mesa Drive)	
Date	Wednesday, June 13, 2008
Time	2:45 p.m. – 3:00 p.m.
Conditions	Clear skies, winds from the west at 3 to 5 mph, temperature in the mid 70s with low humidity.
Measured Noise Level	76.8 dBA L_{EQ}
SR-76 at Pankey Road	
Date	Monday, October 1, 2012
Time	11:45 a.m. – 12:00 p.m.
Conditions	Clear skies, winds from the west at 3 to 5 mph, temperature in the low 90s with low humidity.
Measured Noise Level	63.9 dBA L_{EQ}

Table 1-4
ON-SITE TRAFFIC COUNT DURING NOISE MEASUREMENT

Roadway	**Duration**		**Autos**	**MTs**	**HTs**	**Total**
I-15 (2008)	Measured	15 minutes	1,968	515	1,030	3,018
	Inferred	60 minutes	7,872	535	1,070	9,972
SR-76 (2012)	Measured	15 minutes	104	3	3	110
	Inferred	60 minutes	416	12	12	440

MT = Medium truck, HT = Heavy truck

Table 1-5
CALCULATED VERSUS MEASURED TRAFFIC NOISE DATA

Roadways	Measured	Calculated	Difference	Correction
I-15	76.8 dBA L_{EQ}	77.7 dBA L_{EQ}	0.9 dBA L_{EQ}	None Applied

Site traffic noise modeling accuracy within 2 dBA of measured site values is considered acceptable for future site traffic noise predictions.

Supplemental 15-minute off-site ambient noise measurements were made at five locations (labeled OS-1 through OS-5) near residences along Dulin Road and Pala Mesa Road on June 28, 2010 between 11:00 a.m. and 3:00 p.m. to provide a characterization of traffic noise levels.

These measurements, traffic counts for the time period, and site conditions are summarized in Table 1-6, Off-site Traffic Count During Noise Measurement, and Table 1-7, Off-site Noise Measurement Conditions and Results, June 28, 2010, below. The measurement locations are shown on Figure 1-5. These measurements were used to compute and approximate CNEL level for the measurement location based on normal 24-hour traffic distribution.

Table 1-6
OFF-SITE TRAFFIC COUNT DURING NOISE MEASUREMENT

Site #	Location	Duration		Autos	MTs	HTs	Total
OS-1	Dulin Road/ Avocado Vista Lane	Measured	17 min	15	0	0	15
		Inferred	60 min	53	0	0	60
OS-2	Dulin Road/ Lake Circle Drive	Measured	15 min	29	0	0	29
		Inferred	60 min	116	0	0	116
OS-3	Pala Mesa Drive/ Wilt Road	Measured	15 min	9	1	0	10
		Inferred	60 min	36	4	0	40
OS-4	Pala Mesa Drive/ Daisy Lane	Measured	15 min	19	3	0	22
		Inferred	60 min	76	12	0	88
OS-5	Pala Mesa Drive/ Almendra Court	Measured	15 min	22	1	0	23
		Inferred	60 min	88	4	0	92

Table 1-7
OFF-SITE NOISE MEASUREMENT CONDITIONS AND RESULTS
MONDAY JUNE 28, 2010

Location	Time	Conditions	Measured Noise (Hourly L_{EQ})	Calculated CNEL*
Dulin Road/ Avocado Vista Lane	11:11 AM - 11:28 AM	Overcast skies, winds <3 mph, temperature in the mid 70s with normal humidity	54.5	55.6
Dulin Road/ Lake Circle Drive[1]	2:31 PM - 2:50 PM	Overcast skies, winds at 5 mph, temperature in the mid 70s with normal humidity	64.0	64.4
Pala Mesa Drive/ Wilt Road	1:45 PM - 2:08 PM	Overcast skies, winds <3 mph, temperature in the mid 70s with normal humidity	51.2	51.9
Pala Mesa Drive/ Daisy Lane	1:09 PM - 1:24 PM	Sunny, winds <3 mph, temperature in the mid 80s with normal humidity	58.3	59.2
Pala Mesa Drive/ Almendra Court	12:16 PM - 12:31 PM	Overcast skies, winds <3 mph, temperature in the mid 70s with normal humidity	59.4	60.1

[1]The measurement at Dulin Road/ Lake Circle Drive includes a significant noise contribution from I-15.
*Based on normal traffic distribution patterns.

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2.0 NOISE SENSITIVE LAND USES AFFECTED BY AIRBORNE NOISE

2.1 Guidelines for the Determination of Significance

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:

a. 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 or 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 one 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 s.f.: 400 s.f.
(2) Net lot area 4,000 s.f. to 10 acres: 10 percent of net lot area
(3) Net lot area over 10 acres: 1 acre

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

b. Interior Locations:

45 dB (CNEL) except for the following cases:

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

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

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

2.2 Potential Noise Impacts

The Project proposes the construction of multi-family residential units (NSLUs) within PAs 2 and 3. The Project site would be subject to traffic noise from I-15, SR-76, and local roadways. In addition, the site would be subject to noise generated by neighboring uses on site. Construction and operational noise from other planned projects in the area, including Campus Park, the Palomar College extension campus, and Meadowood improvement construction activities, also could generate noise.

Off-site NSLUs include existing individual homes to the northeast and southeast. There also are residences south of the site beyond SR-76 on Dulin Road, and residences west of I-15 on Pala Mesa Drive. Finally, there are other planned residential developments in the vicinity of the Project, as noted above. As with the Project site NSLUs, these off-site areas would potentially be subject to noise from Project vehicular traffic and construction activities.

a. Potential Transportation Noise Conditions and Impacts

Table 2-1, Traffic Volume for Off-site Analysis, shows the ADT values for the off-site analyzed road segments. Selected road segments were chosen for noise analysis based on proximity to NSLUs. Thus, not all road segments associated with this project are analyzed for noise in this report. Table 2-2, Traffic Volumes for On-site Analysis, provides the year 2030 traffic volumes used in the on-site analysis.

Table 2-1
TRAFFIC VOLUMES FOR OFF-SITE ANALYSIS

Roadway		Segment	Existing ADT	Existing + Cumulative ADT	Existing + Cumulative + Project ADT
I-15					
	4M	E. Mission Road to SR-76	113,000	117,830	126,510
	4M	South of SR-76	107,000	122,840	133,430
SR-76					
	4D	West of Old Highway 395 (Sage Road to 395)	22,700	35,520	39,790
	4D	I-15 Northbound Ramps to Pankey Road	10,600	12,790	28,260
	4D	Pankey Road to Horse Creek Ranch Road	10,300	28,000	30,170
	4D	Horse Creek Ranch Road to Rice Canyon Road	10,000	23,100	25,270

Table 2-1 (cont.)
TRAFFIC VOLUMES FOR OFF-SITE ANALYSIS

Roadway		Segment	Existing ADT	Existing + Cumulative ADT	Existing + Cumulative + Project ADT
Pankey Road					
	4.2A	SR-76 (Pala Road) to Shearer Crossing	3,700	8,660	13,960
	4.2A	Shearer Crossing to Old Highway 395	3,700	5,780	7,960
Pala Mesa Drive					
	2.2F	Wilt/Sage Road to Old Highway 395	600	10,030	11,270
	2.2F	Old Highway 395 to Pankey Road	DNE	3,730	10,100
Horse Ranch Creek Road					
		North of SR 76 (Pala Road)	DNE		21,920
Old Highway 395					
	2.1A	Reche Road to Stewart Canyon Road	6,200	28,660	33,940
	2.1A	Stewart Canyon Road to Tecalote Drive	6,900	10,570	17,060
	2.1A	Tecalote Drive to Pala Mesa Drive	7,100	12,110	18,820

Table 2-2
TRAFFIC VOLUMES FOR ON-SITE ANALYSIS

Roadway		Segment	2030 + project (GPA) ADT
Pankey Road			
	4.2A	Pala Mesa Drive to Street A	11,140
	4.2A	Street A to Dwy #1	12,310
	4.2A	Dwy #1 to Dwy #2	16,720
	4.2A	Dwy #2 to Dwy #3	23,800
	4.2A	Dwy #3 to Pankey Place	26,850
	4.2A	Pankey Place to SR-76	16,050

Future noise levels from the on-site project roadways at on-site locations are shown in Table 2-3.

Table 2-3
YEAR 2030 PLUS PROJECT TRAFFIC NOISE LEVELS AT FUTURE RESIDENTIAL RECEIVERS — SCENARIO 1 AND SCENARIO 2 (COMPARABLE)

Location	Receiver Number	No Soundwall	With 5 ½-foot Soundwall
Receivers East of Pankey Road	R 01	68.8 CNEL	62.5 CNEL
	R 02	68.6 CNEL	63.7 CNEL
	R 03	69.0 CNEL	62.2 CNEL
	R 04	68.2 CNEL	62.4 CNEL
	R 05	67.1 CNEL	65.0 CNEL
	R 06	66.6 CNEL	63.2 CNEL
	R 07	66.7 CNEL	63.1 CNEL
	R 08	67.5 CNEL	63.5 CNEL
	R 09	67.5 CNEL	65.1 CNEL
	R 10	67.8 CNEL	62.4 CNEL
	R 11	68.0 CNEL	61.9 CNEL
Mixed-use core Residential Receivers West of Pankey Road	R 12	67.4 CNEL	58.7 CNEL
	R 13	65.9 CNEL	59.5 CNEL
	R 14	66.0 CNEL	62.2 CNEL
	R 15	67.7 CNEL	61.5 CNEL
	R 16	67.9 CNEL	62.0 CNEL
	R 17	66.8 CNEL	59.8 CNEL
	R 18	67.1 CNEL	58.7 CNEL
	R 19	67.8 CNEL	59.9 CNEL

Notes:
5.5-foot soundwall located around western edge of PA 3 along with 5.5-foot barriers on residential balconies in PA 3 for receivers east of Pankey Road
5.5-foot barriers around/on any exterior residential use area for mixed-use core residential receivers west of Pankey Road

i. Exterior Locations

On-site Effects. The Project site is below the freeway grade for much of the area; however, the site slopes upwards to the east. As shown on Table 1-3, existing conditions on site show ambient noise levels of approximately 77 dBA L_{EQ} near I-15. Project NSLUs in the multi-family housing and residential units in the mixed-use core area would, therefore, potentially be subject to significant exterior traffic noise impacts. As shown in Table 1-4, existing conditions on the site show ambient

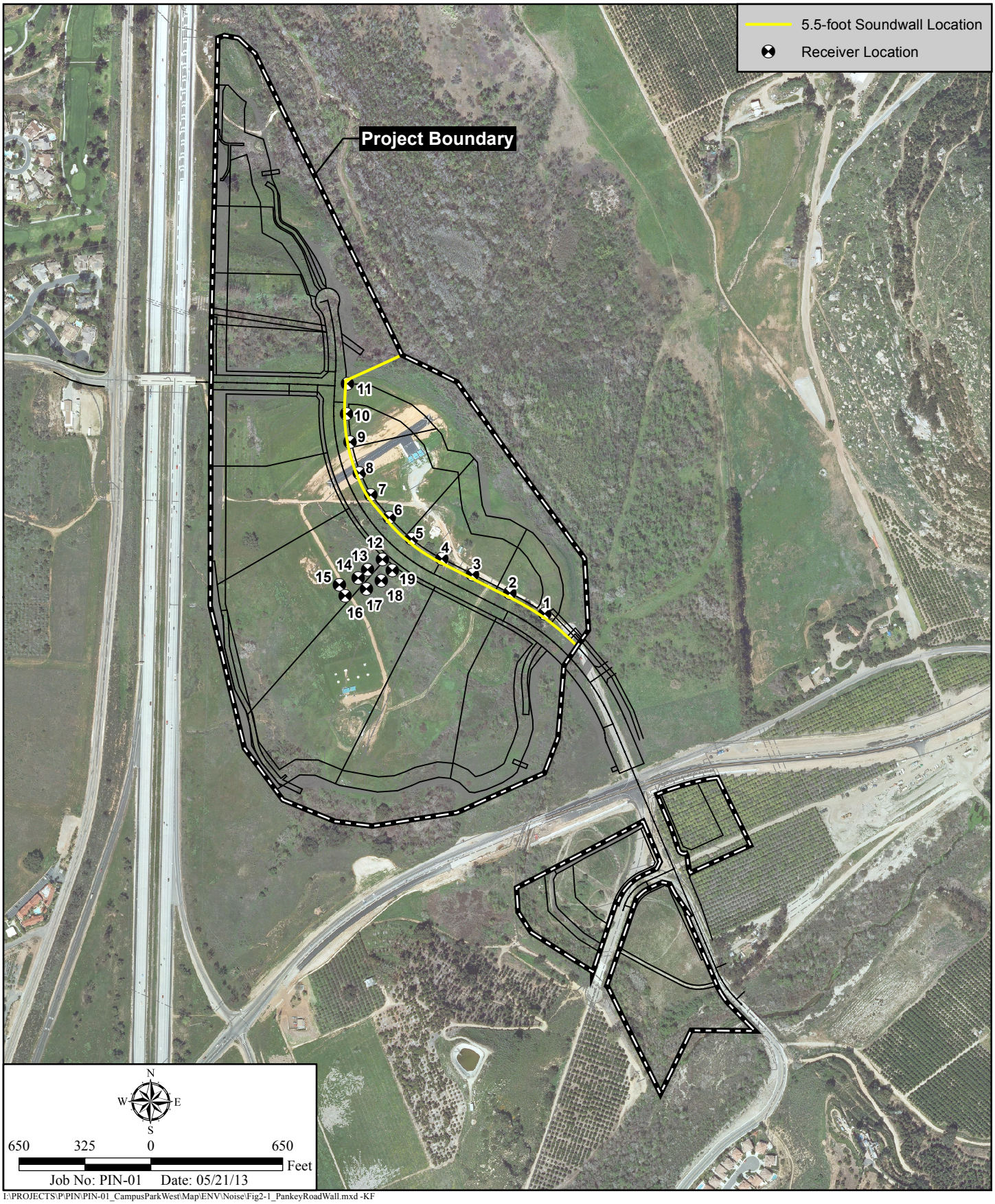
noise levels of approximately 64 dBA near SR-76. With the addition of future traffic, NSLUs in this area would potentially be subject to significant exterior traffic noise impacts.

The site would be partially leveled with balanced cut and fill to support the proposed development. This would result in some topographic shielding of the site from the final slopes created by the balanced cut and fill. This shielding would not significantly attenuate the overall freeway noise to the receptors modeled along the western areas of the planned buildings, however, because final site topography would allow direct line of sight from I-15 at the closest freeway locations to the level building pad areas. As a result, topography by itself would result in a negligible change in the roadway noise impacts to the residential areas.

As noted in the Introduction, two design scenarios are evaluated in this document. Scenario 1 assumes that Caltrans right-of-way abutting the southern edge of PA 2 and the northern edge of PA 5 would remain in its current condition. Scenario 2 assumes that these properties are incorporated into the Project. Although no use is proposed for the property north of SR-76 (excluding a Project monument sign), in PA 5 an additional 10,000 s.f. of general commercial uses are assumed. In order to identify worst-case traffic generation, this use is assumed to be 16-fueling spaces gas station. These uses are projected to result in a fairly small change to Scenario 1 numbers (2558 overall trips) relative to the overall Project. Of these trips, 537 would be daily primary trips, 1,305 would be daily diverted trips, and 716 would be daily pass-by trips. These trips are only anticipated to show changes to traffic loading on the NB and SB I-15/SR-76 ramps, on the segment of SR-76 between I-15 and Horse Ranch Creek Road, and on Pankey Road from Shearer Crossing to Old Highway 395. All other Project uses, traffic generation, and travel patterns remains identical between the scenarios. Modeling for Scenario 2, which included the 537 additional daily primary trips generated by the gas station, resulted in comparable noise levels to that generated by the modeling for Scenario 1 (specifically, a less than 0.1 dBA difference at nearby NSLUs). As such, traffic noise levels at NSLUs located near the Proposed Project including the Scenario 2 additions would be comparable should the project be approved, regardless of which scenario was selected.

Table 2-3, Year 2030 Plus Project Traffic Noise Levels at Future Residential Receivers, shows the calculated future noise levels for 2030. The numbered receiver locations are shown on Figure 2-1, 5.5-foot Wall Along Pankey Road, A six-foot high fire control wall is included in the Project design along the southwestern southeastern outer edge of area PA 2 and the northern edge of PA 5. Modeling was performed both with and without the firewall with minimal change noted, so modeling is based on the worst-case no firewall condition.

The ultimate configuration of general commercial structures in PA 2 is unknown at this time. As a result, assumptions regarding potential for noise shielding of PA 3 structures provided by those uses is speculative. Modeling without PA 2 uses in place shows that all analyzed receiver locations to the immediate east of Pankey Road along the perimeter of PA 3 and Pankey Road would have noise impacts in excess of the County's exterior transportation noise impact level of 65 CNEL for multi-family uses. For the same reason, all analyzed receivers located in the mixed-use core component in PA 2 (west of Pankey Road) demonstrate noise impacts in excess of 65 CNEL. These impacts are considered significant.



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5.5-foot Wall Along Pankey Road

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Figure 2-1

Modeling was then completed assuming a six-foot barrier on Pankey Road west of PA 3. All structures were shown as attenuated, with additional shielding provided beyond that required. A smaller wall was then modeled. As shown in Table 2-3, modeling was then conducted with a 5.5-foot high sound attenuation barrier along the eastern side of Pankey Road. Table 2-3 shows the results of this modeling as compared to the unattenuated noise at receivers within the Proposed Project site. With this sound barrier in place, all ground-level receivers east of Pankey Road would have less than significant impacts with regards to noise. Second-floor residential balconies east of Pankey Road would also require 5.5-foot noise barriers to attenuate noise to below significant levels. R 09 shows a projected noise level of 65.1 dB. This is within the normal range of error. The modeled noise wall location is shown on Figure 2-1.

Modeling was also conducted for the 35 residences that would be located within the mixed-use core in PA 2 to determine what the potential noise impacts would be at these sensitive receptors. As shown in Table 2-3, all analyzed receiver locations in this area would have noise impacts in excess of the County's exterior transportation noise impact level of 65 CNEL for multi-family uses when no attenuation measures are included. Traffic noise modeling was done to determine if a 5.5-foot barrier around these receivers would diminish noise levels to below a level of significance, and this barrier did effectively reduce noise levels at these locations. Thus, a 5.5-foot barrier located around exterior use areas (currently assumed to be balconies) within the mixed-use core to the west of Pankey Road would provide adequate noise attenuation without the consideration of buildings or other noise shielding elements.

Off-site Effects. Similar to on-site conditions, additional traffic on area roadways has the potential to affect off-site residences. The roads for which the Project TIA projected substantial variation from existing conditions were reviewed. As shown on Table 1-7, existing noise levels along Dulin Road range from 55.6 to 64.4 CNEL (at one location close to the I-15) at the measured locations. Along Pala Mesa Road west of I-15, conditions are somewhat quieter, with measured locations ranging from 51.9 to 60.1 CNEL (with the louder locations located closer to I-15). With Project development, noise levels would rise in this area.

Analysis of off-site impacts is based on worst-case conditions without consideration of topographic, vegetative, or structural shielding along the roadway. As illustrated on Table 2-6, Distance to Noise Contour Lines from the Centerlines of Roadways, noise levels along these roadways are projected to be 61.8 to 63.8 CNEL for Pala Mesa Drive, and 58.6 CNEL for Dulin Road (segments not near the 1-15) one hundred feet from the roadway centerline. The levels on Pala Mesa Drive would exceed thresholds (60 dBA) for exterior use areas for single family residential uses. Figure 2-2 shows the Existing + Cumulative 60 CNEL traffic noise contours along with the Existing + Cumulative + Project traffic noise contours.

A field survey of the existing residences along Dulin Road and Pala Mesa Drive showed that all homes are oriented with either the front of the house (driveways and garages) facing the roadway or have fencing facing the roadway shielding the outdoor use areas. Specific areas are discussed below.

All of the residences on the northwest side of Dulin Road face the roadway. The worst-case 60 CNEL (for single-family uses) contour passes in front of or through the front section of the houses and does not include associated outdoor use areas. The residences on the southeastern side of the road from south of Shearer Crossing to near the eastern arm of Lake Circle Drive

have the backs of homes shielded by noise control fences. The reader is referred to Figure 2-3, Dulin Road Residences with Exterior Noise Control, for photographs of the noise control fences in this area.

Residences along Pala Mesa Drive likewise principally face the roadway, with the outdoor use areas either fully or nearly beyond the 60 CNEL contour (in either existing or existing plus project conditions) and shielded by the residence. There are a few exceptions on the southern side of the road adjacent to and facing Old Highway 395 and very close to I-15 (e.g., APN 125 050 6300). Noise from I-15 in this area is so substantial that noise from vehicles on Pala Mesa Drive presents a negligible contribution to noise at this location.

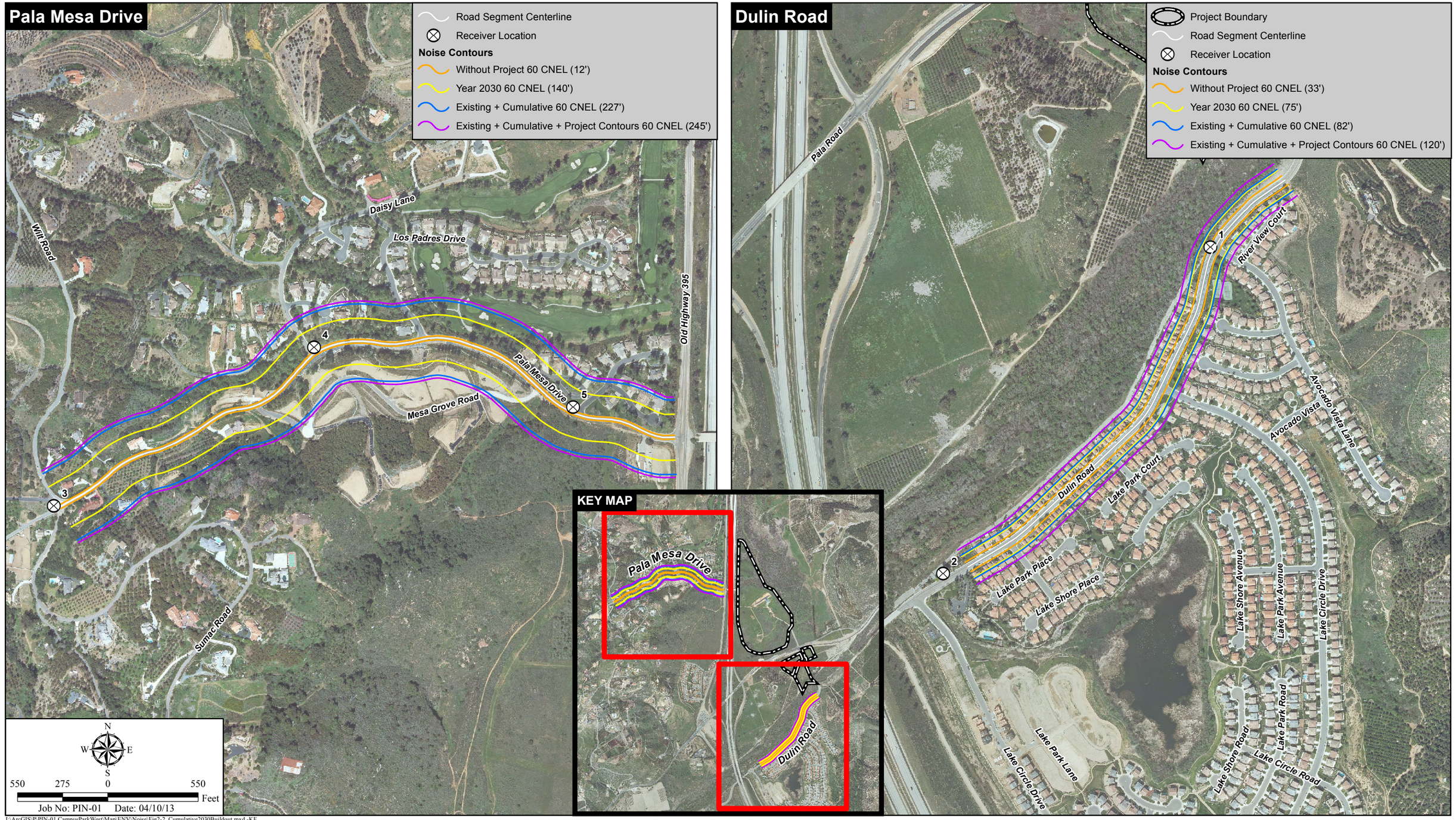
Further to the west are APNs 108 433 3400 and 108 433 0100. The outdoor use areas of these parcels would have clear views of Pala Mesa Drive, but both have solid noise control walls surrounding the areas. The reader is referred to Figure 2-4, Pala Mesa Drive Residences with Exterior Noise Control, for photographs of the noise control fences in this area. One residence is obscured by trees but the fence can be seen in gaps between branches. Noise impact modeling was done for residences with outdoor use areas shielded by existing fencing and walls.

Modeled NSLUs were chosen due to sensitivity and proximity to roadways that would be affected. Table 2-4 compares modeled noise levels in different development conditions for specified receivers. All outlined residences on Dulin Road, Pala Mesa Drive and Shearer Crossing (see Figure 2-3, Figure 2-4 and Figure 2-5, Shearer Crossing Residence with Exterior Noise Control**)** already have attenuation walls/fencing in place as confirmed with a site visit, and modeling for these receivers included these walls. As the project would not have a 60 CNEL or greater noise level associated when modeled with Existing + Project traffic ADT, no barriers are required based on Campus Park West implementation.

Table 2-4
NOISE LEVELS AT NSLUs
SCENARIO 1 AND SCENARIO 2 (COMPARABLE)
CNEL

NSLU	Existing	Existing + Project	Change with Project	Existing + Cumulative	Existing + Project + Cumulative	Change with Project
Pala Mesa Drive	47.4	52.3	4.9	59.7	60.2	0.5
Tennis Court	55.8	57.8	2.0	57.7	59.1	1.4
Dulin Residence 1	47.7	49.7	2.0	49.6	51	1.4
Dulin Residence 2	48.1	50.1	2.0	50	51.4	1.4
Dulin Residence 3	48.0	50.0	2.0	50	51.3	1.3
Dulin Residence 4	47.6	49.6	2.0	49.5	50.9	1.4
Dulin Residence 5	47.7	49.7	2.0	49.6	51	1.4
Shearer Crossing Residence (existing barrier)	50.9	52.9	2.0	52.8	54.1	1.3

*Note: All of the above residences currently have a 6 foot or higher soundwall in place which was incorporated into the modeling. The tennis court has no attenuation barrier in place.
See Table 1-1 for mph associated with noise modeling for specified NSLUs in this table.



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Comparison of Existing + Cumulative and Existing + Cumulative + Project Noise Contours

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Figure 2-2

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Dulin Road Residences With Exterior Noise Control

CAMPUS PARK WEST

Figure 2-3

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Pala Mesa Drive Residences With Exterior Noise Control

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Figure 2-4

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Shearer Crossing Residence with Exterior Noise Control

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Figure 2-5

ii. Interior Locations

The County requires that interior noise levels not exceed 45 CNEL for habitable residential space. It is generally accepted that modern construction provides a minimum 15 CNEL and 15 dBA L_{EQ} reduction in exterior to interior noise. Therefore, any building located completely outside the 60 CNEL contour is assumed to be in compliance with a maximum interior noise level of 45 CNEL habitable interior spaces.

On-site Effects. Based on analysis of the current conceptual development plans, on-site multi-family residences may be subject to an exterior traffic noise impact greater than 65 CNEL which based on a 15 CNEL exterior to interior reduction may have interior levels greater than 50 CNEL, as noted above. Specifically, all potential residential uses west of Pankey Road in PA 2, and east of Pankey Road in PA 3 could be subject to potentially significant interior noise impacts. Mitigation through the incorporation of enhanced building elements would be required.

Off-site Effects. As noted above, off-site areas potentially affected were assessed with a site visit and soundwalls were confirmed to exist at all residences. Since the exterior sound is assumed to be appropriately attenuated, the interior sound also would fall within threshold limits. No impact is identified.

b. Design Considerations and Mitigation Measures

i. On-site Exterior Locations

Mitigation to lower significant impacts to less than significant levels include the following:

1. For the mitigation of 2030 traffic noise impacts to PA 3 residential units, a 5.5-foot-high sound attenuation barrier would be required along Pankey Road shown on Figure 2-1. The barrier would be sited along the eastern side of Pankey Road (excluding driveway entrances) for the length of the multi-family housing area with returns to the north and south. The wall should follow around the curved portion of the driveway entrances terminating where it would run parallel to the entrance. The final barrier shall conform to the following standards:

    - The sound attenuation fence/wall must be solid. It can be constructed of masonry, wood, plastic, fiberglass, steel, or a combination of those materials, as long as there are 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 1-inch total thickness or have a density of at least 3 ½ pounds per s.f. 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 1-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.

2. For exterior impacts to outdoor balconies in PA 2 and PA 3, the traffic noise model demonstrated that a 5.5-foot high soundwall constructed on the balconies within these PAs would reduce noise to below the 65 dBA exterior noise threshold for multi-family uses. The top portion of these barriers could be made of a transparent material such as glass or clear plastic as described above, if it is desirable to preserve a view.

    - This 5.5-foot balcony noise control barrier is without consideration of any shielding provided by the buildings or additional attenuation due to distance. The final building design may provide substantial shielding thus reducing the final required barrier heights necessary to provide compliance with the 65 CNEL exterior requirements. The applicant may provide an updated analysis by a County-approved noise consultant demonstrating compliance for all required exterior outdoor use areas with the County 65 CNEL requirement completed to the satisfaction of the Director of the DPLU to approve a lower height balcony noise control barrier.

3. Mitigation for on-site interior noise impacts would be accomplished through incorporation of enhanced building elements (i.e., thicker dual-paned windows with spacing of a ½ inch or greater and enhanced wall designs). The Applicant shall grant to the County of San Diego a noise easement for any planned residential use areas (mixed or multi-family). The easement shall require an acoustical analysis by a County-approved noise consultant demonstrating interior noise compliance to 45 CNEL or less in all habitable spaces per Title 24 (California Building Code) for the second story or higher living areas of all multi-family and mixed-use core area homes on the Project site; completed to the satisfaction of the Director of the DPLU. If the elevated exterior noise requires that windows be in the closed position to provide interior noise control, the design for the structure must also specify a forced air ventilation system to provide a habitable interior environment without reliance on an open window condition, as specified in the State Building Code and IBC.

2.3 Off-site Direct and Cumulative Noise Impacts

A comparison of noise levels generated in the Existing (as modeled) and the Existing + Project conditions are shown in Table 2-5, and the Existing + Cumulative and Existing + Cumulative + Project conditions are shown in Table 2-6. Both tables provide the distance to noise contour lines from the centerlines of roadways (without consideration for topography).

a. Direct Noise Impacts

As shown on Table 2-5, Existing + Project traffic would not increase noise to greater than 60 CNEL at a distance of 100 feet from any modeled roadway, where it does not currently exceed that threshold. For those roadways where traffic noise already exceeds 60 CNEL, project

related traffic would double the existing sound (increase of 3 CNEL) at one location—along SR-76 between the I-15 Northbound Ramps and Pankey Road. There are no NSLUs in this area. Therefore, direct impacts would be less than significant.

b. Cumulative Noise Impacts

Noise levels under Existing + Cumulative + Project conditions would exceed 60 CNEL along all modeled roadways (refer to Table 2-6). The change between Existing and Existing + Cumulative + Project conditions would exceed three CNEL along SR 76 from the I-15 Northbound Ramps to Rice Canyon Road, Pankey Road from SR-76 to Old Highway 395, Pala Mesa Drive from Wilt/Sage Road to Old Highway 395, and Old Highway 395 from Reche Road to Pala Mesa Drive. There are, however, no NSLUs adjacent to SR 76 or the portion of Pala Mesa Drive from Old Highway 395 to Pankey Road; therefore, no cumulative noise impacts are identified in those locations. The project's contribution to the noise increase along the portion of Pala Mesa Drive from Wilt/Sage Road to Old Highway 395 is 0.5 dBA and its contribution along Pankey Road from Shearer Crossing to Old Highway 395 is 1.4 dBA; these contributions are not considered to be cumulatively considerable. The project would result in an increase of 2.4 dBA along Pankey Road from SR-76 to Shearer Crossing. As detailed in Section 2.2a.i, however, these residences already have attenuation walls/fencing in place. The project would result in an increase of 2.0 dBA along Old Highway 395 from Stewart Canyon Road to Pala Mesa Drive; however, the noise from I-15 in this area is so substantial that noise from Old Highway 395 presents a negligible contribution to noise at this location. Based on this information, the project would not result in a cumulatively considerable contribution to potential noise impacts in the area.

Table 2-5
DIRECT PROJECT NOISE IMPACTS

Roadway		Existing Conditions				Existing + Project Conditions				
	Segment	CNEL @ 100 ft. (dBA)	70 CNEL (ft.)	65 CNEL (ft.)	60 CNEL (ft.)	CNEL @ 100 ft. (dBA)	Change at 100 ft (dBA)	70 CNEL (ft.)	65 CNEL (ft.)	60 CNEL (ft.)
I-15*										
	E. Mission Road to SR-76	81.6	595	1050	1720	82.0	0.4	725	1400	2480
	South of SR-76	81.4	580	1025	1690	81.8	0.4	625	1100	1175
SR-76*										
	West of Old Highway 395	71.9	130	305	620	72.6	0.7	170	370	810
	I-15 Northbound Ramps to Pankey Road	68.6	72	175	411	72.5	3.9	168	364	800
	Pankey Road to Horse Ranch Creek Road	68.5	70	172	390	69.3	0.8	77	220	440
	Horse Ranch Creek Road to Rice Canyon Road	68.3	68	168	380	69.2	0.9	75	210	430
Pankey Road										
	SR-76 (Pala Road) to Shearer Crossing	54.5	IRW	9	28	58.4	3.9	7	22	69
	Shearer Crossing to Old Highway 395	54.5	IRW	9	28	59.0	4.5	IRW	32	98
Pala Mesa Drive										
	Wilt/Sage Road to Old Highway 395	50.6	IRW	IRW	11	57.1	6.5	IRW	23	60
	Old Highway 395 to Pankey Road*	-	-	-	-	60.9	-	22	48	121
Horse Ranch Creek Road (Old Pankey Place)*										
	North of SR 76 (Pala Road)	-	-	-	-	-	-	-	-	-
Old Highway 395										
	Reche Road to Stewart Canyon Road	64.7	30	93	295	67.4	2.7	55	173	546
	Stewart Canyon Road to Tecalote Drive	65.2	33	105	331	68.1	2.9	64	203	643
	Tecalote Drive to Pala Mesa Drive	65.3	34	107	339	68.2	2.9	66	208	659

Note: Contour distances do not consider topographic variation, which could reduce noise levels relative to stated levels
- = Roadway does not exist at present
IRW = The CNEL contour indicated exists within the width of the roadway.
*No sensitive receptors; information provided for general area planning only

Table 2-6
NEAR TERM CONDITIONS: DISTANCE TO NOISE CONTOUR LINES FROM THE CENTERLINES OF ROADWAYS (NO TOPOGRAPHICAL CONSIDERATION)

Roadway	Existing	Existing + Cumulative Conditions				Existing + Cumulative + Project Conditions					
Segment	CNEL @ 100 ft. (dBA)	CNEL @ 100 ft. (dBA)	70 CNEL (ft.)	65 CNEL (ft.)	60 CNEL (ft.)	CNEL @ 100 ft. (dBA)	Change with Project at 100 ft (dBA)	Change at 100 ft. from Existing (dBA)	70 CNEL (ft.)	65 CNEL (ft.)	60 CNEL (ft.)
I-15*											
E. Mission Road to SR-76	81.6	81.9	710	1370	2480	82.2	0.3	0.6	660	1155	1875
South of SR-76	81.4					82.4	1.0	1.0	668	1152	1870
SR-76*											
West of Old Highway 395	71.9	73.8	200	420	830	74.3	0.5	2.4	220	470	890
I-15 Northbound Ramps to Pankey Road	68.6	69.4	80	180	475	72.9	3.5	4.3	163	425	868
Pankey Road to Horse Ranch Creek Road	68.5	72.8	174	375	740	73.1	0.3	4.6	175	390	775
Horse Ranch Creek Road to Rice Canyon Road	68.3	72.0	140	340	670	72.3	0.3	4.0	155	366	762
Pankey Road											
SR-76 (Pala Road) to Shearer Crossing	54.5	58.2	IRW	24	74	60.6	2.4	6.1	IRW	34	128
Shearer Crossing to Old Highway 395	54.5	59.0	IRW	28	82	60.4	1.4	5.9	IRW	32	120
Pala Mesa Drive											
Wilt/Sage Road to Old Highway 395	50.6	64.5	IRW	82	227	65.0	0.5	14.4	13	98	245
Old Highway 395 to Pankey Road*	-	58.6	IRW	24	70	62.0	3.4	-	18	55	130

Table 2-6 (cont.)
NEAR TERM CONDITIONS: DISTANCE TO NOISE CONTOUR LINES FROM THE CENTERLINES OF ROADWAYS (NO TOPOGRAPHICAL CONSIDERATION)

Roadway	Existing	Existing + Cumulative Conditions				Existing + Cumulative + Project Conditions					
Segment	CNEL @ 100 ft. (dBA)	CNEL @ 100 ft. (dBA)	70 CNEL (ft.)	65 CNEL (ft.)	60 CNEL (ft.)	CNEL @ 100 ft. (dBA)	Change with project at 100 ft (dBA)	Change at 100 ft. from Existing (dBA)	70 CNEL (ft.)	65 CNEL (ft.)	60 CNEL (ft.)
Horse Ranch Creek Road (Old Pankey Place)*											
North of SR 76 (Pala Road)	-	-	-	-	-	-	-	-	-	-	-
Old Highway 395											
Reche Road to Stewart Canyon Road	64.7	74.1	122	280	600	72.1	-2.0	7.4	125	327	660
Stewart Canyon Road to Tecalote Drive	65.2	67.0	65	140	325	69.1	2.1	3.9	96	215	430
Tecalote Drive to Pala Mesa Drive	65.3	67.6	70	160	352	69.6	2.0	4.3	98	222	470

Note: Contour distances do not consider topographic variation, which could reduce noise levels relative to stated levels.
*No sensitive receptors; information provided for general area planning only.
- = Roadway does not exist at present
IRW = The CNEL contour indicated exists within the width of the roadway.

c. Design Considerations and Mitigation Measure Calculations

There are no design considerations identified for this topic and no mitigation is required as all projected impacts would be less than significant.

3.0 PROJECT-GENERATED AIRBORNE NOISE

3.1 Guidelines for the Determination of Significance

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 3-1, San Diego County Code Section 36.404 Sound Level Limits.

Table 3-1
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 three decibels. The ambient noise level shall be measured when the alleged noise violation source is not operating.

(b) The sound level limit at a location on a boundary between two zones is the arithmetic mean of the respective limits for the two zones; provided however, that the one-hour average sound level limit applicable to extractive industries, including but not limited to

borrow pits and mines, shall be 75 decibels at the property line regardless of the zone which the extractive industry is actually located.

(c) S88 zones are Specific Planning Areas which allow for different uses. The sound level limits in Table 36.404 above that apply in an S88 zone depend on the use being made of the property. The limits in Table 36.404, subsection (1) apply to property with a residential, agricultural, or civic use. The limits in subsection (3) apply to property with a commercial 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 six 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 eight-hour period, between 7:00 a.m. and 7:00 p.m., when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is being received.

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 3-2, San Diego County Code Section 36.410 Maximum Sound Level (Impulsive) Measured at Occupied Property, 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 3-2 are as described in the County Zoning Ordinance.

Table 3-2 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 3-3, San Diego County Code Section 36.410 Maximum Sound Level (Impulsive) Measured at Occupied Property for Public Road Projects, 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 3-3 are as described in the County Zoning Ordinance.

Table 3-3 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.

3.2 Potential Operational Noise Impacts

a. Potential 2030 Noise Conditions Without Mitigation

This section focuses on non-transportation noise.

On-site Effects

The Project proposes mixed-use core, general commercial, limited impact industrial, and multi-family residential uses all in proximity to one another. Potential commercial uses in the mixed-use core area which might have a noise impact on the mixed-use core residential include but are not limited to parking lots, rooftop mechanical equipment, automotive shops (with compressors, impact wrenches, and dynamometers), restaurants/nightclubs (with patron and music noise), and grocery stores (with refrigeration and freezer compressors). Impacts also could result from other adjacent residential heating, ventilation, and air conditioning (HVAC) units. If nighttime entertainment at cafes or other uses in the mixed-use core area uses outdoor amplified music, property line noise impacts may occur in excess of ordinance allowable levels and would often exceed 70 dBA L_{EQ} at property lines. Even indoor nighttime entertainment venues can have excessive property line impacts if they have indoor music and prop outside doors open. Pending identification of specific lessors, impacts to residential uses in areas PAs 2 and 3 and other commercial uses in areas PAs 4 and 5 are conservatively assessed as significant.

An additional on-site use that may involve a potential noise source is the sheriff's station proposed in the limited impact industrial area of the Project. Siren noise from emergency vehicles leaving the sheriff's station would be exempted from County thresholds according to the Sections 36.402 and 36.417 of the County Noise Ordinance. Additionally, any noise related to potential helicopter activity during emergency response is also exempted. Sirens of vehicles to be used during specified shifts must be tested at the start of every shift, however, and this would be considered part of normal business operations. As such, it would be subject to County noise thresholds.

The Sheriff has suggested that a new facility in this area could have a total of 165 sworn and non-sworn personnel. Based on the ratio of sworn to non-sworn staff at the nearby Fallbrook sheriff's station, it is assumed that a total of 148 sworn and 17 professional staff would work at this station (90 percent sworn, 10 percent non-sworn). Assuming two 12-hour shifts (6:00 a.m. to 6:00 p.m. and 6:00 p.m. to 6:00 a.m.) in a 24 hour period, as is in practice at the Fallbrook station, and two sworn staff per vehicle tested, it is estimated that a total of 37 cars per shift would be conducting siren testing.

The Department of Justice Law Enforcement and Testing Standards notes that the loudest siren should be 120 dBA at 3 meters from the front of the siren. It further notes that sirens are highly directional and are normally mounted in the front facing grill area of the vehicle.

Four-second tests were assumed for 37 siren tests in one hour. This equates to 109.3 dBA L_{EQ} at 3 meters from the test location. Since one shift would start at 6:00 a.m., it is assumed that siren testing would occur between 5:00 a.m. and 7:00 a.m. (being completed as officers either come

off shift, or as others prepare to leave on shift). Depending on the location of the station, the size and orientation of the parking lot, and the presence of intervening buildings, the siren testing may exceed the nighttime hourly allowable level at the nearby residences. Potential noise impacts would therefore be significant.

Siren test noise at the on-site Sheriff's station shall be controlled through site plan design process using one of the following two options:

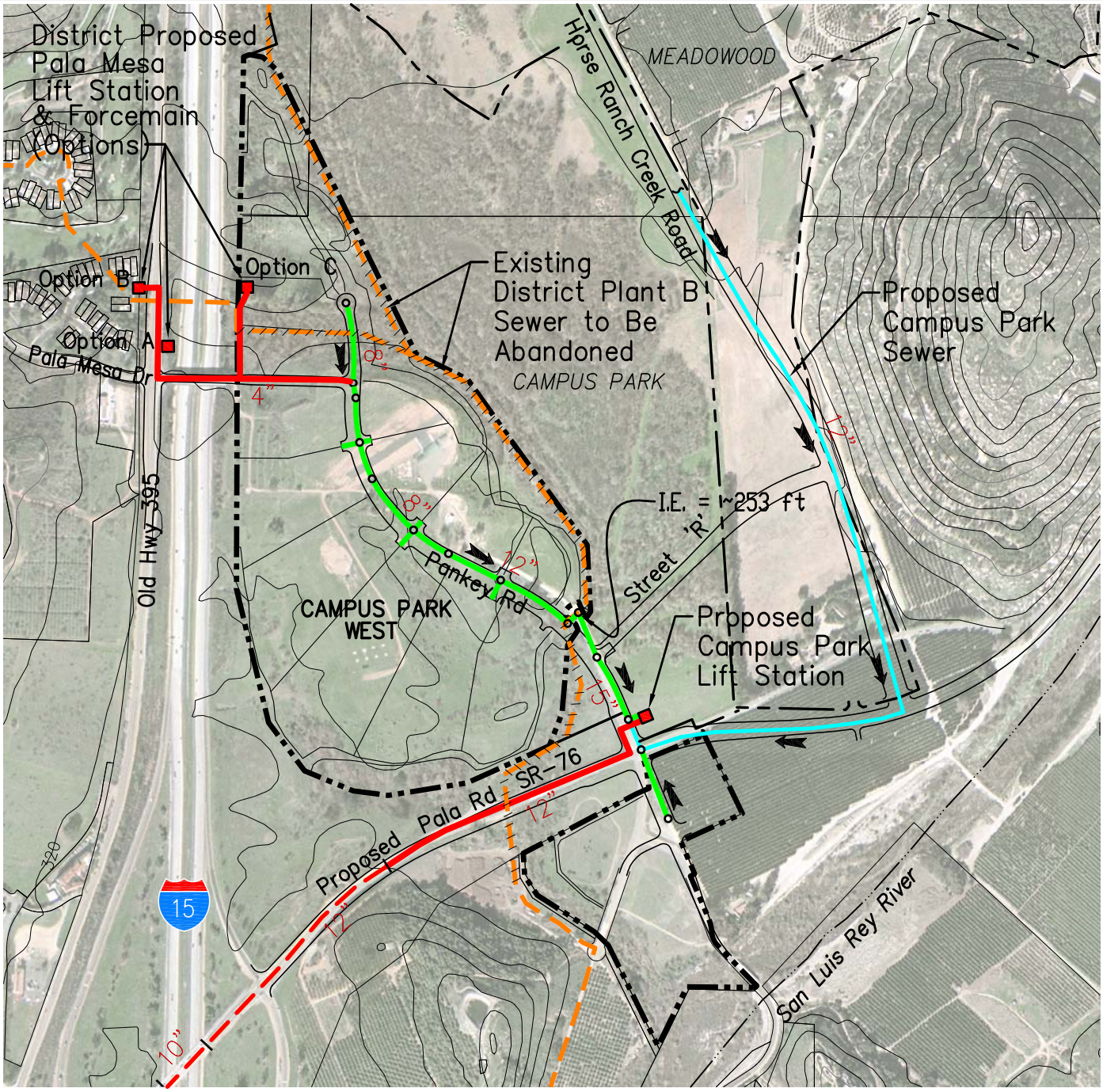
1. Selecting the location of the sheriff's station such that it is not in close proximity to the residences, and using an assumed on-site building as an intervening noise control structure.

2. Constructing the parking area further away from the residences, and designating a specific siren test location. The location could be selected so that the sirens would face away from the residential structures, and a wall could be erected on both sides of the test area to further attenuate noise.

A final noise study for the sheriff's station shall be prepared during site plan approval. The report shall finalize the noise control requirements based on actual building design specifications.

Scenario 2 of the Proposed Project also involves one new potential noise source with potential effects. The additional southern parcel may be developed with a roadside service; options for the service are either a fast food restaurant or a gas station which may include a convenience store and carwash. In order to provide a worst case analysis, a carwash with a loud blow dry system has been used as a basis for analysis. The typical loudest carwash is characterized by an air blast dryer that creates a worst case noise of 75 dBA at 25 feet. The typical blower dry cycle is less than 60 seconds per car, if the carwash were to clean 20 cars per hour this would result in a noise impact of 72.7 dBA L_{EQ}. This is attenuated to less than 60 dBA L_{EQ} at 85 feet. Any adjacent property line location will be at a greater distance. Potential noise impacts would therefore be less than significant.

RMWD has requested that the Project environmentally clear some actions proposed for their overall system (see Figure 3-1, Project Vicinity Sewer Facilities). In order to support these actions, a pump station also would be needed at the northerly extent of Campus Park West. Three alternative locations for this northerly station would be evaluated, but only one would be required. One of these locations would be sited in the limited impact industrial uses north of Pala Mesa Drive. (The two potential off-site locations are discussed below.) Regardless of location, the RMWD pump station would be a submersible package sewer. An above-grade motor control center and electrical panel would be required. Equipment would be shielded by an approximately three foot by three foot by four foot fiberglass reinforced plastic enclosure, with a control panel mounted on the wall. This would be located on a pad not to exceed 10 by 10 feet in size. With any of the potential pump locations, this RMWD pump would result in less than significant noise impacts to surrounding houses. The only portion of the pump station that would produce potentially audible noise is the piping for the pump which comes above ground, yet is located below grade in a covered pit. The noise associated with it would be inaudible from a



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Project Vicinity Sewer Facilities

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Figure 3-1

distance greater than 10 feet away, and the nearest NSLU is a residence located more than 50 feet away from the closest proposed pump location. Potential noise impacts would therefore be less than significant.

Off-site Effects

The sheriff's station siren testing discussed above as an on-site use with potential on-site noise effects requires proximity for impacts to occur. At its closest potential location to off-site NSLUs, the Sheriff station could be anywhere from 650 to 1,850 feet from off-site residences. At those distances, siren testing noise would not be above ambient noise levels (i.e., less than 50 dBA L_{EQ}). Therefore, although anticipated to be periodically audible, impacts to off-site residential uses west of I-15 or further away would not exceed the thresholds and would be less than significant.

Campus Park West would utilize an off-site pump station for the sewer needs of the development. This pump station (to be constructed by approved Campus Park) would be sited on Campus Park property in the northeast quadrant of the Pankey Road/SR-76 intersection. This Campus Park-installed pump station would be sited on a 0.2-acre site north of SR-76 and east of Pankey Road. The sewer lift station would pump all wastewater generated by the Project to an existing 12-inch force main in SR-76. As part of the approved project, preliminary details were provided for design of the Campus Park pump station. Three structures were proposed: (1) a lift station wet well for influent sewage and three submersible pumping units, (2) emergency storage to accommodate six hours of average daily sewage flow, and (3) a valve vault. A number of pump station elements would be located below grade. These would include the pump station wet well, with the top of the wet well set at finished grade; the emergency storage structure concrete vaults; and liquid holding vaults with only access shafts at grade. Above-grade facilities would include an emergency bypass connection, and an emergency generator (sized to run two pumps in addition to all auxiliary electrical and mechanical systems). The preliminary size of the generator is 60 kilowatts. The only portion of the pump station that would produce potentially audible noise is the piping for the pump which comes above ground, yet is located below grade in a covered pit. The noise associated with it would be inaudible from a distance greater than 10 feet away. There are no residences or NSLUs located in close proximity to the proposed pump location (including PA 3); therefore, potential noise impacts would therefore be less than significant.

As noted above, in the On-site Effects portion of this section, RMWD has requested that the Project environmentally clear some actions proposed for their overall system. The two additional alternative locations are also north of Pala Mesa Road, and are could be located west of I-15. West of I-15, the southernmost alternative site is located between Old Highway 395 and I-15 and the northernmost site is located west of Old Highway 395 (see Figure 3-1). For the reasons described above (size, shielding, etc.), the RMWD pump would result in less than significant noise impacts to surrounding houses. The only portion of the pump station that would produce potentially audible noise is the piping for the pump which would be in a covered sump. The noise associated with it would be inaudible from a distance greater than 10 feet away, and the nearest NSLU is a residence located more than 50 feet away from the closest proposed pump location, west of Old Highway 395. Potential noise impacts would therefore be less than significant.

b. Design Considerations and Mitigation Measures

The proposed PA 3 multi-family housing is separated from the commercial area by Pankey Road (a divided four-lane road). This would provide some level of attenuation, but would not lower potential impacts to less than significant levels.

Mitigation measures would include the following:

1. When specific business types are known and a preliminary site plan is available, any business proposed in or adjacent to PA 2 or PA 3 (within PAs 2, 4 or 5) must be analyzed by a County-approved noise consultant for direct impacts to the business property line and or exterior shell of any future multi-family housing.

2. The planned sheriff's station would require planning by a County-approved noise consultant demonstrating compliance for the planned sheriff's substation with the County 55 dBA L_{EQ} (numeric average for commercial and multi-family residential) requirement completed to the satisfaction of the Director of the DPLU.

3.3 Potential General Construction Noise Impacts

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

a. Potential Temporary Construction Noise Impacts Without Mitigation

This site would require only the limited demolition of the model airplane landing strip, shade structures and storage. This small model airplane runway and existing shade structures and portable storage units would be easily removed and dismantled with small equipment and would have negligible noise impacts away from the area. Site construction would, however, entail the use of heavy equipment throughout the site for the full term of construction. Construction activities can be roughly divided into several distinct elements. These construction elements are shown in the typical order that they occur and are not intended to modify any Project plan phasing. These construction elements may overlap or occur in a slightly different order dependent on construction and project requirements. They would include the following:

Mass Grading

This typically requires the use of several pieces of heavy equipment, including large dozers, excavators, scrapers, compactors, water trucks, and a variety of smaller equipment necessary for the creation of the basic building locations, roads, and outdoor elevations desired. Large equipment used in mass grading may create noise in excess of 95 dBA at 50 feet and may work in a single area adjacent a property line for extended time periods. It has the potential to exceed construction property line noise limits.

Foundation Excavation

This typically involves the use of medium-sized equipment, including (one or more of the following) a small dozer, backhoe or excavator, compactor, water truck, and a variety of smaller equipment to create the finished pad elevations and foundation excavation. Smaller equipment typically may create noise up to or occasionally higher than 80 dBA. It is rarely used continuously in a single location for an extended time period, however, and it is normally working at a greater distance to the property line because of building setback requirements.

Foundation Pour

The individual building pads are created by having concrete delivered via truck from an off-site mixing facility and pumping it with a pumper or reed boom truck throughout the foundation area to create finished building pads. Pumpers and cement trucks can create noise up to or occasionally higher than 80 dBA. Normally these types of units are placed in the easier access areas due to vehicle turning requirements. Further, it is very unusual to require more than one or two hours to complete a normal foundation pour. This type of operation would not be expected to exceed the allowable property line noise limit.

On-site Utilities Excavation

This includes the use of an excavator or backhoe, a trencher, and potentially a loader throughout the site to allow for underground utilities. This type of equipment rarely exceeds 75 dBA at 50 feet. They do not normally work close to a property line and are almost always continuously moving. It is unusual for this type of operation to exceed the allowable property line noise limit.

Building Construction

The building framing and exterior is constructed manually with the use of forklifts, light mobile cranes, generators, and other light equipment. Most framing equipment is not used continuously in one area. There are occasionally small air compressors or portable generators in operations but these types of units are normally below 70 dBA at 50 feet and do not exceed property line noise limits.

Finish Grading

Typically a grader, water truck, compactor and sometimes a small dozer and/or skidsteer, are used to prepare the site for paving and landscaping. Finish grading equipment rarely makes noise greater than 70 dBA at 50 feet and are almost never in one place for any extended time period. This type of operation is not expected to exceed the allowable property line noise limit.

Paving

Concrete or blacktop is delivered to the site from an off-site mixing facility, spread over the planned hard surface areas and is then either compacted or allowed to cure. Concrete or blacktop equipment rarely makes noise at greater than 70 dBA at 50 feet and are almost never in one place

for any extended time period. This type of operation is not expected to exceed the allowable property line noise limit.

On-site Effects Related to On-site Construction

As noted earlier, project grading would occur in two phases. Phase 1 would include the commercial parcels south of SR-76, the commercial parcel north of SR-76 and west of Pankey Road, and Pankey Road and Pala Mesa Drive. Phase 2 of the grading plan would include approximately 300,000 cubic yards of cut and fill to complete the grading of the multifamily parcel and the light industrial parcels north of Pala Mesa Drive. Also as previously noted, project backbone infrastructure (including Pala Mesa Drive and Pankey Road) would be completed prior to development of project site uses.

As part of a conservative analysis, it is assumed that the mixed use residential would be completed prior to the Phase 2 grading, and that the residential uses east of Pankey Road could be completed and occupied prior to the final grading of the light industrial area north of Pala Mesa Drive.

The closest location between the multi-family area east of Pankey Road and the mixed use in the Phase 1 area is approximately 160 feet; this is the same distance from the light industrial area to the multi-family residential area east of Pankey Road. The loudest equipment operations for mass grading occur when a scraper is loading; often the loading operation will utilize tandem units to completely fill the pan of each scraper. The Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM) lists a scraper as creating a noise level of 83.6 dBA at a distance of 50 feet. This equates to a 79.6 dBA L_{EQ} impact (82.6 dBA L_{EQ} for two units) at a 40% operational time. This impact would be reduced by distance attenuation at 160 feet to 69.5 dBA L_{EQ} for a single unit or 72.5 dBA L_{EQ} for a tandem unit. In this worst case scenario, if the units were to continuously work for eight hours, it would result in noise levels of 72.5 dBA L_{EQ} (8 hour) at the closest residential area. Therefore, the impacts would be less than significant.

During vertical construction the loudest portion of the construction operations is typically the foundation excavation and concrete pour. The loudest piece of equipment (an excavator) used to dig the foundation trenching would have little potential of creating noise in excess of 75 dBA L_{EQ} (8 hour) beyond 50 feet from the construction activities, as is true with other smaller equipment used during construction.

Excluding a very small westernmost corner adjacent to PA 1, future residences in PA 3 would be separated from commercial and industrial areas by the width of Pankey Road. This corner creates its own setback for residences and construction noise impacts would be less than significant at the closest feasible residence. The size of equipment used for two-story (less than 35 feet) residential-only construction on finished grade pads is typically smaller equipment and has almost no potential to exceed noise ordinance compliance at any distance.

The future mixed-use development in PA 2 could potentially have commercial construction directly adjacent to a developed and occupied mixed use structure within PA 2. However, PA 2

is a single parcel and is not covered by the normal construction noise ordinances for activities on the same parcel. It is unlikely that residences would be occupied while aspects of PA 2 are still under construction, yet impacts to potential on-site NSLUs would be less than significant even if these proposed homes were inhabited.

Off-site Effects Resulting from On-site Construction

There are three pre-existing residences located near the Project site that potentially could be affected by on-site construction. No noise impacts due to construction-period activities on site would exceed thresholds at sensitive receptors west of I-15 or south of SR-76 due to their distance from site planning areas.

The residence located northeast of the Proposed Project site, east of Horse Ranch Creek Road, is over 1,800 feet from the closest on-site construction location, the residence located to the west of Horse Ranch Creek Road and north of SR-76 is over 500 feet from the closest on-site construction location, and the house located on Shearer Crossing south of SR-76 is over 400 feet from the closest on-site construction location. If a large dozer were to work for a continuous one-hour period at the closest location to the southeastern residence (400 feet away), the noise impact at the residence would be approximately 71 dBA L_{EQ}. Because this projected noise level would be below the County's threshold of 75 dBA L_{EQ} (8 hour) for construction noise, impacts to off-site NSLUs would be less than significant. Subsequently, neither of the other receptors would experience a significant construction noise impact. Additionally, no new residences are planned within an impact distance. Because of this, no noise control would be required for off-site residences.

Off-site Effects Resulting from Off-site Construction

Off-site improvements would include sewer or water pipeline placement, or roadway improvements. These activities generally use quieter equipment than large dozers or scrapers used in mass grading. They tend to be located at one locale for shorter periods, and often do not operate at full power for a long duration. A backhoe or excavator, the most common piece of construction equipment used for linear utility installation, has short-term noise levels of between 70 to 85 dBA range at 50 feet from the source dependent on the size of the equipment. Smaller pipelines (12 inches or less) that are buried at shallower depth (less than 5 feet) rarely create significant impacts because of the types of equipment used and that the excavation and refill moves along the length of the pipeline fairly quickly. Only when it is a larger diameter pipe laid in at depths up to 12 feet or greater is larger equipment with slower progress along the pipeline likely to have impacts greater than allowed levels. The majority of proposed water mains for the Proposed Project would be 12 inches in diameter, with one 16-inch line located between Pankey Road and Horse Ranch Creek Road within SR-76. The proposed on-site sewer lines would all be 12 inches or less in diameter, with one 15-inch diameter pipeline in Pankey Road between the Project southern boundary and SR-76.

The 16-inch sewer conveyance pipeline is planned to be installed by the adjacent, approved Campus Park project by 2014. If, however, it is not installed prior to Campus Park West implementation, the Proposed Project would install this main. The closest NSLUs to this facility

would be the two homes off SR-76 and Horse Ranch Creek Road. The home on SR-76 is over 250 feet north of the roadbed where the pipeline would be installed. The home on Horse Ranch Creek Road is over 125 feet east of the roadbed where the pipeline would be installed. Any distance greater than 50 feet would attenuate excavation noise to less than significant levels. Off-site construction-period noise impacts would be less than significant.

Construction of the proposed RWMD pump station at either of the two off-site location options west of I-15 would have the potential to expose residents to short-term noise effects. Similar to the construction activities on site, the loudest piece of equipment involved with the construction of the pump station, regardless of the location chosen, would be an excavator. An excavator would be used to dig the trench for the pump station and would have little potential for creating noise in excess of 75 dBA L_{EQ} beyond 50 feet from the construction activities. The nearest residence to any of the proposed off-site RWMD pump stations is approximately 70 feet away. Thus, noise impacts related to the construction of this pump station would be less than significant.

b. Design Considerations and Mitigation Measures

All mass grading and vertical construction operations would have sufficient distance separation from any potentially occupied portions of the project site to limit construction noise impacts to less than significant levels.

No mitigation measures are required as no potentially significant impacts were identified.

3.4 Potential Impulsive Noise Impacts

a. Potential Impulsive Noise Impacts Without Mitigation

As discussed in the Project description, the site mass grading should not require blasting. The site consists primarily of recent or older alluvium; these deposits are assumed to be rippable. Although the entire site is underlain at depth by granite rock, this unit is not anticipated to be encountered as part of the site development process (Leighton and Associates, Inc., 2012).

There is a possibility that the Pankey Road bridge construction may utilize driven piles for the bridge footings. This work would be completed during backbone infrastructure development, prior to the construction of on-site residences. The closest off-site residence is approximately 1,000 feet from the planned bridge location. If a pile driver were to work for a continuous one-hour period at this location, the noise impact at the closest existing residence would be approximately 68.3 dBA L_{EQ}. This noise level would be below the County's threshold, and therefore less than significant.

b. Design Considerations and Mitigation Measures

The mass grading and Pankey Road Bridge would be completed prior to on-site residential construction.

3.5 Cumulative or Combined Noise Impacts

a. Potential Combined Noise Impacts

This section focuses on non-transportation noise. The reader is referred to the discussion in Section 2.3 for cumulative traffic noise impacts.

On-site Effects

The Project proposes mixed-use core, general commercial, limited impact industrial, and multi-family residential uses all in proximity to one another. As noted above, potential commercial uses in the mixed-use core area (PA 2) which might combine to have a noise impact on the mixed-use core residential uses include (but are not limited to) parking lots, rooftop mechanical equipment (including HVAC units), automotive shops (with compressors, impact wrenches, and dynamometers), nightclubs (with patron and music noise), and grocery stores (with refrigeration and freezer compressors). Even if each business or residence is in individual compliance with its property line noise limit, there is potential that a nearby multi-family residence (in either PA 2 or PA 3), as well as other commercial uses, could be impacted by noise above allowable limits by the cumulative noise from all of the sources. On-site cumulative impacts are conservatively assessed as significant.

Off-site Effects

No significant off-site impact is identified for this issue.

b. Design Considerations and Mitigation Measures

Mitigation measures would include the following:

1. Any business or Project element proposed in or adjacent to PA 2 must be analyzed by a County-approved noise consultant for cumulative impacts to PA 2 and PA 3 property lines or the exterior shell of any future multi-family housing to ensure that adjacent business uses do not cause a cumulative noise above the allowable limits.

2. Any Project element proposed in areas adjacent to PAs 2 and 3 must be analyzed by a County-approved noise consultant for evaluation of cumulative impacts at the PA 2 and PA 3 property lines

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4.0 GROUND-BORNE VIBRATION AND NOISE IMPACTS

4.1 Guidelines for the Determination of Significance

Impacts associated with ground-borne vibration and noise would be significant if Project implementation would expose the uses listed in Table 4-1, Guidelines for Determining the Significance of Ground-borne Vibration and Noise Impacts, and Table 4-2, Guidelines for Determining the Significance of Ground-borne Vibration and Noise Impacts for Special Buildings, to ground-borne vibration or noise levels equal to or in excess of the levels shown:

Table 4-1
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.

[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 4 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 4-2
GUIDELINES FOR DETERMINING THE 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.

[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.

4.2 Potential and Mitigated Impacts

a. Potential Impacts Without Mitigation

On-site Effects

No post-construction on site or observed off-site sources have the potential of creating ground-borne vibration or low frequency noise of significance. Only the rough grading operation of a heavy dozer or vibratory roller, or pile driving during Project construction has the potential to result in significant ground-borne vibration or low frequency noise. Since no residences would be on site during the potential pile driving, no impact would occur from pile driving. Due to the alluvial nature of the materials, a vibratory roller would likely be used extensively to provide adequate compaction and would represent the highest potential impacts for potential on-site residences from the Phase 2 mass grading. A vibratory roller has a reference Peak Particle Velocity (PPV) of approximately 0.210 inch per second (in/sec) at a distance of 160 feet (as discussed in the construction noise section above). This would be reduced to .0831 in/sec by distance attenuation only, without consideration of soil damping. Caltrans notes in its Transportation- and Construction-Induced Vibration Guidance Manual (California Department of Transportation, Prepared by: Jones & Stokes, June 2004) that a PPV (in/sec) of 0.24 is Distinctly Perceptible and that 0.035 PPV (in/sec) is Barely Perceptible. Therefore, this level of vibration would fall into the class of only slightly over Barely Perceptible (less than Barely Perceptible if soil damping values were applied). For short-term construction, this impact would be less than significant.

Noise impacts to sensitive species are addressed in the Project Biological Technical Report.

Off-site Effects

Due to the damping effects of soil, a dozer (which would represent the greatest potential for off-site vibration impacts) is typically expected to be below 0.0040 inches/second root mean square (rms) at a distance of greater than 50 feet from the dozer operation. As discussed above, the closest existing residence is over 400 feet from the closest potential mass grading construction areas. A pile driver may create vibration impacts at a slightly greater distance however with a 100 feet of separation from the potential pile driving to the closest residence no vibration impacts are possible from the pile driving. No significant impacts would occur with regard to mass grading or pile driving for a Pankey Road bridge at the southern edge of PA 2.

b. Design Considerations and Mitigation Measures

There are no design considerations identified for this topic and no mitigation is required as all projected impacts would be less than significant.

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5.0 SUMMARY OF PROJECT IMPACTS, DESIGN CONSIDERATIONS, MITIGATION, AND CONCLUSION

POTENTIAL IMPACTS

The potential impacts associated with Scenario 1 and Scenario 2 of the Proposed Project are identical and are not separately discussed.

The Project proposes mixed-use core, general commercial, limited impact industrial, and multi-family residential uses and a pump station all in proximity to one another. Potential impacts to areas multi-family uses in PA 2 and PA 3 are conservatively assessed as significant.

On-site residences to the immediate east of Pankey Road along the perimeter of PA 3 and Pankey Road would have 2030 traffic noise impacts in excess of the County's exterior transportation noise impact level of 65 CNEL for multi-family uses. For the same reason, all analyzed receivers (for multi-family uses) located in the mixed-use core component in PA 2 (west of Pankey Road) demonstrate noise impacts in excess of 65 CNEL.

On-site cumulative impacts from the above-described commercial sources are conservatively assessed as significant.

Because of the possibility of pipeline excavation for pipes exceeding 12 inches, there would be the potential for significant temporary construction noise impacts upon residences located adjacent to the proposed off-site road and utilities improvements between SR-76 and Pankey Road if that line is not installed by the adjacent approved Campus Park prior to Campus Park West implementation. Potential noise impacts are conservatively assessed as significant.

PROJECT DESIGN CONSIDERATIONS

Project design considerations include completion of mass grading and the Pankey Road bridge prior to any residential construction.

MITIGATION MEASURES

To mitigate for 2030 traffic noise impacts to the residential units proposed in PA 3, a 5.5-foot high sound attenuation barrier will be required along the eastern side of Pankey Road for the length of the multi-family housing area. The wall will be constructed around the curved portion of the driveway entrance terminating at a location where it would run parallel to the entrance.

- All planned outdoor residential use areas in PAs 2 and 3 including first-floor decks (PA 2 only) and second-floor balconies (both PA 2 and PA 3) will require noise shielding by a 5.5-foot-high noise control barrier. This 5.5-foot balcony noise control barrier is without consideration of any shielding provided by the buildings or additional attenuation due to distance. The final building design may provide substantial shielding thus reducing the final required barrier heights necessary to provide compliance with the 65 CNEL exterior requirements. The applicant may provide an updated analysis by a County-approved

noise consultant demonstrating compliance for all required exterior outdoor use areas with the County 65 CNEL requirement completed to the satisfaction of the Director of the DPLU with a lower height balcony noise control barrier.

An acoustical analysis will be prepared by a County-approved noise consultant to demonstrate compliance with the County 45 CNEL interior noise threshold for all habitable spaces per Title 24 (California Building Code) for all multi-family (PA 2) and mixed-use core homes (PA 3) on the Project site as part of the building plan submittal.

Mitigation for on-site interior noise impacts will be accomplished through incorporation of enhanced building elements (i.e., thicker dual-paned windows with spacing of a ½ inch or greater and enhanced wall designs). If elevated exterior noise levels require that windows be in the closed position to provide interior noise control, building design would include a forced air ventilation system to provide a habitable interior environment without reliance on an open window condition, as specified in the State Building Code and IBC.

When specific business types are known and a preliminary site plan is available, cumulative property line noise impacts for the commercial and mixed-use core areas of PA 4 and PA 5 will be analyzed by a County-approved noise consultant to determine compliance with the County Ordinance limitations of 57.5 dBA between 7:00 a.m. and 10:00 p.m. and 52.5 dBA between 10:00 p.m. and 7:00 a.m. (arithmetic average of multi-family and commercial noise limits) or 65 CNEL at multi-family residential locations. Additional noise control methods may include screening noise sources, relocating noise sources at a greater distance from residences and/or a combination of these measures. Implementation of noise control features would ensure compliance with County standards.

Siren test noise at the on-site Sheriff's station shall be controlled through site plan design process using one of the following two options:

1. Selecting the location of the sheriff's station such that it is not in close proximity to the residences, and using an assumed on-site building as an intervening noise control structure.

2. Constructing the parking area further away from the residences, and designating a specific siren test location. The location could be selected so that the sirens would face away from the residential structures, and a wall could be erected on both sides of the test area to further attenuate noise.

A final noise study for the sheriff's station shall be prepared during site plan approval. The report shall finalize the noise control requirements based on actual building design specifications, including identification of additional noise reducing measures as necessary to ensure compliance with County noise standards (i.e., 57.5 dBA between 7:00 a.m. and 10:00 p.m. and 52.5 dBA between 10:00 p.m. and 7:00 a.m. [arithmetic average of multi-family and commercial noise limits] or 65 CNEL at multi-family residential locations).

CONCLUSION

With implementation of the Proposed Project design considerations and mitigation measures included in this report, the Project would be in compliance with the County Noise Ordinance, which would ensure that noise generated by the Project would be within acceptable dB levels. Accordingly, construction, operational, and traffic noise impacts from the Project would be less than significant following implementation of Project design considerations and mitigation measures.

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6.0 CERTIFICATION

This report is based on the related Project information received and measured noise levels, and represents a true and factual analysis of the acoustical impact issues associated with the construction and use of the proposed Campus Park West Project.

This report was prepared by Charles Terry, County-approved Noise Consultant.

Charles Terry

August 8, 2013
Date

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APPENDIX A

APPENDIX A

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