La Costa Town Square
Final Environmental Impact Report

SCH #2003041159

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LIST OF ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
ACOE	U.S. Army Corp of Engineers
ADT	Average Daily Traffic
AMSL	Above Mean Sea Level
APN	Assessor Parcel Number
ARB	California Air Resources Board
BAU	Business as Usual
BAT/BCT	Best Available Technologies/Best Conventional Technologies
BEPA	Bald Eagle Protection Act
BMPs	Best Management Practices
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAAQS	California Ambient Air Quality Standards
CAFE	Corporate Average Fuel Economy
Cal EPPC	California Exotic Pest Plant Council
CAPs	criteria air pollutants
CASQA	California Stormwater Quality Association
CC&Rs	Covenants, Conditions, and Restrictions
CCAA	California Clean Air Act
CCAR	California Climate Action Registry
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CEC	California Energy Commission
CEQA	California Environmental Quality Act
cf	cubic feet
CFCs	chlorofluorocarbons
CFD	Community Finance District
CFP	California Fully Protected (species)
CFR	Code of Federal Regulations
cfs	cubic feet per second
CH_4	methane

CIP	Capital Improvement Program
CMP	Congestion Management Plan
CMWD	Carlsbad Municipal Water District
CNCCP	California Natural Communities Conservation Plan
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CPUC	California Public Utilities Commission
CSC	California Department of Fish and Game species of special concern
CSSD	Carlsbad Sewer Service District
CUSD	Carlsbad Unified School District
CWA	Clean Water Act
cy/ac	cubic yards of grading per acre
dB	decibel
dBA	A-weighted decibel scale
DEH	San Diego County Department of Environmental Health
DEIR	Draft Environmental Impact Report
DFG	California Department of Fish and Game
DOT	United States Department of Transportation
du	dwelling unit
EFIG	Emission Factor and Inventory Group
EIR	Environmental Impact Report
EMF	electromagnetic fields
EMFAC	Emission Factors
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ESP	Emergency Storage Project
EUSD	Encinitas Union School District
EWA	Encina Wastewater Authority
FEMA	Federal Emergency Management Agency

FHWA	Federal Highway Administration
FIP	Federal Implementation Plan
FIRM	Flood Insurance Rate Map
FTA	Federal Transportation Administration
GHG	greenhouse gases
GMP	Growth Management Plan
gpd	gallons per day
gpm	gallons per minute
GRP	General Reporting Protocol
GVW	gross vehicle weight
GWP	Global Warming Potential
H&SC	California Health and Safety Code
HA	hydrologic area
HCM	Highway Capacity Manual
HCP	Habitat Conservation Plan
HHW	Household Hazardous Waste
HMP	Carlsbad Habitat Management Plan
HMTA	Hazardous Materials Transportation Act
HR	House Resolution
HSA	hydrologic subarea
HU	hydrologic unit
HVAC	heating, ventilation, and air conditioning
I-5	Interstate 5
ICU	Intersection Capacity Utilization
in/sec	inches per second
IPCC	Intergovernmental Panel on Climate Change
ITE	Institute of Transportation Engineers, Border Section
kV	kilovolts
kwh	kilowatt hours
L	Local Shopping Center
LCFS	Low Carbon Fuel Standard
L_{eq}	Equivalent Continuous Noise Level
LFMP	Local Facilities Management Plan
LFMZ	Local Facilities Management Zone

LID	Low-Impact Development
LOS	Level of Service
LVW	loaded vehicle weight
LWD	Leucadia Wastewater District
MG	million gallons
mgd	million gallons per day
MHCP	Multiple Habitat Conservation Plan
MOU	Memorandum of Understanding
MP 149	La Costa Master Plan
MPH	miles per hour
MS4	Municipal Separate Storm Water Systems
$MTCO_2$	metric tons of carbon dioxide
$MTCO_2e$	metric tons of carbon dioxide equivalent
MWD	Metropolitan Water District
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NCCP	Natural Communities Conservation Plan
NCTD	North County Transit District
NIEHS	National Institute of Environmental Health Sciences
NO_2	nitrogen dioxide
NOI	Notice of Intent
NOP	Notice of Preparation
NO_X	nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
O	Office and Related Commercial
O_3	ozone
OAQPS	Office of Air Quality and Planning Standards
OHWM	ordinary high water mark
OMSP	On-going Multi-Species Plan
OMWD	Olivenhain Municipal Water District
OPR	Office of Planning and Research
OS	Open Space
Pb	lead
PD	Planned Development

PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
ppv	peak particle velocity
psi	pounds per square inch
RAQS	Regional Air Quality Strategy
RLM	Low-Medium Density Residential
RM	Medium Density Residential
RMH	Medium-High Density Residential
ROG	Reactive Organic Gas
RPW	Relatively Permanent Waters
RSPA	Research and Special Programs Administration
RTCIP	Regional Transportation Congestion Improvement Program
RWQCB	Regional Water Quality Control Board
SAM	Site Assessment and Mitigation Program
SANDAG	San Diego Association of Governments
SANTEC	San Diego Traffic Engineer's Council
SAR	Second Assessment Report
SB	Senate Bill
SDAB	San Diego Air Basin
SDAPCD	San Diego Air Pollution Control District
SDCWA	San Diego County Water Authority
SDG&E	San Diego Gas & Electric
SDP	Site Development Plan
SDUHSD	San Dieguito Union High School District
SE	Southeast Quadrant
sf	square feet
SIP	State Implementation Plan
SO_2	sulfur dioxide
SUSMP	Standard Urban Stormwater Mitigation Plan
SWMP	Storm Water Management Program
SWPPP	Storm Water Pollution Prevention Program
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
TCM	Transportation Control Measure

TIF	Traffic Impact Fee
TMDL	Total Maximum Daily Load
TNW	Traditional Navigable Waters
URBEMIS	Urban Emissions Model
USACE	United States Army Corps of Engineers
USFWS	U. S. Fish and Wildlife Service
UST	Underground Storage Tank
UWMP	Urban Water Management Plan
V/C	volume to capacity
VMT	vehicle miles traveled
VOC	volatile organic compounds
VPH	vehicles per hour
VPHPL	vehicles per hour per lane
VWD	Vallecitos Water District
WQTR	Water Quality Technical Report
WSA	Water Supply Assessment

CHAPTER 1.0
INTRODUCTION

This Draft Environmental Impact Report (Draft EIR) is intended to inform the City of Carlsbad, public and quasi-public agencies and groups, and the general public about the potential significant environmental effects of the proposed project and associated actions (Section 15002 of the CEQA Guidelines).

The proposed project consists of the development and operation of a mixed-use center containing commercial retail, offices, single-family residential, multifamily residential, and open space areas collectively referred to as the La Costa Town Square project. The project proposes to subdivide an approximately 83-acre property into four parcels including a commercial parcel, an office parcel, a residential parcel, and a multifamily residential parcel. The project also proposes landscaping and utilities, and two detention basins that will control stormwater runoff from the project site. Approximately 9.1 acres of the site are proposed to be reserved for open space.

Discretionary approvals associated with the proposed project include amendments to the City's General Plan, the La Costa Master Plan, and the Local Facilities Management Plan Zone 11. The project also includes a Master Tentative Parcel Map, Commercial Tentative Tract Map, Residential Tentative Tract Map, Site Development Plan, Conditional Use Permits, Grading/Hillside Development Permit, participation in the implementation of the *Habitat Conservation Plan/Ongoing Multi-Species Plan (HCP/OMSP) for Properties in the Southeast Quadrant of the City of Carlsbad California* (City of Carlsbad 1995a), and certification of the Final EIR. Additionally, discretionary actions and/or approvals by other agencies include a Federal Clean Water Act Section 404 Permit by the U. S. Army Corps of Engineers (ACOE); and a California Fish and Game Section 1602 and Section 401 Certification by the San Diego Regional Water Quality Control Board (RWQCB).

1.1 LEGAL REQUIREMENTS

This Draft EIR was prepared in accordance with the current guidelines for the preparation of EIRs issued by the City of Carlsbad and complies with all criteria, standards, and procedures of the California Environmental Quality Act (CEQA) of 1970, as amended (Public Resources Code Section 21000 et seq.); and the Guidelines for the Implementation of the California Environmental Quality Act (CEQA Guidelines) published by the Resources Agency of the State of California (California Administrative Code Sections 15000 et seq.) (CEQA 2008).

The City of Carlsbad is the lead agency for the preparation of this Draft EIR as defined by CEQA (Public Resources Code Section 21067 as amended), and the content of the document reflects the independent judgment of the City.

1.2 PURPOSE OF THE DRAFT EIR

This Draft EIR is intended to provide information to the public agencies, general public, and decision makers regarding the project-specific and cumulative environmental impacts from the development and operation of the proposed project and related components. Under the provisions of CEQA, "the purpose of an environmental impact report is to identify the significant effects on the environment of a project, to identify alternatives to the project, and to indicate the manner in which those significant effects can be mitigated or avoided" (Public Resources Code 21002.1(a)). This is a project EIR in accordance with Section 15161 of the CEQA Guidelines.

1.3 BACKGROUND

To define the scope of the investigation of the Draft EIR, the City of Carlsbad originally distributed a Notice of Preparation (NOP) to city, county, and state agencies; other public agencies; and other interested private organizations and individuals in April 2003. Upon making updates to the project description for the proposed project, the City recirculated the NOP in April 2005 and again on June 29, 2007. These updates reflected land use changes to project characteristics on the same project area proposed in 2003; notably, the project originally

proposed office and childcare use but no multifamily residential units, whereas in 2007 the amount of proposed commercial space was increased, 14 affordable units were proposed for the commercial parcel, approximately 128 multifamily residences were proposed for the northwest parcel, and 64 single-family residences were included on the northeast parcel. A further land use modification was proposed in 2008 to refine the commercial space to include two office buildings on La Costa Avenue and delete the proposed theater and 14 affordable units. These changes were made in response to revised, economically driven needs for the project vicinity. Site design changes between 2003 and 2008 for the commercial parcel reflected these land uses changes, and the proposed changes did not change anticipated environmental impacts identified in the previous initial studies. The purpose of the NOP is to identify agency and public concerns regarding potential impacts of the proposed project.

In response to the 2003 and 2005 NOP, comment letters were received for both NOP documents from the following public agencies and private organizations: the Governor's Office of Planning and Research (OPR), U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Game (DFG), the San Diego Association of Governments (SANDAG), San Diego Gas & Electric (SDG&E), State of California Department of Transportation District 11, San Diego County Archaeological Society, and Leucadia Wastewater District. In addition, comment letters were received from individuals Joy Lane and Alan Reece in response to the 2003 NOP.

Comment letters were received in response to the June 2007 NOP from the following public agencies, private organizations, and individuals: OPR, Native American Heritage Commission, North County Transit District (NCTD), SANDAG, City of Encinitas, San Diego County Archaeological Society, Francine J. Lane, Ernie Trujillo, Mr. and Mrs. P. Remington, Neal Meyers, Mehdi Zomorrodian, and Don Burton. Written comments received during the 30-day public review period for each NOP are included in Appendix A of this EIR.

Additionally, a public scoping meeting was held by the City on May 1, 2003. The purpose of this meeting was to convey information about the proposed project and to receive comments regarding the scope and content of the previous Draft EIR. Numerous public comments were made regarding the project's traffic and aesthetics impacts. As only minor changes were incorporated since this meeting, no public scoping session was held since the release of the 2003 NOP.

1.4 AVAILABILITY OF REPORTS

This Draft EIR and all reference documents are available for public review at the City of Carlsbad Planning Department, 1635 Faraday Avenue, Carlsbad, California 92008. Copies are available to the public upon payment of a charge for reproduction. Circulating copies are also available at the Carlsbad Georgina Cole Library and the City of Carlsbad City Library, Dove Lane (La Costa Library). Documents may be reviewed during regular business hours.

1.5 COMMENTS REQUESTED

Comments of all agencies and individuals are invited regarding the information contained in this Draft EIR. All comments on the Draft EIR should be sent to the following City of Carlsbad contact:

Mr. Van Lynch, Senior Planner
City of Carlsbad Planning Department
1635 Faraday Avenue
Carlsbad, California 92008-7314

Following a 45-day period of circulation and review of the Draft EIR, all comments and the responses to the comments will be incorporated in a Final EIR prior to certification of the document by the City of Carlsbad.

1.6 STRUCTURE OF THIS EIR

This Draft EIR is organized into nine sections. Section 1.0 is this Introduction. Section 2.0, the Executive Summary, provides a brief project description, summarizes project impacts and mitigation measures, and identifies project alternatives. A detailed description of the proposed project is provided in Section 3.0. Section 4.0 describes the general environmental setting. Section 5.0 analyzes project impacts and identifies mitigation measures designed to reduce significant impacts. Section 6.0 discusses the cumulative impacts, significant irreversible environmental changes, unavoidable significant environmental impacts, and areas of no significant impact. An analysis of alternatives to the proposed project is provided in Section 7.0. References and persons responsible for preparation of the EIR are included in Section 8.0. The Final EIR will also include Section 9.0, which will contain responses to comments on the Draft EIR.

A separately bound set of appendices to the Draft EIR includes the NOP and comments received on the NOP, as well as the technical studies prepared for the project. In compliance with Public Resources Code Section 21081.6, a mitigation monitoring and reporting program will be prepared as a separately bound document and will be adopted by the City at the time of certification of the EIR.

CHAPTER 2.0
EXECUTIVE SUMMARY

2.1 THE PROJECT

The proposed La Costa Town Square project involves the construction and operation of a mixed-use center that includes an approximately 284,400-square-foot community shopping center, two office buildings totaling approximately 55,000 square feet, 64 single-family detached residential units, and a future multifamily residential site to be developed at a later date with approximately 128 condominium homes. The project site encompasses approximately 83 acres.

The project site is located within Villages SE 13, SE 14, and a portion of SE 8 of the La Costa Master Plan. The La Costa Master Plan (MP 149), which consists of 2,399 acres, was adopted by the City of Carlsbad in 1972 and has been periodically amended since its original adoption. The adjacent Villages of La Costa Master Plan has recently processed a major Master Plan Amendment and is currently under development.

The project site is owned by the La Costa Town Square LLC and was annexed to the City of Carlsbad in 1972. The City's General Plan has designated the property for development with a commercial center, offices, and residential uses since the early 1970s. The La Costa Town Square is also included in the Habitat Conservation Plan/Ongoing Multi-Species Plan (HCP/OMSP) for Properties in the Southeast Quadrant of the City of Carlsbad, California, finalized in 1995. This document was created to provide for the conservation of sensitive wildlife and habitat in the context of a proposed large-scale development plan. The HCP/OMSP will be implemented by the project.

2.2 PROJECT CHARACTERISTICS

The La Costa Town Square project proposes the construction and operation of a mixed-use development containing retail, major supermarket, restaurants, gas

stations, main street, community gathering space, offices, and single-family residential all integrated into a comprehensive pedestrian-friendly neighborhood. In addition, there is a future multifamily parcel west of Rancho Santa Fe Road providing for the development of approximately 128 units. **Table 2.0-1** provides a description of each component of the proposed project.

Table 2.0-1
Development Summary

Proposed Use	Parcel Size (Acres)	Nonresidential Development (s.f.)	Number of Residential Units
Commercial Center	41.58	284,400	---
Offices	7.14	55,000	
Single-Family Residential	24.39	---	64
Multifamily Residential	9.96	---	128 (approx.)

2.3 PROJECT LOCATION

The project site is located in the southeastern portion of Carlsbad in northern San Diego County, California. The project site is generally located north of La Costa Avenue and south of Rancho Santa Fe Road and the approximately 128 multifamily residential units are proposed to the north of Rancho Santa Fe Road. Regional access to the site is provided by Interstate 5 (I-5), located approximately 3.8 miles west of the site. The project site is bounded on the west by the former alignment of Rancho Santa Fe Road, to the south by La Costa Avenue, to the east by La Costa Avenue and an SDG&E utility easement, and to the north by the former alignment of Rancho Santa Fe Road and the new alignment for Rancho Santa Fe Road. **Figure 2.0-1** depicts the location of the project site in a regional and local context.

2.4 ENVIRONMENTAL IMPACTS

Pursuant to the CEQA Guidelines, the City of Carlsbad determined through an Initial Study that an EIR is required for the proposed project. The environmental issue areas identified for study in this EIR are:

2.0-1 Regional Location and Local Vicinity

- Land Use and Planning
- Transportation/Circulation
- Air Quality
- Noise
- Paleontological Resources
- Biological Resources
- Hydrology/Water Quality
- Geology and Soils
- Hazards
- Visual Aesthetics/Grading
- Public Services and Utilities
- Climate Change

Cumulative impacts and impacts to climate change though the production of greenhouse gases are discussed in EIR Section 6.0 Analysis of Long-Term Effects.

Table 2.0-2 presents a summary of the environmental impacts of the proposed project, mitigation measures to reduce potentially significant impacts of the proposed project, and the level of significance of each impact after mitigation.

Based on the analysis and conclusions of this EIR, the City of Carlsbad finds that the project will result in significant and unmitigated project-specific and/or cumulative impacts to transportation/circulation, air quality, noise, and global climate change. If the City of Carlsbad chooses to approve the project, it must adopt a "Statement of Overriding Considerations" pursuant to sections 15093 and 15126(b) of the CEQA Guidelines.

Significant project-level impacts have also been identified for some transportation/ circulation, air quality, noise, paleontological resources, biological resources, hydrology/water quality, geology and soils, and hazards impacts. Impacts to paleontological resources, biological resources, hydrology/water quality, geology and soils, and hazards impacts can be reduced to a level of less than significant. Impacts to transportation/circulation, air quality, noise, and global climate change would remain significant and unmitigated.

2.5 POTENTIAL AREAS OF CONTROVERSY

The CEQA Guidelines require potential areas of controversy to be identified in the Executive Summary. Concerns identified by those responding to the NOP (see Appendix A) include:

- Compliance with SDG&E Guidelines regarding grading for any encroachment to and in the transmission right-of-way.
- Compliance with the SANDAG Congestion Management Program guidelines.
- Cumulative impacts on biological resources.
- Impacts on listed and sensitive species and their habitats.
- Indirect project impacts on biological resources.
- Project-related onsite and offsite hydrology and water quality.
- Project impacts to cultural resources, and use of the State Historical Resource Commission's *Guidelines for the Curation of Archaeological Collections*.
- Compliance with Native American Heritage Commission guidelines for methods of consultation with local tribes for impacts to sacred cultural lands.
- Compliance with the Caltrans *Guide for the Preparation of Traffic Impacts Studies* dated 2001.
- Focus on bus stop alignment and other transit related improvements.
- Effect of outdoor lighting impacts on dark skies within surrounding communities.
- Noise impacts to surrounding communities due to increased traffic volumes or activity on the project site.
- Visual impacts to the surrounding communities.
- Compliance with the Leucadia Wastewater District Standard Specifications and other applicable ordinances and resolutions.

- Demand for water and energy resources.
- Use of recycling and design features to limit solid waste generation.
- Wide distribution of public noticing measures.

Areas of controversy identified by those who attended a public scoping meeting on the proposed project include:

- Traffic increase along Rancho Santa Fe Road.
- Visual impacts associated with nighttime lighting of the project site.
- Visual impacts associated with views of the project site from surrounding homes.
- Visual impacts associated with views of the project site from drivers along Rancho Santa Fe Road.

All comments to the NOPs and scoping meeting received have been reviewed and addressed in this Draft EIR.

2.6 ALTERNATIVES TO THE PROPOSED PROJECT

The alternatives analyzed in detail in Section 7.0 Alternatives of this EIR include:

- Alternative 1 – No Project: No Development
- Alternative 2 – No Project: (Existing General Plan, Existing Master Plan, and HCP)
- Alternative 3 – Biological Open Space (on Single-Family Residential Parcel

Table 2.0-2
Environmental Impacts and Mitigation Measures

Potential Impacts	Mitigation Measures	Level of Significance after Mitigation
5.1 Land Use		

Potential Impacts	Mitigation Measures	Level of Significance after Mitigation
No significant impact to land use has been identified.	No mitigation measures are needed, as no significant impact associated with land use has been identified.	Not applicable.
5.2 Traffic/Circulation		
Implementation of the project would result in a significant short and long term traffic impact.	The following locations will be significantly impacted either directly or cumulatively by the project: • I-5 Freeway segments in the project area • Rancho Santa Fe Road (Island Drive to Melrose Drive) • Leucadia Boulevard (Quail Gardens to El Camino Real) • San Elijo Road (Rancho Santa Fe Road to Elfin Forest Road) • Rancho Santa Fe Road / El Camino Del Norte Intersection • Rancho Santa Fe Road / San Marcos Boulevard Intersection All locations forecast to operate at deficient levels of service are located outside Carlsbad. Caltrans has no plans for improvements to the I-5 segments; and the city of Encinitas does not have any projects included in their Capital Improvement Program that would improve the operating conditions along the segments or at intersections identified above. No feasible mitigation measures were identified at these locations.	Significant and unmitigated
5.3 Air Quality		
Implementation of the project would result in a significant long-term air quality impact.	**AQ-1.** The following measures shall be implemented by the project applicant unless it can be demonstrated to the City of Carlsbad that the measures would not be feasible: • The applicant shall require the commercial development operator to operate, maintain and promote a ride-share program for employees of the various businesses. • The applicant shall include one or more secure bicycle parking areas within the property and encourage bicycle riding for both employees	Significant and unmitigated.

Potential Impacts	Mitigation Measures	Level of Significance after Mitigation
	and customers. • The office buildings and community shopping center shall be designed to meet the 2008 Title 24 plus 20 percent energy-efficiency standards. • The applicant shall require that all materials handling equipment operated by the businesses within the facility be electric or use non-diesel engines.	
5.4 Noise		
Implementation of the proposed project would result in a significant short-term impact associated with drilling noise.	**N-1.** During rock drilling, the construction contractor shall implement a portable sound attenuation barrier with a Sound Transmission Class rating of 15 or more along the northern portion of the project site. The sound attenuation barrier shall break the line-of-sight between the rock drill and the first-floor level of the single-family residence at the northern terminus of Sitio Lima adjacent to the project site. The sound attenuation barrier shall remain in place as long as rock drilling activity is occurring adjacent to the existing single-family residence. In addition, prior to initial drilling operations, the rock drill shall be certified to not generate noise levels in excess of 85 dBA at a distance of 50 feet while operated at high idle (maximum governed rpm) under full-load condition during the test.	Potentially significant and unmitigated at some residences.
Implementation of the proposed project would result in a significant impact associated with blasting noise.	**N-2.** All property owners within 250 feet of the blasting area shall be notified of the blasting activities (for noise and vibration impacts). This notification shall describe expected period and frequency that the blasting will occur and give a contact phone number for any questions or complaints. All complaints shall be responded to in a method deemed satisfactory to the Carlsbad Planning Director.	Potentially significant and unmitigated at some residences.
Implementation of the proposed project would result in a significant	**N-3.** Minimum 12-foot-high sound walls shall be constructed by the applicant along the loading dock areas at Buildings 15,	Less than significant.

Potential Impacts	Mitigation Measures	Level of Significance after Mitigation
impact associated with loading dock and delivery truck noise.	18, and 21.	
Implementation of the proposed project would result in a significant impact associated with noise related to nighttime use of the outdoor gathering area.	**N-4.** The outdoor gathering area shall not be used for events between the hours of 10:00 p.m. to 7:00 a.m.	Less than significant.
Implementation of the proposed project would result in a significant impact associated with HVAC equipment exterior noise.	**N-5.** When mechanical equipment plans are prepared, the plans shall be evaluated for the buildings on Commercial Pads 15 through 18 and 21 to ensure that outdoor mechanical equipment noise would not exceed 60 dB CNEL at the proposed adjacent residences.	Less than significant.
Implementation of the proposed project would result in a significant impact associated with exterior and interior noise on-site.	**N-6.** A 5- to 8-foot-high noise barrier shall be constructed by the applicant at the top of the slope along a portion of Rancho Santa Fe Road. The materials used in the construction of the barrier are required to have a minimum surface density of 3.5 pounds per-square-foot and may consist of earthen berms, masonry material, tempered glass or a combination of these materials. The barrier shall not have any openings or cracks. An interior noise study will be required for second story units on Lots 34 thru 48.	Less than significant.
5.5 Paleontological Resources		
Based on the proven paleontological resource value of the Eocene-age sedimentary rocks, the mass excavation of the commercial portion of the project site has the potential to impact paleontological resources. This is considered a significant impact.	**P-1.** As a condition of the grading permit, the developer shall comply with all recommendations stated in the *Paleontological Resource Assessment* prepared to the project site by Thomas A. Deméré, Ph.D., Department of Paleontological Services, San Diego Natural History Museum (February 2001 and March 2007) including the following: • Prior to initiation of construction activities the project developer shall retain a qualified paleontologist to carry out the mitigation program	Less than significant.

Potential Impacts	Mitigation Measures	Level of Significance after Mitigation
	outlined here. A qualified paleontologist is defined as an individual with a M.S. or Ph.D. in paleontology or geology who is familiar with paleontological procedures and techniques. • A qualified paleontologist shall be at the preconstruction meeting to consult with the grading and excavation contractors. • A paleontological monitor shall be on-site at all times during the original cutting of previously undisturbed deposits of high sensitivity formations (undifferentiated Friars/Delmar formations) to inspect exposures for contained fossils. The paleontological monitor need not be on-site during the original cutting of previously undisturbed deposits of zero sensitivity formations (Santiago Peak Volcanics). A paleontological monitor is defined as an individual who has experience in the collection and salvage of fossil materials. The paleontological monitor shall work under the direction of a qualified paleontologist. • When fossils are discovered, the paleontologist (or paleontological monitor) shall recover them. In most cases this fossil salvage can be completed in a short period of time. However, some fossil specimens (such as a complete large mammal skeleton) may require an extended salvage period. In these instances the paleontologist (or paleontological monitor) shall be allowed to temporarily direct, divert, or halt grading to allow recovery of fossil remains in a timely manner. Because of the potential for the recovering of small fossil remains, such as isolated mammal teeth, it may be necessary to set up a	

Potential Impacts	Mitigation Measures	Level of Significance after Mitigation
	screen-washing operation on the site. • Fossil remains collected during the monitoring and salvage portion of the mitigation program shall be cleaned, repaired, sorted, and cataloged. • Prepared fossils, along with copies of all pertinent field notes, photos, and maps shall be deposited (as a donation) in a scientific institution with permanent paleontological collections such as the San Diego Natural History Museum. Donation of the fossils shall be accompanied by financial support for initial specimen storage. • A final summary report shall be completed and submitted to the Planning Department that outlines the results of the mitigation program. This report shall include discussions of the methods used, stratigraphic sections(s) exposed, fossils collected, and significance of recovered fossils. Compliance with this mitigation measure shall be verified by the City of Carlsbad Engineering Department.	
5.6 Biological Resources		
Implementation of the project would result in a significant impact associated with the sensitive plant species on-site.	**B-1.** Thread-leaved brodiaea, Orcutt's brodiaea, and San Diego thornmint are narrow endemic species under the Carlsbad HMP; thus additional species-specific mitigation is required prior to issuance of any grading permit for the project. Restoration of habitat for the brodiaea species shall be accomplished by the developer and to the satisfaction of the City of Carlsbad Planning Department, through the relocation of bulbs to suitable habitat for these species including the same soil type and microhabitat characteristics as the impacted populations. A suitable open space preserve located within the same geographic region and approved	Less than significant.

Potential Impacts	Mitigation Measures	Level of Significance after Mitigation
	by the City of Carlsbad (with concurrence by the Wildlife Agencies) shall be acquired by the developer for the brodiaea relocation and for San Diego thornmint preservation. An open space acquisition and restoration plan shall be prepared prior to disturbance of these species and shall be submitted to and approved by the City of Carlsbad Planning Department. This plan shall detail the relocation procedures to be used along with a 5-year maintenance and monitoring program to ensure survival.	
Implementation of the project would result in a significant impact associated with sensitive wildlife.	**B-2.** Clearing and grading operations are prohibited within habitat where the coastal California gnatcatcher and Cooper's hawks or other native or migratory raptors may be nesting. This restriction shall occur from the January 15 beginning of the Cooper's hawks or other native or migratory raptors breeding season through the July 31 end of the coastal California gnatcatcher breeding season. Clearing may occur during this time frame if no active nests are detected or it has been established that the young have become independent of the nest. A preconstruction clearance survey shall be conducted by a qualified biologist prior to January 15 to make this determination. In addition, removal of any trees occupied by an active raptor nest must be avoided until after the nesting season (July 15). A 200-foot buffer surrounding any active raptor nest shall also be established where no clearing activities shall be allowed until the nesting season is completed (City of Carlsbad 1995a). This measure shall be placed as a condition on the grading permit.	Less than significant.
Implementation of the project would result in a significant impact	**B-3.** Both creation and restoration/enhancement actions are required by this mitigation measure.	Less than significant.

Potential Impacts	Mitigation Measures	Level of Significance after Mitigation
associated with wetland and nonwetland jurisdictional waters on site.	Impacts to the ephemeral drainages will be mitigated at a 1:1 ratio for a total of 0.26 acre. Impacts to the riparian scrub/seep shall be mitigated at a ratio of 3:1 for a total of 0.63 acre. Prior to issuance of a grading plan or other disturbance to the riparian scrub/seep, a restoration plan shall be prepared by the developer and approved by the City of Carlsbad Planning Department (with concurrence by the Wildlife Agencies) prior to disturbance (including grading) of the drainage or basin areas. The plan shall include mitigation for impacts to waters of the U.S. These mitigated areas may be satisfied by contribution to an approved mitigation site, where impacts to state or federal jurisdictional waters (as defined) are mitigated in an ACOE, CDFG, or RWQCB mitigation bank.	
The project would result in a significant indirect project-related impacts associated with the surrounding biological resources.	**B-4.** During construction, trash that could attract scavengers that could prey on sensitive wildlife must be maintained and kept to a minimum. Trash containers with animal-resistant lids must be provided on the site during construction. This measure shall be incorporated into the project. **B-5.** The developer shall provide all project homebuyers a list of invasive plant species (*Cal EPPC List: Exotic Pest Plants of Greatest Ecological Concern in California, October 1999* by the California Exotic Pest Plant Council (Cal EPPC)) that should not be used in landscaping. Additionally, these species shall be identified in the Covenants, Conditions, and Restrictions (CC&Rs) of the homeowners association as plants to be avoided in landscaping. Developer shall establish a homeowner's association and corresponding CC&Rs. Said CC&Rs shall be submitted to and approved by the	Less than significant.

Potential Impacts	Mitigation Measures	Level of Significance after Mitigation
	Planning Director prior to final map approval. Prior to issuance of a building permit, the Developer shall provide the Planning Department with a recorded copy of the official CC&Rs that have been approved by the California Department of Real Estate and the Planning Director. **B-6.** The homeowners, homeowner associations, and the public shall be informed of ways to avoid impacts to the conserved resources through a public information program developed in cooperation with the City. The program shall include: • Public information brochure that describes the natural resources and prohibited activities within conserved habitat; and • Landscaping and fuel break planting brochure for homeowners and homeowner associations adjacent to conserved habitat.	
	5.7 Hydrology/Water Quality	
Implementation of the project will result in significant impacts to on-or off-site erosion or siltation.	**WQ-1.** Prior to issuance of a grading permit, the developer shall prepare and submit for review and approval of the Carlsbad City Engineer, a Storm Water Pollution Prevention Program (SWPPP) to demonstrate that pollutants will be controlled through compliance with the City of Carlsbad Standard Urban Stormwater Mitigation Plan (SUSMP), General Construction Stormwater Permit (Order No. 99-08, NPDES CAS000002), and the General Municipal Stormwater Permit (Order R9-2007-0001, NPDES CAS0108758). The applicant shall be responsible for monitoring and maintaining the BMP erosion control measures identified below on a weekly basis in accordance with the City's grading and erosion control requirements (Municipal Code Section	Less than significant.

Potential Impacts	Mitigation Measures	Level of Significance after Mitigation
	15.16. et seq.). The locations of all erosion control devices shall be noted on the grading plans. BMPs that shall be installed include, but are not limited to, the following: • Silt fence, fiber rolls, or gravel bag berms • Check dams • Street sweeping and vacuuming • Storm drain inlet protection • Stabilized construction entrance/exit • Hydroseed, soil binders, or straw mulch • Containment of material delivery and storage areas • Stockpile management • Spill prevention and control • Waste management for solid, liquid, hazardous, and sanitary waste-contaminated soil • Concrete waste management **WQ-2a.** Prior to issuance of permits or approvals for any public or private right-of-way improvements or site development plans, the developer shall prepare and submit for review and approval of the Carlsbad City Engineer, improvement plans that demonstrate that pollutants will be controlled through compliance with the City of Carlsbad SUSMP and Stormwater Management Program (SWMP). Approval of such plans shall be subject to a determination by the Carlsbad City Engineer that the proposed project has incorporated the post-development water quality pollution control site design BMPs, source control BMPs, and structural treatment control BMPs identified below into the project design to the maximum extent practicable: • Street sweeping • Inlet basin labeling • Filtering bioretention units	

Potential Impacts	Mitigation Measures	Level of Significance after Mitigation
	• Pervious pavement • Vegetated swales • Detention/infiltration basins • Covered trash enclosures **WQ-2b.** Project shall be required to show that it complies with the applicable hydromodification provisions of Order R9-2007-0001 and is designed so that post-project runoff flow rates and directions do not exceed pre-project runoff flow rates and directions for applicable design storms.	
Implementation of the project may result in a significant impact associated with water quality.	**WQ-3.** In conjunction with the sale, rental or lease of a residence or business property, all prospective owners and tenants shall be notified in writing through Covenants, Conditions, and Restrictions (CC&Rs) that they shall: a. Establish or work with established disposal programs for the removal and proper disposal of toxic and hazardous waste products. b. Not discharge or cause to be discharged any toxic chemicals or hydrocarbon compounds, such as gasoline, motor oil, antifreeze, solvents, paints, paint thinners, wood preservatives and other such fluids, into any public or private street or into any storm drain or storm drain conveyance. c. Use and/or dispose of all pesticides, fungicides, herbicides, insecticides, fertilizers, and other such chemical treatments in accordance with federal, State, County, and City requirements as prescribed on their respective containers. d. Employ BMPs to eliminate or reduce surface pollutants when planning any changes to the landscaping and/or surface improvements. Developer shall establish a	Less than significant.

Potential Impacts	Mitigation Measures	Level of Significance after Mitigation
	homeowner's association and corresponding CC&Rs. Said CC&Rs shall be submitted to and approved by the Planning Director prior to final map approval. Prior to issuance of a building permit, the Developer shall provide the Planning Department with a recorded copy of the official CC&Rs that have been approved by the California Department of Real Estate and the Planning Director.	
Implementation of the project may result in a significant impact associated with listed impaired water bodies.	See Mitigation Measures WQ-2a, -2b, and -3 listed above	Less than significant
5.8 Geology and Soils		
Implementation of the project may result in a significant impact associated with seismic-related hazards.	**GS-1.** Prior to issuance of a grading permit, a final geotechnical report that addresses site-specific geotechnical considerations shall be submitted to the City Engineer for approval. The final geotechnical report shall update the recommendations provided in the *Compilation of Reports for La Costa Town Square* (Southern California Soil & Testing, Inc. 2007 and 2009) preliminary geotechnical report for this project. These recommendations shall address engineering measures for project-specific site conditions which minimize seismic-related impacts, erosion and loss of topsoil, unstable geologic units, or expansive soils. The project construction and maintenance will comply with the recommendations of the final report and any modifications proposed by the City Engineer.	Less than significant
Implementation of the project may result in a significant impact associated with erosion and loss of topsoil.	See Mitigation Measure GS-1 listed above.	Less than significant
Implementation of the project may result in a significant impact	See Mitigation Measure GS-1 listed above.	Less than significant

Potential Impacts	Mitigation Measures	Level of Significance after Mitigation
associated with unstable geologic units.		
Implementation of the project may result in a significant impact associated with expansive soil.	See Mitigation Measure GS-1 listed above.	Less than significant
5.9 Hazards		
Implementation of the project may result in a significant impact associated with dam failure flooding.	**H-1.** Prior to approval of a final map subdividing the single-family residential portion of the project site, a grading plan shall be prepared and shall determine the extent of dam inundation area of the existing Stanley A. Mahr Reservoir. All of the single-family residential lots within the Dam Inundation Area shall receive notification as part of the standard ownership disclosure package and Covenants, Conditions, and Restrictions (CC&Rs) that their property is inside the Stanley A. Mahr Reservoir dam inundation area, and is subject to flooding, resulting in the potential loss of property, in the event of dam failure. Developer shall establish a homeowner's association and corresponding CC&Rs. Said CC&Rs shall be submitted to and approved by the Planning Director prior to final map approval. Prior to issuance of a building permit, the Developer shall provide the Planning Department with a recorded copy of the official CC&Rs that have been approved by the California Department of Real Estate and the Planning Director.	Less than significant
5.10 Visual Aesthetics/Grading		
No significant impact to visual aesthetics and grading has been identified.	No mitigation measures are needed, as no significant impact associated with visual aesthetics and grading has been identified.	Not applicable
5.11 Public Services and Utilities		
No significant impact to public services and utilities has been	No mitigation measures are needed, as no significant impact associated with public services and utilities has been identified.	Not applicable

Potential Impacts	Mitigation Measures	Level of Significance after Mitigation
identified.		

CHAPTER 3.0
PROJECT DESCRIPTION

3.1 PROJECT SITE LOCATION AND DESCRIPTION

The proposed La Costa Town Square project involves the construction and operation of a mixed-use center that includes 284,400 square feet of retail, restaurants, gas stations, and other commercial uses, 55,000 square feet of office space, 64 single-family detached residential units, and a 9.96-acre multifamily residential site to be developed in the future with approximately 128 condominium homes.

The project site encompasses approximately 83 acres and is located in the southeastern portion of the City of Carlsbad. Located thirty miles north of downtown San Diego, Carlsbad is a city with a population of approximately 101,000 people. Carlsbad is bordered to the north by the city of Oceanside, to the south by the city of Encinitas, to the east by the cities of Vista and San Marcos and the County of San Diego, and on the west by the Pacific Ocean. The project site is generally located northeast of the intersection of La Costa Avenue and Rancho Santa Fe Road. Regional access to the site is provided by I-5, located approximately 3.8 miles west of the site. Local access to the project site is provided by Rancho Santa Fe Road and La Costa Avenue. **Figure 2.0-1** depicts the regional location and local context of the project area.

The project site is bounded by Rancho Santa Fe Road on the north and west, by La Costa Avenue on the south, and by a SDG&E utility easement on the east. Currently, the project site consists of vacant, undeveloped land.

The project site elevation ranges from a low of approximately 260 feet above mean sea level (AMSL) in the canyon east of the La Costa Avenue entrance, to a high of approximately 400 feet AMSL on the northern portion of the site. The site slopes generally to the south.

3.2 PROJECT BACKGROUND

The project site is located within Villages Southeast Quadrant (SE) 13, SE 14, and a portion of SE 8 of the La Costa Master Plan. The La Costa Master Plan (MP 149), which consists of 2,399 acres, was adopted by the City of Carlsbad in 1972 and has been periodically amended since its original adoption. The adjacent Villages of La Costa Master Plan has recently processed a major Master Plan Amendment and is currently under development.

The project site is owned by La Costa Town Square, LLC and was annexed to the City of Carlsbad in 1972. The City's General Plan has designated a portion of the property for development as a local shopping center, in addition to an office and related commercial and low-medium density residential development, since the early 1970s.

The La Costa Town Square is also included in the Habitat Conservation Plan/Ongoing Multi-Species Plan (HCP/OMSP) for Properties in the Southeast Quadrant of the City of Carlsbad, California, (City of Carlsbad 1995a). This document was created to provide for the conservation of sensitive wildlife and habitat in the context of a proposed large-scale development plan. The HCP/OMSP will be implemented by the project. Development of the La Costa Town Square will be subject to all applicable City of Carlsbad Growth Management Plan policies and ordinances.

3.3 PROJECT CHARACTERISTICS

The La Costa Town Square project proposes the construction and operation of a mixed-use development containing retail, major supermarket, restaurants, gas stations, main street, community gathering space, and single-family residential all integrated into a comprehensive pedestrian friendly neighborhood. In addition, there is one multifamily parcel north of Rancho Santa Fe Road. **Table 3.0-1** provides a description of each component of the proposed project.

Table 3.0-1
Development Summary

Proposed Use	Gross Area Parcel Size (Acres)	Non-Residential Development (s.f.)	Number of Residential Units
Future Multifamily	9.96	---	128 (approx.)
Commercial	41.58	284,400	---
Office	7.14	55,000	---
Single-Family Residential	24.39	---	64
TOTAL	83.07	339,400	192

3.4 MASTER TENTATIVE PARCEL MAP

The proposed Master Tentative Parcel Map would divide the project into four separate parcels consisting of one multifamily parcel, one commercial parcel, one office parcel, and one single-family residential parcel. **Figure 3.0-1** depicts the proposed Tentative Parcel Map and **Figure 3.0-2** shows the overall project Site Development Plan.

3.4.1 Multifamily – Parcel No. 1

The multifamily parcel consists of 9.96 gross acres and is located in the northernmost portion of the project site. A separate discretionary application will be processed for this parcel at a later time, and will include the locations of approximately 128 multifamily units (overall density of approximately 13 units per gross acre) and 1.9 acres of open space. Along the northern boundary of the parcel and project site, the old alignment of Rancho Santa Fe Road west of the existing road is now a 50-foot-wide easement that contains an existing recreational trail in the old existing right-of-way separating the multifamily parcel from the existing residential development to the northwest of the parcel. Access to the multifamily parcel will be provided from Paseo Lupino (a collector street). The multifamily parcel will undergo a future site plan subject to the limitations provided in this EIR, and is anticipated to be developed after the single-family and commercial parcels are complete.

3.4.2 Commercial Tentative Map – Parcels No. 2 and 3

The two commercial parcels shown in **Figure 3.0-1** and **Figure 3.0-2** consist of a total of 26 commercial pads and parking and open space lots on 48.72 gross acres. These parcels are located southeast of Rancho Santa Fe Road, north of La Costa Avenue, and west of the proposed 64 single-family home residential development parcel.

A non-residential planned development permit is included for the commercial lots. The project includes commercial uses located in one- and two-story configurations. The local community shopping center will be located on Parcel 2 and consists of 284,400 square feet of commercial uses including approximately 124,900 square feet of retail and restaurant uses; two gas station pads totaling 6,500 square feet; a 55,000 square-foot grocery; and a 98,000 square-foot, two-level, department store. An additional 55,000 square feet of office uses will be located on Parcel 3 and accessed from La Costa Avenue. A total of 1,477 parking spaces will be provided at the

3.0-1 Tentative Parcel Map

8.5 x 11

3.0-2 Project Site Development Plan

11 x 17

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shopping center and 220 spaces will be provided for the office buildings. Open space on the easterly edges of the commercial development will separate the commercial and office parcels from the proposed adjacent single-family residential parcel.

Access to the 284,400 square feet of commercial uses will be provided from three locations: La Costa Avenue will have one signalized entrance to the site; and Rancho Santa Fe Road will utilize the existing signalized intersection at Paseo Lupino and provide one "right-in-only" entrance mid-block between La Costa Avenue and Paseo Lupino. The office site will be accessed at a new signalized intersection at Calle Timiteo.

The commercial parcel is proposed to be developed in two phases. First, the "core" central portion of the shopping center, including the main department store, supermarket, and retail shops and restaurants along the central corridor would be developed. After completion of the core shopping center, additional retail uses, restaurants, gas stations, and offices planned for the periphery of the parcel would occur, including the pedestrian entry tower and courtyard planned for the western corner of the parcel at the intersection of Rancho Santa Fe Road and La Costa Avenue.

3.4.3 Residential Tentative Map – Parcel No. 4

The residential parcel depicted in **Figure 3.0-2** anticipates 68 lots on 24.39 gross acres, including 64 single-family lots (Lots 1-64) and four open space lots (Lots 65-68). The single-family lot sizes range from 7,500 square feet up to 27,265 square feet. The sizes of the four open space lots on the residential parcel range from 12,310 square feet up to 62,810 square feet. Access to the residential homes will be provided from an entrance on La Costa Avenue with a connection to existing Sitio Lima. A pedestrian access way will be provided to the commercial parcel near Rancho Santa Fe Road. A separate tentative tract map has been prepared for the subdivision of this parcel. This parcel would be developed in its entirety prior to or concurrent with the first phase of commercial parcel development.

The residential tentative map proposes four open space lots (Lots 65-68) totaling 3.5 acres. The open space buffer for the commercial parcel will create privacy to the residences from surrounding roadways and commercial uses.

3.5 LANDSCAPE CONCEPT

The landscape theme for the project aims to reinforce and strengthen the European/Tuscan form of style and architecture. Landscape features such as open plazas, visual landmarks, water features, specialty paving, site furniture, and tree and rich landscape plantings, will be the cornerstone to the landscape concept.

3.6 OPEN SPACE

As described in the parcel descriptions above, the project proposes 1.9 acres of open space to be located on the multifamily residential parcel, 3.7 acres of open space in the commercial parcels and 3.5 acres of open space located on four lots throughout the single-family parcel. The combined total of 9.1 acres of open space throughout the project functions to separate or buffer residential areas from commercial or surrounding roadways, provide access for project residents, offer landscaping and other aesthetic features, and in some areas allow for detention of excess stormwater.

3.7 DETENTION BASINS/BIOLOGICAL SWALES

The project includes two new detention basins. One detention basin, located on the southern edge of the commercial parcel along La Costa Avenue, is equipped with storm drain connections. The second is located northerly of the intersection of La Costa Avenue and Camino De Los Coches. The detention basins are designed to provide flood control by collecting overflow water from the proposed development. In addition to the basin, numerous biological swales throughout the project treat flows from the pavement areas before the drainage waters enter the public drainage systems. These systems are proposed to meet the Regional Water Quality Control Board and City runoff requirements.

3.8 GRADING/HILLSIDE DEVELOPMENT PERMIT

The project will be required to present a final grading plan and obtain a Hillside Development Permit prior to beginning development. Substantial cut and fill areas are required to provide level pads for development. The overall grading for the project southeast of Rancho Santa Fe Road is 10,993 cubic yards per acre. The multifamily parcel northwest of Rancho Santa Fe Road was graded with the Rancho Santa Fe Road realignment project and completed several years ago. Total grading for the commercial and office portions of the project is 12,143 cubic yards per acre and is allowed per Carlsbad Municipal Code Section 21.95.140D (Hillside Development Ordinance), which allows exemption for nonresidential grading volumes and slope heights. The single-family residential parcel grading volume is 11,454 cubic yards per acre. A small amount of offsite grading will be required for the extension of Sitio Lima at the most easterly end of the single-family residential area. Additional discussion of grading is found in sections 5.1 Land Use and Planning, 5.8 Geology and Soils, and 5.10 Visual Aesthetics/Grading of this EIR.

3.9 BUILDING HEIGHT

The commercial portion of the project proposes the height of the roof line over the theme tower to be at 55 feet above ground level. The single-family residential buildings will generally be two stories, the multifamily residential buildings will generally be two or three stories, and other commercial building heights will generally range between 15 and 44 feet above ground level. Code Section 21.28.030(d) indicates that the City Council may approve a height limit up to 55 feet for projects of 40 or more acres when the Council can make six specific findings for the proposed project. In addition, Carlsbad Municipal Code Section 21.46.020 allows for protrusion above height limits for areas of a building that do not include or provide for additional floor space.

3.10 PUBLIC SERVICES

Senate Bill (SB) 221 and SB 610 evaluate water supply availability to land use decisions made by the respective jurisdictional agencies. SB 221 requires water suppliers to prepare written verification that sufficient water supplies are planned to be available prior to approval of large-scale projects (projects that demand an

amount of water equivalent to, or greater than, the amount of water required by a 500-dwelling unit project). SB 610 and SB 221 require water suppliers to prepare a Water Supply Assessment (WSA) report for large scale projects for inclusion by land use agencies within the CEQA process. However, as analyzed by the Olivenhain Municipal Water District (OMWD), the project is estimated to demand approximately 202,717 gallons per day (gpd), whereas a 500-unit project would demand approximately 250,000 to 350,000 gpd. Therefore, a separate WSA for the proposed project is not required, and the necessary supply of water to the project site is accounted for under OMWD's Urban Water Management Plan for normal, single-dry, and multiple-dry years.

Water service to the project site will be provided by the OMWD for all onsite facilities, while the Leucadia Wastewater District will provide sewer services to the site. The City of Carlsbad will maintain the storm drain facilities on the site. Gas and electricity will be provided by SDG&E. The project site is located within the Encinitas Union School District and the San Dieguito Union High School District. The two school districts will provide school services to the residents within the project site. The City of Carlsbad will provide police and fire protection safety services, library services, and parks and recreation services. Additional discussion of public services, including water supply, is found in Section 5.11 Public Services and Utilities of this EIR.

3.11 CULTURAL RESOURCES CONSULTATION

A cultural resources update was prepared for the project, which summarized three archaeological sites on the project site, which were determined to be not significant and no further work was recommended for these resources (RECON 2001a). However, the General Plan Amendment and development of native terrain actions that would occur are subject to the requirements of SB 18 – Traditional Tribal Cultural Places. Under this bill, the City will contact the Native American Heritage Commission for a list of tribes in the local area to consult. During the Draft EIR public review period, these tribes will be sent project information and asked for a list of known sacred sites, if any. Responses will be

reported in the Final EIR and any adverse issues will be addressed prior to certification of the Final EIR.

3.12 PROJECT OBJECTIVES

Objectives for the project are to:

- Strengthen the City's tax base through sales and property taxes and provide increased shopping and job opportunities for local residents.

- Ensure that the surrounding residential areas are adequately served by a commercial center that fulfills daily shopping needs, which will minimize the length of local vehicular trips and encourage transit use, and will provide convenience goods, food, and personal services in accordance with the La Costa Master Plan.

- Unify land uses by setting forth design guidelines and an implementation program that creates a unique and distinctive sense of place and identity for the community and is consistent with the City's Landscape Manual.

- Conform to and implement the City's Growth Management Program and HCP/OMSP and conform to the General Plan after a minor land use boundary amendment and its associated policies and goals.

- Offer safe, attractive, well-balanced residential areas with a range of housing types, styles, and price levels in a variety of locations, which are compatible with surrounding areas.

- Provide open space features onsite for the benefit of residents and neighboring communities to support active and passive recreation opportunities and a high-quality living environment.

- Provide amenities for well-designed pedestrian access to the site and bicycle linkages to the surrounding communities through a logical connection of trails, sidewalks, and bicycle facilities.

- Comply with the provisions of Carlsbad Municipal Code Section 21.85.040 by providing the required number of affordable housing units offsite.

- Develop a plan that is sensitive to existing hillside areas, balances earthwork, and provides contour grading where feasible to minimize visual impacts from surrounding public viewing areas.

- Enhance employment opportunities for the City through the creation of construction- and commercial-related jobs that are fully integrated into the community.

- Encourage sustainability in design to foster "green" development that reduces project energy needs and water consumption.

- Improve the water quality of site runoff through sustainable design features, such as a natural bioswale.

3.13 INTENDED USES OF THE EIR

The following provides a list of the discretionary actions that will be under consideration by the City as part of the approval of the proposed project. This EIR is intended to apply to all listed projects, approvals, and permits, as well as any other permits or approvals necessary or desirable to implement the project.

1. **General Plan Amendment**. The applicant is requesting an amendment to the General Plan Land Use Map and Open Space and Conservation Element to add the land use designation of Residential High Density and to adjust the office, commercial, open space, and residential land uses of the project site. Areas designated Open Space on the existing General Plan Land Use Map and Open Space and Conservation Map will be realigned to maintain an open space buffer between the commercial and residential land uses.

2. **La Costa Master Plan Amendment MP 149(Q)**. The project requires an amendment to two of the existing La Costa Master Plan provisions. The

amendment includes reducing the total office space square-footage requirement of 25 percent down to 15 percent; adjusting the commercial, office, and open space boundary between the single-family residential and the commercial land uses; and adding the Residential High Density land use designation.

3. **Local Facilities Management Plan (LFMP) Zone 11 Amendment**. An amendment to the Zone 11 LFMP is being proposed for the project to address the changes in land use. The amended LFMP describes all public facilities requirements and sets forth the timing of installation and financing for all public facilities.

4. **Master Tentative Parcel Map**. A Master Tentative Parcel Map, which covers the entire project site, is proposed to subdivide the project into four separate parcels, consisting of the multifamily residential, commercial, office, and single-family residential uses.

5. **Commercial and Office Tentative Maps.** A Commercial Tentative Map is proposed for the commercial portion of the project, which would create 24 commercial pads within the shopping center, parking areas, and open space. A separate tentative map is proposed for the development of the office site to create two lots and 60 airspace condominium units.

6. **Residential Tentative Map.** The residential tentative map would create 64 R-1-7,500-square-foot, single-family lots and four open space lots.

7. **Site Development Plan.** A Site Development Plan is required for each of the commercial and office portions of the project for the same area covered by the Commercial and Office Tentative Maps (#5 above).

8. **Conditional Use Permit – Service Station.** A conditional use permit will be processed for the service stations shown as pads #7 and #14.

9. **Conditional Use Permit – Drive-throughs.** A conditional use permit will be processed for each drive-through facility.

10. **Hillside Development Permit**. The proposed grading must be conducted in conformance with the City of Carlsbad Hillside Development Ordinance and a Hillside Development Permit will be obtained.

11. **Variance**. A variance is needed to allow for more than one entry sign per street frontage as the project has multiple entrances on each street frontage.

12. **Participation in the Implementation of HCP/OMSP.** The project is included in and will comply with the Implementation Agreement for the HCP/OMSP. The Villages of La Costa Master Plan has established and defined permanent preservation of Conserved Habitat Area and appropriate Impact Areas within each of the three Villages of La Costa projects.

13. **Certification of the Final EIR.** After the required public review period of a Draft EIR, the City of Carlsbad will respond to comments, edit the document, and produce a Final EIR to be certified by the City Council as complete and providing accurate information concerning the environmental impacts from implementation of the proposed project.

3.14 SUBSEQUENT DISCRETIONARY APPROVALS

Subsequent discretionary approvals will be required to implement the proposed project. These subsequent approvals include approval of subdivision and other related implementing actions including, but not limited to, grading and building permits. The approvals are necessary for project implementation, are considered part of the whole of the project, and as such are evaluated in the environmental analysis of this EIR.

3.15 DISCRETIONARY ACTIONS AND APPROVALS BY OTHER AGENCIES

U.S. Army Corps of Engineers (ACOE). Projects that include potential dredge or fill impacts to "waters of the U.S." (including wetlands) are subject to Section 404 of the Clean Water Act (CWA). The proposed project would impact jurisdictional waters and wetlands on the site. Impacts to waters of the U.S. (including wetlands) are not covered by the HCP/OMSP and will require additional mitigation. A mitigation plan for these impacts is proposed and is discussed in Section 5.6 Biological Resources of the EIR. The discussion and analysis contained in the EIR is intended to provide the ACOE the information needed to grant a Section 404 Permit.

California Department of Fish and Game (DFG). The DFG is responsible for conserving, protecting, and managing California's fish, wildlife, and native plant resources. To meet this responsibility, the law requires any person, state or local governmental agency, or public utility to notify the DFG before beginning an activity that will substantially modify a river, stream, or lake. If the DFG determines that the activity could substantially adversely affect an existing fish and wildlife resource, a Lake or Streambed Alteration Agreement is required pursuant to Section 1602 of the Fish and Game Code. It is anticipated that the proposed project applicant would be required to obtain a 1602 Agreement due to alterations of the project site drainage. Where a state-listed threatened or endangered species occurs on a project site, the DFG also would be responsible for the issuance of a Memorandum of Understanding (MOU) to ensure the conservation, enhancement, protection, and restoration of state-listed threatened or endangered species and their habitats.

U.S. Fish and Wildlife Service (USFWS). The USFWS is authorized under the Endangered Species Act of 1972 (ESA) to establish lists of endangered and threatened plants and animals and to identify critical habitats for listed species. If a listed species or critical habitat may be present within the impact area of the proposed project, a biological assessment is required under the ESA. If it is then determined that a proposed project will affect a listed endangered or threatened species or critical habitat, a formal consultation or a habitat conservation plan is required with the USFWS to identify mitigation measures required to be added as a condition of project approval, as a precondition to issuance of an "incidental take

permit." If the proposed project will potentially impact an endangered plant, habitat, or animal, the project will be required to comply with the ESA.

The proposed project is included in the HCP/OMSP. The document was created by the City of Carlsbad, Fieldstone, La Costa Associates, DFG, and USFWS to provide for the conservation of sensitive wildlife and habitat in the context of a proposed large-scale development plan. The HCP/OMSP identifies 66 species of concern and provides an impact analysis of the proposed development in regard to these species. In addition, the plan provides for the dedication of open space both onsite and offsite as mitigation for impacts to the species of concern and affiliated habitat.

San Diego Regional Water Quality Control Board (RWQCB). The San Diego RWQCB is one of nine regional boards under the California State Water Resources Control Board (SWRCB). Under the direction of the SWRCB, the RWQCB exercises authority under the federal CWA and correlative state statutes to regulate the discharge of "waste" into waters of the U.S. within its San Diego region of influence. Regulation in part is done through obtaining a Section 401 Water Quality Certification pursuant to the CWA. Section 401 Certification is based on a finding that the proposed project's Section 404 discharge will comply with all pertinent water quality standards as established by the RWQCB. As part of Section 401 Certification, conditions may be imposed by the RWQCB to remove or mitigate potential impacts to water quality standards. If a project is denied certification, a Section 404 permit cannot be issued for the project. The RWQCB also may require a Waste Discharge Requirement under the state Porter-Cologne Water Quality Control Act for state waters not covered under the 401 Water Quality Certification.

3.16 LEAD, RESPONSIBLE, AND TRUSTEE AGENCIES

3.16.1 Lead Agency

In conformance with Sections 15050 and 15367 of the CEQA Guidelines, the City of Carlsbad has been designated the "lead agency," which is defined as the public agency that has the principal responsibility for carrying out or approving a project.

3.16.2 Possible Responsible/Trustee Agencies

Responsible Agencies are those agencies that have discretionary approval over one or more actions involved with development of the proposed project site. Trustee Agencies are state agencies having discretionary approval or jurisdiction by law over natural resources affected by a project. These agencies may include, but are not limited to, the following:

3.16.3 Responsible Agencies

U.S. Fish and Wildlife Service
U.S. Army Corps of Engineers (Section 404 Permit)
Regional Water Quality Control Board (Section 401 Certification or waiver)
California Department of Fish and Game (Fish and Game Code Section 1602)

3.16.4 Trustee Agency

California Department of Fish and Game (Section 1602 Permit)

CHAPTER 4.0
ENVIRONMENTAL SETTING

This section provides a general description of the environmental setting of the proposed project. Information developed for the setting was established at the time of release of the July 2007 Notice of Preparation (NOP). A more detailed description of the environmental setting as it relates to each of the environmental issues addressed in this EIR is provided in Sections 5.1 through 5.11.

The project site consists of approximately 83 acres of land and is located in the southeastern portion of Carlsbad. Located 30 miles north of downtown San Diego, Carlsbad is a city with a population of approximately 101,000 people. Carlsbad is bordered to the north by Oceanside, to the south by Encinitas, to the east by Vista and San Marcos and San Diego County, and on the west by the Pacific Ocean. The project site is generally located northeast of the intersection of La Costa Avenue and Rancho Santa Fe Road (see **Figure 2.0-1** in Section 2.0 Executive Summary of this EIR). Regional access to the site is provided by I-5, located approximately 3.8 miles west of the site. Local access to the project site is provided by Rancho Santa Fe Road and La Costa Avenue.

The project site elevation ranges from a low of approximately 260 feet AMSL in the canyon north of the La Costa Avenue entrance to a high of approximately 400 feet AMSL on the northern portion of the site. The site slopes generally to the south. Currently, the project site consists of vacant, undeveloped land. The northwest portion of the project site, including the proposed multifamily residential parcel, was previously graded as a part of the realignment of Rancho Santa Fe Road. Existing or planned single-family residential communities are located to the north, east, south, and west of the project site; and a small community-serving commercial center is located to the southwest, at the intersection of La Costa Avenue and Rancho Santa Fe Road. Local neighborhood parks are scattered throughout the neighborhoods surrounding the site with larger recreation parcels near a secondary school approximately 0.5 miles south of the site. A steep hillside begins approximate 0.3 miles northeast of the project site, separated from the

project site by a small residential community, providing a large backdrop of natural open space rising to over 1,000 feet AMSL.

The proposed La Costa Town Square project site is located within the coastal subprovince of the Peninsular Ranges Geomorphic Province, near the western edge of the southern California Batholith. The bedrock underlying the majority of the project site consists of volcanic/ metavolcanic rock of the Santiago Peak Volcanics. Sandstone bedrock of the Delmar Formation underlies the southwesterly portion of the site. Sedimentary bedrock of the Lusardi Formation locally underlies a canyon and lower natural slope area in the southeasterly portion of the site.

As is common in most of southern California, the project site is located within a seismically active region. No active fault is known to exist on or in the immediate vicinity of the project site, and the site is not located within an Earthquake Fault Zone. The nearest active fault is the Rose Canyon Fault Zone, located approximately 7 miles west of the project site.

The project site is located in an area of mild Mediterranean climate, characterized by moderate year-round temperatures. In the summer, ocean breezes blow inland providing cool temperatures during the day. At night, the wind reverses direction and the breezes blow from land to sea. Santa Ana winds periodically affect this pattern and bring hot and dry air blowing from land to sea for two- or three-day periods, typically during fall months. Average seasonal temperatures range from the low 70s in the summer to low 50s in winter. The overall average temperature is 61 degrees Fahrenheit. An average of 10 inches of rainfall occurs each year, predominantly between November and April.

The proposed project site is located within the San Diego Air Basin. The San Diego Air Basin is a nonattainment area for federal and state air quality standards for ozone and state standards for particulate matter less than 10 microns in diameter (PM_{10}) and 2.5 microns in diameter ($PM_{2.5}$). Air pollutants transported into the basin from the adjacent South Coast Air Basin (Los Angeles, San Bernardino, Orange,

and Riverside counties) substantially contribute to the nonattainment conditions in the San Diego Air Basin. Motor vehicles are the major generators of air pollutant emissions in the vicinity of the project site. Rancho Santa Fe Road and La Costa Avenue carry local and through traffic emitting exhaust pollutants. Currently, the project site generates no stationary or mobile source emissions other than occasional vehicles traversing the project site along the dirt roads.

The project site is located within the Carlsbad Hydrologic Unit. The entire hydrologic unit is a triangular area of approximately 210 square miles, extending from Lake Wohlford on the east to the Pacific Ocean on the west, and from the city of Vista on the north to Cardiff-by-the-Sea on the south. The hydrologic unit includes the cities of Oceanside, Carlsbad, Encinitas, Vista, and Escondido. The area is drained by Buena Vista, Agua Hedionda, San Marcos, and Escondido creeks. The Carlsbad Unit contains three major coastal lagoons: Buena Vista, Agua Hedionda, and Batiquitos.

The following six vegetation communities have been identified within the project site: Diegan coastal sage scrub, disturbed coastal sage scrub, native grassland, nonnative grassland, riparian scrub, and disturbed seasonal ponding areas. The site also has five ponded areas. The remainder of the site is disturbed or developed. A total of 87 plant species have been identified on the site. Approximately 62 percent of the species are native to southern California, while the remaining 38 percent are introduced species.

The project site is located within the HCP/OMSP (City of Carlsbad 1995a). All six vegetation communities listed above are considered sensitive on the project site by resource agencies due to either restricted range or cumulative losses throughout the region. The ponded areas were surveyed in 2001 and 2004 and found to be negative for the San Diego fairy shrimp and no further surveys are required. The lack of identification of vernal pool indicator plant species in three of the pools and negative results of the protocol focused surveys for endangered fairy shrimp species in all five pools suggest these basins do not appear to be naturally occurring vernal pools. The property also contains 0.06 acre of wetland and 0.35 acre of nonwetland jurisdictional waters of the U.S.

Seven sensitive and noteworthy plant species have been observed on the project site: thread-leaved brodiaea, Orcutt's brodiaea, California adolphia, southwestern spiny rush, western dicondra, Palmer's grappling hook, and small-flowered microseris. One other sensitive plant species, the San Diego thornmint, was identified in the California Natural Diversity Database (CNDDB) as historically occurring on the project site, although one rare plant survey in conducted in 2006 did not document this species. All of these species are covered by the HCP/OMSP, with the exception of the small-flowered microseris.

The California gnatcatcher, a federally threatened species, has been observed onsite. In addition, the following four sensitive bird species have been observed on the project site: California horned lark, yellow-breasted chat, white-tailed kite, and southern California rufous-crowned sparrow. In addition, the following three California species of special concern were found on the site or in the vicinity of the site during previous surveys: western spadefoot, loggerhead shrike, and Belding's orange-throat whiptail. All of these species are covered by the HCP/OMSP. No observed wildlife movement corridors are present on the project site.

CHAPTER 5.0
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

This section of the EIR identifies the environmental setting for each environmental issue area, the thresholds for determining significance of environmental impacts, potential environmental impacts, mitigation measures for those environmental impacts that are deemed significant, and the environmental impact remaining after implementation of mitigation measures. Notes and references are also listed.

Each environmental issue analyzed in this EIR is discussed in the following format:

Environmental Setting: A discussion of the existing conditions, services, and physical environment of the project area (CEQA Guidelines Section 15125).

Thresholds for Determining Significance: The amount or type of impact that may create a substantial or potentially substantial adverse change in the environment as defined in Section 15382 of the CEQA Guidelines and as discussed in Sections 15064 and 15065. The Environmental Checklist contained in Appendix G of the CEQA Guidelines (all areas), the City of Carlsbad Growth Management Guidelines (traffic), noise standards established in the City General Plan (noise), the City of Carlsbad Hillside Development Regulations (visual aesthetics/grading), and the LFMP Zone 11 Performance Standards (public services and utilities) serve as guides for determining the thresholds contained in this document. Based on these criteria, project impacts can be classified as:

- Significant and unmitigated
- Significant and mitigated
- Below a level of significance

Environmental Impact: A discussion of the impacts of the proposed project in quantitative and/or qualitative terms, based on the uses of land and associated project components identified in the project description (CEQA Guidelines Sections 15126 and 15358).

Mitigation Measures: A discussion of the measures required or recommended to avoid, mitigate, or substantially lessen significant impacts (CEQA Guidelines Sections 15126.4 and 15370).

Level of Significance After Mitigation: A discussion of the level of impact of the project following implementation of required or recommended mitigation measures (CEQA Guidelines Sections 15126.2 and 15126.4).

Environmental Issues

1. Land Use and Planning
2. Transportation/Circulation
3. Air Quality
4. Noise
5. Paleontological Resources
6. Biological Resources
7. Hydrology/Water Quality
8. Geology and Soils
9. Hazards
10. Visual Aesthetics/Grading
11. Public Services and Utilities

Detailed discussions of these environmental issue areas are found in the following sections. Other long-term environmental issues, such as cumulative impacts (including Global Climate Change), growth-inducing impacts, significant irreversible environmental changes, unavoidable significant environmental impacts, and areas of no significant impact, are discussed in Section 6.0 Analysis of Long-Term Effects of this EIR.

5.1 LAND USE AND PLANNING

5.1.1 Environmental Setting

Onsite Land Uses

The project site consists of vacant, undeveloped land covered with Diegan coastal sage scrub, disturbed coastal sage scrub, native grassland, nonnative grassland, disturbed seasonal ponding areas, and riparian scrub. The project site is bounded on the west by Rancho Santa Fe Road, to the south by La Costa Avenue, to the east by a SDG&E utility easement, and to the north by Rancho Santa Fe Road and the former Rancho Santa Fe Road. The newly realigned Rancho Santa Fe Road separates the multifamily housing parcel from the remainder of the site. The project site elevation ranges from a low of approximately 260 feet AMSL in the canyon east of the La Costa Avenue entrance to a high of approximately 400 feet AMSL on the northern portion of the site. The site slopes generally to the south.

The project site is owned by the La Costa Town Square LLC and was annexed to the City of Carlsbad in 1972. The City's General Plan has designated a portion of the property as a local shopping center, in addition to office and related commercial and low-medium residential uses, since the early 1970s.

Offsite Land Uses

Single-family residential development borders the project site to the northwest of the proposed multifamily site location, to the north (adjacent to the realigned Rancho Santa Fe Road), and to the southeast of the proposed single-family portion of the site. Multifamily residential units border the site to the south, adjacent to La Costa Avenue, between Camino De Los Coches and Rancho Santa Fe Road. Additionally, a small shopping center is located in the southwest corner of the intersection of Rancho Santa Fe Road and La Costa Avenue. The nearest open space is in the form of small open parcels scattered throughout the nearby

residential neighborhoods, and a steep hillside approximately 0.3 miles northeast of the proposed single-family residential portion of the project site.

Existing Land Use Plans, Policies and Regulations

The following describes the land use plans, policies and regulations applicable to the proposed project.

City of Carlsbad General Plan

Eight elements comprise the City of Carlsbad General Plan. These elements are Land Use, Circulation, Noise, Housing, Open Space and Conservation, Public Safety, Parks and Recreation, and Arts. Together, these elements satisfy the seven mandatory general plan elements as established in the California Government Code. Goals, objectives, and implementing policies and action programs have been established for each of the elements.

Figure 5.1-1 depicts the existing City of Carlsbad General Plan land use designations for the project site and surrounding area. The project site land use designations are Office and Related Commercial (O), Local Shopping Center (L), Open Space (OS), and Low-Medium Density Residential (RLM). The land use designations immediately surrounding the project site are Open Space (OS), Low-Medium Density Residential (RLM), Medium Density Residential (RM), Medium-High Density Residential (RMH), and Local Shopping Center (L).

La Costa Master Plan

The project site is located within Villages SE 13, SE 14, and a portion of SE 8 of the La Costa Master Plan. The La Costa Master Plan (MP 149) consists of 2,399 acres, was adopted by the City of Carlsbad in 1972, and has been periodically amended since its original adoption. The Villages of La Costa project has recently processed a major Master Plan Amendment and is currently under development.

City of Carlsbad Zoning Ordinance

The City of Carlsbad Zoning Ordinance provides the specific physical land use planning criteria for development within the city. The project site is located within and surrounded by a Planned Community Zone.

5.1-1 Existing General Plan Land Use Designations

Growth Management

The Growth Management chapter (Chapter 21.90) of the City of Carlsbad Municipal Code is generally intended to provide a balanced community; ensure that development is consistent with the General Plan; and prevent growth unless adequate public facilities and improvements are provided in a phased and logical fashion. This chapter of the Zoning Ordinance generally provides that General Plan, zone change, and Specific Plan amendments that would increase the density or development intensity of that established by the General Plan are required to amend the applicable Local Facilities Management Plan (LFMP) prior to project approval.

Zone 11 Local Facilities Management Plan

The City's Growth Management Program (GMP) and Chapter 21.90 of the City's Municipal Code, divides Carlsbad into 25 local facilities management zones. The GMP requires the preparation of LFMPs for the 25 different management zones within the City. The LFMPs implement the provisions to the City's GMP by phasing all development and public facility needs in accordance with the adopted GMP performance standards. Individual projects must comply with the provisions of the LFMP in which they are located, as well as implement provisions of the citywide plan. The proposed project is located within Local Facilities Management Zone (LFMZ) 11. **Figure 5.1-2** depicts the project site in relation to the LFMZs in the city.

The GMP establishes performance standards for 11 different public facilities: city administration, library, wastewater treatment, parks, drainage, circulation, fire, open space, schools, sewer collection, and water distribution. The GMP requires these public facilities to be available in conformance with the adopted performance standards in any area where new development occurs. If a particular LFMZ is not in compliance with each of the 11 public facility standards, no new development can occur within that LFMZ.

Hillside Development Regulations

Due to the topography of the project site, the proposed project is subject to the Hillside Development Regulations of the Carlsbad Zoning Ordinance. The Hillside Development Regulations are generally intended to preserve the natural appearance of hillsides and ensure that development of hillsides does not damage natural resources and landforms or cause significant erosion and siltation. However, special regulations apply to nonresidential uses. No

5.1-2 Local Facilities Management Zone 11

property in Carlsbad with a slope of 15 percent or more and an elevation differential greater than 15 feet shall be developed unless a hillside development permit has been issued. Additional discussion related to grading and Hillside Development Regulations is provided in sections 5.8 Geology and Soils and 5.10 Visual Aesthetics/Grading of this EIR.

Landscape Manual

The policies, programs, and requirements of the Landscape Manual apply to all public and private development requiring discretionary permits or submittal of landscape plans for development permits. The Landscape Manual contains policies and requirements associated with:

- Planting
- Irrigation
- Water Conservation
- Streetscape
- Slope Revegetation/Erosion Control
- Fire Protection

The policies and requirements within the Landscape Manual are minimum standards, and projects are encouraged to exceed the standards whenever possible. However, variances may be granted from the policies and requirements of the manual if undue hardships or special circumstances make a variance request necessary.

Habitat Conservation Plan/Ongoing Multi-Species Plan

The La Costa Town Square project site is included in the HCP/OMSP. This document was created to provide for the conservation of sensitive wildlife and habitat in the context of a proposed large-scale development plan. The HCP/OMSP will be implemented by the project.

5.1.2 Thresholds for Determining Significance

Appendix G of the CEQA Guidelines is used to provide direction for determination of a significant land use impact from the proposed project. For the purpose of this EIR, a significant impact would occur if the proposed project would:

- Physically divide an established community or cause incompatibility of existing or planned land uses;

- Conflict with any applicable land use plan, policy or regulation including the City of Carlsbad General Plan, City of Carlsbad Zoning Ordinance, Zone 11 Local Facilities Management Plan, City of Carlsbad Hillside Development Ordinance, resulting in a significant physical impact on the environment; or

- Conflict with the City of Carlsbad's Habitat Conservation Plan/Ongoing Multi-Species Plan.

5.1.3 Environmental Impact

Onsite Land Use Compatibility

As illustrated in the Site Development Plan **Figure 3.0-2** in Chapter 3.0 Project Description of this EIR, the project proposes construction and operation of a mixed-use project that includes an approximately 284,400-square-foot community shopping center, 55,000 square feet of offices, 64 single-family detached residential units, and 128 future multifamily residential units.

The proposed Master Tentative Parcel Map would divide the project into four separate parcels consisting of one commercial, one office, one single-family residential, and one multifamily residential parcel. The proposed uses are generally consistent with the existing General Plan and LFMP land use designations for the project site, although minor land use boundary modifications will result in General Plan and LFMP amendments to add the Residential High land use designation and relocate the Office to be adjacent to La Costa Avenue. These discretionary

actions will be achieved as described below in the "consistency" section. A landscaped open space buffer separates the commercial and residential parcels. As a result, noise and any visual impacts associated with the commercial uses closest to the single-family homes would be minimal. Because parcels, lots, and pads within the project site have incorporated measures to reduce adjacent land use conflicts, implementation of the proposed project will not result in an onsite land use impact.

Offsite Land Use Compatibility and Established Communities

Land uses surrounding the project site are generally residential, with a small community commercial area at the southeast corner of Rancho Santa Fe Road and La Costa Avenue. Despite the General Plan and LFMP amendments, the proposed land use changes and boundary modification are minor and will not create incompatibilities with the surrounding communities. Potential environmental impacts to the compatibility of these land uses may be high noise, light, or glare, aesthetic or visual, or other physical impacts to surrounding land uses from the proposed project's land uses. Most of these impacts are discussed in other sections of this EIR and, therefore, the project is not found to impact land use compatibility with offsite land uses.

Figures 5.10-2, 5.10-3 and **5.10-4** (located in Section 5.10 Visual Aesthetics/Grading of this EIR) depict the views of the project site from the several single-family residences. Land bordering the project site to the southeast and east (across La Costa Avenue), and northeast (across Rancho Santa Fe Road) are developed with single-family homes. The single-family residences proposed by the project are compatible in intensity, density, and neighborhood design with the existing residential development in the vicinity. No significant impact associated with these offsite land uses would occur.

There is also an existing single-family residential development with mostly two-story residences that borders the project site to the northeast. The project proposes a 50-foot-wide open space buffer with landscaping and pedestrian/bicycle paths to separate the proposed multifamily residential uses

and existing single-family residences. The multifamily residential parcel will be closest to the existing single-family residential development to the east of the project site and will be designed similar in style and scale as the neighboring residential communities; therefore, no significant impact associated with these offsite land uses would occur.

Nearest to the proposed commercial parcel, multifamily residential units border the site to the south (across La Costa Avenue, between Camino De Los Coches and Rancho Santa Fe Road). Additionally, a small shopping center is located on the corner of Rancho Santa Fe Road and La Costa Avenue. The proposed commercial development would include restaurants, two detention basins, pads for retail uses, a pedestrian entry tower and courtyard, two office buildings, and parking lots within the southwestern portion of the project site. The proposed development would also include a minimum 50-foot-wide landscaped setback along La Costa Avenue. Since the project provides a minimum 50-foot-wide landscaped setback along La Costa Avenue, no significant impact associated with these offsite land uses is anticipated.

The project will connect to the adjacent communities through pedestrian enhancements and the Citywide Trail System and will offer focal points of shopping, restaurants, open space, and other features to be used by residents of the surrounding community. The project site is currently vacant and unused, and the proposed project would complement the surrounding communities through fulfilling the land use designations intended under the General Plan as described below. No major roadways, walls, or other dividing features are proposed for the project site that would create physical barriers. Therefore, there will be no land use impact associated with dividing an established community.

Existing Land Use Plans, Policies, and Regulations

Consistency with City of Carlsbad General Plan

Figures 5.1-3a and **5.1-3b** depict the existing and proposed General Plan and LFMP land use boundaries within the project site. The existing General Plan (City of

Carlsbad 1994) designations of Office and Related Commercial (O), Local Shopping Center (L), Open Space (OS), and Low-Medium Density Residential (RLM) would be modified to accommodate the proposed project. The existing RLM designation located north of Rancho Santa Fe Road would be redesignated to Residential High Density (RH) to accommodate the proposed density of 128 future multifamily units on Parcel 1 under the proposed project. The northerly portion of proposed Parcel 2 of the proposed project would be changed from the O designation to L, consistent with the existing L designation on the balance of Parcel 2. The existing L designation north of the intersection of Rancho Santa Fe Road and Calle Timiteo would be redesignated O over proposed Parcel 3. The existing RLM designation would be retained on Parcel 4, the proposed single-family site, and a portion of the existing L designation on Parcel 4 would be changed to RLM. The existing OS designation would be altered to correspond to the open space proposed between parcels 2 and 4. These alterations of existing urban and open space designations would not substantially alter land use intensity in the project area and would maintain an open space corridor connecting La Costa Avenue with Rancho Santa Fe Road and continuing to the north to connect with the open space corridor along the abandoned portion of Rancho Santa Fe Road. Therefore, amendments to the General Plan and LFMP are required to reflect the La Costa Master Plan amendments as discussed below. These actions would still allow for consistency of the proposed project and General Plan objectives C-19 (using the General Plan Open Space Map as a conceptual guide and the proposed project realignment to better define areas for greenways and pedestrian trails), C-20 (to make adjustments with

5.1-3aExisting General Plan, Master Plan, and LFMP Zone Amendments

5.1-3b Proposed General Plan, Master Plan, and LFMP Zone Amendments

geographically similar or larger open space areas, and environmentally similar or better open space areas), and C-22 (to use open space to buffer major land uses).

Since the proposed project is generally consistent with the existing General Plan and LFMP land use designations, despite a minor change in physical boundaries of these land uses and reclassification of two land uses, a less than significant impact associated with this issue would occur.

General Plan Policy Analysis

Land Use Element

- *A City which provides for an orderly balance of both public and private land uses within convenient and compatible locations throughout the community and ensures that all such uses, type, amount, design, and arrangement serve to protect and enhance the environment, character and image of the City.*

- *A City which provides for land uses which through their arrangement, location and size, support and enhance the economic viability of the community.*

- *A City which provides for a variety of housing types and density ranges to meet the diverse economic and social requirements of residents, yet still ensures a cohesive urban form with careful regard for compatibility while retaining the present predominance of single-family residences.*

- *A City that achieves a healthy and diverse economic base by creating a climate for economic growth and stability to attract quality commercial development to serve the employment, shopping, recreation, and service needs of Carlsbad residents.*

- *A City which provides for the development of compatible, conveniently located neighborhood shopping centers.*

- Project Consistency: The proposed project is a mixed-use project containing commercial retail, office, single-family residences, and multifamily residences. The project provides an orderly balance of both public and private land uses creating a healthy and diverse economic base. The project design and arrangement serve to protect and enhance the environment, character, and image of Carlsbad. The project includes a variety of housing types and density ranges to meet the diverse economic and social requirements of city residents, while retaining the present predominance of single-family residences. The development offers compatible, conveniently located shopping for the city residents. The project also creates employment possibilities within the diverse range of retail and commercial uses within the project site.

Circulation Element

- *A City with an adequate circulation infrastructure to serve the projected population.*

- *A City which promotes, encourages, and accommodates a variety of transportation modes as alternatives to the automobile.*

- *A City with a transportation system which helps to minimize air pollution and traffic congestion and supports commerce and economic development.*

- *A City with an integrated transportation network serving local and regional needs which accommodates a balance of different travel modes based on safety, convenience, attractiveness, costs, environmental and social impacts.*

  - Project Consistency: The proposed project includes the realigned Rancho Santa Fe Road within the project site. This has resulted in a better overall circulation infrastructure for the area's future needs. The project also accommodates a variety of transportation modes as alternatives to the automobile. For example, a bus transportation system is an important part of the project design. Bus stops exist along circulation roadways around

the commercial parcel in order to offer a transportation system that helps to minimize pollution and traffic congestion in the area. The bus transportation system also supports the project site's commerce and economic development, and the project will enhance bus stop features along Rancho Santa Fe Road. Additionally, the proposed project offers landscaped trails and walkways throughout the project site for pedestrian access by City residents, and offers bicycle racks for City residents using nearby bicycle routes from the adjacent streets to access the site. The project's design for alternative modes of travel is derived from the City's goals to offer a balance of different travel modes based on safety, convenience, attractiveness, costs, and environmental and social impacts.

Noise Element

- *A City which is free from excessive, objectionable, or harmful noise.*
- *A City where land uses are not significantly impacted by noise.*
- *To provide a roadway system that does not subject surrounding land uses to significantly adverse noise levels.*
    - Project Consistency: As discussed in *Section 5.2 Transportation/Circulation*, approximately 25,516 average vehicle trips per day would be generated by the proposed project. These vehicle trips would contribute to traffic noise along the surrounding roadways. Within the proposed project site, noise attenuation features would be constructed along planned roadways where needed to reduce vehicular noise impacts to below a level of significance. The project also proposes an outdoor gathering area available for outdoor performances between 7:00 a.m. and 10:00 p.m. that may generate noise; however, this noise would be only 48 to 53 dB at the nearest residences, which would be in compliance with the Noise Element. Additional attenuation features would further reduce the audible level at these residences and, therefore, the project would remain consistent with the City's Noise Element.

Housing Element

- *The City should assure the future development provides an adequate diversity of housing, with types, prices, tenures and locations consistent with the age and economic characteristics of present and future residents.*

- *The City should provide affordable housing opportunities in a variety of types and locations to meet the needs of current low and moderate income households and a fair share proportion of future low and moderate income households.*

- *The City should assure that the amount and type of housing development or redevelopment is compatible with, and convenient to, the locations of major facilities and services and, in particular, major transportation and transit routes as well as major employment centers.*

    - Project Consistency: The proposed project provides a variety of housing opportunities for the city residents, ranging from single-family detached homes to multifamily attached dwelling units. The project proposes 64 single-family homes, located within the residential parcel east of the commercial parcel. The residents have an option to access the commercial parcel using walkways through the open space buffer located between the residential and commercial parcels. The project also proposes 128 future multifamily residential units located in the northwestern parcel. Therefore, all of the project residential units will be conveniently located and compatible to employment, major transportation routes, shopping, and other services.

Open Space and Conservation Element

- *An open space system of aesthetic value that maintains community identity, achieves a sense of natural spaciousness, and provides visual relief in the cityscape.*

- *An open space system that improves the quality of life for the citizens of Carlsbad.*

    - Project Consistency: The proposed project has addressed the General Plan Open Space and Conservation Element goals by establishing a total of 9.1 acres of open space within the project site. Approximately 3.7 acres of open space will separate the residential parcel from the commercial parcel. This open space will include a pedestrian access system and a detention basin. This open space will create privacy for the residences from surrounding roadways and commercial uses. Additionally, another 1.9 acres of open space will be designated within the northern parcel. This open space will consist of a trail within an approximately 50-foot-wide open space corridor along the northern boundary of the multifamily residential parcel. Also, the connector road located along the eastern boundary of the multifamily residential parcel is closed and 0.3 acres of the road will be designated as open space.

Public Safety Element

- *A City which minimizes injury, loss of life and damage to property resulting from fire, flood, crime, hazardous material, or seismic disaster occurrence.*

    - Project Consistency: The City of Carlsbad has adopted the City of Carlsbad Emergency Plan, which addresses the City's planned response to extraordinary emergency situations. As the project site develops, the risk from undisturbed natural vegetation will be minimized as the vegetation is replaced by development; therefore, the wildfire risk is considered minimal. The small open space corridor located northeast of the project site has a low potential to have wildfires; however, the impact is considered minimal because the proposed project will be required to implement fire safety measures in the project building construction and landscaping. Additionally, according to the Zone 11 LFMP, all future development in Zone 11 is within the 5-minute response time of Fire Station 6 and partially within the 5-minute response time of Fire Station 2.

Implementation of the proposed project will result in an alteration of the topography and drainage characteristics of the site. As a result, flooding and drainage control mechanisms are required to ensure that the rate and volume of runoff from the project are held at the predevelopment levels. The project includes two detention basins within commercial Parcel 2: One detention basin, equipped with storm drain connections, is located along La Costa Avenue; and the second basin is located on the southern edge of the open space buffer between Parcels 3 and 4. The detention basins are designed to provide flood control by collecting overflow water from the proposed development. According to the Federal Emergency Management Agency Flood Insurance Rate Map (FEMA 2007) the project site is not located within a flood zone. Due to the Stanley A. Mahr Reservoir (also known as the La Costa Dam) located north of the project site, the project site may experience some incidental flooding mainly along the realigned Rancho Santa Fe Road. Additionally, the eastern corner of the project site could experience flooding associated with dam failure. Mitigation Measure H1 contained in EIR Section 5.9 Hazards would reduce or eliminate the possible impact associated with a dam failure.

The City of Carlsbad Police Department's response time to the project site is currently 6 minutes. According to the Police Department, the proposed project would be provided with adequate police services to the area. EIR Section 5.11 Public Services and Utilities, contains more information about police services.

Development of the project site will result in new residential and commercial uses on the site. The expected increase in residential development will result in more household hazardous materials being used, stored, and discarded within the community. Additionally, the commercial uses may use hazardous materials within the project site. However, the expected use of hazardous materials is considered minimal and normal use associated with the project land uses. Since the use of hazardous materials will be stored, handled, transported, and disposed in accordance with existing

regulations, no significant impact associated with the hazardous materials is expected to occur.

Carlsbad is within a seismically active region. Adherence to city and state building codes would reduce or eliminate any known potential for seismic disaster.

Arts Element

- *A City strongly reflecting the arts in its total environment with land and facilities permanently dedicated to performing and visual arts, together with an abundant range of on-going and special arts programs involving as many regular and visiting members of the community as possible, as active participants, audiences, and patrons.*

  - Project Consistency: The project includes an outdoor gathering area for exhibits and special events not involving amplified music. This project design feature contributes to this land use policy.

Consistency with La Costa Master Plan

The project site is located within Villages SE 13, SE 14, and a portion of SE 8 of the La Costa Master Plan. The project requires an amendment to two of the existing La Costa Master Plan provisions. The amendment includes reducing the total office space-square-footage requirement from 25 percent to 15 percent, and the minor adjustment of the open space boundary between the single-family residential and the commercial land uses. **Figures 5.1-3a** and **5.1-3b** depict the existing and proposed Master Plan boundaries. Since the proposed project is not consistent with the existing La Costa Master Plan, an amendment to the La Costa Master Plan will be processed. However, as analyzed in the No Project Alternative, no greater environmental impacts will occur than those considered under the La Costa Master Plan for the project site and identified in this EIR. Similarly, the addition of Residential High Density land use and minor land use boundary adjustments will be made through a General Plan Amendment as

described above; therefore, there will be no physical land use impact that would cause an inconsistency with the La Costa Master Plan.

Consistency with City of Carlsbad Zoning Ordinance

The proposed project is consistent with the Planned Community Zone designation of the project site and no zone change is proposed. However, a variance will be obtained to allow for more than one monument entry sign per street frontage as the project has multiple entrances on Rancho Santa Fe Road. Because the commercial parcel has two entrances from Rancho Santa Fe Road, monumentation at both of these entry points is required to welcome visitors to the commercial center and direct them to particular destinations. Because of the large size of parcel and appropriately spaced distance between the commercial driveways, locating the additional monumentation signage would achieve the same practical effect of multiple lot developments along a main road utilizing monumentation at their dedicated entryways. The monumentation would not conflict with design regulations of the Zoning Ordinance or present a visual nuisance or significant obstruction. Therefore, with the variance, the project would have a less than significant impact associated with consistency with the Carlsbad Zoning Ordinance.

Consistency with the City's Growth Management Chapter

The proposed project complies with the Growth Management Control Point densities for the proposed land use designations as established in Section 21.90.045 of the Carlsbad Zoning Ordinance. According to that section, the Control Point density for the proposed project is 3.2 dwelling units per net acre for RLM areas and, therefore, this area could have accommodated up to 78 residential units. The 64 residential units proposed for the revised RLM area (a density of 2.6 dwelling units per acre) are 14 units less than what was available to the site by-right.

Council Policy Statement 43 (effective December 17, 2002) directs excess dwelling units that otherwise could have been built by-right in an area to be

added to a citywide "excess dwelling units" balance. This policy complements the voter-approved Proposition E, which established residential growth limits. Under this policy statement, the City Council would be authorized to approve a residential project with a number of dwelling units greater than allowed by-right, provided that one of several conditions is met. The citywide excess dwelling unit balance may be applied to these projects (reducing the balance). One condition of the residential development would be for implementing a 15 percent low-income requirement of the Inclusionary Housing Ordinance; another would be for developing "smart growth" projects where increased density is being placed in proximity to major transit facilities, employment opportunities, and commercial support services; still another would be for projects approved for a land use change from nonresidential to residential or projects containing a mix of these land uses. The proposed project promotes these policies and is applicable to receive the excess dwelling units. Excess dwelling units exist in the "excess dwelling unit bank" to be allocated to the new Residential High Density land use designation.

For a detailed discussion of the project's consistency with existing and planned services and facilities as well as the requirements of the Growth Management Chapter of the Zoning Ordinance, please refer to Section 5.11 Public Services and Utilities of this EIR. Because construction or development would not be allowed within the project site without compliance with the Zone 11 LFMP, the proposed project is consistent with the requirements of the Growth Management Chapter of the Carlsbad Zoning Ordinance.

Consistency with Zone 11 Local Facilities Management Plan

The existing LFMP Zone 11 is shown in **Figure 5.1-2**. As depicted in the figure, an amendment to the LFMP Zone 11 is required for the project to address the changes in land use and the proposed land use boundaries. The amended LFMP (**Figures 5.1-3a** and **5.1-3b**) describes all public facilities requirements and sets forth the timing of installation and financing for all public facilities. The scope of the LFMP Zone 11 amendment is considered minor including the boundary changes between the land uses, adjusted commercial and office square-

footages, open space configuration, and total residential uses including the addition of the Residential High Density land use designation. Despite these changes, as discussed in EIR Section 5.11 Public Services and Utilities, there will be a less than significant impact to services defined in the Zone 11 LFMP. Since the changes in the amended LFMP Zone 11 are minor and the amended LFMP Zone 11 is consistent with the proposed amendments for the General Plan, this issue is not considered a significant impact.

Consistency with Hillside Development Regulations

Grading for the proposed project, excluding the previously graded multifamily residential site, would be approximately 11,454 cubic yards per acre (cy/ac) for the single-family residential portion of the project and 12,143 cy/ac for the combined commercial and office portions of the project.

Nonresidential development is not required to comply with the volume of grading and slope height requirements of the Hillside Development Regulations, which instead provides that "any nonresidential project proposing grading in excess of ten thousand cubic yards per acre or creating slopes in excess of forty feet in height shall provide both written and graphic exhibits to justify the proposed grading to the satisfaction of the decision-making body." Combined grading for the commercial and office portion of the project would not create slopes in excess of 40 feet in height, but would exceed the 10,000 cy/ac threshold and would require justification satisfactory to the City Council for exceeding the design standard. In addition, grading for the office site would result in slopes of up to approximately 26 to 30 feet in height adjacent to La Costa Avenue that are at a 2:1 slope ratio and are not proposed to be contour graded. This would require City Council approval of a modification to the contour grading standard (Section 21.95.120 F) of the Hillside Development Regulations. Features of the grading design in this area of the project that support modification of the contour grading standard are the provision of vegetated swales at the top and toe of the slope to carry drainage within a landscape feature, rather than in a pipe or concrete culvert; and the site plan for the project, which would locate the office building a minimum of 190 feet from La Costa Avenue, thus providing a landscaped foreground view from La Costa Avenue and from the residences on the south side of the street.

Development in the portion of the project south of Rancho Santa Fe Road is constrained by past grading for Rancho Santa Fe Road and La Costa Avenue, which altered the natural contours within the project site. The grading concept for the project is to step down from the higher elevation adjacent to Rancho Santa Fe Road to the elevation at La Costa Avenue by providing a cut slope

varying from 5 feet to approximately 37 feet in height at Rancho Santa Fe Road; a mid-slope varying from 28 feet to approximately 45 feet in height; and a fill slope adjacent to La Costa Avenue that varies from 7 feet to approximately 37 feet in height. This grading pattern is similar to the manner in which the existing residences adjacent to the east were developed and results in no views of graded slopes from Rancho Santa Fe Road; very limited views of the mid-slope, which would be at the rear of the proposed lots; and a maximum slope height of approximately 37 feet adjacent to La Costa Avenue and with homes set back from 20 to 80 feet from the edge of the road.

Additional analysis of the geotechnical and visual impacts of the proposed project is provided in Section 5.8 Geology and Soils and Section 5.10 Visual Aesthetics/Grading of this EIR. Granting of the Hillside Development Permit by the City Council, with approval of modifications or exceptions to the grading standards, would avoid a significant land use impact associated with the Hillside Development Regulations.

Consistency with City's Landscape Manual

The City's Landscape Manual applies to all public and private developments requiring discretionary permits. As such, the proposed project must and would comply with the requirements, standards, and guidelines contained in the Landscape Manual. Therefore, no significant impact associated with the Landscape Manual would occur.

Habitat Conservation Plan/Ongoing Multi-Species Plan

An analysis of the project's consistency with the HCP/OMSP is provided in Section 5.6 Biological Resources of this EIR, which indicates that the proposed project will not result in a significant land use impact associated with the HCP/OMSP.

5.1.4 Mitigation Measures

No mitigation measures are proposed as no significant impacts associated with land use and planning have been identified.

5.1.5 Level of Significance after Mitigation

Onsite, Offsite, and Established Community Land Use Compatibility

No significant impact associated with onsite or offsite land uses, or physical division of an established community has been identified.

Existing Land Use Plans, Policies, and Regulations

No significant impact associated with consistency between the proposed project and the City of Carlsbad General Plan, La Costa Master Plan, Zoning Ordinance, Growth Management Plan, Local Facilities Management Plan, Hillside Development Regulations, or City Landscape Manual has been identified.

Habitat Conservation Plan/Ongoing Multi-Species Plan

No significant land use impact associated with the HCP/OMSP has been identified.

5.2 TRANSPORTATION/CIRCULATION

The information presented in this section is a summary of the *Traffic Impact Analysis for La Costa Town Square* (Traffic Analysis or Traffic Report) prepared by Urban Systems Associates, Inc. (2008). The Traffic Report is provided as Appendix B of this EIR.

The Traffic Report was prepared in accordance with the SANDAG Congestion Management Program (CMP) guidelines and the City of Carlsbad Growth Management Plan Guidelines. Existing and Existing Plus Project conditions within Carlsbad were determined using the Intersection Capacity Utilization (ICU) method, since that method was used for the existing conditions evaluation in the latest (Year 2007) City of Carlsbad GMP traffic monitoring report. For all future conditions, all study intersections located within Carlsbad were evaluated using the Highway Capacity Manual (HCM) methodology (Transportation Resource Board 2000). Intersections outside Carlsbad were evaluated using the 2000 HCM software for all scenarios. The SANDAG Series 10 Combined North County Transportation Model, Carlsbad Subarea, was used to estimate Year 2010 and buildout (Year 2030) traffic conditions. Section 2.0 of the Traffic Report fully describes the methodology used to evaluate potential project traffic impacts.

The study area for the report covers most of Carlsbad east of I-5 and extends into portions of the cities of Encinitas and San Marcos as well as portions of unincorporated San Diego County. The study area was established by Urban Systems Associates and captures a region up to 5 miles in some directions from the project site in which project-generated traffic would be likely to occur on an arterial street segment.

5.2.1 Environmental Setting

This section of the report evaluates existing average daily traffic (ADT) volumes on study area street segments (between intersections) and at intersections during AM and PM peak hours. Traffic volumes are based on recent daily roadway traffic counts and peak period manual traffic counts at intersections.

Street Segments

Figure 5.2-1 shows existing ADT volumes on street segments within the study area. These volumes were taken from recent traffic counts conducted for the City of Carlsbad's 2007

5.2-1 Existing Average Daily Traffic

Traffic Monitoring Program or provided by the applicant at other study area locations not monitored by the City. **Figure 5.2-2** shows existing roadway classifications for street segments within and adjacent to the study area.

Following is a description of the existing street system within the project study area:

Calle Barcelona is classified as a four-lane Secondary Arterial between El Camino Real and Rancho Santa Fe Road. The posted speed limit is 45 miles per hour (MPH).

Camino De Los Coches is classified as a four-lane Secondary Arterial between Rancho Santa Fe Road and Calle Timiteo. Between Calle Timiteo and La Costa Avenue this roadway is classified as a two-lane collector with left-turn lanes at intersections thereby adding capacity. The posted speed limit is 40 MPH.

El Camino Real is classified as a north-south Prime Arterial. It exists as a six-lane arterial with a raised median from just south of Aviara Parkway/Alga Road and between Costa Del Mar and Leucadia Boulevard/Olivenhain Road. North of Costa Del Mar and south of Aviara Parkway/Alga Road, El Camino Real is five lanes (two lanes southbound/three lanes northbound). Bike lanes exist on both sides of the roadway. The posted speed limit is 55 MPH. The Carlsbad Traffic Impact Fee (TIF) includes widening southbound to three lanes.

La Costa Avenue is classified as a Major Arterial west of El Camino Real and a Secondary Arterial east of El Camino Real. La Costa Avenue is a four-lane arterial west of Romeria Street and a three-lane arterial east of Romeria Street (two travel lanes in the westbound direction and one travel lane in the eastbound direction). The posted speed limit is 45 MPH. East of Rancho Santa Fe Road, La Costa Avenue is a four-lane secondary arterial and transitions to two lanes at Camino De Los Coches.

Leucadia Boulevard is classified as a Major Arterial (Augmented Facility with additional capacity) between I-5 and El Camino Real in the Circulation Element

of the City of Encinitas General Plan, with four lanes and a raised median. Bike lanes exist on both sides of the roadway between Quail Gardens Drive and El Camino Real. The posted speed limit is 40 MPH.

5.2-2 Existing Roadway Classifications

Melrose Drive is classified as a Prime Arterial between Faraday Avenue and Rancho Santa Fe Road. Melrose Drive is a six-lane arterial with a raised median. Bike lanes exist on both sides of the roadway. The posted speed limit is 55 MPH.

Olivenhain Road is classified as a Prime Arterial between El Camino Real and Rancho Santa Fe Road with four lanes. The posted speed limit is 45 MPH. The Circulation Element of the City of Encinitas General Plan indicates that the ultimate classification is a six-lane Prime Arterial. A roadway widening project is in progress and will provide three eastbound and two westbound lanes. However, there is currently no project in Carlsbad or Encinitas to widen Olivenhain Road for a third westbound lane.

Rancho Santa Fe Road is classified as a Prime Arterial and extends from Encinitas on the south to San Marcos to the north. Rancho Santa Fe Road has six lanes and a raised median between Olivenhain Road and Melrose Drive. The posted speed limit is 45 MPH. The roadway narrows to four lanes within San Marcos.

San Elijo Road is classified as a four-lane Major Arterial, which intersects Rancho Santa Fe Road to the west and extends into San Marcos to the east. The posted speed limit is 45 MPH.

Table 5.2-1 includes existing street segment levels of service (LOS) within Carlsbad based on the highest peak hour flow by direction, taken from intersection peak hour traffic counts, and a per lane capacity of 1,800 vehicles per hour per lane (VPHPL). As shown, all street segments currently operate acceptably, at LOS D or better, using this methodology as required by the City of Carlsbad GMP.

Table 5.2-2 includes existing I-5 levels of service. Segments of I-5 are shown to operate at an unacceptable LOS F during peak hours.

Table 5.2-1
Existing Street Segment Peak Hour Levels of Service
Segments Within Carlsbad

Segment	Lanes[1]	Capacity	AM Peak Hour				PM Peak Hour			
			Volume[2]	Dir.	V/C	LOS	Volume[3]	Dir.	V/C	LOS
Rancho Santa Fe Road										
Melrose Dr. – San Elijo Rd.	3	5,400	1,975	SB	0.37	A	1,579	NB	0.29	A
San Elijo Rd. – La Costa Ave.	3	5,400	2,739	SB	0.51	A	2,012	NB	0.37	A
La Costa Ave. – Olivenhain Rd.	3	5,400	2,080	SB	0.39	A	1,817	NB	0.34	A
Olivenhain Rd. – Calle Acervo	2	3,600	779	NB	0.22	A	810	SB	0.23	A
El Camino Real										
Aviara Pkwy/Alga Rd. – La Costa Ave.	2	3,600	2,150	SB	0.60	A	2,155	NB	0.60	A
La Costa Ave. – Leucadia Blvd./Olivenhain Rd.	3	5,400	1,818	SB	0.34	A	1,819	SB	0.34	A
Melrose Drive										
Palomar Airport Rd. – Rancho Santa Fe Rd.	3	5,400	971	SB	0.18	A	923	SB	0.17	A
La Costa Avenue										
I-5 SB Ramps – Piraeus St.	2	3,600	1,578	EB	0.44	A	1,897	EB	0.53	A
Piraeus St. – El Camino Real	2	3,600	1,443	WB	0.40	A	1,784	WB	0.50	A
El Camino Real – Romeria St.	2	3,600	733	WB	0.20	A	871	EB	0.24	A
Romeria St. – Rancho Santa Fe Rd.[3]	1	1,800	608	EB	0.34	A	657	EB	0.37	A
Rancho Santa Fe Rd. – Calle Timiteo	2	3,600	424	WB	0.12	A	328	EB	0.09	A
Calle Timiteo – Camino de los Coches	1	1,800	485	EB	0.27	A	159	EB	0.09	A
Camino De Los Coches – Circulo Sequoia	1	1,800	85	EB	0.05	A	61	WB	0.03	A
Calle Barcelona										
El Camino Real – Rancho Santa Fe Rd.	2	3,600	319	EB	0.09	A	259	EB	0.07	A

[1] Lanes in One Direction.
[2] Highest Volume by Direction in Peak Hour, as shown in **Figure 5.2-5a** through **Figure 5.2-5f**.
[3] Eastbound, One-Lane Only; Westbound, Two-Lanes.
V/C = Volume to Capacity Ratio
LOS = Level of Service
Note: Peak hour segment volumes are taken from intersection AM/PM peak hour figures.

Table 5.2-2
Existing Freeway Segment Levels of Service

Segment	Number of Lanes	Peak Hour Capacity per Lane	ADT	Peak Hour %	Dir. Split	Truck Factor	Peak Hour Volume Per Lane	V/C	LOS[1]
Interstate 5									
Poinsettia Ln. to La Costa Ave.	8	2,350	214,000	0.08	0.60	0.97	2,647	1.13	F
La Costa Ave. to Leucadia Blvd.	8	2,350	219,000	0.08	0.60	0.97	2,709	1.15	F
Leucadia Blvd. to Encinitas Blvd.	8	2,350	224,000	0.08	0.60	0.97	2,771	1.18	F

ADT = Average Daily Traffic
V/C = Volume to Capacity Ratio
LOS = Level of Service
[1] Caltrans District 11 LOS Estimation Procedures
Source: SANDAG/Caltrans 2006

Table 5.2-3 includes existing street segment levels of service using ADT volumes for CMP arterial segments within Carlsbad and roadways outside Carlsbad. As shown in **Table 5.2-3**, three roadway segments are operating at unacceptable levels of service. Rancho Santa Fe Road between Melrose Drive and Island Drive currently operates at LOS E. The City of San Marcos has identified this segment as being CMP deficient and will prepare a deficiency plan to include strategies for additional capacity. Olivenhain Road between El Camino Real and Rancho Santa Fe Road, and El Camino Real between Aviara Parkway/Alga Road and La Costa Avenue are operating at a LOS F. All other roadway segments are operating at LOS D or better.

Olivenhain Road is currently being widened by a combined City of Carlsbad/City of Encinitas project that will provide three eastbound lanes and two westbound lanes. There is no project planned to provide the third westbound lane. These improvements have been assumed in the Existing Plus Project conditions.

The southbound lanes of El Camino Real south of Aviara Parkway/Alga Road narrow from three to two lanes adjacent to the Batiquitos Lagoon and will

eventually be widened to three lanes southbound as a City of Carlsbad Traffic Impact Fee project. With widening to six lanes, this segment would operate at LOS D.

Table 5.2-3
Existing Street Segment Level of Service Summary - CMP ADT Method
CMP Arterials and Roadways Outside Carlsbad

Segment	Classification	Capacity at LOS E	ADT	V/C	LOS
Rancho Santa Fe Road					
San Marcos Blvd. – Island Dr.	4-MA	40,000	33,800	0.85	D
Island Dr. – Melrose Dr.	4-MA	40,000	36,400	0.91	E
Melrose Dr. – San Elijo Rd.	6-PA	60,000	34,675	0.58	B
San Elijo Rd. – La Costa Ave.	6-PA	60,000	39,950	0.67	C
La Costa Ave. – Olivenhain Rd.	6-PA	60,000	32,200	0.54	B
Calle Acervo – El Camino del Norte	2-SA(+)	20,000	14,800	0.74	C
El Camino Real					
Aviara Pkwy./Alga Rd. – La Costa Ave.	5-PA[1]	50,000	50,905	1.02	F
La Costa Ave. – Leucadia Blvd./Olivenhain Rd.	6-PA	60,000	39,335	0.66	C
Leucadia Boulevard					
I-5 SB Ramps – Quail Gardens Dr.	4-MA (+)	45,400	36,400	0.81	D
Quail Gardens Dr. – El Camino Real	4-MA (+)	45,400	31,000	0.68	C
Olivenhain Road					
El Camino Real – Rancho Santa Fe Rd.	4-PA	40,000	42,600	1.07	F
San Elijo Road					
Rancho Santa Fe Rd. – Elfin Forest Rd.	4-MA	40,000	14,600	0.37	B

[1] To be widened by the City of Carlsbad Traffic Impact Fee Program. With six lanes, V/C = (50,905 ÷ 60,000) = 0.85; LOS = D
6-PA = 6-Lane Prime Arterial
5-PA = 5-Lane Prime Arterial
4-PA = 4-Lane Prime Arterial
4-MA = 4-Lane Major Arterial
4-MA (+) = 4-Lane Major Arterial, Augmented per City of Encinitas Standards
3-SA = 3-Lane Secondary Arterial
2-SA(+) = 2-Lane Secondary Arterial, Augmented, per City of Encinitas Standards
V/C = Volume to Capacity Ratio
LOS = Level of Service
ADT = Average Daily Traffic

Intersections

Figure 5.2-3 shows the key to study area intersections, by number. **Figures 5.2-4a** through **5.2-4f** show existing intersection lane configurations; and **Figures 5.2-5a** through **5.2-5**f show existing AM and PM peak hour traffic volumes at the study area intersections.

5.2-3 Project Intersection Key

5.2-4aExisting Intersection Lane Configurations

5.2-4bExisting Intersection Lane Configurations

5.2-4c Existing Intersection Lane Configurations

5.2-4dExisting Intersection Lane Configurations

5.2-4e Existing Intersection Lane Configurations

5.2-4f Existing Intersection Lane Configurations

5.2-5aExisting AM/PM Peak Hour Traffic

5.2-5bExisting AM/PM Peak Hour Traffic

5.2-5c Existing AM/PM Peak Hour Traffic

5.2-5dExisting AM/PM Peak Hour Traffic

5.2-5e Existing AM/PM Peak Hour Traffic

5.2-5f Existing AM/PM Peak Hour Traffic

Table 5.2-4 includes the results of the intersection level of service ICU method for existing conditions within Carlsbad. The study area Carlsbad intersections are shown to be operating at acceptable levels of service (LOS D or better) for existing conditions.

Table 5.2-4
Existing Intersection Level of Service Summary - ICU Method
Intersections Within Carlsbad

Intersection		AM Peak Hour		PM Peak Hour	
		V/C	LOS	V/C	LOS
5	Melrose Dr. at Palomar Airport Rd. (07/11/07) C	0.82	D	0.71	C
6	Melrose Dr. at Rancho Bravado (01/12/06) P	0.32	A	0.26	A
7	Melrose Dr. at Poinsettia Ln./Paseo Corto (01/12/06) P	0.24	A	0.24	A
8	Melrose Dr. at Carillo Wy. (01/12/06) P	0.38	A	0.32	A
9	Melrose Dr. at Alga Rd. (08/09/07) C	0.53	A	0.67	B
10	Rancho Santa Fe Rd. at Melrose Dr. (06/26/07) T	0.50	A	0.53	A
11	Rancho Santa Fe Rd. at San Elijo Rd. (08/08/07) C	0.51	A	0.62	B
12	Rancho Santa Fe Rd. at Camino Junipero (12/19/06) T	0.55	A	0.53	A
13	Rancho Santa Fe Rd. at La Costa Ave. (08/08/07) C	0.63	B	0.62	B
14	Rancho Santa Fe Rd. at Camino de los Coches (07/19/06) C	0.46	A	0.50	A
15	Rancho Santa Fe Rd. at Calle Barcelona (01/10/06) C	0.65	B	0.48	A
16	Rancho Santa Fe Rd. at Olivenhain Rd. (07/12/07) C	0.65	B	0.67	B
18	El Camino Real at Aviara Pkwy./Alga Rd. (08/09/07) C	0.75	C	0.72	C
19	El Camino Real at Costa Del Mar Rd. (01/12/06) P	0.60	A	0.64	B
20	I-5 SB Ramps at La Costa Ave. (07/17/07) C	0.56	A	0.54	A
21	I-5 NB Ramps at La Costa Ave. (07/17/07) C	0.65	B	0.65	B
22	Piraeus St. at La Costa Ave. (01/05/06) P	0.59	A	0.67	B
23	Saxony Rd. at La Costa Ave. (01/05/06) P	0.47	A	0.54	A
24	El Camino Real at La Costa Ave. (08/07/07) C	0.70	B	0.74	C
25	Viejo Castilla Wy. At La Costa Ave. (01/17/06) P	0.39	A	0.34	A
26	Romeria St. at La Costa Ave. (01/12/06) P	0.39	A	0.46	A
27	Cadencia St. at La Costa Ave. (01/12/06) P	0.46	A	0.44	A
37	Amargosa Dr. at Olivenhain Rd. (01/10/06) P	0.84	D	0.69	B
38	Calle Timiteo at La Costa Ave.[1] (01/10/06) P	0.34	A	0.21	A
39	Camino de los Coches at La Costa Ave.[1] (01/10/06) P	0.48	A	0.26	A
42	La Costa Avenue at Project Driveway #1[1] (01/11/06) P	0.23	A	0.19	A
45	Rancho Santa Fe Rd. at Paseo Lupino (12/19/06) T	0.48	A	0.39	A
46	Rancho Santa Fe Rd. at Calle Acervo (12/19/06) T	0.85	D	0.71	C

Intersection	AM Peak Hour		PM Peak Hour	
	V/C	LOS	V/C	LOS

[1] Existing Stop Sign Control
V/C = Volume to Capacity Ratio
LOS = Level of Service
(xx/yy/zz) = Traffic Count Date

Source of Traffic Counts
C = City of Carlsbad
P = Priority Engineering
T = Transportation Studies, Inc.

Table 5.2-5 shows intersection levels of service using HCM methodology for intersections outside Carlsbad. The intersection in Encinitas at Rancho Santa Fe Road/El Camino Del Norte currently is controlled by all-way stop signs and operates poorly. A traffic signal at this intersection would improve the level of service and reduce delay at this location. However, the City of Encinitas has no plans for the installation of a traffic signal, preferring to retain the all-way stop as a traffic calming measure and to discourage through traffic within the nearby residential areas. All other locations evaluated currently operate acceptably at LOS D or better.

Table 5.2-5
Existing Intersection Level of Service Summary - HCM Method
Intersections Outside Carlsbad

Intersection		AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS
1	Rancho Santa Fe Rd. at San Marcos Blvd. (01/11/06) P	36.8	D	47.9	D
2	Rancho Santa Fe Rd. at Lake San Marcos Dr. (01/11/06) P	10.5	B	12.9	B
3	Rancho Santa Fe Rd. at Camino Del Arroyo Dr. (01/11/06) P	10.0	A	9.8	A
4	Rancho Santa Fe Rd. at Island Dr. (01/11/06) P	3.1	A	3.2	A
10	Rancho Santa Fe Rd. at Melrose Dr. (8/26/07) C	30.9	C	33.9	C
17	Rancho Santa Fe Rd. at El Camino Del Norte[1] (01/11/06) P	39.4	E	29.4	D
28	I-5 SB Ramps at Leucadia Blvd. (01/14/06) P	18.6	B	18.7	B
29	I-5 NB Ramps at Leucadia Blvd. (01/14/06) P	14.2	B	18.0	B
30	Clark Ave. at Leucadia Blvd. (01/03/06) P	29.7	C	11.9	B
31	Saxony Rd. at Leucadia Blvd. (01/03/06) P	30.6	C	34.0	C
32	Sidonia St. at Leucadia Blvd. (01/03/06) P	11.2	B	11.2	B
33	Quail Gardens at Leucadia Blvd. (01/04/06) P	32.3	C	25.2	C

34	Garden View Rd. at Leucadia Blvd. (01/04/06) P	25.1	C	30.5	C
35	Town Center Pl. at Leucadia Blvd. (01/04/06) P	19.9	B	25.5	C
36	El Camino Real at Leucadia Blvd. (01/18/06) P	39.7	D	43.1	D
37	Amargosa Dr. at Olivenhain Rd. (01/10/06) P	25.1	C	17.6	B
40	Melrose Dr. at San Elijo Rd. (01/18/06) P	26.7	C	25.6	C

[1] Existing All-Way Stop Sign Control
(xx/yy/zz) = Traffic Count Date
Source of Traffic Counts
P = Priority Engineering
C = City of Carlsbad

Local Streets

Figure 5.2-6 shows local street classifications in the project area. Nearby streets evaluated are Paseo Lupino and Corte Brezo north of the project site; Circulo Sequoia east of the project site; and Calle Timiteo, Camino De Los Coches, and Calle Acervo south of the project site.

Paseo Lupino is classified as a two-lane collector street that intersects Rancho Santa Fe Road. The project will have a major driveway at the south side of this intersection.

Corte Brezo is a two-lane local street providing access to the existing residential area to the west.

Circulo Sequoia is a two-lane local street serving the existing residential area to the east.

Calle Timiteo is a two-lane collector street extending from La Costa Avenue to Camino De Los Coches to the south. The project will construct a major driveway at the Calle Timiteo intersection on La Costa Avenue and will install a traffic signal at the intersection.

Camino De Los Coches south of La Costa Avenue to Calle Timiteo is a two-lane secondary arterial with added roadway capacity due to left-turn lanes at

intersections. The segment between Calle Timiteo and Rancho Santa Fe Road is a four-lane secondary arterial street.

Calle Acervo between Camino De Los Coches and Rancho Santa Fe Road is a two-lane collector street.

Figure 5.2-7 shows existing ADT volumes on these evaluated residential streets near the project site.

Table 5.2-6 shows existing street segment levels of service for these nearby residential streets, using volume to capacity (V/C) ratios and level of service criteria for street segments contained in the SANDAG CMP. As shown in this table these streets currently operate acceptably at LOS A or B.

5.2-6 Local Street Classifications in the Project Area

5.2-7 Local Street Existing Average Daily Traffic

Table 5.2-6
Existing Local Street Segment Levels of Service

Segment	Classification	Capacity at LOS E[1]	ADT[2]	V/C	LOS
La Costa Ave.					
Camino De Los Coches – Circulo Sequoia	2-SA	15,000	1,685	0.11	A
Camino De Los Coches					
La Costa Ave. – Calle Acervo	2-SA	15,000	3,698	0.25	A
Calle Acervo – Calle Timiteo	2-SA	15,000	3,700	0.25	A
Calle Timiteo – Rancho Santa Fe Rd.	4-SA	30,000	8,485	0.28	A
Calle Timiteo					
200 Ft. South of La Costa Ave.	2-C	8,000	2,098	0.26	A
200 Ft. North of Camino De Los Coches	2-C	8,000	2,273	0.28	A
Calle Acervo					
Camino de los Coches – Calle Barcelona	2-C	8,000	3,000	0.38	B
Paseo Lupino					
West of Rancho Santa Fe Rd.	2-C	8,000	905	0.11	A
Corte Brezo					
North of Paseo Lupino	2-L	2,200[3]	905	0.41	A
Circulo Sequoia					
North of La Costa Ave.	2-L	2,200[3]	768	0.35	A
South of La Costa Ave.	2-L	2,200[3]	637	0.29	A

[1] 2006 SANDAG CMP Update: Table D-2
[2] See Figure 5.2-7
[3] Capacity at LOS C
4-SA = 4-Lane Secondary Arterial
2-SA = 2-Lane Secondary Arterial (with left-turn lanes at intersections)
2-C = 2-Lane Collector Street (without left-turn lanes at intersections)
2-L = 2-Lane Local Street

5.2.2 Thresholds for Determining Significance

Appendix G of the CEQA Guidelines is used to provide direction for determination of a significant traffic/circulation impact from the proposed project. For the purposes of this EIR, a significant impact would occur if the proposed project would:

- Result in an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial

increase in either the number of vehicle trips, the V/C ratio on roads, or congestion at intersections); or

- Result in exceedance, either individually or cumulatively, of a level of service standard established by the county congestion management agency (SANDAG) for designated roads or highways.

Based on the City of Carlsbad Growth Management Guidelines, a significant impact would occur within Carlsbad if the proposed project would:

- Cause a road segment or intersection to operate at a LOS E or F, or if the project contributes to a LOS E or F condition during peak hours.

On roadway segments outside of Carlsbad, a significant impact would occur, using San Diego Traffic Engineer's Council (SANTEC)/Institute of Transportation Engineers, Border Section (ITE) Guidelines (2000), if the proposed project would:

- Occur only at LOS E or F and if the increase in V/C ratio of the segment is greater than 0.02 (2 percent) due to the addition of project traffic.

- Project significant impacts to freeway main lanes would occur only at LOS E or F during the highest peak hour per lane volume, and if the project causes an increase in per lane V/C ratio greater than 0.01 (1 percent).

- At all intersections, for Year 2010 and 2030, the threshold of significance is an increase in delay of more than two seconds at signalized intersections at LOS E or F, with LOS D being acceptable, so that the threshold of significance of more than two seconds of additional delay does not apply at LOS D locations.

- For CMP Arterials, the level of service standard is LOS E. It is SANDAG's policy that all roadway segments that operate at LOS F are subject to Deficiency Plan requirements.

5.2.3 Environmental Impact

Forecast Model

Computer travel forecasts used for the analysis of Year 2010 and buildout conditions were prepared by SANDAG. The SANDAG Year 2010 Transportation Forecast was used for this analysis. The SANDAG Series 10 Combined North County Year 2030 Transportation Forecast, and including the project land use, was used for evaluation of Year 2030 conditions.

Street Segments Level of Service Procedures

The City of Carlsbad GMP criterion for levels of service determination on street segments between intersections was used for street segments within Carlsbad. The procedure used was to determine the highest peak hour volume per lane on the street segment and determine V/C for that segment, using 1,800 VPHPL as the capacity per lane.

The CMP regionally significant arterials and other streets outside of Carlsbad were evaluated using ADT volumes on segments. Levels of service were determined using the CMP and SANTEC/ITE Roadway Classifications and LOS tables provided in those guidelines.

Intersection Level of Service Procedures

To determine future intersection peak hour levels of service, and for CMP evaluation purposes, intersection levels of service for Year 2010 and 2030 were calculated using the 2000 HCM computer software methodology. Existing and Existing Plus Project conditions within Carlsbad were determined using the ICU method, since that method is required for the existing conditions evaluation in the latest City of Carlsbad GMP traffic monitoring report (Year 2007). For all future conditions, all study intersections located within Carlsbad were evaluated using the HCM methodology. Intersections outside Carlsbad were evaluated using HCM software for all scenarios.

Project Traffic

This section describes the estimated project trip generation and trip distribution.

Trip Generation

Table 5.2-7 includes the vehicle trip generation expected from the site. The project is expected to generate the following:

- 25,516 average daily trips
- 1,197 trips occur during the AM peak hour, which consists of 716 inbound trips and 481 outbound trips
- 2,584 trips occur during the PM peak hour, which consists of 1,283 inbound trips and 1,301 outbound trips

Table 5.2-7
Project Trip Generation

Proposed Project	Amount		Trip Rate[1]		ADT	AM PEAK HOUR					PM PEAK HOUR				
						%	#	In/Out	In	Out	%	#	In/Out	In	Out
Community Shopping Center	284,400	SF	80	/KSF	22,752	4	910	6 : 4	546	364	10	2,275	5 : 5	1,138	1,137
Condominium	128	DU	8	/DU	1,024	8	82	2 : 8	16	66	10	102	7 : 3	71	31
Single Family Residential	64	DU	10	/DU	640	8	51	3 : 7	15	36	10	64	7 : 3	45	19
Office	55,000	SF	20	/KSF	1,100	14	154	9 : 1	139	15	13	143	2 : 8	29	114
				TOTAL	**25,516**		**1,197**		**716**	**481**		**2,584**		**1,283**	**1,301**

[1] Trip rates source is SANDAG Traffic Generation Rates for the San Diego Region, April 2002
KSF = Thousand Square Feet
DU = Dwelling Units

Trip Distribution

The project directional trip distribution was based on the Year 2030 select traffic analysis zone computer model results from the SANDAG Series 10 Combined

North County Model Carlsbad subarea. The project trip distributions from the Year 2030 trip distribution were also used for Existing Plus Project and Year 2010 conditions. **Figure 5.2-8** shows the project trip directional distribution percentages. **Figure 5.2-9** shows percentages of trips expected at the project driveways. **Figure 5.2-10** includes the project-only ADT volumes on street segments, while **Figures 5.2-11a** through **Figure 5.2-11f** show the project-only AM and PM peak hour volumes at intersections.

Existing Plus Project Conditions

The following provides a description of existing traffic conditions with the addition of traffic associated with the proposed project.

5.2-8 Project Trip Distribution Percentages

5.2-9 Project Driveway Trip Distribution Percentages

5.2-10 Project Only Average Daily Traffic Volumes

5.2-11a Project Only AM/PM Peak Hour Traffic

5.2-11b Project Only AM/PM Peak Hour Traffic

5.2-11c Project Only AM/PM Peak Hour Traffic

5.2-11d Project Only AM/PM Peak Hour Traffic

5.2-11e Project Only AM/PM Peak Hour Traffic

5.2-11f Project Only AM/PM Peak Hour Traffic

Street Segments

Figure 5.2-12 shows existing ADT volumes with project-only traffic added at study area street segments. **Table 5.2-8** shows street segment peak hour levels of service with project traffic added to existing volumes on segments within Carlsbad. As shown in **Table 5.2-8**, all study area street segments within Carlsbad are expected to operate at acceptable levels of service (LOS D or better during peak hours). Therefore, the proposed project would not result in significant impacts related to existing street segment conditions within Carlsbad and no project-related offsite roadway segment improvements would be needed.

Table 5.2-8
Existing Plus Project Street Segment Peak Hour Levels of Service Within Carlsbad

Segment	Lanes[1]	Capacity	AM Peak Hour				PM Peak Hour			
			Volume[2]	Dir.	V/C	LOS	Volume[2]	Dir.	V/C	LOS
Rancho Santa Fe Road										
Melrose Dr. – San Elijo Rd.	3	5,400	2,132	SB	0.40	A	1,864	NB	0.35	A
San Elijo Rd. – La Costa Ave.	3	5,400	2,309	SB	0.43	A	2,434	NB	0.45	A
La Costa Ave. – Olivenhain Rd.	3	5,400	2,026	SB	0.38	A	2,210	NB	0.41	A
Olivenhain Rd. – Calle Acervo	2	3,600	808	NB	0.22	A	886	NB	0.25	A
El Camino Real										
Aviara Pkwy/Alga Rd. – La Costa Ave.	2	3,600	2,223	SB	0.62	B	2,227	NB	0.62	B
La Costa Ave. – Leucadia Blvd./Olivenhain Rd.	3	5,400	1,748	SB	0.32	A	1,819	NB	0.34	A
Melrose Drive										
Palomar Airport Rd. – Rancho Santa Fe Rd.	3	5,400	1,093	SB	0.20	A	1,139	SB	0.21	A
La Costa Avenue										
I-5 SB Ramps – Piraeus St.	2	3,600	1,624	EB	0.45	A	1,974	EB	0.55	A
Piraeus St. – El Camino Real	2	3,600	1,489	EB	0.41	A	1,863	WB	0.52	A
El Camino Real – Romeria St.	2	3,600	901	EB	0.25	A	1,046	EB	0.29	A
Romeria St. – Rancho Santa Fe Rd.	1	1,800	715	EB	0.40	A	920	EB	0.51	A
Rancho Santa Fe Rd. – Calle Timiteo	2	3,600	562	WB	0.16	A	687	EB	0.19	A
Calle Timiteo – Camino de los Coches	1	1,800	546	EB	0.30	A	317	EB	0.18	A
Camino de los Coches – Circulo Sequoia	1	1,800	171	WB	0.10	A	129	EB	0.07	A
Calle Barcelona										
El Camino Real – Rancho Santa Fe Rd.	2	3,600	364	EB	0.10	A	336	EB	0.09	A

[1] Lanes in One Direction
[2] Highest Volume by Direction in Peak Hour (See Figure 5.2-13a through Figure 5.2-13f for Peak Hour Volumes)
V/C = Volume to Capacity Ratio
LOS = Level of Service
Note: Significant Impact occurs only at LOS E or F; LOS A, B, C, or D, are acceptable per City of Carlsbad Growth Management Program

5.2-12 Existing + Project Average Daily Traffic

Table 5.2-9 shows I-5 freeway segment levels of service with project traffic added to existing traffic volumes. As shown in **Table 5.2-9**, the peak hour V/C ratio increases due to project traffic are no more than 1 percent. Therefore, the proposed project impacts to I-5 are less than significant. Although the project contribution to I-5 freeway mainlane volumes is low and project freeway impacts are less than significant, the project contributes to significant regionwide cumulative freeway impacts. Caltrans has I-5 corridor studies in process through the Regional Transportation Congestion Improvement Program (RTCIP) to help reduce cumulative impacts by evaluating the feasibility of several alternative improvements for I-5, including High Occupancy Vehicle lanes, additional auxiliary lanes between interchanges, and possibly direct connections to park-and-ride lots. However, no specific mitigation has been defined at this time. Therefore, the project's contribution to regional cumulative freeway impacts will remain significant and unmitigated.

Table 5.2-10 shows street segment levels of service and possible project impacts based on ADT volumes on CMP arterials and segments outside of Carlsbad. As shown in **Table 5.2-10**, Rancho Santa Fe Road between Island Drive and Melrose Drive would operate at LOS E with or without the project. Therefore, implementation of the project would result in a significant project and cumulative impact to Rancho Santa Fe Road between Island Drive and Melrose Drive. However, the City of San Marcos has identified this segment as a CMP deficient arterial and will prepare a plan to enhance roadway capacity on Rancho Santa Fe Road without roadway widening. When this plan is implemented, the level of service would be acceptable. Until the project is implemented, the project and cumulative impacts will remain significant and unmitigated.

The segment of El Camino Real between Alga Road and La Costa Avenue is a CMP designated arterial and is currently operating at an unacceptable LOS F; however, a project-related specific impact would occur only if the V/C increase is greater than 0.02. The project does not increase the V/C ratio more than 0.02 and, therefore, no project-related significant impact would occur on this segment. However, the project will contribute to a cumulative significant impact

on this segment. The segment will be widened to three southbound lanes by a City of Carlsbad TIF project. With widening of the segment, the level of service would be LOS D, which is within the CMP standard of LOS E. This segment was previously evaluated according to the City of Carlsbad's GMP roadway segment methodology, which uses the segment peak hour flow rather than ADT. The segment level of service using this peak hour methodology was acceptable without the need to widen the segment to the ultimate six lanes.

Table 5.2-9
Existing Plus Project Freeway Segment Levels of Service Summary

Segment	Number of Lanes	Cap. Per Lane	ADT[1]	Peak Hour %	Direction Split	Truck Factor	Peak Volume Per Lane	V/C	LOS[2]
Near Term With Project									
Interstate 5									
Poinsettia Ln. - La Costa Ave.	8	2,350	215,531	0.08	0.60	0.97	2,666	1.14	F
La Costa Ave. - Leucadia Blvd.	8	2,350	220,531	0.08	0.60	0.97	2,728	1.16	F
Leucadia Blvd. - Encinitas Blvd.	8	2,350	225,531	0.08	0.60	0.97	2,790	1.19	F
Near Term without Project									
Interstate 5									
Poinsettia Ln. - La Costa Ave.	8	2,350	214,000	0.08	0.60	0.97	2,647	1.13	F
La Costa Ave. - Leucadia Blvd.	8	2,350	219,000	0.08	0.60	0.97	2,709	1.15	F
Leucadia Blvd. - Encinitas Blvd.	8	2,350	224,000	0.08	0.60	0.97	2,771	1.18	F

Segment	V/C With Project	V/C Without Project	Change in V/C	Significant?
Interstate 5				
Poinsettia Ln. to La Costa Ave.	1.14	1.13	0.01	No
La Costa Ave. to Leucadia Blvd.	1.16	1.15	0.01	No
Leucadia Blvd. to Encinitas Blvd.	1.19	1.18	0.01	No

Note: Significant Impact Occurs Only at LOS E or F if V/C Increase is Greater than 0.01 on CMP Freeways.
Cap. = Capacity in one direction
ADT = Average Daily Traffic
V/C = Volume to Capacity Ratio
LOS = Level of Service
Peak Hour % = % of ADT in Peak Hour
Direction Split = % of Peak Hour in Peak Direction
Truck Factor = Represents Capacity Reduction for Heavy Vehicles
[1] Caltrans Year 2006 Freeway Volumes
[2] Caltrans District 11 LOS Estimation Procedures

Table 5.2-10
Existing Plus Project Street Segment ADT and Levels of Service Summary
CMP Arterials and Segments Outside of Carlsbad

Segment	Lanes	Cap. at LOS E	Without Project			With Project			Λ	S ?
			ADT	V/C	LOS	ADT	V/C	LOS		
Rancho Santa Fe Road										
San Marcos Blvd. – Island Dr.	4-PA	40,000	33,800	0.85	D	34,310	0.86	D	0.01	N
Island Dr. – Melrose Dr.	4-PA	40,000	36,400	0.91	D	37,421	0.94	E	0.03	Y
Melrose Dr. – San Elijo Rd.	6-PA	60,000	34,675	0.58	B	40,289	0.67	C	0.11	N
San Elijo Rd. – La Costa Ave.	6-PA	60,000	39,950	0.67	C	48,625	0.81	D	0.17	N
La Costa Ave. – Olivenhain Rd.	6-PA	60,000	32,200	0.54	B	36,793	0.61	C	0.09	N
Calle Acervo. – El Camino del Norte	2-SA(+)	20,000	14,800	0.74	C	16,331	0.81	D	0.09	N
El Camino Real										
Aviara Pkwy./Alga Rd. – La Costa Ave.	5-PA[1]	50,000	50,905	1.02	F	51,926	1.04	F	0.02	N
La Costa Ave. – Leucadia Blvd./ Olivenhain Rd.	6-PA	60,000	39,335	0.66	C	39,335	0.66	C	0.00	N
Leucadia Boulevard										
I-5 SB Ramps – Quail Gardens Dr.	4-MA (+)	45,400	36,400	0.80	D	37,931	0.84	D	0.04	N
Quail Gardens Dr. – El Camino Real	4-MA(+)	45,400	31,000	0.68	C	33,041	0.73	C	0.06	N
Olivenhain Road										
El Camino Real – Rancho Santa Fe Rd.	5-PA	50,000	42,600	0.85	D	45,662	0.91	E	0.08	Y
San Elijo Road										
Rancho Santa Fe Rd. – Elfin Forest Rd.	4-MA	40,000	14,600	0.37	B	17,162	0.43	B	0.07	N

[1] To be widened by the city of Carlsbad Traffic Impact Fee Program. With six lanes, V/C = (52,132 ÷60,000) = 0.87; LOS D
V/C = Volume to Capacity Ratio
LOS = Level of Service (Based on CMP Guidelines, Table D-2)
6-PA = 6-Lane Prime Arterial
5-PA = 5-Lane Prime Arterial
4-PA = 4-Lane Prime Arterial
4-MA = 4-Lane Major Arterial
4-MA(+) = 4-Lane Major Arterial, Augmented per City of Encinitas Standards
4-SA = 4-Lane Secondary Arterial
2-SA(+) = 2-Lane Secondary Arterial, Augmented, per City of Encinitas Standards
S? = Significant Impact?
Note: Significant Impact only at LOS E or F and if V/C increase due to Project is greater than 0.02.

The Olivenhain Road segment between El Camino Real and Rancho Santa Fe Road is identified as significantly impacted. However, this roadway segment is

currently being improved to provide three eastbound lanes and two westbound lanes as part of a combined project by the cities of Carlsbad and Encinitas. With this widening, and with project traffic added, operations would decline to LOS E. There are no current plans to add a third westbound lane, which would be required to mitigate the project impact and, therefore, the project impact would be significant and unmitigated.

Intersections

Figures 5.2-13a through **5.2-13f** show existing AM and PM peak hour traffic at the study area intersections with project traffic added.

The La Costa Avenue/Camino De Los Coches intersection currently meets traffic signal installation warrants. With project traffic added, additional warrants will be met; however, as shown in **Table 5.2-11**, the intersection will operate at an acceptable LOS A. The project design includes installation of a traffic signal with a fair share reimbursement of costs from the Carlsbad TIF Program. Therefore, no project or cumulative impact occurs at this intersection.

Table 5.2-11 shows Existing Plus Project intersection peak hour levels of service for intersections within Carlsbad using ICU methodology. As shown in this table, all Carlsbad study area intersections are expected to be at LOS D or better during the peak hours, as required by the City's GMP, so no significant project impacts are identified at intersections within Carlsbad.

Table 5.2-12 shows Existing Plus Project intersection peak hour levels of service using HCM methodology for intersections on CMP arterials and outside Carlsbad. The intersection of Rancho Santa Fe Road and El Camino del Norte would experience an unacceptable level of service with implementation of the project, and this delay would be more than 2.0 seconds with the project, as shown in **Table 5.2-5**. Therefore, a significant project and cumulative impact will occur at this intersection. Signalization or the installation of a roundabout would, according to analysis provided in Appendix B, improve the operating condition to acceptable level of service thereby reducing the project and cumulative impact to a level less than significant. However, because the City of Encinitas does not intend to implement mitigation such as signalization or a

roundabout, the project and cumulative impact at this intersection would remain significant and unmitigated. All other intersections described in **Table 5.2-12** will remain at an acceptable level of operation.

5.2-13a Existing + Project AM/PM Peak Hour Traffic

5.2-13b Existing + Project AM/PM Peak Hour Traffic

5.2-13c Existing + Project AM/PM Peak Hour Traffic

5.2-13d Existing + Project AM/PM Peak Hour Traffic

5.2-13e Existing + Project AM/PM Peak Hour Traffic

5.2-13f Existing + Project AM/PM Peak Hour Traffic

Table 5.2-11
Existing Plus Project Intersection Levels of Service Summary – ICU Method
Intersections Within Carlsbad

	Intersection	AM Peak Hour		PM Peak Hour	
		ICU	LOS	ICU	LOS
5	Melrose Dr. at Palomar Airport Rd.	0.83	D	0.71	C
6	Melrose Dr. at Rancho Bravado	0.32	A	0.27	A
7	Melrose Dr. at Poinsettia Ln./Paseo Corto	0.25	A	0.25	A
8	Melrose Dr. at Carillo Wy.	0.39	A	0.37	A
9	Melrose Dr. at Alga Rd.	0.56	A	0.73	C
10	Rancho Santa Fe Rd. at Melrose Dr.	0.54	A	0.54	C
11	Rancho Santa Fe Rd at San Elijo Rd.	0.57	A	0.73	B
12	Rancho Santa Fe Rd at Camino Junipero	0.60	A	0.62	B
13	Rancho Santa Fe Rd. at La Costa Ave.	0.68	B	0.80	C
14	Rancho Santa Fe Rd. at Camino de los Coches	0.48	A	0.55	A
15	Rancho Santa Fe Rd. at Calle Barcelona	0.70	B	0.56	A
16	Rancho Santa Fe Rd. at Olivenhain Rd.	0.67	B	0.74	C
18	El Camino Real at Aviara Pkwy./Alga Rd.	0.75	C	0.74	C
19	El Camino Real at Costa Del Mar Rd.	0.61	B	0.66	B
20	I-5 SB Ramps at La Costa Ave.	0.56	A	0.55	A
21	I-5 NB Ramps at La Costa Ave.	0.66	B	0.68	B
22	Piraeus St. at La Costa Ave.	0.61	A	0.70	B
23	Saxony Rd. at La Costa Ave.	0.47	A	0.56	A
24	El Camino Real at La Costa Ave.	0.71	C	0.77	C
25	Viejo Castilla Wy. at La Costa Ave.	0.40	A	0.37	A
26	Romeria St. at La Costa Ave.	0.45	A	0.55	A
27	Cadencia St. at La Costa Ave.	0.44	A	0.58	A
37	Amargosa Dr. at Olivenhain Rd.	0.85	D	0.71	C
38	Calle Timiteo at La Costa Ave./Project Dwy. #2	0.35	A	0.32	A
39	Camino de los Coches at La Costa Ave.[1]	0.38	A	0.27	A
42	La Costa Ave. at Project Driveway #1	0.33	A	0.48	A
43	La Costa Ave. at East Driveway #3/Paseo Tamarindo[3]	0.20	A	0.19	A
44	Rancho Santa Fe Rd. at West Driveway #4[2]	NA	NA	NA	NA
45	Rancho Santa Fe Rd. at East Driveway #5/Paseo Lupino	0.52	A	0.66	A
46	Rancho Santa Fe Rd at Calle Acervo	0.87	D	0.75	C

ICU = Intersection Capacity Utilization
LOS = Level of Service
[1] Existing Stop Sign Control
[2] No Conflicting Moves, Right-turn-in Only
[3] Stop Sign Facing Southbound Traffic

LOS	ICU
A	0.00-0.60
B	0.61-0.70
C	0.71-0.80
D	0.81-0.90 81-.09
E	0.91-1.00
F	Over 1.00

Table 5.2-12
Existing Plus Project Intersection Levels of Service Summary – HCM Method
Intersections Outside Carlsbad

Intersection		AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS
1	Rancho Santa Fe Rd. at San Marcos Blvd.	37.1	D	49.6	D
2	Rancho Santa Fe Rd. at Lake San Marcos Dr.	10.6	B	13.2	B
3	Rancho Santa Fe Rd. at Camino Del Arroyo Dr.	10.3	B	10.7	B
4	Rancho Santa Fe Rd. at Island Dr.	3.2	A	3.2	A
10	Rancho Santa Fe Rd. at Melrose Dr.	33.4	C	38.5	D
17	Rancho Santa Fe Rd. at El Camino Del Norte[1]	45.6	E	44.0	E
28	I-5 SB Ramps at Leucadia Blvd.	20.0	B	20.1	B
29	I-5 NB Ramps at Leucadia Blvd.	14.7	B	19.4	B
30	Clark Ave. at Leucadia Blvd.	32.5	C	13.3	B
31	Saxony Rd. at Leucadia Blvd.	32.7	C	40.5	D
32	Sidonia St. at Leucadia Blvd.	12.4	B	17.2	B
33	Quail Gardens at Leucadia Blvd.	36.1	D	35.0	D
34	Garden View Rd. at Leucadia Blvd.	25.0	C	33.9	C
35	Town Center Pl. at Leucadia Blvd.	19.9	B	25.0	C
36	El Camino Real at Leucadia Blvd.	42.2	D	53.0	D
37	Amargosa Dr. at Olivenhain Rd.	31.2	C	30.7	C
40	Melrose Dr. at San Elijo Rd.	27.0	C	28.1	C

[1] Existing All-Way Stop Sign Control; LOS E at Greater than 35.0 Seconds of Delay.
Note: A Project Significant Impact occurs only at LOS E or F if the Project increase in delay is greater than 2.0 seconds. No Signalized Location is at LOS E or F with Project traffic added to Existing Conditions, so that Project Impacts at these locations are Less than Significant.

Existing Local Streets Plus Project

Figure 5.2-14 shows the project-only directional distribution percentages of traffic onto local residential streets and into the adjacent residential areas with access onto these streets. **Figure 5.2-15** illustrates the project-only ADT volumes assigned to the nearby residential streets while **Figure 5.2-16** includes project-only traffic added to existing ADT volumes.

5.2-14 Local Street Project Only Directional Trip Distribution Percentages

5.2-15 Local Street Project Only Average Daily Traffic

5.2-16 Local Street Existing + Project Average Daily Traffic

Table 5.2-13 lists street segment levels of service with project-only traffic added to existing traffic volumes. As shown in the table, all evaluated segments are expected to operate acceptably with project traffic added. Therefore, the proposed project would not result in significant impacts on local streets and no mitigation is required.

Table 5.2-13
Existing Plus Project Local Street Segment Levels of Service

Segment	Classification	Capacity at LOS E[1]	ADT[2]	V/C	LOS
La Costa Ave.					
Camino De Los Coches – Circulo Sequoia	2-SA	15,000	3,084	0.21	A
Camino De Los Coches					
La Costa Ave. – Calle Acervo	2-SA	15,000	5,722	0.38	B
Calle Acervo – Calle Timiteo	2-SA	15,000	3,953	0.26	A
Calle Timiteo – Rancho Santa Fe Rd.	4-SA	30,000	8,738	0.29	A
Calle Timiteo					
200 Ft. South of La Costa Ave.	2-C	8,000	3,616	0.45	C
200 Ft. North of Camino De Los Coches	2-C	8,000	2,779	0.35	C
Calle Acervo					
Camino de los Coches – Calle Barcelona	2-C	8,000	4,265	0.53	C
Paseo Lupino					
West of Rancho Santa Fe Rd.	2-C	8,000	2,182	0.27	A
Corte Brezo					
North of Paseo Lupino	2-L	2,200[3]	1,158	0.53	B
Circulo Sequoia					
North of La Costa Ave.	2-L	2,200[3]	1,147	0.52	B
South of La Costa Ave.	2-L	2,200[3]	1,015	0.45	A

[1] 2006 SANDAG CMP Update: Table D-2
[2] See Figure 5.2-16
[3] Capacity at LOS C
4-SA = 4-Lane Secondary Arterial
2-SA = 2-Lane Secondary Arterial (with left-turn lanes at intersections)
2-C = 2-Lane Collector Street (without left-turn lanes at intersections)
2-L = 2-Lane Local Street
Note: Does not include pass-by trip reduction

Year 2010 Baseline and Plus Project Conditions

This section provides a discussion of the future Year 2010 traffic conditions both with and without the addition of the proposed project-generated traffic volumes. The SANDAG/Carlsbad Cities-County 2010 Transportation Forecast was used to determine Year 2010 traffic volumes. Land use assumptions for cumulative projects within Carlsbad and San Marcos were verified as being included in the SANDAG Series 10 Combined North County Model, so that the cumulative effects of these projects are included in traffic volumes produced from the Year 2010 and Year 2030 traffic models. The list of cumulative projects can be found in Appendix B of the Traffic Report, which is included as Appendix B of this EIR.

Street Segments

Figure 5.2-17 shows Year 2010 ADT volumes for study area street segments with project traffic included. Several segments are shown with volumes less than existing volumes. The Year 2010 traffic model includes additional roadway segments missing under existing conditions such as Faraday Avenue, Cannon Road, and Twin Oaks Valley Road. The addition of these missing segments would cause a redistribution of regional traffic.

Table 5.2-14 shows street segments within Carlsbad peak hour levels of service for Year 2010. As shown, all segments within Carlsbad evaluated are expected to meet the GMP criteria of LOS D or better during peak hours. Therefore, implementation of the proposed project would not result in significant impacts in Year 2010 peak hours, and no mitigation is required.

Table 5.2-15 shows freeway segment levels of service for Year 2010 conditions. With project traffic added to mainlane peak hour volumes, V/C ratios increase no greater than 0.01. Project I-5 freeway mainlane volumes are low and project contributions to freeway impacts are less than significant. However, the project contributes to regionwide cumulative freeway significant impacts. Caltrans has I-5 corridor studies in process through the RTCIP to help reduce cumulative impacts by evaluating the feasibility of several alternative improvements for I-5,

including High Occupancy Vehicle lanes, additional auxiliary lanes between interchanges, and possibly direct connections to park-and-ride lots. However, no specific mitigation has been defined at this time and therefore the project's contribution to the significant, cumulative freeway impacts will remain significant and unmitigated.

5.2-17 Year 2010 Average Daily Traffic With Project

Table 5.2-14
Year 2010 With Project Street Segment Peak Hour Levels of Service
Segments Within Carlsbad

Segment	Lanes[1]	Capacity	AM Peak Hour				PM Peak Hour			
			Volume[2]	Dir.	V/C	LOS	Volume[2]	Dir.	V/C	LOS
Rancho Santa Fe Road										
Melrose Dr. – San Elijo Rd.	3	5,400	1,927	NB	0.36	A	1,649	SB	0.30	A
San Elijo Rd. – La Costa Ave.	3	5,400	2,053	NB	0.38	A	2,202	SB	0.41	A
La Costa Ave. – Olivenhain Rd.	3	5,400	1,892	NB	0.35	A	1,682	NB	0.31	A
Olivenhain Rd. – Calle Acervo	2	3,600	1,164	NB	0.32	A	1,058	SB	0.29	A
El Camino Real										
Aviara Pkwy./Alga Rd. – La Costa Ave.	3	5,400	2,719	SB	0.50	A	3,336	SB	0.62	B
La Costa Ave. – Leucadia Blvd./Olivenhain Rd.	3	5,400	2,371	SB	0.44	A	2,925	SB	0.54	A
Melrose Drive										
Palomar Airport Rd. – Rancho Santa Fe Rd.	3	5,400	1,642	SB	0.30	A	1,428	SB	0.26	A
La Costa Avenue										
I-5 SB Ramps – Piraeus St.	2	3,600	1,367	WB	0.38	A	1,575	EB	0.44	A
Piraeus St. – El Camino Real	2	3,600	1,232	EB	0.35	A	1,556	EB	0.44	A
El Camino Real – Romeria St.	2	3,600	858	WB	0.24	A	987	EB	0.28	A
Romeria St. – Rancho Santa Fe Rd.	1	1,800	771	WB	0.43	A	902	WB	0.50	A
Rancho Santa Fe Rd. – Calle Timiteo	2	3,600	656	WB	0.18	A	721	WB	0.20	A
Calle Timiteo – Camino de los Coches	2	3,600	457	EB	0.12	A	386	EB	0.11	A
Camino de los Coches – Circulo Sequoia	1	1,800	222	WB	0.12	A	227	EB	0.13	A
Calle Barcelona										
El Camino Real – Rancho Santa Fe Rd.	2	3,600	326	EB	0.09	A	249	WB	0.07	A

[1] Lanes in One Direction.
[2] Highest Volume by Direction in Peak Hour. (See Figure 5.2-19a through Figure 5.2-19f for Peak Hour Volumes).
V/C = Volume to Capacity Ratio
LOS = Level of Service
Note: Significant Impact Occurs Only at LOS E or F; LOS A, B, C, or D are Acceptable Per City of Carlsbad Growth Management Program.

Table 5.2-15
Year 2010 with Project Freeway Segment Levels of Service Summary

Segment	Number of Lanes	Cap. Per Lane	ADT[1]	Peak Hour %	Direction Split	Truck Factor	Peak Volume Per Lane	V/C	LOS[2]
Near Term with Project									
Interstate 5									
Poinsettia Ln. – La Costa Ave.	8	2,350	232,700	0.08	0.60	0.97	2,879	1.23	F
La Costa Ave. – Leucadia Blvd.	8	2,350	237,700	0.08	0.60	0.97	2,941	1.25	F
Leucadia Blvd. – Encinitas Blvd.	8	2,350	244,700	0.08	0.60	0.97	3,027	1.29	F
Near Term without Project									
Interstate 5									
Poinsettia Ln. to La Costa Ave.	8	2,350	231,175	0.08	0.60	0.97	2,860	1.22	F(0
La Costa Ave. to Leucadia Blvd.	8	2,350	236,175	0.08	0.60	0.97	2,922	1.24	F
Leucadia Blvd. to Encinitas Blvd.	8	2,350	243,175	0.08	0.60	0.97	3,008	1.28	F

Segment	V/C with Project	V/C without Project	Change in V/C	Significant?
Interstate 5				
Poinsettia Ln. to La Costa Ave.	1.23	1.22	0.01	No
La Costa Ave. to Leucadia	1.25	1.24	0.01	No
Leucadia Blvd. to Encinitas Blvd.	1.29	1.28	0.01	No

Note: Significant Impact occurs only at LOS E or F if V/C Increase is greater than 0.01 on CMP freeways.

Cap. = Capacity in one direction
ADT = Average Daily Traffic
V/C = Volume to Capacity Ratio
LOS = Level of Service
Peak Hour % = % of ADT in Peak Hour

Direction Split = % of Peak Hour in Peak Direction
Truck Factor = Represents Capacity Reduction for Heavy Vehicles
[1] SANDAG/Carlsbad Year 2010 Traffic Model
[2] Caltrans District 11 LOS Estimation Procedures

Table 5.2-16 shows street segment ADT levels of service for Year 2010 using the CMP V/C methodology for CMP segments and segments outside Carlsbad.

The segments of Olivenhain Road within Encinitas and Rancho Santa Fe Road between Island Drive and Melrose Drive were identified as significantly impacted for Existing Plus Project conditions. However, the Year 2010 traffic forecast shows a slight decrease in traffic on these segments due to inclusion of other major roadways not present under existing conditions, so that impacts are less than significant and no mitigation is required beyond that discussed under Existing Plus Project conditions.

The segment of Rancho Santa Fe Road from San Marcos Boulevard to Island Drive, however, is identified as operating at an unacceptable LOS F without the project in Year 2010. As shown in **Table 5.2-16**, the project would increase the V/C ratio by only 0.02; therefore, no project-related impacts to this segment in Year 2010 would occur, although the project would contribute to the cumulative significant impact at this segment. However, the City of San Marcos has identified this segment as a CMP deficient arterial and will prepare a plan to enhance roadway capacity on the four-lane segments of Rancho Santa Fe Road without roadway widening. When this plan is implemented, the level of service would be acceptable. However, until this plan is implemented, the project cumulative impact will remain significant and unmitigated.

Table 5.2-16 also identifies an unacceptable LOS F operation on the El Camino Real segment between Aviara Parkway and La Costa Avenue, as a CMP-designated six-lane arterial. The project would increase the V/C ratio by only 0.02; therefore, no project-related impacts to this segment in Year 2010 would occur, although the project would contribute to the cumulative significant impact at this segment. This segment was previously evaluated according to the City of Carlsbad GMP roadway segment methodology using peak hour flow rather than ADT. During peak hours, this segment will operate acceptably.

Table 5.2-16
Year 2010 with Project Street Segment ADT Levels of Service Summary
CMP Arterials and Segments Outside of Carlsbad

Segment	Lanes	Capacity at LOS E	Without Project			With Project			V	S?
			ADT	V/C	LOS	ADT	V/C	LOS		
Rancho Santa Fe Road										
San Marcos Blvd. – Island Dr.	4-PA	40,000	41,792	1.04	F	42,302	1.06	F	0.02	N
Island Dr. – Melrose Dr.	4-PA	40,000	31,083	0.78	D	32,104	0.80	D	0.02	N
Melrose Dr. – San Elijo Rd.	6-PA	60,000	22,507	0.38	A	28,121	0.47	B	0.09	N
San Elijo Rd. – La Costa Ave.	6-PA	60,000	32,156	0.54	B	40,831	0.68	C	0.14	N
La Costa Ave. – Olivenhain Rd.	6-PA	60,000	26,398	0.44	B	32,522	0.54	B	0.10	N
Calle Acervo – El Camino del Norte	2-SA(+)	20,000	15,375	0.77	C	16,906	0.85	D	0.08	N
El Camino Real										
Aviara Pkwy./Alga Rd. – La Costa Ave.	6-PA	60,000	62,383	1.04	F	63,404	1.06	F	0.02	N
La Costa Ave. – Leucadia Blvd./Olivenhain Rd.	6-PA	60,000	46,700	0.78	C	46,700	0.78	C	0.00	N
Leucadia Boulevard										
I-5 SB Ramps – Quail Gardens Dr.	4-MA(+)	45,400	31,175	0.69	C	32,706	0.72	C	0.03	N
Quail Gardens Dr. – El Camino Real	4-MA	45,400	20,661	0.46	B	22,702	0.50	C	0.04	N
Olivenhain Road										
El Camino Real – Rancho Santa Fe Rd.	5-PA	50,000	28,349	0.57	C	31,411	0.63	D	0.06	N
San Elijo Road										
Rancho Santa Fe Rd. – Elfin Forest Rd.	4-MA	40,000	16,358	0.44	B	18,910	0.47	B	0.06	N

V/C = Volume to Capacity Ratio
LOS = Level of Service
6-PA = 6-Lane Prime Arterial
4-PA = 4-Lane Prime Arterial
4-SA = 4-Lane Secondary Arterial
2-SA(+) = 2-Lane Secondary Arterial, Augmented, per City of Encinitas Standards.
S? = Significant Impact?
Note: Significant Impact only at LOS E or F if V/C increase due to the Project is greater than 0.02.

5-PA = 5-Lane Prime Arterial
4-MA = 4-Lane Major Arterial
4-MA (+) = 4-Lane Major Arterial, Augmented per City of Encinitas Standards

Intersections

Figures 5.2-18a through **5.2-18f** show the AM and PM peak hour volumes without project traffic, at study area intersections, expected in Year 2010. **Figures 5.2-19a** through **5.2-19f** show the AM and PM peak hour volumes with project traffic at study area intersections expected in Year 2010. In addition, **Figures 5.2-20a** through **5.2-20f** show Year 2010 intersection lane configurations. All lane configurations are existing conditions, or planned and soon to be constructed by other development projects or the City of Carlsbad Traffic Impact Fee Program, as noted in the figures.

Table 5.2-17 shows Year 2010 intersection levels of service, with and without project traffic, using HCM methodology. As shown, all evaluated intersections within the study area are expected to operate at least at LOS D during peak hours as required by the City's GMP, with the exception of the two intersections discussed below. Therefore, the proposed project traffic impacts are expected to be less than significant at study area intersections with LOS D or better, and no project intersection mitigation is needed for Year 2010 conditions.

One intersection in San Marcos (Rancho Santa Fe Road and San Marcos Boulevard) is at LOS F. As the project will not cause an additional delay of more than 2.0 seconds, project impacts are less than significant. However, the project will contribute to a cumulatively considerable significant impact. The City of San Marcos has determined that improvements at this intersection are unfeasible. Because no specific mitigation has been defined at this time, the cumulative impact will remain significant and unmitigated at this intersection.

The intersection of Rancho Santa Fe Road and El Camino del Norte in Encinitas, similar to conclusions for existing conditions, is anticipated to have an unacceptable LOS in Year 2010 conditions, and implementation of the project would cause a further delay greater than 2.0 seconds at this intersection during peak hours, therefore a significant project impact exists at this intersection. Signalization or the installation of a roundabout would, according to analysis provided in Appendix B, improve the operating condition to acceptable level of

service thereby reducing the project and cumulative impact to a level less than significant. However, because the City of Encinitas does not intend to implement mitigation such as signalization or a roundabout, the project and cumulative impact at this intersection would remain significant and unmitigated.

5.2-18a Year 2010 Without Project AM /PM Peak Hour Traffic

5.2-18b Year 2010 Without Project AM /PM Peak Hour Traffic

5.2-18c Year 2010 Without Project AM /PM Peak Hour Traffic

5.2-18d Year 2010 Without Project AM /PM Peak Hour Traffic

5.2-18e Year 2010 Without Project AM /PM Peak Hour Traffic

5.2-18f Year 2010 Without Project AM /PM Peak Hour Traffic

5.2-19a Year 2010 With Project AM/PM Peak Hour Traffic

5.2-19b Year 2010 With Project AM/PM Peak Hour Traffic

5.2-19c Year 2010 With Project AM/PM Peak Hour Traffic

5.2-19d Year 2010 With Project AM/PM Peak Hour Traffic

5.2-19e Year 2010 With Project AM/PM Peak Hour Traffic

5.2-19f Year 2010 With Project AM/PM Peak Hour Traffic

5.2-20a Year 2010 Lane Configurations

5.2-20b Year 2010 Lane Configurations

5.2-20c Year 2010 Lane Configurations

5.2-20d Year 2010 Lane Configurations

5.2-20e Year 2010 Lane Configurations

5.2-20f Year 2010 Lane Configurations

Table 5.2-17
Year 2010 Intersection Levels of Service Summary

Intersection		Year 2010				Year 2010 + Project							
		AM Peak Hour		PM Peak Hour		AM Peak Hour		Λ	S?	PM Peak Hour		Λ	S?
		Delay	LOS	Delay	LOS	Delay	LOS			Delay	LOS		
1	Rancho Santa Fe Rd./San Marcos Blvd.	49.3	D	145.4	F	49.6	D	0.3	N	146.9	F	1.5	N
2	Rancho Santa Fe Rd./Lake San Marcos Dr.	23.2	C	13.8	B	23.9	C	0.7	N	13.9	B	0.1	N
3	Rancho Santa Fe Rd./Camino Del Arroyo Dr.	22.4	C	24.4	C	22.9	C	0.5	N	25.2	C	0.8	N
4	Rancho Santa Fe Rd./Island Dr.	2.9	A	3.0	A	2.9	A	0.0	N	2.5	A	0.0	N
5	Melrose Dr./Palomar Airport Rd.	47.3	D	46.1	D	47.4	D	0.1	N	48.3	D	2.2	N
6	Melrose Dr./Rancho Bravado	15.7	B	13.7	B	16.0	B	0.3	N	13.9	B	0.2	N
7	Melrose Dr./Poinsettia Ln./Paseo Corto	21.7	C	21.0	C	21.9	C	0.2	N	21.1	C	0.1	N
8	Melrose Dr./Carillo Wy.	16.9	B	16.5	B	17.5	B	0.6	N	17.1	B	0.6	N
9	Melrose Dr./Alga Rd.	27.1	C	24.3	C	27.5	C	0.4	N	26.8	C	2.5	N
10	Rancho Santa Fe Rd./Melrose Dr.	43.9	D	35.0	D	46.8	D	2.9	N	36.3	D	1.3	N
11	Rancho Santa Fe Rd./San Elijo Rd.	36.2	D	32.2	C	39.5	D	3.3	N	36.9	D	4.7	N
12	Rancho Santa Fe Rd./Camino Junipero	10.1	B	11.7	B	10.8	B	0.7	N	13.2	B	1.5	N
13	Rancho Santa Fe Rd./La Costa Ave.	33.0	C	33.5	D	41.9	D	8.9	N	44.4	D	10.8	N
14	Rancho Santa Fe Rd./Camino De Los Coches	7.4	A	5.7	A	7.8	A	0.0	N	5.2	A	0.0	N
15	Rancho Santa Fe Rd./Calle Barcelona	21.8	C	17.3	B	22.8	C	1.0	N	18.4	B	1.1	N
16	Rancho Santa Fe Rd./Olivenhain Rd.	21.8	C	27.1	C	23.6	C	1.8	N	33.2	C	6.1	N
17	Rancho Santa Fe Rd./El Camino Del Norte[1]	72.6	F	27.7	D	84.8	F	12.2	Y	41.9	E	14.2	Y
18	El Camino Real /Aviara Pkwy/Alga Rd.	32.8	C	51.0	D	33.1	C	0.3	N	53.8	D	2.8	N
19	El Camino Real/Costa Del Mar Rd.	7.4	A	6.2	A	7.7	A	0.3	N	6.2	A	0.0	N
20	I-5 SB Ramps/La Costa Ave.	33.4	C	22.0	C	34.8	C	1.4	N	22.3	C	0.3	N
21	I-5 NB Ramps/La Costa Ave.	13.5	B	18.4	B	13.6	B	0.1	N	18.9	B	0.5	N
22	Piraeus St./La Costa Ave.	4.7	A	4.6	A	4.7	A	0.0	N	4.6	A	0.0	N
23	Saxony Rd./La Costa Ave.	4.2	A	4.8	A	4.2	A	0.0	N	4.8	A	0.0	N
24	El Camino Real/La Costa Ave.	45.5	D	52.6	D	45.7	D	0.2	N	54.2	D	1.6	N
25	Viejo Castilla Wy./La Costa Ave.	6.0	A	7.6	A	5.7	A	0.0	N	7.2	A	0.0	N
26	Romeria St./La Costa Ave.	11.9	B	6.7	B	12.6	B	0.7	N	10.2	B	3.5	N
27	Cadencia St./La Costa Ave.	8.4	A	14.9	B	9.4	A	1.0	N	20.6	C	5.7	N
28	I-5 SB Ramps/Leucadia Blvd.	22.8	C	20.3	C	23.4	C	0.6	N	21.4	C	1.1	N
29	I-5 NB Ramps/Leucadia Blvd.	35.0	D	20.6	C	35.1	D	0.1	N	21.8	C	1.2	N

Intersection		Year 2010				Year 2010 + Project							
		AM Peak Hour		PM Peak Hour		AM Peak Hour		Λ	S?	PM Peak Hour		Λ	S?
		Delay	LOS	Delay	LOS	Delay	LOS			Delay	LOS		
30	Clark Ave./Leucadia Blvd.	20.0	C	20.1	C	20.2	C	0.3	N	22.5	C	2.4	N
31	Saxony Rd./Leucadia Blvd.	37.1	D	29.8	C	40.8	D	3.7	N	31.9	C	2.1	N
32	Sidonia St./Leucadia Blvd.	6.8	A	7.1	A	7.0	A	0.2	N	8.3	A	1.2	N
33	Quail Gardens Dr./Leucadia Blvd.	31.6	C	32.1	C	33.9	C	2.3	N	39.5	D	7.4	N
34	Garden View Rd./Leucadia Blvd.	27.7	C	35.5	D	28.2	C	0.5	N	37.3	D	1.8	N
35	Town Center Pl./Leucadia Blvd.	19.5	B	30.6	C	19.5	B	0.0	N	30.2	C	0.0	N
36	El Camino Real/Leucadia Blvd.	50.2	D	35.7	D	51.7	D	1.5	N	36.5	D	0.8	N
37	Amargosa Dr./Olivenhain Rd.	22.6	C	25.2	C	27.1	C	4.5	N	40.7	D	15.5	N
38	Calle Timiteo (Driveway) #2/La Costa Ave.[4]	14.1	B	12.0	B	21.1	C	7.0	N	19.8	B	7.8	N
39	Camino De Los Coches/La Costa Ave.[5]	12.3	B	11.2	B	15.8	B	3.5	N	17.1	B	5.8	N
40	San Elijo Rd./Melrose Rd.	33.6	C	33.4	C	34.2	C	0.6	N	33.5	C	0.1	N
41	San Elijo Rd./Fallsview Rd.[7]	11.7	B	12.4	B	11.9	B	0.2	N	13.0	B	0.5	N
42	La Costa Ave./West Driveway #1[6]	11.9	B	11.5	B	23.1	C	11.2	N	33.8	C	22.3	N
43	La Costa Ave /East Dwy #3/Paseo Tamarindo[3]	---	---	---	---	9.5	A	---	N	8.9	A	---	N
44	Rancho Santa Fe Rd/West Driveway #4[2]	---	---	---	---	---	A	---	N	---	A	---	N
45	Rancho Santa Fe Rd/East Driveway #5[8]	3.0	A	3.0	A	22.9	C	19.9	N	44.7	D	41.7	N
46	Rancho Santa Fe Rd./Calle Acervo	43.6	D	22.4	C	49.1	D	5.5	N	29.5	C	7.1	N

Λ = Change in delay.
D = Delay in seconds.
LOS = Level of Service.
S? = Significant Impact due to Project.
[1] All-Way-Stop Control within City of Encinitas. Encinitas will not allow intersection improvements.
[2] Right-In Only for Northbound Traffic. No Conflicting Movements.
[3] Stop Sign facing Southbound Traffic. No Intersection Without Project.
[4] Stop Sign remains with no project; project installs traffic signal.
[5] Stop Sign remains with no project; project installs a traffic signal; TIF Fair-Share Reimbursement.
[6] Stop Sign remains with no project; project installs traffic signal.
[7] Right-Turn In-Out Only. Stop Sign Facing Northbound Traffic.
[8] Provide Westbound Dual-Left Turn Lanes

Unsignalized		Signalized	
Delay	LOS	Delay	LOS
0.00 - 10.0	A	0.00 - 10.0	A
10.1 - 15.0	B	10.1 - 20.0	B
15.1 - 25.0	C	20.1 - 35.0	C
25.1 - 35.0	D	35.1 - 55.0	D
35.1 - 50.0	E	55.1 - 80.0	E
Over 50.0	F	Over 80.0	F

Note: A significant impact occurs at LOS E or F if project increases intersection delay by more than 2.0 seconds.

All other intersections described in **Table 5.2-17** will remain at an acceptable level of operation.

Year 2030 Baseline and Plus Project Conditions

This section provides a description of the future Year 2030 traffic conditions both with and without the addition of traffic associated with the proposed project. The SANDAG/Combined North County Transportation Forecast was used to determine Year 2030 traffic volumes. Urban Systems Associates, Inc., adjusted the traffic model peak hour turn volumes to account for existing conditions volumes and reasonably expected growth in future traffic volumes.

Street Segments

Figure 5.2-21 shows Year 2030 ADT volumes with project traffic included. **Table 5.2-18** shows peak hour street segment levels of service for Year 2030. As shown, all segments evaluated using peak hour methodology within Carlsbad are expected to meet the GMP criteria of LOS D or better during peak hours. Therefore, implementation of the proposed project would not result in significant traffic impacts in Year 2030, and no mitigation is required.

Table 5.2-19 indicates freeway mainlane peak hour levels of service and shows I-5 freeway segment levels of service with project traffic added to Year 2030 traffic volumes. The peak hour V/C ratio increases due to project traffic are no more than 1 percent. Therefore, the proposed project impacts to I-5 are less than significant. Although the project contribution to I-5 freeway mainlane volumes is low and project freeway impacts are less than significant, the project contributes to significant regionwide cumulative freeway impacts. Caltrans has I-5 corridor studies in process through the RTCIP to help reduce cumulative impacts, evaluating the feasibility of several alternative improvements for I-5, including High Occupancy Vehicle lanes, additional auxiliary lanes between interchanges, and possibly direct connections to park-and-ride lots. It is infeasible for small, individual projects to mitigate for regional cumulative freeway impacts. No specific mitigation has been defined at this time and,

therefore, the project will contribute to the significant, cumulative freeway impacts.

5.2-21 Year 2030 With Project AM/PM Peak Hour Traffic

Table 5.2-18
Year 2030 with Project Street Segment Peak Hour Levels of Service (Segments Within Carlsbad)

Segment	Lanes[1]	Cap.	AM Peak Hour				PM Peak Hour			
			Volume[2]	Dir.	V/C	LOS	Volume[2]	Dir.	V/C	LOS
Rancho Santa Fe Road										
Melrose Dr. - San Elijo Rd.	3	5,400	1,972	NB	0.37	A	2,493	SB	0.46	A
San Elijo Rd. - La Costa Ave.	3	5,400	2,446	NB	0.46	A	2,517	SB	0.47	A
La Costa Ave. - Olivenhain Rd.	3	5,400	2,003	NB	0.39	A	1,917	SB	0.36	A
Olivenhain Rd. – Calle Acervo	2	3,600	1,209	NB	0.33	A	1,044	NB	0.29	A
El Camino Real										
Aviara Pkwy/Alga Rd. - La Costa Ave.	3	5,400	3,519	NB	0.65	B	3,051	SB	0.57	A
La Costa Ave. - Leucadia Blvd./Olivenhain Rd.	3	5,400	2,284	NB	0.42	A	2,469	SB	0.46	A
Melrose Drive										
Palomar Airport Rd. - Rancho Santa Fe Rd.	3	5,400	2,189	NB	0.40	A	1,723	SB	0.32	A
La Costa Avenue										
I-5 SB Ramps - Piraeus St.	2	3,600	1,974	EB	0.55	A	1,505	EB	0.43	A
Piraeus St. - El Camino Real	2	3,600	1,829	EB	0.51	A	1,510	EB	0.42	A
El Camino Real - Romeria St.	2	3,600	1,063	WB	0.30	A	1,012	EB	0.28	A
Romeria St. - Rancho Santa Fe Rd.	1	1,800	859	EB	0.47	A	953	WB	0.53	A
Rancho Santa Fe Rd. - Calle Timiteo	2	3,600	684	WB	0.19	A	748	EB	0.21	A
Calle Timiteo – Camino de los Coches	2	3,600	445	EB	0.12	A	416	EB	0.12	A
Camino de los Coches – Circulo Sequoia	1	1,800	216	WB	0.12	A	227	EB	0.13	A
Calle Barcelona										
El Camino Real – Rancho Santa Fe Rd.	2	3,600	387	WB	0.11	A	299	WB	0.09	A

[1] Lanes in One Direction.
[2] Highest Volume by Direction in Peak Hour (See Figure 5.2-23a through Figure 5.2-23f for peak hour volumes).
V/C = Volume to Capacity Ratio
LOS = Level of Service
Note: Significant Impact occurs only at LOS E or F; LOS A, B, C, or D are acceptable per City of Carlsbad Growth Management Program.

Table 5.2-19
Year 2030 with Project Freeway Segment Levels of Service Summary

Segment	Number of Lanes	Cap. Per Lane	ADT[1]	Peak Hour %	Direction Split	Truck Factor	Peak Volume Per Lane[2]	V/C	LOS[3]
Near Term With Project									
Interstate 5									
Poinsettia Ln. to La Costa Ave.	8 + HOV	2,350	293,700	0.08	0.60	0.97	2,907	1.24	F
La Costa Ave. to Leucadia Blvd.	8 + HOV	2,350	294,700	0.08	0.60	0.97	2,917	1.24	F
Leucadia Blvd. to Encinitas Blvd.	8 + HOV	2,350	312,700	0.08	0.60	0.97	3,095	1.32	F
Near Term Without Project									
Interstate 5									
Poinsettia Ln. to La Costa Ave.	8 + HOV	2,350	292,169	0.08	0.60	0.97	2,892	1.23	F
La Costa Ave. to Leucadia Blvd.	8 + HOV	2,350	293,169	0.08	0.60	0.97	2,902	1.24	F
Leucadia Blvd. to Encinitas Blvd.	8 + HOV	2,350	311,169	0.08	0.60	0.97	3,080	1.31	F

Segment	V/C With Project	V/C Without Project	Change in V/C	Significant?
Interstate 5				
Poinsettia Ln. to La Costa Ave.	1.24	1.23	0.01	No
La Costa Ave. to Leucadia Blvd.	1.24	1.24	0.00	No
Leucadia Blvd. to Encinitas Blvd.	1.32	1.31	0.01	No

Note: Significant Impact occurs only at LOS E or F if V/C increase is greater than 0.01 on CMP Freeways.

Cap. = Capacity in one direction
ADT = Average Daily Traffic
V/C = Volume to Capacity Ratio
LOS = Level of Service
Peak Hour % = % of ADT in Peak Hour
Direction Split = % of Peak Hour in Peak Direction
Truck Factor = Represents Capacity Reduction for Heavy Vehicles
[1]SANDAG/Carlsbad Year 2030 Traffic Model
[2]Caltrans District 11 LOS Estimation Procedures
[3]HOV Lane Reduces Mainlane Peak Hour Volume By 20%

Table 5.2-20 shows Year 2030 with and without project street segment levels of service using CMP ADT methodology for CMP arterials within Carlsbad and segments outside of Carlsbad.

Table 5.2-20
Year 2030 with and without Project Street Segment Peak Hour Levels of Service Summary CMP Arterials and Segments Outside Carlsbad

Segment	Lanes	Cap. at LOS E	Without Project			With Project			Λ	S ?
			ADT	V/C	LOS	ADT	V/C	LOS		
Rancho Santa Fe Road										
San Marcos Blvd. - Island Dr.	4-PA	40,000	53,942	1.35	F	54,452	1.36	F	0.01	N
Island Dr. - Melrose Dr.	4-PA	40,000	42,683	1.07	F	43,704	1.09	F	0.03	Y
Melrose Dr. - San Elijo Rd.	6-PA	60,000	30,307	0.51	B	35,921	0.60	B	0.09	N
San Elijo Rd. - La Costa Ave.	6-PA	60,000	53,056	0.89	D	61,731	1.03	F	0.14	Y
La Costa Ave. - Olivenhain Rd.	6-PA	60,000	34,698	0.58	B	40,822	0.68	C	0.10	N
Calle Acervo - El Camino del Norte	2-SA(+)	20,000	16,069	0.80	C	17,600	0.88	D	0.08	N
El Camino Real										
Aviara Pkwy./Alga Rd. - La Costa Ave.	6-PA	60,000	63,783	1.06	F	64,804	1.08	F	0.02	N
La Costa Ave. - Leucadia Blvd./Olivenhain Rd.	6-PA	60,000	43,000	0.72	C	43,000	0.72	C	0.00	N
Leucadia Boulevard										
I-5 SB Ramps - Quail Gardens Dr.	4-MA (+)	45,400	33,469	0.74	C	35,000	0.77	C	0.03	N
Quail Gardens Dr. - El Camino Real	4-MA (+)	45,400	41,661	0.92	E	43,702	0.96	E	0.04	Y
Olivenhain Road										
El Camino Real - Rancho Santa Fe Rd.	5-PA	50,000	37,649	0.75	C	40,711	0.81	D	0.06	N
San Elijo Road										
Rancho Santa Fe Rd. - Elfin Forest Rd.	4-MA	40,000	40,848	1.02	F	43,400	1.09	F	0.07	Y

V/C = Volume to Capacity Ratio
LOS = Level of Service
6-PA = 6-Lane Prime Arterial
4-PA = 4-Lane Prime Arterial
5-PA = 5 -Lane Prime Arterial
4-MA = 4-Lane Major Arterial
4-MA (+) = 4-Lane Major Arterial, Augmented per City of Encinitas Standards
4-SA = 4-Lane Secondary Arterial
2-SA (+) = 2-Lane Secondary Arterial, Augmented, per City of Encinitas Standards
S? = Significant Impact?
Note: Significant Impact only at LOS E or F if V/C increase due to Project is greater than 0.02

The segments of Leucadia Boulevard within Encinitas between Quail Gardens Drive and El Camino Real are identified as significantly impacted. Implementation of the proposed project would result in significant project-level and cumulative impacts to these segments of Leucadia Boulevard. However, the City of Encinitas desires to maintain Leucadia Boulevard as four lanes rather than six lanes to discourage through traffic. Widening for additional lanes is infeasible. Therefore, no mitigation is proposed for these segments, and the impact will remain significant and unmitigated.

As shown in **Table 5.2-20**, the segments of Rancho Santa Fe Road between San Elijo Road and La Costa Avenue would operate at LOS F using average daily traffic level of service tables and is shown for reference only. However, this segment was also evaluated using the City of Carlsbad Growth Management Program methodology using peak hour flow rather than ADT. During peak hours this segment will operate acceptably, and the project impact will be less than significant.

The four-lane segment of Rancho Santa Fe Road from San Marcos Boulevard to Island Drive is identified as operating at an unacceptable LOS F with or without the project in Year 2030. As shown in **Table 5.2-20,** the project would increase the V/C ratio by only 0.01; therefore, no project-related impacts to this segment in Year 2030 would occur, although the project would contribute to the cumulative significant impact on this segment.

The segment at Rancho Santa Fe Road between Island Drive and Melrose Drive is identified as operating at an unacceptable LOS F with or without the project. The project would increase the V/C ration by 0.03, which is greater than the significance threshold of more than a 0.02 increase in V/C ratio. The project-related impacts to this segment would be significant, and the project would contribute to the cumulative impact on this segment.

The City of San Marcos has determined that it is not practical or feasible to widen these segments to six lanes and has developed a CMP Deficiency Plan for these segments. A CMP Deficiency Plan evaluates level of service based on

peak flow rather than ADT. An arterial peak flow evaluation for Rancho Santa Fe Road between San Marcos Boulevard and Melrose Drive indicates operation within this CMP standard of LOS E. Therefore, project and cumulative impacts can be considered to be mitigated by updating the current CMP Deficiency Plan.

Table 5.2-20 also identifies a possible unacceptable LOS F operation on the El Camino Real segment between Aviara Parkway and La Costa Avenue. The project would increase the V/C ratio by only 0.02; therefore, no project-related impacts to this segment in Year 2030 would occur, although the project might contribute to the cumulative significant impact on this segment. This segment was previously evaluated according to the City of Carlsbad GMP roadway segment methodology using peak hour flow rather than ADT. During peak hours, this segment will operate acceptably.

Intersections

Figures 5.2-22a through **5.2-22f** show Year 2030 AM and PM peak hour volumes without project traffic and **Figures 5.2-23a** through **5.2-23f** show Year 2030 AM and PM peak hour volumes with project traffic included. **Figures 5.2-24a** through **5.2-24f** show Year 2030 lane configurations.

Table 5.2-21 shows Year 2030 intersection levels of service with and without project traffic using HCM methodology. As shown, all evaluated intersections within the study area are expected to operate at least at LOS D during peak hours as required by the City's GMP, with the exception of the two intersections discussed below. Therefore, the proposed project traffic impacts are expected to be less than significant at study area intersections with LOS D or better, and no project intersection mitigation is needed for Year 2030 conditions.

One intersection in San Marcos (Rancho Santa Fe Road and San Marcos Boulevard) is at LOS F; however, the project will cause an additional delay of less than 2.0 seconds; therefore, project impacts are less than significant. However, the project will contribute to a cumulative significant impact. The City of San Marcos has determined that additional improvements are unfeasible at this

location. Because no specific mitigation has been defined at this time, the cumulative impact will remain significant and unmitigated at this intersection.

The intersection of Rancho Santa Fe Road and El Camino del Norte in Encinitas, similar to conclusions for existing and year 2030 conditions, is anticipated to have an unacceptable

5.2-22a Year 2030 Without Project AM/PM Peak Hour Traffic

5.2-22b Year 2030 Without Project AM/PM Peak Hour Traffic

5.2-22c Year 2030 Without Project AM/PM Peak Hour Traffic

5.2-22d Year 2030 Without Project AM/PM Peak Hour Traffic

5.2-22e Year 2030 Without Project AM/PM Peak Hour Traffic

5.2-22f Year 2030 Without Project AM/PM Peak Hour Traffic

5.2-23a Year 2030 With Project AM/PM Peak Hour Traffic

5.2-23b Year 2030 With Project AM/PM Peak Hour Traffic

5.2-23c Year 2030 With Project AM/PM Peak Hour Traffic

5.2-23d Year 2030 With Project AM/PM Peak Hour Traffic

5.2-23e Year 2030 With Project AM/PM Peak Hour Traffic

5.2-23f Year 2030 With Project AM/PM Peak Hour Traffic

5.2-24a Year 2030 Lane Configurations

5.2-24b Year 2030 Lane Configurations

5.2-24c Year 2030 Lane Configurations

5.2-24d Year 2030 Lane Configurations

5.2-24e Year 2030 Lane Configurations

5.2-24f Year 2030 Lane Configurations

Table 5.2-21
Year 2030 Intersection Levels of Service Summary

	Intersection	Year 2030				Year 2030 + Project							
		AM Peak Hour		PM Peak Hour		AM Peak Hour		Λ	S?	PM Peak Hour		Λ	S?
		Delay	LOS	Delay	LOS	Delay	LOS			Delay	LOS		
1	Rancho Santa Fe Rd./San Marcos Blvd.	52.5	D	158.9	F	52.7	D	0.2	N	160.9	F	2.0	N
2	Rancho Santa Fe Rd./Lake San Marcos Dr.	25.7	C	16.0	B	27.5	C	1.8	N	18.0	B	2.0	N
3	Rancho Santa Fe Rd./Camino Del Arroyo Dr.	29.5	C	37.8	D	31.3	C	1.8	N	42.0	D	4.2	N
4	Rancho Santa Fe Rd./Island Dr.	3.1	A	3.9	A	3.1	A	0.0	N	4.1	A	0.2	N
5	Melrose Dr./Palomar Airport Rd.	54.0	D	52.6	D	54.9	D	0.9	N	53.8	D	1.9	N
6	Melrose Dr./Rancho Bravado	36.6	D	14.4	B	38.8	D	2.2	N	14.1	B	0.5	N
7	Melrose Dr./Poinsettia Ln./Paseo Corto	25.1	C	18.7	B	25.5	C	0.4	N	18.5	B	0.2	N
8	Melrose Dr./Carillo Wy.	17.2	B	18.1	B	18.1	B	0.9	N	17.7	B	0.7	N
9	Melrose Dr./Alga Rd.	22.3	C	34.7	D	23.6	C	1.3	N	39.8	D	6.8	N
10	Rancho Santa Fe Rd./Melrose Dr.	64.6	E	39.7	D	66.0	E	1.4	N	42.6	D	3.2	N
11	Rancho Santa Fe Rd./San Elijo Rd.	34.0	D	30.2	C	40.4	D	6.4	N	36.7	D	6.5	N
12	Rancho Santa Fe Rd./Camino Junipero	10.9	B	11.7	B	12.2	B	1.3	N	13.4	B	1.7	N
13	Rancho Santa Fe Rd./La Costa Ave.	39.1	D	36.0	D	51.2	D	12.1	N	48.8	D	12.8	N
14	Rancho Santa Fe Rd./Camino De Los Coches	7.8	A	6.8	A	7.6	A	0.0	N	6.2	A	0.0	N
15	Rancho Santa Fe Rd./Calle Barcelona	21.2	C	13.4	B	22.9	C	1.7	N	14.4	B	1.0	N
16	Rancho Santa Fe Rd./Olivenhain Rd.	40.8	D	29.7	C	48.5	D	7.7	N	44.9	D	10.5	N
17	Rancho Santa Fe Rd./El Camino Del Norte ∈	76.3	F	45.3	E	88.3	F	12.0	Y	64.5	F	19.1	Y
18	El Camino Real /Aviara Pkwy/Alga Rd.	41.3	D	36.2	D	42.4	D	1.1	N	36.9	D	0.3	N
19	El Camino Real/Costa Del Mar Rd.	21.6	C	6.1	A	22.9	C	1.3	N	6.1	A	0.0	N
20	I-5 SB Ramps/La Costa Ave.	30.4	C	21.3	C	30.7	C	0.3	N	21.7	C	0.4	N
21	I-5 NB Ramps/La Costa Ave.	16.2	B	18.4	B	16.9	B	0.2	N	18.7	B	0.3	N
22	Piraeus St./La Costa Ave.	8.0	A	5.0	A	8.8	A	0.8	N	4.9	A	0.0	N
23	Saxony Rd./La Costa Ave.	5.6	A	4.6	A	5.9	A	0.3	N	4.6	A	0.0	N
24	El Camino Real/La Costa Ave.	48.5	D	39.9	D	49.8	D	1.3	N	42.0	D	0.1	N
25	Viejo Castilla Wy./La Costa Ave.	5.3	A	5.4	A	5.0	A	0.0	N	5.0	A	0.0	N
26	Romeria St./La Costa Ave.	9.3	A	7.9	A	9.8	A	0.5	N	9.7	A	1.8	N
27	Cadencia St./La Costa Ave.	14.6	B	13.3	B	15.9	B	1.3	N	16.8	B	3.5	N
28	I-5 SB Ramps/Leucadia Blvd.	24.3	C	24.0	C	25.3	C	1.0	N	24.8	C	0.8	N

	Intersection	Year 2030				Year 2030 + Project							
		AM Peak Hour		PM Peak Hour		AM Peak Hour		Λ	S?	PM Peak Hour		Λ	S?
		Delay	LOS	Delay	LOS	Delay	LOS			Delay	LOS		
29	I-5 NB Ramps/Leucadia Blvd.	42.5	D	15.0	B	43.3	D	0.8	N	15.6	B	0.6	N
30	Clark Ave./Leucadia Blvd.	29.9	C	13.2	B	32.4	C	2.5	N	14.7	B	1.5	N
31	Saxony Rd./Leucadia Blvd.	35.6	D	46.0	D	38.5	D	2.9	N	52.1	D	6.1	N
32	Sidonia St./Leucadia Blvd.	13.5	B	8.2	A	15.3	B	1.8	N	11.6	B	3.4	N
33	Quail Gardens Dr./Leucadia Blvd.	38.9	D	38.7	D	44.7	D	5.8	N	48.4	D	9.7	N
34	Garden View Rd./Leucadia Blvd.	27.8	C	35.1	D	27.7	C	0.0	N	35.6	D	0.5	N
35	Town Center Pl./Leucadia Blvd.	21.6	C	33.5	C	21.5	C	0.0	N	33.6	C	0.1	N
36	El Camino Real/Leucadia Blvd.	47.1	D	42.8	D	49.3	D	2.2	N	47.6	D	4.8	N
37	Amargosa Dr./Olivenhain Rd.	26.5	C	16.9	B	32.4	C	5.9	N	29.4	C	12.3	N
38	Calle Timiteo (Driveway) #2/La Costa Ave.[4]	14.8	B	12.6	B	16.0	B	1.2	N	16.3	B	3.7	N
39	Camino De Los Coches/La Costa Ave.[5]	12.8	B	11.8	B	18.0	B	5.2	N	16.6	B	4.8	N
40	San Elijo Rd./Melrose Dr.	40.7	D	36.2	D	40.9	D	0.2	N	36.4	D	0.2	N
41	San Elijo Rd./Fallsview Dr.[6]	12.5	B	16.1	C	12.7	B	0.2	N	16.9	C	0.8	N
42	West Driveway #1/ La Costa Ave.[4]	12.2	B	11.9	B	28.8	C	15.6	N	37.1	D	25.2	N
43	East Driveway #3/La Costa Ave./Paseo Tamarindo[3]	NA	NA	NA	NA	9.4	A	0.0	N	8.9	A	0.0	N
44	West Driveway #4/ Rancho Santa Fe Rd.[2]	NA	NA	NA	NA	NA	NA	NA	N	NA	NA	NA	N
45	East Driveway #5/ Rancho Santa Fe Rd./Paseo Lupino[7]	4.8	A	5.2	A	23.6	C	19.8	N	30.7	C	25.5	N
46	Rancho Santa Fe Rd./Calle Acervo	46.9	D	22.6	C	52.2	D	5.4	N	29.7	C	7.1	N

Λ= Change in delay.
D = Delay in seconds.
LOS = Level of Service.
S? = Significant Impact due to Project.
[1] All-Way-Stop Control within City of Encinitas. Encinitas will not allow intersection improvements.
[2] Right-In Only for Northbound Traffic.
[3] Stop Sign facing Southbound Traffic.
[4] Without Project, the stop sign facing northbound traffic remains; project installs traffic signal.
[5] Stop sign facing northbound traffic remains; project installs traffic signal.
[6] The right-in–out only intersection remains as-is. The LOS relates to the NB right turn only movement.
[7] Provide Westbound dual left-turn lanes.

Stop Signs	
Delay	LOS
0.00 – 10.0	A
10.1 – 15.0	B
15.1 – 25.0	C
25.1 – 35.0	D
35.1 – 50.0	E
Over 50.0	F

Signalized	
Delay	LOS
0.00 –	A
10.1 –	B
20.1 –	C
35.1 –	D
55.1 –	E
Over	F

Note: A significant impact occurs at LOS E or F if project increases intersection delay by more than 2.0 seconds.

level of service in Year 2010 conditions, and implementation of the project would cause a further delay greater than 2.0 seconds at this intersection during peak hours. Therefore, a significant project impact exists at this intersection. According to the analysis provided in Appendix B, signalization or installation of a roundabout would improve operating conditions to an acceptable level of service, thereby reducing the project and cumulative impact to a level less than significant. However, because the City of Encinitas does not intend to implement mitigation such as signalization or a roundabout, the project and cumulative impact at this intersection would remain significant and unmitigated.

Ramp Meters

Table 5.2-22 and **Table 5.2-23** show Year 2030 ramp meter delays at the I-5/La Costa Avenue and I-5/Leucadia Boulevard interchanges. Ramp meter rates are assumed so that a maximum 15 minutes of delay is calculated at each ramp with project added. As shown in **Tables 5.2-22** and **5.22-23**, ramp meter delay increases are minimal at both locations with project traffic added and are not considered significant. Therefore, implementation of the proposed project would not result in significant impacts to ramp meters in Year 2030, and no mitigation is required.

Local Streets Year 2030 Conditions

Figure 5.2-25 shows Year 2030 ADT volumes without project traffic on residential streets near the project. The Year 2030 volumes are similar to existing volumes since the adjacent neighborhoods are built-out with no new developments expected in these areas.

Table 5.2-24 lists Year 2030 street segment levels of service on these streets near the project without the project traffic volumes added. As shown in this table, street segment levels of service would be acceptable at LOS A and B. Based on this evaluation, nearby roadways would operate acceptably in Year 2030 with project traffic and project traffic impacts to these streets would be less than significant. No mitigation is required.

Table 5.2-22
Year 2030 with and without Project Ramp Meter Operations at I-5/La Costa Avenue Interchange

With Project					
15-Minute Maximum Delay					
Location (on-ramp)		Demand** (Veh/Hr)	Meter Rate* (Veh/Hr)	Excess Demand (Veh/Hr)	Delay (Min)
AM	I-5/La Costa Avenue Northbound	821	657	164	15.0
PM	I-5/La Costa Avenue Northbound	431	345	86	15.0
AM	I-5/La Costa Avenue Southbound	641	513	128	15.0
PM	I-5/La Costa Avenue Southbound	626	501	125	15.0

Without Project					
15-Minute Maximum Delay					
Location (on-ramp)		Demand** (Veh/Hr)	Meter Rate* (Veh/Hr)	Excess Demand (Veh/Hr)	Delay (Min)
AM	I-5/La Costa Avenue Northbound	806	657	149	13.6
PM	I-5/La Costa Avenue Northbound	392	348	44	7.6
AM	I-5/La Costa Avenue Southbound	626	514	112	13.1
PM	I-5/La Costa Avenue Southbound	586	502	84	10.0

***** = Meter Rate adjusted to provide maximum 15-minute delay: Delay = Excess Demand/Meter Rate x 60 minutes
****** = See Figure 5.2-22a through Figure 5.2-22f and Figure 5.2-23a through Figure 5.2-23f

Comparison - With and Without Project				
Location		Horizon Year Without Project Delay (Min.)	Horizon Year With Project Delay (Min.)	Change in Delay (Min.)
AM	I-5/La Costa Avenue Northbound On-Ramp	13.6	15.0	1.4
PM	I-5/La Costa Avenue Northbound On-Ramp	17.6	15.0	7.4
AM	I-5/La Costa Avenue Southbound On-Ramp	13.1	15.0	1.9
PM	I-5/La Costa Avenue Southbound On-Ramp	10.1	15.0	4.9

Min. = Delay measured in minutes

Table 5.2-23
Year 2030 with and without Project Ramp Meter Operations at I-5/Leucadia Boulevard Interchange

With Project					
15-Minute Maximum Delay					
Location (on-ramp)		Demand** (Veh/Hr)	Meter Rate* (Veh/Hr)	Excess Demand (Veh/Hr)	Delay (Min)
AM	I-5/Leucadia Boulevard Northbound	1,260	1,008	252	15.0
PM	I-5/Leucadia Boulevard Northbound	579	463	116	15.0
AM	I-5/Leucadia Boulevard Southbound	685	548	137	15.0
PM	I-5/Leucadia Boulevard Southbound	438	350	88	15.0

Without Project					
15-Minute Maximum Delay					
Location (on-ramp)		Demand** (Veh/Hr)	Meter Rate* (Veh/Hr)	Excess Demand (Veh/Hr)	Delay (Min)
AM	I-5/Leucadia Boulevard Northbound	1,245	1,008	237	14.1
PM	I-5/Leucadia Boulevard Northbound	540	466	74	9.5
AM	I-5/Leucadia Boulevard Southbound	669	548	121	13.2
PM	I-5/Leucadia Boulevard Southbound	399	344	55	9.6

***** = Meter Rate adjusted to provide maximum 15-minute delay: Delay = Excess Demand/Meter Rate x 60 minutes
****** = See Figure 5.2-22a through Figure 5.2-22f and Figure 5.2-23a through Figure 5.2-23f

Comparison - with and without Project				
		Horizon Year without Project	Horizon Year with Project	Change in Delay (Min.)
Location (on-ramp)		Delay (Min.)	Delay (Min.)	
AM	I-5/Leucadia Boulevard Northbound	14.1	15.0	0.9
PM	I-5/Leucadia Boulevard Northbound	9.5	15.0	5.5
AM	I-5/Leucadia Boulevard Southbound	13.2	15.0	1.8

PM	I-5/Leucadia Boulevard Southbound	9.6	15.0	5.4

Min. = Delay measured in minutes

5.2-25 Local Street Year 2030 Without Project Average Daily Traffic

Table 5.2-24
Year 2030 without Project Local Street Segment Levels of Service

Segment	Classification	Capacity at LOS E[1]	ADT[2]	V/C	LOS
La Costa Ave.					
Camino De Los Coches – Circulo Sequoia	2-SA	15,000	1,700	0.11	A
Camino De Los Coches					
La Costa Ave. – Calle Acervo	2-SA	15,000	3,700	0.25	A
Calle Acervo – Calle Timiteo	2-SA	15,000	3,700	0.25	A
Calle Timiteo – Rancho Santa Fe Rd.	4-SA	30,000	8,500	0.28	A
Calle Timiteo					
200 Ft. South of La Costa Ave.	2-C	8,000	2,100	0.26	A
200 Ft. North of Camino De Los Coches	2-C	8,000	2,300	0.29	A
Calle Acervo					
Camino de los Coches – Calle Barcelona	2-C	8,000	3,000	0.38	B
Paseo Lupino					
West of Rancho Santa Fe Rd.	2-C	8,000	910	0.12	A
Corte Brezo					
North of Paseo Lupino	2-L	2,200[3]	910	0.41	A
Circulo Sequoia					
North of La Costa Ave.	2-L	2,200[3]	770	0.35	A
South of La Costa Ave.	2-L	2,200[3]	640	0.29	A

[1] 2006 SANDAG CMP Update: Table D-2
[2] See Figure 5.2-24
[3] Capacity at LOS C
4-SA = 4-Lane Secondary Arterial
2-SA = 2-Lane Secondary Arterial (With left turn lanes at intersections)
2-C = 2-Lane Collector Street (Without left turn lanes at intersections)
2-L = 2-Lane Local Street

Figure 5.2-26 shows Year 2030 ADT volumes with project traffic added and **Table 5.2-25** shows Year 2030 with project local street segment levels of service. This evaluation indicates that all evaluated segments will operate acceptably at LOS A, B, or C.

5.2-26 Local Street Year 2030 With Project Average Daily Traffic

Table 5.2-25
Year 2030 with Project Local Street Segment Levels of Service

Segment	Classification	Capacity at LOS E[1]	ADT[2]	V/C	LOS
La Costa Ave.					
Camino De Los Coches – Circulo Sequoia	2-SA	15,000	3,105	0.21	A
Camino De Los Coches					
La Costa Ave. – Calle Acervo	2-SA	15,000	5.741	0.38	B
Calle Acervo – Calle Timiteo	2-SA	15,000	3,953	0.26	A
Calle Timiteo – Rancho Santa Fe Rd.	4-SA	30,000	8,755	0.29	A
Calle Timiteo					
200 Ft. South of La Costa Ave.	2-C	8,000	3,631	0.45	C
200 Ft. North of Camino De Los Coches	2-C	8,000	2,810	0.35	C
Calle Acervo					
Camino de los Coches – Calle Barcelona	2-C	8,000	4,274	0.53	C
Paseo Lupino					
West of Rancho Santa Fe Rd.	2-C	8,000	2,189	0.27	A
Corte Brezo					
North of Paseo Lupino	2-L	2,200[3]	1,165	0.53	B
Circulo Sequoia					
North of La Costa Ave.	2-L	2,200[3]	1,153	0.52	B
South of La Costa Ave.	2-L	2,200[3]	1,022	0.46	A

[1] 2006 SANDAG CMP Update: Table D-2
[2] See Figure 5.2-25
[3] Capacity at LOS C
4-SA = 4-Lane Secondary Arterial
2-SA = 2-Lane Secondary Arterial (With left turn lanes at intersections)
2-C = 2-Lane Collector Street (Without left turn lanes at intersections)
2-L = 2-Lane Local Street
Note: Does not include pass-by trip reduction

La Costa Avenue/Levante Street Intersection

Existing. The intersection of La Costa Avenue/Levante Street is approximately 250 feet west of the La Costa Avenue/Rancho Santa Fe Road intersection and is controlled by a stop sign facing northbound traffic on Levante Street. This intersection was not part of the study area because it is a local street. However, the City Engineer determined an existing problem with queuing at this intersection.

Year 2030. **Figure 5.2-27** shows the Year 2030 peak hour volumes at the intersections of these two streets. **Figure 5.2-28** shows a phase diagram that would allow the interconnected operation of these two signals, so they would function as one controlled signal installation for all movements. **Figure 5.2-29** shows a phase diagram and striping alternative that would allow east-west split phase operation. The eastbound queues would be shorter than separate left turns east-west. The intersection delays and levels of service are similar for each of these phasing alternatives. Refer to EIR Appendix B for the queuing evaluation with the La Costa Avenue/Rancho Santa Fe Road levels of service worksheets.

Project Features

Provided below are project features that enhance traffic flow on local streets in Year 2030, although it was determined earlier that proposed project impacts to local streets in Year 2030 would be less than significant:

- The project proposes to construct a driveway to the south side of the Paseo Lupino/Rancho Santa Fe Road intersection and add westbound dual left-turn lanes. A traffic signal modification will be needed to accommodate these improvements.

- The project will install a traffic signal interconnect within Rancho Santa Fe Road from the proposed project driveway at Paseo Lupino through the La Costa Avenue intersection and ending at the Los Coches Road intersection.

5.2-27 La Costa Avenue/Levante Street/Rancho Santa Fe Road Year 2030 Lane Configurations and Peak Hour Traffic

5.2-28 Conceptual Striping Layout at La Costa Avenue/Levante Street/Rancho Santa Fe Road (Without Split Phase Signal EB/WB)

5.2-29 Conceptual Striping Layout at La Costa Avenue/Levante Street/Rancho Santa Fe Road (With Split Phase Signal Option)

- The project will construct a driveway on the north side of the existing driveway on La Costa Avenue east of Rancho Santa Fe Road. A traffic signal will be installed at this location.

- The project will construct a driveway on the north side of the Calle Timiteo/La Costa Avenue intersection. A traffic signal will be installed at this location.

- The project applicant will install a stop sign facing southbound traffic in conjunction with project construction at La Costa Avenue/Project Driveway #3 (east).

Figure 5.2-9 illustrates the locations of these driveways. In addition to these project features, parking may be removed on both sides of La Costa Avenue to accommodate new lane configurations and frontage improvements due to project impacts. The Camino De Los Coches/La Costa Avenue intersection will be signalized since the intersection now meets minimum warrants for a traffic signal; and after project traffic is added at this intersection, additional traffic signal warrants will be met. The project will receive a fair- share reimbursement from the City of Carlsbad Traffic Impact Fee Program.

5.2.4 Mitigation Measures

Table 5.2-26 describes the impacts, mitigation, and significance after mitigation for all roadway impacts identified in the analysis above; and **Table 5.2-27** summarizes the project impacts, mitigation, and significance for each location analyzed above across all of the study time periods.

Project and cumulative impacts to the following road segments and intersections will remain significant and unmitigated:

- Rancho Santa Fe Road between Island Drive and Melrose Drive in Existing + Project, Year 2010, and Year 2030 scenarios

- Leucadia Boulevard between Quail Gardens Drive and El Camino Real in Year 2030 scenario

Table 5.2-26
Summary of La Costa Traffic Significant or Potentially Significant Impacts

Location	Jurisdiction	Year	Condition/Impact	Related Plans or Project Mitigation	Notes	Significance after Mitigation
I-5 Freeway Segments	Caltrans	Existing	Existing LOS F at peak hours	Caltrans is considering plans to improve flow, but none identified, none funded.	Improvements not identified or funded.	N/A
Rancho Santa Fe Road Segment (Island-Melrose)	San Marcos	Existing	Existing LOS E	San Marcos identified as CMP deficient and widening to 6 lanes is infeasible.	Improvements not identified.	N/A
El Camino Real Segment (Aviara-La Costa)	Carlsbad	Existing	Existing LOS F	Will widen to 3 lanes Carlsbad TIF project.	Acceptable operation after widening.	N/A
Olivenhain Road Segment (El Camino Real - Rancho Santa Fe Road)	Joint Encinitas - Carlsbad	Existing	Existing LOS F (4 lanes)	Recently improved to 3 eastbound lanes and 2 westbound lanes.	Operating conditions improve to LOS D with widening.	N/A
Intersection Rancho Santa Fe Road and El Camino del Norte	Encinitas	Existing	Existing LOS E	None.	City of Encinitas does not have an adopted CIP project for this location. Therefore, operation not expected to improve.	N/A
I-5 Freeway Segments	Caltrans	Existing + Project	No Project Impact *(but cumulatively contributes)*	Caltrans is considering plans to improve flow, but none identified, none funded.	Improvements not identified or funded.	No mitigation proposed. Cumulative impact remains significant.
Rancho Santa Fe Road Segment	San Marcos	Existing + Project	Project Impact *(and cumulative*	None. Widening to 6 lanes is infeasible.	City of San Marcos does not have an	No mitigation proposed. Project

Location	Jurisdiction	Year	Condition/Impact	Related Plans or Project Mitigation	Notes	Significance after Mitigation
(Island-Melrose)			*impact)*		adopted CIP project for this location. Therefore, operation not expected to improve.	and cumulative impacts remain significant.
Olivenhain Road Segment (El Camino Real-Rancho Santa Fe Road)	Joint Encinitas - Carlsbad	Existing + Project	Project causes decline from LOS D to LOS E with 5 lanes.	None.	No plans for further improvement; City of Encinitas does not have an adopted CIP project for this location. Therefore, operation not expected to improve.	No mitigation proposed. Project and cumulative impacts significant.
El Camino Real Segment (Aviara-La Costa)	Carlsbad	Existing + Project	No Project Impact *(but cumulatively contributes)*	Will widen to 3 lanes as Carlsbad TIF project.	Widening would translate to acceptable operation.	Not significant. (Meets City GMP Standard)
Intersection Rancho Santa Fe Road and El Camino del Norte	Encinitas	Existing + Project	Project increases more than 2.0 seconds; project and cumulative impact.	None.	City of Encinitas does not have an adopted CIP project for this location. Therefore, operation not expected to improve.	Proposed mitigation is infeasible. Project impact remains significant
I-5 Freeway Segments	Regional/Carlsbad	Yr 2010 + Project	No Project Impact *(but cumulatively contributes)*	Caltrans is considering plans to improve flow, but none identified, none funded.	Improvements not identified.	No mitigation proposed. Cumulative impact remains significant.
Rancho Santa Fe Road Segment (San Marcos-Island)	San Marcos	Yr 2010 + Project	No Project Impact *(but cumulatively contributes)*	None. Widening to 6 lanes is infeasible.	City of San Marcos does not have an adopted CIP project for this location. Therefore, operation	No mitigation proposed. Cumulative impact remains significant.

Location	Jurisdiction	Year	Condition/Impact	Related Plans or Project Mitigation	Notes	Significance after Mitigation
					not expected to improve.	
El Camino Real Segment (Aviara-La Costa)	Carlsbad	Yr 2010 + Project	No Project Impact *(Cumulatively contributes based on CMP standards)*	None.	Analysis of peak hour operations demonstrates the segment operates at acceptable LOS. This is consistent with Carlsbad GMP standard. No improvements necessary.	Not significant. (Meets City GMP standard)
Intersection Rancho Santa Fe Road and San Marcos Blvd.	San Marcos	Yr 2010 + Project	No Project Impact *(but cumulatively contributes)*	None.	City of San Marcos does not have an adopted CIP project for this location. Therefore, operation not expected to improve.	No mitigation proposed. Cumulative impact remains significant.
Intersection Rancho Santa Fe Road and El Camino del Norte	Encinitas	Yr 2010 + Project	Project Impact *(and cumulative impact)*	None.	City of Encinitas does not have an adopted CIP project for this location. Therefore, operation not expected to improve.	Proposed mitigation is infeasible. Project and cumulative impact remains significant
I-5 Freeway Segments	Regional/Carlsbad	Yr 2030 + Project	No Project Impact *(but cumulatively contributes)*	Caltrans is considering plans to improve flow, but none identified, none funded.	Improvements not identified.	No mitigation proposed. Cumulative impact remains significant.
Leucadia Blvd Segments (Quail Gardens-El Camino	Encinitas	Yr 2030 + Project	Project Impact *(and cumulative impact)*	None.	City of Encinitas does not have an adopted CIP project for this	No mitigation proposed. Project and cumulative

Location	Jurisdiction	Year	Condition/Impact	Related Plans or Project Mitigation	Notes	Significance after Mitigation
Real)					location. Therefore, operation not expected to improve.	impacts remain significant.
Rancho Santa Fe Road Segment (San Marcos Blvd – Island)	San Marcos	Yr 2030 + Project	No Project Impact *(but cumulatively contributes)*	None.	City of San Marcos does not have an adopted CIP project for this location. Therefore, operation not expected to improve.	No mitigation proposed. Cumulative impact remains significant.
Rancho Santa Fe Road Segment (Island-Melrose)	San Marcos	Yr 2030 + Project	Project Impact *(and cumulative impact)*	None.	City of San Marcos does not have an adopted CIP project for this location. Therefore, operation not expected to improve.	No mitigation proposed. Project and cumulative impacts remain significant.
Rancho Santa Fe Road Segment (San Elijo-La Costa)	Carlsbad	Yr 2030 + Project	Project Impact *(and cumulative impact)*	Interconnect traffic signals from Camino De Los Coches to Paseo Lupino.	Analysis of peak hour operations demonstrates the segment operates at acceptable LOS. This is consistent with Carlsbad GMP standard. No improvements necessary.	Not significant. (Meets City GMP standard)
Olivenhain Road Segment (El Camino Real-Rancho Santa Fe Road)	Joint Encinitas - Carlsbad	Yr 2030 + Project	Project causes decline from LOS D to LOS E	None.	City of Encinitas does not have an adopted CIP project for this location. Therefore, operation not	No mitigation proposed. Project and cumulative impacts remain significant.

Location	Jurisdiction	Year	Condition/Impact	Related Plans or Project Mitigation	Notes	Significance after Mitigation
					expected to improve.	
El Camino Real Segment (Aviara-La Costa)	Carlsbad	Yr 2030 + Project	No Project Impact *(but cumulatively contributes)*	None.	Analysis of peak hour operations demonstrates the segment operates at acceptable LOS. This is consistent with Carlsbad GMP standard. No improvements necessary.	Not significant. (Meets City GMP standard)
San Elijo Road Segment (Rancho Santa Fe Road – Elfin Forest Road)	San Marcos	Yr 2030 + Project	Project Impact (and cumulative impact)	None.	City of San Marcos does not have an adopted CIP project for this location. Therefore, operation not expected to improve.	No mitigation proposed. Project and cumulative impact remains significant.
Intersection Rancho Santa Fe Road and San Marcos Blvd.	San Marcos	Yr 2030 + Project	No Project Impact *(but cumulatively contributes)*	None.	City of San Marcos does not have an adopted CIP project for this location. Therefore, operation not expected to improve.	No mitigation proposed. Cumulative impact remains significant.
Intersection Rancho Santa Fe Road and El Camino del Norte	Encinitas	Yr 2030 + Project	Project Impact *(and cumulative impact)*	None.	City of Encinitas does not have an adopted CIP project for this location. Therefore, operation not expected to improve.	Proposed mitigation is infeasible. Project and cumulative impacts remain significant.

Table 5.2-27
Summary of La Costa Traffic Significant or Potentially Significant Impacts by Location Over Time

Location	Jurisdiction	Existing	Existing + Project	2010 + Project	2030 + Project	Mitigation, Significance
I-5 Freeway Segments	Regional (Carlsbad)	Existing LOS F	No Project Impact *(but cumulatively contributes)*	No Project Impact *(but cumulatively contributes)*	No Project Impact *(but cumulatively contributes)*	No mitigation is proposed. Cumulative impacts remain significant.
Rancho Santa Fe Road Segment (Island-Melrose)	San Marcos	Existing LOS E	Project Impact *(and cumulative impact)*	Project Impact *(and cumulative impact)*	Project Impact *(and cumulative impacts)*	No mitigation is proposed. Project and cumulative impacts remain significant.
Rancho Santa Fe Road Segment (San Marcos Blvd – Island)	San Marcos	None	None	No Project Impact *(but cumulatively contributes)*	No Project Impact *(but cumulatively contributes)*	No mitigation is proposed. Cumulative impacts remain significant.
Leucadia Blvd Segment (Quail Gardens-El Camino Real)	Encinitas	None	None	None	Project Impact *(and cumulative impact)*	No project mitigation proposed. Project and cumulative impacts remain significant.
Olivenhain Road Segment (El Camino Real- Rancho Santa Fe Road)	Joint Encinitas-Carlsbad	Existing LOS D	Project causes decline from LOS D to LOS E	Project Impact *(and cumulative impact)*	Project Impact *(and cumulative impact)*	No project mitigation proposed. Project and cumulative impacts remain significant.

Location	Jurisdiction	Existing	Existing + Project	2010 + Project	2030 + Project	Mitigation, Significance
San Elijo Road Segment (Rancho Santa Fe Road to Elfin Forest Road	San Marcos	None	None	None	Project Impact (and cumulative impact)	No mitigation is proposed. Cumulative impacts remain significant.
Intersection Rancho Santa Fe Road and El Camino del Norte	Encinitas	Existing LOS E	No Project Impact *(but cumulatively contributes)*	Project Impact *(and cumulative impact)*	Project Impact *(and cumulative impact)*	Proposed project mitigation is infeasible. Project and cumulative impacts remain significant.
Intersection Rancho Santa Fe Road and San Marcos Blvd.	San Marcos	None	None	No Project Impact *(but cumulatively contributes)*	No Project Impact *(but cumulatively contributes)*	No mitigation is proposed. Cumulative impacts remain significant.

- San Elijo Road between Rancho Santa Fe Road and Elfin Forest Road in Year 2030 scenario

- Intersection of Rancho Santa Fe Road and El Camino del Norte in all scenarios

Cumulative impacts to the following road segments and intersections will remain significant and unmitigated:

- I-5 freeway segments in all year scenarios

- Rancho Santa Fe Road between Island Drive and Melrose Drive in Existing + Project and Year 2030 scenarios

- Intersection of Rancho Santa Fe Road and San Marcos Boulevard in Year 2010 and 2030 scenarios

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5.3 AIR QUALITY

This section includes a description of existing air quality, a summary of applicable regulations, and analyses of potential short-term and long-term air quality impacts of the proposed project. Mitigation measures are recommended, as necessary, to reduce significant air quality impacts. Air quality calculations are provided in Appendix C of this EIR.

5.3.1 Environmental Setting

The project site is located in Carlsbad in San Diego County, which is within the San Diego Air Basin (SDAB). The boundaries of the SDAB coincide with that of the county. Ambient concentrations of air pollutants in the SDAB are determined by the amount of emissions released by pollutant sources and the atmosphere's ability to transport and dilute such emissions. Natural factors that affect transport and dilution include terrain, wind, atmospheric stability, and the presence of sunlight. Therefore, existing air quality conditions in the area are determined by natural factors such as topography, meteorology, and climate, in addition to the amount of emissions released by existing air pollutant sources, as discussed separately below.

Climate

The climate of San Diego County is characterized by warm, dry summers and mild, wet winters. One of the main determinants of the climatology is a semipermanent high-pressure area (the Pacific High) in the eastern Pacific Ocean. The Pacific High is located well to the north in the summer, causing storm tracks to be directed north of California. This high-pressure cell maintains clear skies for much of the year. When the Pacific High moves southward during the winter, this pattern changes, and low-pressure storms are brought into the region, causing widespread precipitation. In San Diego County, the months of heaviest precipitation are November through April, averaging about 9 to 14 inches annually. The mean temperature is 62.2°F, and the mean maximum and mean minimum temperatures are 75.7°F and 48.5°F, respectively.

The Pacific High also influences the wind patterns of California. The predominant wind directions are westerly and west-southwesterly during all four seasons, and the average annual wind speed is 5.6 MPH.

An inversion layer, which is a layer of warm air that lies over cooler, ocean-modified air, often acts as a lid, preventing air pollutants from escaping upward. In the summer, these temperature inversions are stronger than in winter and prevent pollutants from escaping upward and dispersing. In the winter, a ground-level or surface inversion commonly forms during the night and traps carbon monoxide emitted by vehicles during the morning rush hours. Inversion layers are important elements of local air quality because they inhibit the dispersion of pollutants, thus resulting in a temporary degradation of air quality.

Existing Air Quality – Criteria Air Pollutants

Criteria air pollutants are concentrations of the following: ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter with an aerodynamic resistance diameter of 10 micrometers or less (PM_{10}), fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less ($PM_{2.5}$), and lead are used as indicators of ambient air quality conditions. These are the most prevalent air pollutants known to be deleterious to human health, and there is extensive documentation available on health-effects criteria for these pollutants. A brief description of each criteria air pollutant, including source types, health effects, and future trends, is provided below along with the most current attainment area designations and monitoring data for the project area and vicinity.

<u>Ozone</u>

Ozone is a photochemical oxidant, a substance whose oxygen combines chemically with another substance in the presence of sunlight, and the primary component of smog. Ozone is not directly emitted into the air, but is formed through complex chemical reactions between precursor emissions of reactive

organic gases (ROG) and oxides of nitrogen (NO_X) in the presence of sunlight. ROG are volatile organic compounds that are photochemically reactive. ROG emissions result primarily from incomplete combustion and the evaporation of chemical solvents and fuels. It should be noted that the ROG designation includes more chemical compounds, for purposes of this analysis ROG and volatile organic compound (VOC) are equivalent and are used interchangeably. NO_X are a group of gaseous compounds of nitrogen and oxygen that results from the combustion of fuels. A highly reactive molecule, ozone readily combines with many different components of the atmosphere. Consequently, high levels of ozone tend to exist only while high ROG and NO_X levels are present to sustain the ozone formation process. Once the precursors have been depleted, ozone levels rapidly decline. Because these reactions occur on a regional scale, ozone is a regional pollutant.

Ozone located in the upper atmosphere (stratosphere) acts in a beneficial manner by shielding the earth from harmful ultraviolet radiation that is emitted by the sun. However, ozone located in the lower atmosphere (troposphere) is a major health and environmental concern. Meteorology and terrain play a major role in ozone formation. Generally, low wind speeds or stagnant air coupled with warm temperatures and clear skies provide the optimum conditions for formation. As a result, summer is generally the peak ozone season. Because of the reaction time involved, peak ozone concentrations often occur far downwind of the precursor emissions. In general, ozone concentrations over or near urban and rural areas reflect an interplay of emissions of ozone precursors, transport, meteorology, and atmospheric chemistry (Godish 2004).

The adverse health effects associated with exposure to ozone pertain primarily to the respiratory system. Scientific evidence indicates that ambient levels of ozone affect not only sensitive receptors, such as asthmatics and children, but healthy adults as well. Exposure to ambient levels of ozone ranging from 0.10 to 0.40 part per million (ppm) for 1–2 hours has been found to significantly alter lung functions by increasing respiratory rates and pulmonary resistance, decreasing tidal volumes (the amount of air inhaled and exhaled), and impairing respiratory mechanics. Ambient levels of ozone above 0.12 ppm are linked to symptomatic

responses that include such symptoms as throat dryness, chest tightness, headache, and nausea. In addition to the above adverse health effects, evidence also exists relating ozone exposure to an increase in permeability of respiratory epithelia; such increased permeability leads to an increased response of the respiratory system to challenges, and a decrease in the immune system's ability to defend against infection (Godish 2004).

Ozone precursor emissions of ROG and NO_X have decreased over the past several years because of more stringent motor vehicle standards and cleaner burning fuels. Ozone exceedance days in the SDAB have declined at a faster rate than peak levels. From 1987 to 2006, peak levels declined by 31 percent while the number of California and national 8-hour exceedance days declined by 69 percent and 93 percent, respectively. San Diego is expected to attain the current national 8-hour standard by the year 2009 (ARB 2008a).

Carbon Monoxide

CO is a colorless, odorless gas that is formed when carbon in fuel is not burned completely. It is a component of motor vehicle exhaust, which contributes about 56 percent of all CO emissions nationwide. Other non-road engines and vehicles (such as construction equipment and boats) contribute about 22 percent of all CO emissions nationwide. Higher levels of CO generally occur in areas with heavy traffic congestion. In cities, 85 to 95 percent of all CO emissions may come from motor vehicle exhaust. Other sources of CO emissions include industrial processes (such as metals processing and chemical manufacturing), residential wood burning, and natural sources such as forest fires. Woodstoves, gas stoves, cigarette smoke, and unvented gas and kerosene space heaters are sources of CO indoors. The highest levels of CO in the outside air typically occur during the colder months of the year when inversion conditions are more frequent. The air pollution becomes trapped near the ground beneath a layer of warm air (EPA 2008).

CO enters the bloodstream through the lungs by combining with hemoglobin, which normally supplies oxygen to the cells. However, CO combines with

hemoglobin much more readily than oxygen does, resulting in a drastic reduction in the amount of oxygen available to the cells. Adverse health effects associated with exposure to CO concentrations include such symptoms as dizziness, headaches, and fatigue. CO exposure is especially harmful to individuals who suffer from cardiovascular and respiratory diseases (EPA 2008). The highest concentrations are generally associated with cold, stagnant weather conditions that occur during the winter. In contrast to problems caused by ozone, which tends to be a regional pollutant, CO problems tend to be localized.

Nitrogen Dioxide

NO_2 is a brownish, highly reactive gas that is present in all urban environments. The major human-made sources of NO_2 are combustion devices, such as boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines. Combustion devices emit primarily nitric oxide (NO), which reacts through oxidation in the atmosphere to form NO_2 (EPA 2008). The combined emissions of NO and NO_2 are referred to as NO_X and reported as equivalent NO_2. Because NO_2 is formed and depleted by reactions associated with ozone, the NO_2 concentration in a particular geographical area may not be representative of the local NO_X emission sources.

Inhalation is the most common route of exposure to NO_2. Because NO_2 has relatively low solubility in water, the principal site of toxicity is in the lower respiratory tract. The severity of the adverse health effects depends primarily on the concentration inhaled rather than the duration of exposure. An individual may experience a variety of acute symptoms, including coughing, difficulty with breathing, vomiting, headache, and eye irritation during or shortly after exposure. After a period of approximately 4 to 12 hours, an exposed individual may experience chemical pneumonitis or pulmonary edema with breathing abnormalities, cough, cyanosis, chest pain, and rapid heartbeat. Severe, symptomatic NO_2 intoxication after acute exposure has been linked on occasion with prolonged respiratory impairment with such symptoms as chronic bronchitis and decreased lung functions (EPA 2008).

Sulfur Dioxide

SO_2 is produced by such stationary sources as coal and oil combustion, steel mills, refineries, and pulp and paper mills. The major adverse health effects associated with SO_2 exposure pertain to the upper respiratory tract. SO_2 is a respiratory irritant with constriction of the bronchioles occurring with inhalation of SO_2 at 5 ppm or more. On contact with the moist mucous membranes, SO_2 produces sulfurous acid, which is a direct irritant. Concentration rather than duration of the exposure is an important determinant of respiratory effects. Exposure to high SO_2 concentrations may result in edema of the lungs or glottis and respiratory paralysis.

Particulate Matter

Respirable particulate matter with an aerodynamic diameter of 10 micrometers or less is referred to as PM_{10}. PM_{10} consists of particulate matter emitted directly into the air, such as fugitive dust, soot, and smoke from mobile and stationary sources, construction operations, fires and natural windblown dust, and particulate matter formed in the atmosphere by condensation and/or transformation of SO_2 and ROG (EPA 2008). Fine particulate matter $PM_{2.5}$ is a subgroup of PM_{10}, consisting of smaller particles that have an aerodynamic diameter of 2.5 micrometers or less (ARB 2008a).

The adverse health effects associated with PM_{10} depend on the specific composition of the particulate matter. For example, health effects may be associated with metals, polycyclic aromatic hydrocarbons, and other toxic substances adsorbed onto fine particulate matter (referred to as the "piggybacking effect"), or with fine dust particles of silica or asbestos. Generally, adverse health effects associated with PM_{10} may result from both short-term and long-term exposure to elevated concentrations and may include breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular diseases, alterations to the immune system, carcinogenesis, and premature death (EPA 2008). $PM_{2.5}$ poses an increased health risk because the particles

can deposit deep in the lungs and may contain substances that are particularly harmful to human health.

Direct emissions of PM_{10} are projected to almost double in the SDAB between 1975 and 2020. This increase is due to growth in emissions from area-wide sources, primarily fugitive dust from vehicle travel on unpaved and paved roads, dust from construction and demolition operations, and particulates from residential fuel combustion (including wood). The growth in these area-wide sources is primarily due to population growth and increases in vehicle miles traveled (VMT). PM_{10} concentrations in the SDAB have changed little during the years for which reliable data are available. The annual average for 2006 exceeded the state annual standard and in previous years has been higher than the 1989 value. During 1989, there were 114 calculated state standard exceedance days, compared with 159 during 2006. During 2006, there were no calculated days over the 24-hour national standard. There is a substantial amount of variability from year-to-year in the 24-hour statistics. This variability is a reflection of meteorology, the 1-in-6-day sampling schedule, and changes in monitoring location. Although ambient PM_{10} concentrations in the SDAB are not as high as in some other areas of the state, additional emission controls will be needed to bring this area into attainment with the state standards (ARB 2008a).

Annual average $PM_{2.5}$ concentrations (national and state) in the SDAB have declined during the period of 1999 through 2006. The highest maximum 24-hour concentration of 239 micrograms per cubic meter ($\mu g/m^3$) occurred in 2003, and was due to severe wildfires that occurred in Southern California during October. The 98th percentile of 24-hour $PM_{2.5}$ concentrations showed substantial variability within this period, a reflection of changes in meteorology and the influence of the 2003 wildfires (ARB 2008a).

Lead

Lead is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been mobile and industrial sources. As a result of the phase-out of leaded gasoline, as discussed in

detail below, metal processing is currently the primary source of lead emissions. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers.

Twenty years ago, mobile sources were the main contributor to ambient lead concentrations in the air. In the early 1970s, the EPA set national regulations to gradually reduce the lead content in gasoline. In 1975, unleaded gasoline was introduced for motor vehicles equipped with catalytic converters. EPA banned the use of leaded gasoline in highway vehicles in December 1995 (EPA 2008).

As a result of EPA's regulatory efforts to remove lead from gasoline, emissions of lead from the transportation sector have declined dramatically (95 percent between 1980 and 1999), and levels of lead in the air decreased by 94 percent between 1980 and 1999. Transportation sources, primarily airplanes, now contribute only 13 percent of lead emissions. A National Health and Nutrition Examination Survey reported a 78 percent decrease in the levels of lead in people's blood between 1976 and 1991. This dramatic decline can be attributed to the move from leaded to unleaded gasoline (EPA 2008).

The decrease in lead emissions and ambient lead concentrations over the past 25 years is California's most dramatic success story with regard to air quality management. The rapid decrease in lead concentrations can be attributed primarily to phasing out the lead in gasoline. This phase-out began during the 1970s, and subsequent California Air Resources Board (ARB) regulations have virtually eliminated all lead from gasoline now sold in California. All areas of the state are currently designated as attainment for the state lead standard (EPA does not designate areas for the national lead standard). Although the ambient lead standards are no longer violated, lead emissions from stationary sources still pose "hot spot" problems in some areas. As a result, ARB identified lead as a Toxic Air Containments (TAC).

Monitoring Station Data and Attainment Area Designations

Criteria air pollutant concentrations are measured at 10 monitoring stations in the SDAB. Data from the Del Mar (12.7 miles southwest of the site), Escondido (13 miles northeast of the site), Camp Pendleton (13 miles northwest of the site), and San Diego 12th Avenue (26 miles south of the site) monitoring stations were used to characterize existing air quality at the project site. **Table 5.3-1** presents a summary of the highest pollutant values recorded at these stations and compliance with federal and state standards from 2004 to 2008.

Both ARB and EPA use this type of monitoring data to designate areas according to attainment status for criteria air pollutants established by the agencies. The purpose of these designations is to identify those areas with air quality problems and thereby initiate planning efforts for improvement. The three basic designation categories are nonattainment, attainment, and unclassified. The "unclassified" designation is used in an area that cannot be classified on the basis of available information as meeting or not meeting the standards. In addition, the California designations include a subcategory of the nonattainment designation, called "nonattainment-transitional." This designation is given to nonattainment areas that are progressing and nearing attainment. The current national and state standards are shown in **Table 5.3-2**. The SDAB currently meets the national standards for all criteria pollutants except for ozone and meets state standards for all criteria pollutants except ozone, PM_{10}, and $PM_{2.5}$.

On 15 April 2004, EPA issued the initial designations for the 8-hour ozone standard, and the SDAB is classified as "basic" nonattainment. Basic is the least severe of the six degrees of ozone nonattainment. The San Diego Air Pollution Control District (SDAPCD) submitted an air quality plan to EPA in 2007; the plan demonstrated how the 8-hour ozone standard will be attained by 2009. A decision from EPA is not anticipated until the summer or fall of 2009 (SDAPCD 2008). The SDAB is currently classified as a "serious" ozone nonattainment area under state standards. For $PM_{2.5}$, the SDAB is currently classified as a national attainment area and state nonattainment area. The SDAB is classified a state nonattainment area for PM_{10}. The SDAB currently falls under a national

"maintenance plan" for CO, following a 1998 redesignation as a CO attainment area.

Existing Emissions

With respect to the SDAB, mobile sources are the largest contributor to the estimated annual average air pollutant levels of ROG, CO, and NO_X accounting for approximately 60 percent, 94 percent, and 94 percent, respectively, of the total emissions. Areawide sources account for approximately 81 percent and 51 percent of the basin's PM_{10} and $PM_{2.5}$ emissions, respectively (ARB 2008b).

Table 5.3-1
San Diego Monitoring Stations - Ambient Air Quality

Pollutant	Averaging Time	Federal Primary Standards	California Air Quality Standards	Maximum Concentrations[1]					Number of Days Exceeding Federal Standard[2]					Number of Days Exceeding State Standard[2]				
				2004	2005	2006	2007	2008	2004	2005	2006	2007	2008	2004	2005	2006	2007	2008
Ozone (Del Mar)	1 hour	0.12 ppm[3]	0.09 ppm	0.129	0.082	0.086	0.110	0.117	1	0	0	0	0	3	0	0	1	2
	8 hour	0.075 ppm	0.070 ppm	0.095	0.070	0.074	0.079	0.078	5	0	0	3	3	8	0	1	4	11
Carbon Monoxide (Escondido)	1 hour	35 ppm	20 ppm	5.3	5.9	5.7	5.2	*	0	0	0	0	*	0	0	0	0	*
	8 hour	9 ppm	9.0 ppm	3.61	3.10	3.61	3.19	2.81	0	0	0	0	0	0	0	0	0	0
Sulfur Dioxide (San Diego – 1110 Beardsley Street)	24 hours	0.14 ppm	0.04 ppm	*	0.005	0.009	0.006	0.007	*	0	0	0	0	*	0	0	0	0
	Annual	0.03 ppm	none	*	0.003	0.004	0.003	0.003	*	0	0	0	0	*	0	0	0	0
Nitrogen Dioxide (Camp Pendleton)	1 hour	none	0.18 ppm	0.099	0.077	0.081	0.068	0.085	–	–	–	–	–	0	0	0	0	0
	Annual	0.053 ppm	0.030 ppm	0.012	0.012	0.011	0.010	0.010	0	0	0	0	0	0	0	0	0	0
PM_{10}[4] (Escondido)	24 hours	150 µg/m³	50 µg/m³	57.0	42.0	51.0	68.0	82.0	0	0	0	0	0	1	0	1	2	1
	Annual	Revoked	20 µg/m³	27.5	23.9	24.1	26.7	24.7	–	–	–	–	–	1	1	1	1	1
$PM_{2.5}$ (Escondido)	24 hours	35 µg/m³	none	67.3	43.1	40.6	126.2	38.1	9	4	1	11	1	–	–	–	–	–
	Annual	15 µg/m³	12 µg/m³	14.1	*	11.5	13.3	*	0	*	0	0	*	2	*	0	1	*

"–" = data not available or applicable.
"*" = there were insufficient data to determine the value.
(1) Concentration units for ozone, carbon monoxide, and nitrogen dioxide are in parts per million (ppm). Concentration units for PM_{10} and $PM_{2.5}$ are in micrograms per cubic meter (µg/m³).
(2) For annual standards, a value of 1 indicates that the standard has been exceeded.
(3) The federal 1-hour ozone standard was revoked in June 2005.
(4) PM_{10} data are recorded separately for federal and state purposes because EPA and California methods are slightly different. Federal values are shown. PM_{10} is measured every 6 days; the number of days exceeding standards is projected to a 365-day base from the measurements.
Source: ARB 2008d, SDAPCD 2007

Table 5.3-2. National and California Ambient Air Quality Standards

Pollutant	Averaging Time	NAAQS[1]		CAAQS[2]
		Primary[3]	Secondary[4]	Concentration[5]
Ozone (O_3)[6]	1-Hour	–	Same as Primary Standard	0.09 ppm (180 µg/m^3)
	8-Hour	0.075 ppm (147 µg/m^3)		0.070 ppm (137 µg/m^3) [9]
Carbon Monoxide (CO)	8-Hour	9 ppm (10 mg/m^3)	None	9.0 ppm (10 mg/m^3)
	1-Hour	35 ppm (40 mg/m^3)		20 ppm (23 mg/m^3)
	8-Hour (Lake Tahoe)	–	–	6 ppm (7 mg/m^3)
Nitrogen Dioxide (NO_2)	Annual Average	0.053 ppm (100 µg/m^3)	Same as Primary Standard	0.030 ppm (57 µg/m^3)[10]
	1-Hour	–		0.18 ppm (339 µg/m^3)[10]
Sulfur Dioxide (SO_2)	Annual Average	0.030 ppm (80 µg/m^3)	–	–
	24-Hour	0.14 ppm (365 µg/m^3)	–	0.04 ppm (105 µg/m^3)
	3-Hour	–	0.5 ppm (1300 µg/m^3)	–
	1-Hour	–	-	0.25 ppm (655 µg/m^3)
Respirable Particulate Matter (PM_{10})[7]	24-Hour	150 µg/m^3	Same as Primary Standard	50 µg/m^3
	Annual Arithmetic Mean	Revoked		20 µg/m^3 note 7
Fine Particulate Matter ($PM_{2.5}$)[8]	24-Hour	35 µg/m^3	Same as Primary Standard	–
	Annual Arithmetic Mean	15 µg/m^3		12 µg/m^3
Lead (Pb)	30-Day Average	–	–	1.5 µg/m^3
	Calendar Quarter	1.5 µg/m^3	Same as Primary Standard	–
	Rolling 3-Month Average	0.15 µg/m^3	Same as Primary Standard	–
Hydrogen Sulfide (H_2S)	1-Hour	No Federal Standards		0.03 ppm (42 µg/m^3)
Sulfates (SO_4)	24-Hour			25 µg/m^3
Visibility Reducing Particles	8-Hour (10 AM to 6 PM, Pacific Standard Time)			Extinction coefficient of 0.23 per km-visibility of ten miles or more (0.07/30 miles for Lake Tahoe) due to particles when the relative humidity is less than 70 percent.
Vinyl chloride[9]	24-Hour			0.01 ppm (26 µg/m^3)

[1] NAAQS (other than O_3, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The O_3 standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact the EPA for further clarification and current federal policies.

[2] California Ambient Air Quality Standards for O_3, CO (except Lake Tahoe), SO_2 (1- and 24-hour), NO_2, PM_{10}, $PM_{2.5}$, and visibility reducing particles are values that are not to be exceeded. All others are not to be equaled or

[5] Concentration expressed first in units in which it was promulgated. Ppm in this table refers to ppm by volume or micromoles of pollutant per mole of gas.

[6] On June 15, 2005, the 1-hour ozone standard was revoked for all areas except the 8-hour ozone nonattainment Early Action Compact Areas (those areas do not yet have an effective date for their 8-hour designations). Additional information on federal ozone standards is available at http://www.epa.gov/oar/oaqps/greenbk/index.html.

[7] Due to a lack of evidence linking health problems to long-term exposure to coarse particle pollution, the EPA revoked the annual PM_{10} standard on December 17, 2006.

[8] Effective December 17, 2006, the EPA lowered the $PM_{2.5}$ 24-hour standard from 65 µg/m^3 to 35 µg/m^3.

[9] The ARB has identified lead and vinyl chloride as "toxic air contaminants" with no threshold level of exposure for adverse health effects determined. These actions allow for the

Pollutant	Averaging Time	NAAQS[1]		CAAQS[2]
		Primary[3]	Secondary[4]	Concentration[5]

exceeded.

[3] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

[4] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[10] The nitrogen dioxide ambient air quality standard was amended to lower the 1-hr standard to 0.18 ppm and establish a new annual standard of 0.030 ppm. These changes became effective March 20, 2008.

ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter; mg/m^3 = milligrams per cubic meter; km = kilometers
Source: ARB 2008e.

Motor vehicles are the major generators of air pollutant emissions in the vicinity of the project site. Rancho Santa Fe Road and La Costa Avenue carry local and through traffic emitting exhaust pollutants. Currently, the project site is vacant land and generates no stationary or mobile source emissions other than occasional vehicles traversing the project site along the dirt roads.

Existing Air Quality – Toxic Air Contaminants

Concentrations of TACs, or in federal parlance, hazardous air pollutants (HAPs), are also used as indicators of ambient-air-quality conditions. A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations.

According to the *California Almanac of Emissions and Air Quality* (ARB 2008a), the majority of the estimated health risk from TACs can be attributed to relatively few compounds, the most important being PM from diesel-fueled engines (diesel PM). Diesel PM differs from other TACs in that it is not a single substance, but rather a complex mixture of hundreds of substances. Although diesel PM is emitted by diesel-fueled internal combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present.

Unlike the other TACs, no ambient monitoring data are available for diesel PM because no routine measurement method currently exists. However, ARB has made preliminary concentration estimates based on a PM exposure method. This method uses the ARB emissions inventory's PM_{10} database, ambient PM_{10} monitoring data, and the results from several studies to estimate concentrations of diesel PM.

In addition to diesel PM, the TACs for which data are available that pose the greatest existing ambient risk in California are benzene, 1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, *para-*

dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene. Diesel PM poses the greatest health risk among these 10 TACs. Based on receptor modeling techniques, ARB estimated the diesel PM health risk in the SDAB in 2000 to be 420 excess cancer cases per million people. Since 1990, the health risk of diesel PM in the SDAB has been reduced by 52 percent (ARB 2008a).

According to ARB Community Health Air Pollution Information System, there are no major existing stationary sources of TACs within three miles of the project site (ARB 2008c). Vehicles on La Costa Avenue, Rancho Santa Fe Road, El Camino Real, Calle Barcelona, Olivenhain Road, and Leucadia Boulevard are sources of diesel PM and other TACs associated with vehicle exhaust.

Existing Air Quality — Odors

Odors are generally regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache).

With respect to odors, the human nose is the sole sensing device. The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals have the ability to smell very minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; an odor that is offensive to one person may be perfectly acceptable to another (e.g., fast food restaurant). It is important to also note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity.

There are no existing concentrated sources of objectionable odors within 1 mile of the project site. No major agriculture-related odor sources (e.g., pig or dairy operations) are located within two miles.

5.3.2 Regulatory Framework

Air quality within the project area is regulated by EPA, ARB, and SDAPCD. Each of these agencies develops rules, regulations, policies, and/or goals to comply with applicable legislation. Although EPA regulations may not be superseded, both state and local regulations may be more stringent.

Criteria Air Pollutants

Federal Regulations

At the federal level, EPA has been charged with implementing national air quality programs. EPA's air quality mandates are drawn primarily from the CAA, which was enacted in 1970. The most recent major amendments made by Congress were in 1990.

The CAA required EPA to establish National Ambient Air Quality Standards (NAAQS). As shown in **Table 5.3-2**, EPA has established primary and secondary NAAQS for the following criteria air pollutants: ozone, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead. The primary standards protect the public health and the secondary standards protect public welfare. The CAA also required each state to prepare an air quality control plan referred to as a State Implementation Plan (SIP). The federal Clean Air Act Amendments of 1990 (CAAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is modified periodically to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. EPA must review all state SIPs to determine whether they conform to the mandates of the CAA and the amendments thereof, and to determine whether implementing them will achieve air quality goals. If EPA determines a SIP to be inadequate, a

Federal Implementation Plan (FIP) that imposes additional control measures may be prepared for the nonattainment area. Failure to submit an approvable SIP or to implement the plan within the mandated time frame may cause sanctions to be applied to transportation funding and stationary air pollution sources in the air basin.

State Regulations

ARB is the agency responsible for coordination and oversight of state and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA). The CCAA, which was adopted in 1988, required ARB to establish the California Ambient Air Quality Standards (CAAQS) (**Table 5.3-2**). ARB has established CAAQS for sulfates, hydrogen sulfide, vinyl chloride, visibility-reducing particulate matter, and the above-mentioned criteria air pollutants. In most cases the CAAQS are more stringent than the NAAQS. Differences in the standards are generally explained by the health effects studies considered during the standard-setting process and the interpretation of the studies. In addition, the CAAQS incorporate a margin of safety to protect sensitive individuals.

The CCAA requires that all local air districts in the state endeavor to achieve and maintain the CAAQS by the earliest practical date. The act specifies that local air districts should focus particular attention on reducing the emissions from transportation and areawide emission sources, and provides districts with the authority to regulate indirect sources.

Among ARB's other responsibilities are overseeing local air district compliance with California and federal laws, approving local air quality plans, submitting SIPs to EPA, monitoring air quality, determining and updating area designations and maps, and setting emissions standards for new mobile sources, consumer products, small utility engines, off-road vehicles, and fuels.

ARB and local air pollution control districts are currently developing plans for meeting new national air quality standards for ozone and $PM_{2.5}$. California's

adopted 2007 State Strategy was submitted to EPA as a revision to the SIP in November 2007 (ARB 2008f).

Local Plans and Policies

San Diego Air Pollution Control District

SDAPCD seeks to improve air quality conditions in San Diego County through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. The clean air strategy of SDAPCD includes preparing plans and programs for the attainment of ambient air quality standards, adopting and enforcing rules and regulations, and issuing permits for stationary sources. SDAPCD also inspects stationary sources, responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements other programs and regulations required by the CAA, CAAA, and CCAA.

Regional Air Quality Strategy

As mentioned previously, the SDAB is designated as a nonattainment area for ozone for both national and state standards. For each nonattainment area within the state, the CCAA has specified air quality management strategies that must be adopted by the agency responsible for the nonattainment area. Each area must prepare and adopt an air quality management plan (AQMP) or regional air quality strategy (RAQS), which lays out programs for attaining the CAAQS and NAAQS for all criteria pollutants. At present, no attainment plan for $PM_{2.5}$ or PM_{10} is required by the state regulations. Accordingly, the San Diego RAQS was developed by the SDAPCD, pursuant to CCAA requirements and identifies feasible emission control measures to provide expeditious progress in San Diego County toward attaining the state ozone standard. The pollutants addressed are ROG and NO_X, precursors to the photochemical formation of ozone. The RAQS control measures focus on emission sources under the SDAPCD's authority, specifically stationary emission sources and some areawide sources. However, the emission inventories and emission projections in the RAQS

reflect the impact of all emission sources and all control measures, including those under the jurisdiction of ARB (e.g., on-road motor vehicles, off-road vehicles and equipment, and consumer products) and EPA (e.g., aircraft, ships, trains, and pre-empted off-road equipment). Thus, while legal authority to control different pollution sources is separated, SDAPCD is responsible for reflecting national, state, and local measures in a single plan to achieve ambient air quality standards in San Diego County. Achieving ambient air quality standards requires a cooperative partnership of governmental agencies at the federal, state, and local levels. The San Diego County RAQS for the SDAB was initially adopted in 1991, and subsequently revised in 1995, then in 1998, again in 2001 and most recently in 2004.

Rules and Regulations

As mentioned above, SDAPCD adopts rules and regulations. All projects are subject to SDAPCD rules and regulations in effect at the time of construction. Specific rules applicable to the construction of the proposed project may include, but are not limited to:

- Rule 51, Nuisance, states that a person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public; or which endanger the comfort, repose, health or safety of any such persons or the public; or which cause or have a natural tendency to cause injury or damage to business or property.
- Regulation II, which includes Rules 10 through 27, describes the permitting process for stationary sources. The permits are called Authority to Construct and Permit to Operate. Among other rules, the Regulations state that permits are required for central boilers used for heating and hot water, kitchen equipment, emergency generators, and similar equipment that would have the potential to emit pollutants.

- Rule 67, Architectural Coatings, requires that a person shall not manufacture, blend, repackage, supply, sell, offer for sale, apply, or solicit the application of any architectural coating for use within San Diego County which at the time of sale or manufacture contains more than 250 grams of volatile organic compounds (VOCs) per liter of coating. The rule specifies different VOC limits for certain specialty coatings.

Toxic Air Contaminants

Air quality regulations also focus on TACs. In general, for those TACs that may cause cancer, there is no concentration that does not present some risk. In other words, there is no threshold level below which adverse health impacts may not be expected to occur. This contrasts with the criteria air pollutants for which acceptable levels of exposure can be determined and for which the ambient standards have been established (**Table 5.3-2**). Instead, EPA and ARB regulate HAPs and TACs, respectively, through statutes and regulations that generally require the use of the maximum or best available control technology for toxics (MACT and BACT) to limit emissions. These in conjunction with additional rules set forth by SDAPCD establish the regulatory framework for TACs.

Federal Hazardous Air Pollutant Programs

EPA has programs for identifying and regulating HAPs. Title III of the CAAA directed EPA to promulgate national emissions standards for HAPs (NESHAP). The NESHAP may differ for major sources than for area sources of HAPs. Major sources are defined as stationary sources with potential to emit more than 10 tons per year (TPY) of any HAP or more than 25 TPY of any combination of HAPs; all other sources are considered area sources. The CAAA called on EPA to promulgate emissions standards in two phases. In the first phase (1992–2000), EPA developed technology-based emission standards designed to produce the maximum emission reduction achievable. These standards are generally referred to as requiring MACT. For area sources, the standards may be different, based on generally available control technology. In the second phase (2001–2008), EPA is required to promulgate health risk–based emissions standards

where deemed necessary to address risks remaining after implementation of the technology-based NESHAP standards.

The CAAA also required EPA to promulgate vehicle or fuel standards containing reasonable requirements that control toxic emissions, at a minimum to benzene and formaldehyde. Performance criteria were established to limit mobile-source emissions of toxics, including benzene, formaldehyde, and 1,3-butadiene. In addition, Section 219 of the CAAA required the use of reformulated gasoline in selected areas with the most severe ozone nonattainment conditions to further reduce mobile-source emissions.

State and Local Toxic Air Contaminant Programs

TACs in California are primarily regulated through the Tanner Air Toxics Act (Assembly Bill [AB] 1807, Tanner Act) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588, Hot Spot Act). The Tanner Act sets forth a formal procedure for ARB to designate substances as TACs. Research, public participation, and scientific peer review must occur before ARB can designate a substance as a TAC. To date, ARB has identified more than 21 TACs and adopted EPA's list of HAPs as TACs. Most recently, diesel PM was added to the ARB list of TACs.

Once a TAC is identified, ARB then adopts an Airborne Toxics Control Measure for sources that emit that particular TAC. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If there is no safe threshold, the measure must incorporate BACT to minimize emissions (e.g., the Airborne Toxic Control Measure limits truck idling to 5 minutes [13 CCR Chapter 10 Section 2485]).

The Hot Spots Act requires that existing facilities that emit toxic substances above a specified level prepare a toxic-emission inventory, prepare a risk assessment if emissions are significant, notify the public of significant risk levels, and prepare and implement risk reduction measures.

ARB has adopted diesel-exhaust control measures and more stringent emission standards for various on-road mobile sources of emissions, including transit buses and off-road diesel equipment (e.g., tractors, generators). In February 2000, ARB adopted a new public-transit bus fleet rule and emission standards for new urban buses. These new rules and standards provide for 1) more stringent emission standards for some new urban bus engines, beginning with 2002 model year engines; 2) zero-emission bus demonstration and purchase requirements applicable to transit agencies; and 3) reporting requirements, under which transit agencies must demonstrate compliance with the public-transit bus fleet rule. Current and future milestones include the low-sulfur diesel fuel requirement and tighter emission standards for heavy-duty diesel trucks (2007) and off-road diesel equipment (2011) nationwide. Over time, the replacement of older vehicles will result in a vehicle fleet that produces substantially lower levels of TACs than under current conditions. Mobile-source emissions of TACs (e.g., benzene, 1,3-butadiene, diesel PM) have been reduced significantly over the last decade, and will be reduced further in California through a progression of regulatory measures (e.g., Low Emission Vehicle/Clean Fuels and Phase II reformulated gasoline regulations) and control technologies. With implementation of ARB's Risk Reduction Plan, it is expected that diesel PM concentrations will be reduced by 75 percent in 2010 and 85percent in 2020 from the estimated year-2000 level. Adopted regulations are also expected to continue to reduce formaldehyde emissions from cars and light-duty trucks. As emissions are reduced, it is expected that risks associated with exposure to the emissions will also be reduced.

At the local level, air pollution control or management districts may adopt and enforce ARB control measures. Under SDAPCD Regulations II, XI and XII, all sources that possess the potential to emit TACs are required to obtain permits from the district. Permits may be granted to these operations if they are constructed and operated in accordance with applicable regulations, including new-source review standards and air toxics control measures. SDAPCD limits emissions and public exposure to TACs through a number of programs. SDAPCD prioritizes TAC-emitting stationary sources based on the quantity and

toxicity of the TAC emissions and the proximity of the facilities to sensitive receptors.

Sources that require a permit are analyzed by SDAPCD (e.g., health risk assessment [HRA]) on the basis of their potential to emit toxics. If it is determined that the project would emit toxics in excess of SDAPCD's threshold of significance for TACs, as identified below, sources must implement the best available control technology for TACs (T-BACT) to reduce emissions. If a source cannot reduce the risk below the threshold of significance, even after T-BACT has been implemented, SDAPCD will deny the permit required by the source. This helps to prevent new problems and reduces emissions from existing older sources by requiring them to apply new technology when retrofitting with respect to TACs. It is important to note that SDAPCD's air quality permitting process applies to stationary sources; properties that are exposed to elevated levels of nonstationary type sources of TACs, and the nonstationary type sources themselves (e.g., on-road vehicles), are not subject to air quality permits. Further, for reasons of feasibility and practicality, mobile sources (cars, trucks, etc.) are not required to implement T-BACT, even if they do have the potential to expose adjacent properties to elevated levels of TACs. Rather, emissions controls on such sources (e.g., vehicles) are subject to regulations implemented on the federal and state levels.

In addition to criteria air pollutants and TACs, greenhouse gases (GHG) are also air pollutants of concern. The analysis of GHG emissions from the proposed project and their impact on climate change is discussed in Section 6.1 "Cumulative Impacts."

Sensitive Receptors

Schools, hospitals, residences, and other facilities where people congregate, especially children, the elderly, and infirm, are considered particularly sensitive to air pollutants. Typical health problems attributed to smog include respiratory ailments, eye and throat irritations, headaches, coughing, and chest discomfort.

No schools, hospitals, or other places where people congregate are located in the vicinity (0.25 mile) of the project site. However, the project site is adjacent to single-family residences located north, east, and west of the project site. Additionally, some multifamily residences are located south of the site.

Odors

SDAPCD Rule 51 (Public Nuisance) and California Health & Safety Code, Division 26, Part 4, Chapter 3, Section 41700 prohibit the emission of any material which causes nuisance to a considerable number of persons or endangers the comfort, health or safety of the public. Projects required to obtain permits from SDAPCD, typically industrial and some commercial projects, are evaluated by SDAPCD staff for potential odor nuisance and conditions may be applied (or control equipment required) where necessary to prevent occurrence of public nuisance.

Two situations increase the potential for odor problems. The first occurs when a new odor source is located near existing sensitive receptors. The second occurs when new sensitive receptors are developed near existing sources of odor.

5.3.3 Thresholds for Determining Significance

Appendix G of the CEQA Guidelines is used to provide direction for determination of a significant air quality impact from the proposed project. For the purposes of this EIR, a significant impact would occur if the proposed project would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable NAAQS or CAAQS (including releasing emissions which exceed quantitative thresholds for ozone precursors);

- Expose sensitive receptors to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

As stated in Appendix G of the CEQA Guidelines, the significance criteria established by the applicable air pollution control district or air quality management district may be relied upon to make the above determinations. Neither the City of Carlsbad nor the SDAPCD have established thresholds of significance for air pollution daily emissions. On federal projects in a basic O_3 (8-hour) nonattainment area, thresholds for the presumption that a project would conform to the SIP are 100 tons per year for both nitrogen oxide (NO_X) and volatile organic compounds (VOC). In recognition of state designation of serious nonattainment for O_3 and to be conservative, thresholds of 50 tons per year for NO_X and VOC are used for this project. The federal SIP conformity threshold for PM_{10} in a federal nonattainment area is 100 tons per year. Although the SDAB is not a federal nonattainment area for PM_{10}, it is a state nonattainment area. Therefore, the conservative threshold of 70 tons per year is used for this project (Federal Register 2006). For CO, as the SDAB is compliant with both state and federal standards, the conformity threshold of 100 tons per year will be used to determine significance. These thresholds apply to both the construction- and operations-related emissions generated by the proposed project.

Carbon Monoxide Hot Spot Threshold

The project would result in a significant impact related to CO hot spots if the residential community to the northeast would be exposed to CO concentrations above the following State of California CO standards:

8 Hour Standard: 9.0 ppm
1 Hour Standard: 20.0 ppm

5.3.4 Environmental Impact

Air Quality Management Plan

Section 15125(B) of the CEQA Guidelines contains specific reference to the need to evaluate any inconsistencies between the proposed project and the applicable air quality management plan. Included in the RAQS are Transportation Control Measures (TCMs). The RAQS and TCM plan set forth the steps needed to accomplish attainment of safe and federal ambient air quality standards. The ARB provides criteria for determining whether a project conforms to the RAQS, which include the following:

- Is a regional air quality plan being implemented in the project site?
- Is the project consistent with the growth assumptions in the regional air quality plan?
- Does the project incorporate all feasible and available air quality control measures?

The project site is located in the SDAB, and as such, is located in an area where a regional air quality plan is being implemented. The project site is designated Office and Related Commercial (O), Local Shopping Center (L), Open Space (OS), and Low-Medium Density Residential (RLM) in the City of Carlsbad General Plan. The proposed project would alter the boundaries of these land use designations and would add High Density Residential (RM). This change would increase the permitted number of dwelling units from 82 under the existing general plan to 192 (64 single-family and 128 multifamily units) under the proposed project. This results in an increase of 844 ADT in comparison to the existing General Plan and La Costa Master Plan. However, the proposed project would change approximately 2.6 acres from the Local Shopping Center (L) designation to Low-Medium Density Residential (RLM), which would result in a net reduction of approximately 1,300 ADT. In addition, the existing Office (O) designation is approximately 25 percent greater than the planned office area under the proposed project, which would increase the trip generation from 20 trips per 1,000 square feet of office use to 80 trips per 1,000 square feet of local shopping center use. While no precise development plan for Alternative 2 has been prepared, it can be estimated that any change in the total of 25,516 ADT generated by the project site under the proposed project would be approximately 1 to 2 percent increase or decrease in

comparison to the Existing General Plan. Thus, the project is consistent with the growth assumptions of the City of Carlsbad's General Plan and Growth Management Plan.

SDAPCD relies to a certain degree on land use designations contained in general plan documents applicable to its jurisdiction. SDAPCD refers to the contents of approved general plans in order to forecast, inventory, and allocate regional emissions from land use and development-related sources. These emissions budgets are used in statewide air quality attainment planning efforts. As such, the project is consistent with the regional air quality plan. Additionally, the project involves the provision of additional employment generating uses within the North County area that could reduce vehicle miles traveled in the region through the provision of employment generating uses closer to residential land uses. The project is consistent with the RAQS and the impact is less than significant.

Short-Term Construction Impacts

Construction-related emissions are described as "short-term" or temporary in duration and have the potential to represent a significant impact with respect to air quality, especially fugitive PM_{10} and $PM_{2.5}$ dust emissions. Fugitive PM_{10} and $PM_{2.5}$ dust emissions are associated primarily with site preparation and vary as a function of parameters such as soil silt content, soil moisture, wind speed, acreage of disturbance area, and vehicle miles traveled (VMT) by construction vehicles onsite and offsite. Ozone precursor emissions of reactive organic gas (ROG) and NO_x are primarily associated with gas and diesel equipment exhaust and the application of architectural coatings.

Construction-related activities associated with the proposed project would result in project-generated emissions of criteria air pollutants from site preparation (e.g., excavation, grading and clearing, rock blasting and crushing; off-road equipment, material transport, and worker commute exhaust emissions; paving; application of architectural coatings; and other miscellaneous activities.

Project-generated, construction-related emissions of criteria air pollutants and precursors were modeled using the URBEMIS2007 Version 9.2.4 computer model (Rimpo 2008). Project-generated emissions were modeled based on general information provided in the project description and default URBEMIS2007 model settings and parameters attributable to the construction period and site location.

Construction of the proposed project is anticipated to begin in June 2010 and end in August 2011. The site would be developed in stages and each stage would occur sequentially, with potential overlap between phases. For modeling purposes, the first stage would be grading of the project site. Blasting and grading would only be required on the commercial and single-family residential parcels, as the multifamily residential parcel was previously graded during the widening of Rancho Santa Fe Road. According to the proposed grading plan, approximately 66.59 acres of the project site will be graded. Implementation of the grading plan will result in approximately 793,000 cubic yards of grading. Approximately 13,000 cubic yards of soil will be exported offsite. Blasting may be required during construction if rock encountered during grading cannot be ripped by bulldozers. Approximately 127,000 cubic yards of rock would be crushed and used onsite. Paving and building construction would commence after the grading phase and would continue simultaneously until the end of the construction period. The architectural coatings phase would begin 2 months into the construction phase and would continue until August 2011.

The use of explosives to facilitate site grading would result in the generation of CO, PM_{10}, $PM_{2.5}$, and NO_X to a lesser extent. As mentioned above, blasting and grading would only be required on the commercial and single-family residential parcels, as the multifamily residential parcel was previously graded during the widening of Rancho Santa Fe Road. Emissions from explosives detonation are influenced by many factors such as explosive composition, product expansion, method of priming, length of charge, and confinement, which are not known at this time. These factors are difficult to duplicate in a laboratory test facility. Any estimates of emissions from explosive use must be regarded as approximations and cannot be made more precise because explosives are not used in a precise, reproducible manner. The primary pollutant of concern associated with the use of explosives

would be PM_{10} and $PM_{2.5}$; however, there is no precise way of quantifying the amount of dust generated.

Rock crushing operations would also lead to dust generation. Since rock crushing is a mechanical process, it would lead to generation of primarily coarse particles (i.e. PM_{10} and $PM_{2.5}$). The Emission Factor and Inventory Group (EFIG), in the EPA Office of Air Quality Planning and Standards (OAQPS), develops and maintains emission estimating tools for various activities including rock crushing. The AP-42 emission factor for PM_{10} for uncontrolled crushing is 0.00243 lbs/ton rock (EPA 2004). Thus, the rock crushing process would generate 0.066 tons of PM_{10}.

Table 5.3-3 presents the estimated annual emissions for the project and compares the estimated emissions with the thresholds described above. The PM_{10} emissions value for 2009 includes the PM_{10} generated from rock crushing. The exhaust emissions due to the operation of the rock crusher, generator and conveyor were accounted for in the equipment list for the grading phase, and the emissions values shown in **Table 5.3-3** include these associated emissions.

Table 5.3-3
Estimated Annual Construction Emissions (Tons/Year)

	VOC	NO_x	CO	PM_{10}[1]	$PM_{2.5}$
2010	0.69	6.35	2.99	61.80	13.11
2011	5.23	5.00	5.76	10.73	2.49
Threshold	***50***	***50***	***100***	***70***	***100***
Exceeds threshold?	No	No	No	No	No

[1] PM_{10} value for 2010 includes the PM_{10} generated from rock crushing operations.
Note: Construction assumptions, including estimated number and type of construction equipment, construction-related trips, area of disturbance, etc., are present in the URBEMIS data sheets in Appendix C.
Source: Data modeled by EDAW 2009

As presented in **Table 5.3-3**, construction-related emissions generated by the proposed project would be below the thresholds of significance for all pollutants. The impact would be less than significant.

Although particulate matter emissions are projected to be below a level of significance, the project construction team will employ standard fugitive dust control measures to further protect the immediate surrounding communities from construction-related dust including but not limited to:

- Regular application of water and chemical dust suppressants to the construction site;
- Installation of wind breakers around construction areas to keep wind gusts below 25 MPH;
- Regulation of construction equipment and dirt moving during occasions of high wind; and regulation of the quantity of large machinery active on the site at any giventime, and restriction of speed on the construction site.

Long-Term Operations Impacts

Area- and Mobile-Source Emissions

Project-generated, regional area and mobile source emissions of criteria air pollutants and ozone precursors were modeled using the URBEMIS 2007 Version 9.2.4 computer program. URBEMIS allows land-use selections that include project trip generation rates. URBEMIS accounts for area emissions from the usage of natural gas, landscape maintenance equipment, and consumer products; and mobile source emissions associated with vehicle trip generation. Regional area- and mobile-source emissions were modeled based on proposed land use types and sizes as described in EIR Chapter 3.0 Project Description and the trip generation data described in EIR Section 5.2 Transportation/Circulation.

Table 5.3-4 summarizes the modeled project-generated, operation-related emissions of criteria air pollutants and ozone precursors under project build-out in 2011. Operation-related air quality impacts were determined by comparing these modeling results with applicable significance thresholds. Refer to Appendix C for detailed modeling input parameters and results.

As shown in **Table 5.3-4**, operations-related activities would result in project-generated annual unmitigated emissions that are higher than the significance thresholds for CO and PM_{10}.

Table 5.3-4
Estimated Annual Operational Emissions (Tons/Year)

	VOC	NO_x	CO	PM_{10}	$PM_{2.5}$
Mobile Source Emissions	30.15	41.92	378.92	73.19	14.12
Area Source Emissions	3.36	1.02	3.01	0.13	0.13
Total	**33.51**	**42.94**	**381.93**	**73.32**	**14.25**
Threshold	*50*	*50*	*100*	*70*	*100*
Exceeds threshold?	No	No	Yes	Yes	No

Source: Data modeled by EDAW 2009
Note: Based on Year 2009 – provides a worst-case scenario

Stationary Source Emissions

The proposed project would likely include stationary sources of pollutants that would be required to obtain permits to operate under SDAPCD Regulation II (Permits). These sources could include but not be limited to standby diesel generators, gas stations, kitchen equipment at restaurants, and dry cleaning equipment. The permit process would assure that these sources would be equipped with the required emission controls and that, individually, these sources would not cause a significant environmental impact. Nonetheless, the emissions from these sources would be additive to the estimated area and mobile source emissions discussed above.

Total Project Emissions

As shown in **Table 5.3-4**, total emissions resulting from mobile and area sources would exceed the threshold for significance for CO and PM_{10}. As most of the emissions are from mobile sources, implementation of Mitigation Measure AQ-1 will reduce operations emissions of air pollutants due to the proposed project. Project design features will also be implemented to reduce the long-term air pollution. For example, enhanced bus stops will be provided on the La Costa Avenue and Rancho Santa Fe Road to encourage use of public transportation and improved bicycle lanes and storage onsite to encourage bicycle use to and from the project site. However, the results of implementing these measures

cannot be reasonably quantified; therefore, the impact would be significant and unmitigated.

Sensitive Receptors/CO "Hot Spots"

CO concentration is a direct function of motor vehicle activity (e.g., idling time and traffic flow conditions), particularly during peak commute hours, and meteorological conditions. Under specific meteorological conditions (e.g., stable conditions that result in poor dispersion), CO concentrations may reach unhealthy levels with respect to local sensitive land uses such as residential areas, schools, and hospitals. As a result, SDAPCD recommends analysis of CO emissions at a local, as well as a regional level.

An appropriate qualitative screening procedure is provided in the procedures and guidelines contained in *Transportation Project-Level Carbon Monoxide Protocol* (the Protocol) to determine whether a project poses the potential for a CO hot spot (UCD ITS 1997). A CO hot spot is an area of localized CO pollution that is caused by severe vehicle congestion on major roadways, typically near intersections. According to the Protocol, projects may worsen air quality if they significantly increase the percentage of vehicles in cold start modes by 2 percent or more; significantly increase traffic volumes (by 5 percent or more) over existing volumes; or worsen traffic flow, defined for signalized intersections as increasing average delay at intersections operating at LOS E or F or causing an intersection that would operate at LOS D or better without the project, to operate at LOS E or F.

The project traffic study indicates that under future conditions all signalized intersections would operate at LOS D or better during the AM and PM peak hours under cumulative conditions with or without the proposed project, with the exception of the following intersection (Urban Systems Associates 2008):

- Rancho Santa Fe Road/San Marcos Boulevard

Therefore, further investigation of potential CO impacts is warranted.

The Protocol prescribes a quantitative screening analysis to determine a project's CO impacts. However, the screening analysis has become obsolete since it uses emission factors from an older version of ARB's EMFAC model. As a substitute, various air quality agencies in California have developed conservative screening methods. The SDAPCD has not developed quantitative CO screening criteria; therefore, the methods of the Sacramento Metropolitan Air Quality Management District (SMAQMD) are used (SMAQMD 2004). The method is based on background CO concentrations and project trip generation and is not dependent on the traffic volumes or geometry for a specific intersection. The screening is based on the background concentration of CO and a conservative estimate of project-related CO as a function of peak hour trip generation. The screening analysis for the proposed project's potential CO impacts at a generalized intersection is shown in **Table 5.3-5**.

Table 5.3-5
CO Screening for a Generalized Local Intersection

Concentration (ppm)	1-Hour	8-Hour
Background[1]	2.6	N/A
Project-Related[2]	6.8	N/A
Anticipated Total[3]	9.4	6.6
NAAQS	35	9.0
CAAQS	20	9.0
Exceed standards?	No	No

[1] Second Highest value from Table 5.3-1 as per the Protocol (UCD ITS 1997), excluding 2003 special event (fire), rolled back to 2010.
[2] Peak hour trip generation is 2,584 vehicles in the evening peak hour. CO contribution is interpolated from SMAQMD table.
[3] Eight-hour concentration assumed to be 0.7 times 1-hour concentration.
Sources: Data compiled by EDAW 2009; SMAQMD 2004

As shown in the table, the anticipated 1-hour and 8-hour CO concentrations would be less than the national and state standards. The proposed project would not create a CO hot spot; the impact would be less than significant.

Exposure of Sensitive Receptors to TACs

The exposure of sensitive receptors to emissions of TACs from onsite project-generated construction-related and operation-related sources is discussed separately below.

Onsite Construction-Related Equipment Emissions

Construction-related activities would result in short-term project-generated emissions of diesel PM from the exhaust of off-road heavy-duty diesel equipment for site preparation (e.g., excavation, grading, and clearing); paving; application of architectural coatings; and other miscellaneous activities. Diesel PM was identified as a TAC by ARB in 1998. The potential cancer risk from the inhalation of diesel PM, as discussed below, outweighs the potential non-cancer health impacts (ARB 2003). At this time, SDAPCD has not adopted a methodology for analyzing such impacts.

The dose to which receptors are exposed is the primary factor used to determine health risk (i.e., potential exposure to TAC to be compared to applicable standards). Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for the Maximally Exposed Individual (MEI). Thus, the risks estimated for a MEI are higher if a fixed exposure occurs over a longer period of time. According to the Office of Environmental Health Hazard Assessment (OEHHA), health risk assessments, which determine the exposure of sensitive receptors to TAC emissions, should be based on a 70-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the proposed project (Salinas, pers. comm., 2004).

The project construction period of just over one year would be much less than the 70 years period used for risk determination. Thus, because the use of off-road heavy-duty diesel equipment would be temporary in combination with the highly dispersive properties of diesel PM (Zhu and Hinds 2002) and further

reductions in exhaust emissions, project-generated, construction-related emissions of TACs would not expose sensitive receptors to substantial emissions of TACs.

Onsite Operation-Related Stationary-Source Emissions

Project implementation would provide development of commercial uses, which may include stationary sources of TACs (e.g. dry cleaners and diesel generators). These types of stationary sources, in addition to any other stationary sources that may emit TACs, would be subject to SDAPCD's rules and regulations, including Regulations II (Permits), XI (National Emission Standards for Hazardous Air Pollutants), and XII (Toxic Air Contaminants); and MACT and T-BACT requirements. Thus, as discussed above, SDAPCD would analyze such sources (e.g., health risk assessment) based on their potential to emit TACs. If it is determined that the sources would emit TACs in excess of SDAPCD's applicable significance threshold, MACT or T-BACT would be implemented in order to reduce emissions. If the implementation of MACT or T-BACT would not reduce the risk below the applicable threshold, the SDAPCD would deny the required permit. As a result, given compliance with applicable rules and regulations, operation of stationary sources would not result in the exposure of sensitive receptors to substantial concentrations of TACs.

Onsite Project-Generated Operation-Related Mobile- and Area-Sources

Mobile sources of TACs could include proposed land uses that involve the long-term use of heavy-duty diesel trucks. Implementation of the proposed project would include development of commercial land uses, which may include facilities that require the long-term use of heavy-duty diesel trucks (e.g., loading docks). The operation of such a source could result in the exposure of sensitive receptors, especially those within close proximity, to toxic air emissions that exceed the significance threshold.

Sources of TAC emissions include diesel-fueled engine and possible food-service facility operations. Delivery truck travel, truck idling, and operation of the

emergency back-up power generator are emission sources of particulate matter from diesel-fueled engines. Trucks entering and leaving the proposed project would include deliveries associated with the retail stores, gas stations, and possible food service establishments. Trucks idling would occur in the shipping and receiving delivery dock areas. Trucks will be limited to an idle time not to exceed 5 minutes for entering or exiting the truck delivery well, in accordance with California State Legislation. The loading delivery docks are the only locations where routine truck idling associated with operation of the project would be expected.

It is unknown at the time of writing, the types of tenants that would occupy retail space at the project site. It is possible that restaurants serving the residential uses could be included as tenants. Restaurants emit organic gases from the cooking of animal fats and oils. Emissions would be controlled through to an exhaust hood to a roof-top vent. It is possible that operation of the restaurant would require use of trucks equipped with transportation refrigeration storage units (TRUs) to deliver cold-stored food items. Trucks equipped with TRUs typically result in higher TAC emissions, because they are equipped with diesel generator sets to keep perishable food cold, in addition to diesel engine exhaust from the truck. However, it is not anticipated that the retail establishments would experience high truck volumes (i.e., greater than 100 commercial trucks per day or 40 TRU-equipped trucks per day as defined by ARB as the screening level) delivering materials on a frequent basis. Therefore, onsite or offsite sensitive receptors would not be exposed to substantial TAC concentrations from these sources.

Odors

The project Initial Study identified that there would be no significant odor impacts due to the construction and operation of the project.

5.3.5 Mitigation Measures

Mitigation to reduce mobile source emissions due to the operation of the proposed project addresses reducing the number of motor vehicle trips and reducing the emissions of individual vehicles under the control of the project applicant.

AQ-1. The following measures shall be implemented by the applicant unless it can be demonstrated to the City of Carlsbad that the measures would not be feasible:

(a) The applicant shall require the commercial development operator to operate, maintain, and promote a ride-share program for employees of the various businesses.

(b) The applicant shall include one or more secure bicycle parking areas within the property and encourage bicycle riding for both employees and customers.

(c) The office buildings and community shopping center shall be designed to meet the 2008 Title 24 plus 20 percent energy-efficiency standards.

(d) The applicant shall require that all materials handling equipment operated by the businesses within the facility be electric or use nondiesel engines.

5.3.6 Level of Significance after Mitigation

Air Quality Standards, Criteria Pollutants, and Sensitive Receptors

Short-Term (Construction) Air Quality

No significant impact associated with short term air quality standards, criteria pollutants, and exposure to sensitive receptors has been identified. Although particulate matter emissions are projected to be below a level of significance, the project construction team will employ standard fugitive dust control

measures to further protect the immediate surrounding communities from construction-related dust.

Long-Term Air Quality

Implementation of Mitigation Measure AQ-1 outlined above would reduce operations emissions of air pollutants due to the proposed project. The results of implementing these measures cannot be reasonably quantified. Therefore, the impact to criteria pollutants and exposure to sensitive receptors would be significant and unmitigated.

5.4 NOISE

Portions of the following section are summarized from the *La Costa Town Square Project Environmental Noise Assessment* prepared by Dudek (2008a) and *Rock Crushing and Blasting Noise and Vibration Assessment* (Dudek 2008b). The noise assessments are provided in Appendix D of this EIR.

5.4.1 Environmental Setting

The existing noise environment is described later in this section. The following provides an explanation of the characteristics of noise, noise measurement, and community noise standards. **Table 5.4-1** illustrates typical noise levels associated with common indoor and outdoor activities.

Effects of Noise on People

Noise is generally defined as an unwanted sound. Whether a sound is considered a noise depends on the source of the sound, the loudness relative to the background noise, the time of day, the surroundings, and the listener. The difference in people's reactions to different noises or sounds is explained by the perceived noisiness, or how undesirable the sound is to the people in the vicinity of the source. An unwanted sound may be extremely irritating although it is not unreasonably loud. The areas most vulnerable to the harmful effects of sound are residential locations, particularly at night. All human activities can be adversely affected by excessive noise.

Noise can result in speech interference and disrupt activities at home and work, sleep patterns, and recreational pursuits. The long-term effects of excessive noise exposure are physical as well as psychological. Physical effects may include headaches, nausea, irritability, constriction of blood vessels, changes in heart and respiratory rate, and increased muscle tension. Prolonged exposure to high noise levels may result in hearing damage. Psychological effects may result from the stress and irritability associated with a change in sleeping patterns due to excessive noise.

Measures of Noise Level and Noise Exposure

The standard unit of measurement of the loudness of sound is the decibel (dB). The decibel measurement is logarithmic; meaning each increase in 1 decibel is a tenfold increase in the

Table 5.4-1
Typical Noise Levels

Overall Level (Noise level, dB(A))	Community (Outdoor)	Home or Industry (Indoor)	Loudness (Human Judgment of Different Sound Levels)
120-130	Uncomfortably Loud	Military Jet Aircraft Take-Off With After-Burner From Aircraft Carrier @ 50 ft. (130)	Oxygen Torch (121)32 Times As Loud As 70 dB(A)
110-119		Turbo Fan Aircraft @ Take-Off Power @ 200 ft. (118)	Riveting Machine (110) Rock and Roll Band (108-114)16 Times As Loud As 70 dB(A)
100-109		Jet Flyover @ 1000 ft. (103), Bell J-2A Helicopter @ 100 ft. (100)	8 Times As Loud As 70 dB(A)
90-99	Very Loud	Power Mower (96) Boeing 707, DC-8 @ 6080 ft. Before Landing (97) Motorcycle @ 25 ft. (90)	Newspaper Press (97)4 Times As Loud As 70 dB(A)
80-89		Car Wash @ 20 ft. (89) Propeller Plane Flyover @ 1000 ft. (88) Diesel Truck, 40 mph @ 50 ft. (84) Diesel Train, 45 mph @ 100 ft. (83)	Food Blender (88) Milling Machine (85) Garbage Disposal (80)2 Times As Loud As 70 dB(A)
70-79	Moderately Loud	High Urban Ambient Sound (80) Passenger Car, 65 mph @ 25 ft. (77) Freeway @ 50 ft. From Pavement Edge @ 10 AM. (76 +/- 6)	Living Room Music (76) TV-Audio, Vacuum Cleaner (70)
60-69		Air Conditioning Unit @ 100 ft. (60)	Cash Register @ 10 ft. (65-70)½ As Loud As 70 dB(A)
50-59	Quiet	Large Transformers @ 100 ft. (50)	1/4 As Loud As 70 dB(A)

40-49		Bird Calls (44) Lower Limit of Urban Ambient Sound in daytime (40)	1/8 As Loud As 70 dB(A)
11-39	Just Audible	dB(A) Scale Interrupted	
0-10	Threshold of Hearing		

Source: Adapted by Cotton/Bridges/Associates from Melville C. Branch and R. Dale Beland (1970). *Outdoor Noise in the Metropolitan Environment*.

level of noise. Because the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear. Community noise levels are measured in terms of the "A-weighted decibel."

A given level of noise may be more or less tolerable depending on the duration of exposure experienced by an individual. There are numerous measures of noise exposure, which consider not only the A-weighted sound level variation of the noise but also the duration of the disturbance. The State Department of Aeronautics and the California Department of Housing and Community Development cite the community noise equivalent level (CNEL) for use in the measurement of noise exposure. This measurement considers an energy averaged A-weighted noise level for the evening hours, 7:00 p.m. to 10:00 p.m., increased by 5 dB, and the late evening and early morning hourly noise levels, 10:00 p.m. to 7:00 a.m., increased by 10 dB. The daytime noise levels are combined with these weighted levels and then averaged, on an energy basis, to obtain a CNEL value.

The City of Carlsbad also uses the L_{eq} scale to measure community noise levels. The L_{eq} scale represents the energy average noise level over a sample period of time. It represents the decibel sound level that would contain the same amount of energy as a fluctuating sound level over the sample time period.

City of Carlsbad Noise Element

The City of Carlsbad has established noise guidelines in the Noise Element of the City's General Plan. These limits are applicable for transportation noise sources. Residential land uses are considered normally acceptable up to 60 dB CNEL. The Carlsbad Municipal Code does not regulate general nuisance noise such as that associated with mechanical equipment located on private property. Therefore, mechanical equipment is also subject to the 60 dB CNEL noise criteria at noise sensitive land uses. Interior noise levels at residential dwellings are not to exceed a CNEL of 45 dB. Commercial uses are not to exceed an hourly average noise level of 55 dB at noise sensitive land uses.

Existing Noise Levels

Project Site

Major sources of noise affecting the project site are vehicles traveling on Rancho Santa Fe Road and La Costa Avenue. The existing ADT volume is approximately 39,950 ADT along Rancho Santa Fe Road adjacent to the site and approximately 5,700 ADT along La Costa Avenue east of Rancho Santa Fe Road to Calle Timiteo (Urban Systems Associates 2008). **Table 5.4-2** depicts the existing vehicular noise levels affecting the project area.

Table 5.4-2
Measured Noise Levels and Traffic Volumes

Description of Location	Date Time	L_{eq}[1]	Cars	Medium Trucks [2]	Heavy Trucks [3]
90 feet to center line of Rancho Santa Fe Road	06/26/2007 11:20 a.m. to 11:40 a.m.	68 dB	563	12	8
40 feet to the center line of La Costa Avenue	01/16/2008 12:10 p.m. to 12:30 p.m.	62 dB	86	2	0

[1] Equivalent Continuous Sound Level (Average Sound Level)

Sensitive Receptors

Noise sensitive receptors adjacent to the site include single-family and multifamily residences located south of the site across La Costa Avenue. Additionally, single-family homes are located on the west side of Rancho Santa Fe Road.

Vibration

There are no City or state standards for vibration impacts. The professional standard has been that construction vibrations pose no threat to buildings and structures due to the short-term nature of the vibrations from project activities (Caltrans 2002). Caltrans and the U.S. Department of Transportation Federal Transit Administration (FTA) recommend a 0.2 inches per second (in/sec) peak particle velocity (ppv) level for assessment of vibrations. This is the level that would annoy people in buildings, and where there would be a risk of architectural damage.

5.4.2 Thresholds for Determining Significance

Appendix G of the CEQA Guidelines and noise standards established in the City of Carlsbad General Plan are used to provide direction for determination of a significant noise impact from the proposed project. For the purposes of this EIR, a significant impact would occur if the proposed project would:

- Generate noise levels above the established City noise standards for the proposed uses or if proposed land uses are subjected to noise levels exceeding City standards established in the Noise Element of the City of Carlsbad General Plan;

- Increase noise levels by 3 dBA in areas that already exceed City or state standards and that would impact sensitive land uses;

- Increase noise levels by 5 dBA although the result is still below the maximum noise level considered acceptable according to the Noise Element;

- Produce a substantial permanent, temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project; or

- Expose people to the generation of groundborne vibration or groundborne noise levels in excess of 0.2 in/sec ppv.

5.4.3 Environmental Impact

General Construction Noise

Single-family and multifamily residential units are located south, east, and west of the project site. These residences are considered sensitive receptors and could be affected by construction noise associated with the proposed project. The City of Carlsbad Noise Ordinance limits the hours of construction to normal weekday working hours and contains requirements for reducing construction equipment noise (e.g., by maintaining properly equipped muffler systems).

Implementation of the proposed project would generate short-term noise from construction equipment. Based on the amount and type of grading needed to create the commercial and residential pads and roadways, the typical construction day for the proposed project would involve the use of water trucks, scrapers, graders, bulldozers, loaders, compactors, and other miscellaneous construction vehicles. **Table 5.4-3** depicts typical noise levels associated with construction activities.

Table 5.4-3
Typical Construction Equipment Noise Levels

Equipment Item	Range of Noise Level (L_{eq}) at 50'	Average Noise Level (L_{eq}) at 50'

Equipment Item	Range of Noise Level (L_{eq}) at 50'	Average Noise Level (L_{eq}) at 50'
Earthmoving		
Backhoes, 200 HP	71 to 93 dBA	85 dBA
Berm Machine, 100 HP	74 to 84 dBA	80 dBA
Dozers	72 to 96 dBA	86 dBA
Front Loaders, 300 HP	71 to 96 dBA	82 dBA
Graders	73 to 95 dBA	85 dBA
Paver	80 to 92 dBA	89 dBA
Roller, 180 HP	78 to 84 dBA	79 dBA
Scrapers	73 to 95 dBA	88 dBA
Tractors, 200 HP	72 to 96 dBA	84 dBA
Trencher, 80 HP	76 to 86 dBA	82 dBA
Truck/Trailer, 200 HP	70 to 92 dBA	82 dBA
Truck: 125 HP, 150 HP	76 to 85 dBA	80, 82 dBA
Materials Handling		
Concrete Mixer	70 to 90 dBA	85 dBA
Concrete Pump	74 to 84 dBA	82 dBA
Crane, Movable, 50, 200 and 400 HP	75 to 95 dBA	76, 80, 83 dBA
Derrick	86 to 89 dBA	88 dBA
Forklift, 40 HP	68 to 82 dBA	80 dBA
Side Boom, 200 HP	80 to 90 dBA	85 dBA
Water Truck, 500 HP	79 to 88 dBA	84 dBA
Stationary Equipment		
Boiler, 1600 HP	79 to 85 dBA	82 dBA
Compressors, 100 HP, 200 HP	68 to 87 dBA	78, 81 dBA
Generators, 20, 400 and 1300 HP	69 to 81 dBA	74, 81, 84 dBA
Pumps, 25, 200 and 350 HP	60 to 80 dBA	73, 76, 80 dBA
Impact Equipment		
Compactor, 20 HP	84 to 90 dBA	86 dBA
Jack Hammers	75 to 104 dBA	88 dBA
Pile Drivers (Peak Level)	90 to 104 dBA	101 dBA
Pneumatic Tools	82 to 88 dBA	86 dBA
Rock Drills	90 to 105 dBA	98 dBA
Steam Boiler (Pile Driver)	83 to 92 dBA	88 dBA
Other Equipment		
Saws	67 to 92 dBA	78 dBA
Vibrators	69 to 80 dBA	76 dBA
Welding Machines, 50 and 80 HP	76 to 85 dBA	80, 82 dBA

Source: Handbook of Noise Control, 2nd Edition, edited by Cyril M. Harris 1979

As depicted in **Table 5.4-3**, noise levels from the expected construction equipment to be used on the site could range from 80 dBA (trucks, trailers) to 88 dBA (scrapers) at 50 feet from the noise source. These noise levels would be intermittent and would occur only within the construction periods allowed by the City of Carlsbad Noise Ordinance. With continued enforcement of Carlsbad's Construction Noise Ordinance, no significant impact associated with regular construction activities would result.

Rock Crushing

Approximately 127,000 cubic yards of rock material is anticipated to be excavated within the onsite granitic rock formation (Dudek 2008b). A portable rock crusher would be used at the site during these construction activities and would be located centrally on the proposed commercial parcel. The closest homes would be located approximately 850 feet from the rock crushing facility. While the rock crushing activity would generate a 1-hour average noise level of approximately 86 dBA at a distance of 50 feet from the crusher, the noise level would be reduced to approximately 57 dBA at 850 feet assuming under worst-case conditions that there is a direct line-of-sight from the facility to the nearest residents. This noise level would be below the City's required 60 dBA CNEL noise criteria; thus, the noise impact associated with the rock crushing facility is considered less than significant.

Drilling and Blasting Activities

Drilling would be necessary to bore holes for the blasting materials (Dudek 2008b). Rock drills generate airborne noise levels of approximately 80 to 98 dB at a distance of 50 feet. The closest existing residence to the blasting area would be a home located approximately 30 feet away at Sitio Lima; other homes would be located approximately 150 or more feet from the blasting area. In the worst-case scenario, the maximum noise level at the nearest residence could be as high as 100 dBA; a few other residences may find noise levels up to 80 dBA. This is considered a significant impact. Mitigation Measure N-1 would reduce this impact

to a degree; however, it cannot be guaranteed that the impact will be below a level of significance at the nearest residences. Therefore, this would remain a significant and unmitigated impact.

Construction blasting noise will vary but usually generates a maximum noise level of approximately 94 dBA at a distance of 50 feet (Dudek 2008b). The blast is generally perceived as a dull thud rather than loud explosion. The maximum noise level at these residences would range between 84 to 100 dBA for the brief blasting events. This would be considered a significant impact. Blasting operations, if necessary, should be in general conformance with the blasting specifications prepared by the U.S. Bureau of Mines. Mitigation Measure N-2 would require notification of all property owners within 250 feet of the blasting area of the potential activities. However, this will not reduce the perceived noise level and, therefore, a significant and unmitigated noise impact would remain for blasting activities if they are found necessary.

Ground Vibration

Construction operations may generate varying degrees of ground vibration, depending on the construction procedures and the construction equipment. Operation of construction equipment generates vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings located in the vicinity of the construction site would vary, depending on soil type, ground strata, and receptor building construction. Ground vibration levels associated with various types of construction equipment are summarized in **Table 5.4-4**. **Table 5.4-5** presents the vibration level thresholds for architectural and structural damage and human perception thresholds. As stated above, Caltrans and the FTA recommend a 0.2 in/sec level for assessment of impact.

Table 5.4-4
Representative Vibration Source Levels for Typical Construction Equipment

Equipment		ppv at 25 feet (in/sec)
Pile Driver (impact)	upper range	1.518
	typical	0.644
Pile Driver (sonic)	upper range	0.734
	typical	0.170
Large Bulldozer		0.089
Loaded Trucks		0.076
Jackhammer		0.035
Small Bulldozer		0.003

Source: FTA 1995
in/sec = inches per second
ppv = peak particle velocity

Table 5.4-5
Reaction of People and Damage to Buildings at Various Continuous[1] Vibration Levels

Effects on Structures	Effects on People	Vibration Level (in/sec ppv)
Architectural damage and possibly minor structural damage	Considered unpleasant	0.4-0.6
Threshold of risk of architectural damage to normal dwelling with plastered walls and ceilings	Annoying to people in buildings	0.2
Virtually no risk of damage	Threshold of annoyance	0.1
Recommend upper level for ruins and ancient monuments	Vibrations readily perceptible	0.08
Unlikely to cause damage of any type	Threshold of perception; possibility of intrusion	0.006-0.019

[1] Caltrans considers most construction vibrations, with the exception of pile driving and blasting, to be continuous.
Source: Caltrans 2002
in/sec = inches per second
ppv = peak particle velocity

Ground vibrations from construction activities rarely reach levels that can damage structures, but they can achieve audible and perceptible ranges in buildings close to the construction site. Because of the distance from the rock crusher to the closest existing residences (i.e., 850 feet or more), the vibration from the rock crusher will be well below levels that adversely affect structures or humans and would not be noticeable to the existing residents.

Vibration levels associated with blasting would vary. Groundborne vibration is influenced in part by the soil conditions and the receiving building. Blasting operations at the site would be in general conformance with the blasting specifications prepared by the U.S. Bureau of Mines. Blasting contractors can control vibration by limiting the charge weight per sequential delay. Smaller blasting charges would be used in areas that are closer to existing homes. As previously indicated, the closest residence to a blasting area would be approximately 30 feet away. There is insufficient information available at this time to perform specific calculations of the groundborne vibration from the blasting. However, using preliminary screening calculations and assuming a distance of 30 feet from the blast area indicate the vibration from blasting could exceed the 0.2 in/sec ppv threshold. Thus, blasting could potentially result in a significant vibration impact at the adjacent residence. Mitigation Measure N-2 will also reduce this impact; however, without information known at this time, this would be considered a significant and unmitigated impact.

The proposed project consists of residential, commercial, and restaurant uses. These land uses typically do not involve vibration intensive activities. Future project operations are not expected to generate perceptible ground vibration at the nearest residential or commercial uses. Title 24 building standards would ensure that vibration-induced noise generated by commercial sounds would not affect nearby residential units. Therefore, vibration impacts from stationary sources would be less than significant.

Project Operational Noise

Operational noise associated with the proposed project would mainly consist of loading dock and delivery activities, HVAC equipment, and project traffic on adjacent roads such as Rancho Santa Fe Road and La Costa Avenue.

Loading Dock and Delivery Truck Activities

The proposed project includes loading docks between commercial pads 1 and 2, 3 and 4, and at commercial pads 11 (restaurant/shops), 15 (retail), 18 (grocery), 19 (retail), 20 (retail), and 21 (department store). The average sound level associated with loading dock noise is difficult to predict due to the many variables involved. These factors include the variations in truck engine power and idling times, the manner in which loads are placed on hand trucks and fork lifts, and the length of time in any hour that loading dock operations are conducted. However, to determine the approximate noise levels that would be generated at the loading dock area, noise measurements conducted at stores located in Vista and San Marcos were used. Based on these measurements, during the loading dock activities the 1-hour average sound level was approximately 50 to 55 dB at 100 feet from the loading dock. The property lines of the nearest existing or proposed residences would be approximately 110 feet to the loading dock for Building 15, 440 feet to the loading dock at grocery store pad 18, and 320 feet to the loading dock at department store pad 21.

Although the City's Municipal Code does not have a noise ordinance regulating this type of noise, the noise level may be annoying to some residents, particularly during the nighttime hours at the residences located east and south of the loading dock areas. Therefore, a potentially significant adverse noise impact related to the loading dock and delivery activities could occur. Implementation of Mitigation Measure N-3 for installation of sound walls will reduce potential impacts to adjacent residences associated with loading dock and delivery truck activities to a level that is less than significant.

In addition, intermittent cleaning equipment will be used for the commercial property that could cause brief annoying noise to the nearest residents. This activity would be considered to have a less than significant impact.

Outdoor Gathering Area

A small outdoor gathering area is proposed to be located between the department store and supermarket. The gathering area would be used for events such as small summer jazz concerts and Christmas caroling (Spectrum Property Management 2003). Amplified speakers would not be used. The outdoor gathering area hours of operation would be the same as the store hours. Noise associated with the outdoor gathering area would primarily result when musical concerts/performances occur. Based on noise measurements that have been conducted for small non-amplified music events and Christmas caroling outdoors, the average noise levels vary from approximately 50 to 55 dB at a distance of 100 feet from the entertainers.

The closest residences would be located approximately 550 feet from the outdoor gathering area. At this distance, the outdoor activities would generate a one-hour average sound level of up to approximately 35 to 40 dB at the residences. The noise would result in a less than significant noise impact at the adjacent residences during the daytime and evening hours. These noise levels would comply with the City's Noise Element criteria; however, the activities could be annoying to some residents during the nighttime hours. Therefore, the outdoor gathering area would not be used for events between the hours of 10:00 p.m. and 7:00 a.m. Implementation of Mitigation Measure N-4 will reduce potential noise impacts to adjacent residences.

Heating, Ventilation, and Air Conditioning Equipment

HVAC equipment would be mounted on roofs or at the ground level of the commercial buildings. These units typically generate noise levels of approximately 45 to 55 dB at a distance of 50 feet. The residential units nearest to commercial buildings would be those proposed in Parcel 4, located approximately 110 feet from buildings 15-18. In addition, residential properties south of La Costa Avenue could be impacted by HVAC equipment mounted on Building 21. During the preparation of mechanical equipment plans, evaluation of buildings 15-18 and 21

would be conducted to ensure that outdoor HVAC and other mechanical equipment noise does not exceed 60 dB CNEL at the adjacent residential property lines. Implementation of Mitigation Measure N-5 will ensure that mechanical equipment is designed to comply with the City's 60 dB CNEL exterior noise standard at adjacent residential properties.

Offsite Traffic Noise

The proposed project would increase the traffic volume on several roads in the vicinity of the project site, including Rancho Santa Fe Road and La Costa Avenue. **Table 5.4-6** depicts the noise level increase associated with the proposed project. As compared to the existing noise level, the existing plus project noise level would increase by 4 dB along La Costa Avenue between Rancho Santa Fe Road and the proposed project's first driveway entrance. A noise level change of plus or minus 1 dB is typically within the tolerance limit of traffic noise prediction models. In community noise assessments, a 1 dB increase is not noticeable to the human ear. A noise level increase of up to 3 dB is generally not considered significant and a 3 dB or more change in community noise is considered a perceptible difference. As **Table 5.4-6** indicates, the noise level would increase by 4 dB along La Costa Avenue between Rancho Santa Fe Road and the proposed project's first driveway entrance. However, the only existing developed land use that abuts this section of La Costa Avenue is commercial and is not considered a sensitive land use. This noise level increase would be considered less than significant because the noise level increase to the nearest sensitive land uses would be 3 dB or less. The noise level increase would be less than 3 dB at other road segments surrounding the proposed project site; therefore, a less than significant impact to a noise level increase would occur on these segments.

Table 5.4-6
Project-related Offsite Traffic Noise Level Increase
(Existing and Existing with Project)

Location	Existing ADT	Existing CNEL at 50 feet from	Existing Plus Project ADT	Existing Plus Project CNEL at 50 feet from	Increase with Project

		centerline		centerline	(dB)
Rancho Santa Fe Road					
Melrose Dr. to San Elijo Rd.	34,675	77	40,289	78	<1
San Elijo Rd. to La Costa Avenue	39,950	77	48,625	78	1
La Costa Avenue to Olivenhain Rd.	32,200	76	36,793	77	1
Olivenhain Rd.					
El Camino Real to Rancho Santa Fe Rd.	42,600	78	45,662	78	<1
La Costa Avenue					
El Camino Real to Romeria Street	16,200	70	18,752	71	1
Romeria Street to Rancho Santa Fe	12,490	69	17.080	71	2
Rd.	5,700	66	13,965	70	4
Rancho Santa Fe Rd. to Project	5,600	66	11,215	69	3
Driveway 1	3,500	64	8,365	67	3
Project Driveway 1 to Calle Timiteo	1,685	60	3,090	63	3
Calle Timiteo to Camino de los Coches					
East of Camino de los Coches					
Calle Timiteo					
South of La Costa Avenue	2,098	57	3,629	60	3
North of Camino de los Coches	2,273	57	2,783	58	1

Note: The noise levels in the table are rounded to the nearest one-tenth of 1 dB, which is beyond the accuracy limits of traffic noise models. However, these values are shown for comparison purposes.
Source: Urban Systems Associates 2008

The near-term (Year 2010) proposed project-related noise increase is depicted in **Table 5.4-7**. According to the project's traffic consultants, the year 2010 traffic model assumes that several roads would be constructed in the area. The year 2010 traffic volumes are anticipated to be lower than the existing traffic volumes along some street segments. The near-term (Year 2010) existing plus project plus cumulative projects would increase the noise level by 3 dB or less as indicated in **Table 5.4-7** on all segments except one. The noise level increase on segments affected by a noise level increase of 3 dB or less is considered less than significant. The noise level increase along La Costa Avenue between Rancho Santa Fe Road and Project Driveway 1 would increase by 4 dB; however, as described above, there would be a less than significant impact because only commercial (nonsensitive) land uses adjacent to this section would be affected by the noise level increase. Therefore, a less than significant impact to ambient noise level increase for the near-term would also occur with implementation of the proposed project.

Table 5.4-7
Year 2010 Offsite Traffic Noise Level Increase
(Year 2010 with Project)

Location	Year 2010 Plus Project ADT	Year 2010 Plus Project CNEL at 50 feet from center line	Increase with Project (dB)
Rancho Santa Fe Road			
Melrose Dr. to San Elijo Rd.	28,070	76	-1
San Elijo Rd. to La Costa Avenue	40,760	77	1
La Costa Avenue to Olivenhain Rd.	32,470	77	1
Olivenhain Rd.			
Olivenhain Rd. to El Camino Del Norte	31,385	77	-1
La Costa Avenue			
El Camino Real to Romeria Street	18,500	71	1
Romeria Street to Rancho Santa Fe	16,600	70	1
Rd.	14,000	70	4
Rancho Santa Fe Rd. to Project Dwy 1	11,250	69	3
Project Dwy 1 to Calle Timiteo	8,400	67	3
Calle Timiteo to Camino de los Coches	3,100	63	3
East of Camino de los Coches			
Calle Timiteo			
South of La Costa Avenue	3,630	59	2
North of Camino de los Coches	2,810	58	1

Note: Cumulative Noise Level Increase or Decrease in 2010 Compared to the Existing Noise Level
Source: Urban Systems Associates 2008

Traffic Noise Impacts on the Project Site

Exterior Noise

Rancho Santa Fe Road and La Costa Avenue would be the primary traffic noise sources at the site in the future. To determine future noise levels that could be experienced onsite, year 2030 traffic volumes were used. The year 2030 traffic volume along Rancho Santa Fe Road adjacent to the project site would range up to approximately 61,660 ADT. The future traffic volume along La Costa Avenue adjacent to the project site would range from 3,105 ADT to 14,000 ADT (Urban Systems Associates 2008).

Residential lots 34 through 52 would be located adjacent to Rancho Santa Fe Road and approximately 7 to 40 feet below the grade elevation of the road. The lots would be shielded by the intervening topography resulting from the elevation difference. At the closest lots (i.e., Lots 34 through 52), adjacent to Rancho Santa Fe Road, the first-floor noise level would exceed the City's noise criteria at several of the lots. The greatest noise level would occur at Lot 34. The modeled CNEL noise levels at representative lots are depicted in **Table 5.4-8**. As shown, the future noise levels would range up to approximately 65 dB CNEL and exceed the City's noise criteria by 5 dB at Lot 34. The noise level would decrease as the elevation difference between the road and the lots increases; however, the closest lots would still exceed the City's 60 dB CNEL exterior criteria. Therefore, a potentially significant adverse exterior-noise impact related to traffic would occur at some of the closer lots adjacent to Rancho Santa Fe Road. Implementation of Mitigation Measure N-6 will reduce this potentially significant impact to a level less than significant.

Table 5.4-8
Modeled Noise Levels at Representative Lots

Receiver	Future CNEL
Lot 34	65
Lot 37	64
Lot 40	62
Lot 44	60
Lot 47	58
Lot 50	56
Lot 52	55

Residential lots 1, 9, and 10 of the proposed project would be located adjacent to La Costa Avenue. The future traffic volume is projected to be approximately 3,105 ADT at this location (Urban Systems Associates 2008). The noise level at the backyards of these lots would be 60 dB CNEL or less. As this noise level complies with the City's noise guidelines, no significant impact associated with these lots would occur.

Interior Noise

The City of Carlsbad requires that interior noise levels at all residential dwellings not exceed a CNEL of 45 dB. Typically, with the windows open, and using standard California construction materials and methods, the building shells provide approximately 15 dB of noise reduction. Therefore, homes exposed to an exterior CNEL greater than 60 dB could result in an interior CNEL greater than 45 dB. As shown earlier in **Table 5.4-8**, the future noise level would exceed 60 dB CNEL at several of the lots adjacent to Rancho Santa Fe Road. Therefore, a potentially significant adverse interior-noise impact related to traffic would occur at some of the closer lots adjacent to Rancho Santa Fe Road. Implementation of Mitigation Measure N-6 will reduce this potentially significant impact to a level less than significant.

Project Noise Impact on Biological Resources

EIR Section 5.6 Biological Resources provides a discussion of proposed project-generated stationary and vehicular noise associated with construction activities. While a significant biological impact could occur, mitigation in Section 5.6 will reduce any project noise impact on biological resources to a level less than significant.

5.4.4 Mitigation Measures

N-1. During rock drilling, the construction contractor shall implement a portable sound attenuation barrier with a Sound Transmission Class rating of 15 or more along the northern portion of the project site. The sound attenuation barrier shall break the line-of-sight between the rock drill and the first-floor level of the single-family residence at the northern terminus of Sitio Lima adjacent to the project site. The sound attenuation barrier shall remain in place as long as rock drilling activity is occurring adjacent to the existing single-family residence. In addition, prior to initial drilling operations, the rock drill shall be certified to not generate noise levels in

excess of 85 dBA at a distance of 50 feet while operated at high idle (maximum governed rpm) under full-load condition during the test.

N-2. All property owners within 250 feet of the blasting area shall be notified of the blasting activities (for noise and vibration impacts). This notification shall describe expected period and frequency that the blasting will occur and give a contact phone number for any questions or complaints. All complaints shall be responded to in a method deemed satisfactory to the City of Carlsbad Planning Director.

N-3. Minimum 12-foot-high sound walls shall be constructed by the applicant along the loading dock areas at Buildings 15, 18, and 21.

N-4. The outdoor gathering area shall not be used for events between the hours of 10:00 p.m. to 7:00 a.m.

N-5. When mechanical equipment plans are prepared, the plans shall be evaluated for the buildings on Commercial Pads 15 through 18 and 21 to ensure that outdoor mechanical equipment noise would not exceed 60 dB CNEL at the proposed adjacent residences.

N-6. A 5- to 8-foot-high noise barrier shall be constructed by the developer at the top of the slope along a portion of Rancho Santa Fe Road. The materials used in the construction of the barrier are required to have a minimum surface density of 3.5 pounds per-square-foot and may consist of earthen berms, masonry material, tempered glass, or a combination of these materials. The barrier shall not have any openings or cracks. An interior noise study will be required for second-story units on Lots 34 through 48.

5.4.5 Level of Significance after Mitigation

Drilling Noise

Implementation of Mitigation Measure N-1 will reduce potential impacts to residences nearest a potential drilling area, although the perceived noise levels at some residences may continue to be above 60 dBA and a temporary significant and unmitigated noise impact will remain at those residences from potential intermittent drilling.

Blasting Noise

Implementation of Mitigation Measure N-2 will reduce potential impacts to residences nearest a potential blasting area, although the perceived noise levels at some residences may continue to be above 60 dBA and a temporary significant and unmitigated noise impact will remain at those residences from potential intermittent blasting.

Ground Vibration

Implementation of Mitigation Measure N-2 will reduce potential impacts to residences nearest a potential blasting area, although the perceived vibration levels at some residences may continue to be above a 0.2 in/sec ppm level and a temporary significant and unmitigated vibration impact will remain at those residences from potential intermittent blasting.

Loading Dock and Delivery Truck Activities

Implementation of Mitigation Measure N-3 will reduce potential impacts to adjacent residences associated with loading dock and delivery truck activities to a level that is less than significant. This will prevent generation of significant noise levels above established City noise standards for land uses in the project vicinity.

Outdoor Gathering Area

Implementation of Mitigation Measure N-4 will reduce the potential for late-night noise to annoy nearby residents by requiring that the gathering area not be used between 10:00 p.m. and 7:00 a.m.

Heating, Ventilation, and Air Conditioning Equipment

Implementation of Mitigation Measure N-5 will ensure that mechanical equipment is designed to comply with the City's 60 dB CNEL exterior noise standard at adjacent residential properties.

Exterior and Interior Noise Onsite

Implementation of Mitigation Measure N-6 will reduce the impacts associated with exterior and interior noise, including increases in noise levels by 3 dBA in areas that already exceed city or state standards, or increases in noise levels by 5 dBA where the result is still below a maximum acceptable noise level limit, to a level that is less than significant. Homes situated along Rancho Santa Fe Road would not exceed 60 dB CNEL exterior noise levels due to the sound barrier and, consequently, would not exceed 45 dB CNEL interior noise levels. Therefore, potential impacts due to the increase of ambient noise levels in the project vicinity would be reduced to a level less than significant.

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5.5 PALEONTOLOGICAL RESOURCES

This section is based on the Paleontological Resource Assessment prepared by Thomas A. Deméré, Ph.D., Department of Paleontological Services, San Diego Natural History Museum (February 20, 2001, updated March 23, 2007). The report is provided in Appendix E of this EIR.

5.5.1 Environmental Setting

Paleontological resources are the remains and/or traces of prehistoric plant and animal life. Fossil remains are found in the geologic deposits within which they were originally buried. The geology of the project site is characterized by Mesozoic-age basement rocks (Santiago Peak Volcanics) in the proposed residential development area and Eocene-age basement rocks (undifferentiated Friars/Delmar formations) in the proposed commercial area.

An inspection of San Diego Natural History Museum records yielded no previous paleontological resource collecting localities for the project site. However, there are a number of recorded localities within a 2-mile radius of the project site. These localities occur in the Eocene-age sedimentary rocks and have produced important skeletal remains of land mammals including carnivore, rodent, rhinoceros, brontothere (large extinct rhino-like browser), and protoreodont (small extinct deer-like browser), as well as shell remains of estuarine mollusks including clams, oysters, and snails. These fossil remains are very significant and represent one of the richest sources of paleontological information about the Eocene life of California. The paleontological resource potential of the Santiago Peak Volcanics in this area of San Diego County is zero because of the magmatic origin of the rocks.

5.5.2 Thresholds for Determining Significance

Appendix G of the CEQA Guidelines is used to provide direction for determination of a significant paleontological resource impact from the proposed project. For

the purposes of this EIR, a significant impact would occur if the proposed project would:

- Allow grading or construction in areas underlain by geologic formations that exhibit a moderate to high paleontological resource potential; or

- Directly or indirectly destroy a known unique paleontological resource or site, or unique geologic feature.

5.5.3 Environmental Impact

Paleontological resources are typically impacted when earthwork activities such as mass excavation projects cut into geological formations within which fossils are buried. These impacts are in the form of physical destruction of fossil remains. Since fossils are the remains of prehistoric animal and plant life, they are considered nonrenewable. Such impacts are significant, and under CEQA Guidelines, require mitigation.

Based on the proven paleontological resource value of the Eocene-age sedimentary rocks (undifferentiated Friars formations), the mass excavation of the commercial portion of the project site has the potential to impact paleontological resources. While there are no known paleontological resources or unique geologic structures onsite, this is considered a significant impact. Mitigation Measure P-1 would reduce any potential impact to a level less than significant.

The grading of the rock units on the residential portion of the project site will not result in a significant impact associated with paleontological resources due to the zero paleontological resource value of the Santiago Peak Volcanics.

5.5.4 Mitigation Measures

P-1. As a condition of the grading permit, the developer shall comply with all recommendations stated in the *Paleontological Resource Assessment* prepared for the project site by Thomas A. Deméré, Ph.D., Department of

Paleontological Services, San Diego Natural History Museum (February 2001 and March 2007) including the following:

- Prior to initiation of construction activities, the project developer shall retain a qualified paleontologist to carry out the mitigation program outlined here. A qualified paleontologist is defined as an individual with a M.S. or Ph.D. in paleontology or geology who is familiar with paleontological procedures and techniques.

- A qualified paleontologist shall be at the preconstruction meeting to consult with the grading and excavation contractors.

- A paleontological monitor shall be onsite at all times during the original cutting of previously undisturbed deposits of high sensitivity formations (undifferentiated Friars/Delmar formations) to inspect exposures for contained fossils. The paleontological monitor need not be onsite during the original cutting of previously undisturbed deposits of zero sensitivity formations (Santiago Peak Volcanics). A paleontological monitor is defined as an individual who has experience in the collection and salvage of fossil materials. The paleontological monitor shall work under the direction of a qualified paleontologist.

- When fossils are discovered, the paleontologist (or paleontological monitor) shall recover them. In most cases this fossil salvage can be completed in a short period of time. However, some fossil specimens (such as a complete large mammal skeleton) may require an extended salvage period. In these instances the paleontologist (or paleontological monitor) shall be allowed to temporarily direct, divert, or halt grading to allow recovery of fossil remains in a timely manner. Because of the potential for the recovering of small fossil remains, such as isolated mammal teeth, it may be necessary to set up a screen-washing operation on the site.

- Fossil remains collected during the monitoring and salvage portion of the mitigation program shall be cleaned, repaired, sorted, and cataloged.

- Prepared fossils, along with copies of all pertinent field notes, photos, and maps shall be deposited (as a donation) in a scientific institution with permanent paleontological collections such as the San Diego Natural History Museum. Donation of the fossils shall be accompanied by financial support for initial specimen storage.

- A final summary report shall be completed and submitted to the Planning Department that outlines the results of the mitigation program. This report shall include discussions of the methods used, stratigraphic sections exposed, fossils collected, and significance of recovered fossils.

Compliance with this mitigation measure shall be verified by the City of Carlsbad Engineering Department.

5.5.5 Level of Significance after Mitigation

Implementation of Mitigation Measure P-1 will reduce the impact associated with paleontological resources to a level less than significant.

5.6 BIOLOGICAL RESOURCES

The information contained within this section is summarized from the *Biological Technical Report for the La Costa Town Center Property Carlsbad, California* (RECON, July 6, 2001, revised September 3, 2003, and June 28, 2006); *Focused Survey Results for Federally Listed Endangered Fairy Shrimp Species at the La Costa Town Center Property in Carlsbad, California* (RECON, December 19, 2001); *Results of Fairy Shrimp Dry Season Survey on La Costa Town Square Property* (RECON, March 2, 2004); *Significant Nexus Analysis for the La Costa Town Square Property, an Approximate 81.4-Acre Property, Located in the City of Carlsbad, San Diego County, California* (Glenn Lukos Associates, Revised July 21, 2008); and *Revised Biological Report and Impact Analysis for the Offsite Access Road for La Costa Town Square in Carlsbad, California* (RECON, August 12, 2008). The reports are provided in Appendix F of this EIR.

5.6.1 Environmental Setting

Summary

The following six vegetation communities have been identified within the project site: Diegan coastal sage scrub, disturbed coastal sage scrub, native grassland, nonnative grassland, riparian scrub, and disturbed wetland. Ponded areas observed onsite would also be considered a sensitive vegetation community if they were determined to be vernal pools by the City of Carlsbad or resource agencies. These pools are low quality and may have been created by disturbances through off-road vehicle activity and compaction of the soil; however, further evaluation was conducted in 2001 to determine their status as a sensitive resource, including protocol fairy shrimp surveys to determine presence or absence of fairy shrimp and vernal pool flora. One additional pond was surveyed in the 2003 dry season for fairy shrimp.

Seven sensitive plant species were observed onsite during the RECON surveys and in a previous site survey: thread-leaved brodiaea, Orcutt's brodiaea, California adolphia, southwestern spiny rush, western dichondra, and Palmer's grappling

hook were observed onsite; and San Diego thornmint was previously identified onsite. All seven of these species are covered by the HCP/OMSP (City of Carlsbad 1995a). San Diego thornmint and the two brodiaea species are considered narrow endemic species by the 2004 City of Carlsbad Habitat Management Plan (HMP). Five sensitive bird species were observed onsite during the current surveys: coastal California gnatcatcher, California horned lark, southern California rufous-crowned sparrow, yellow-breasted chat, and white-tailed kite. Three additional California species of special concern were identified on the site or near the vicinity during previous surveys: loggerhead shrike, western spadefoot, and Belding's orange-throated whiptail. The property also contains wetlands and nonwetland jurisdictional waters of the U.S.

Vegetation Communities

The vegetation communities/land cover types found onsite are shown in **Figure 5.6-1** and summarized in **Table 5.6-1**. A total of 87 plant species were identified on the site. Approximately 62 percent of the species are native to southern California, while the remaining 38 percent are introduced species.

Table 5.6-1
Vegetation Communities/Land Cover Types

Vegetation Community	Total Acreage
Diegan coastal sage scrub	15.3
Disturbed coastal sage scrub	2.1
Native grassland	5.6
Nonnative grassland	27.3
Riparian Scrub	0.2
Seasonal ponded areas	0.3
Disturbed	24.2
Developed	6.4
Total	**81.8**

<u>Diegan Coastal Sage Scrub and Disturbed Coastal Sage Scrub</u>

Diegan coastal sage scrub is generally found on dry slopes at lower elevations from Los Angeles County south to Baja California. On the project site, this

community is present in the canyons south of Rancho Santa Fe Road and a few other remaining patches totaling approximately 15.3 acres. The most commonly seen shrubs include California sagebrush, common encelia, black sage, and California buckwheat. One area in the center of the project site is heavily dominated by chaparral mallow. Native bunch grasses are a common understory plant in the more sparse areas of this community. Nonnative grasses such as wild oats and brome grasses are present as well.

5.6-1 Vegetation Communities

Disturbed coastal sage scrub is composed of the same low-growing, aromatic, drought-deciduous plants as Diegan coastal sage scrub but has a higher percentage of nonnative weedy species. There are approximately 2.1 acres of this community on the project site. Dominant species present in this community include California sagebrush, common encelia, California buckwheat, laurel sumac, and lemonadeberry. The disturbed coastal sage scrub on the western side of the property is dominated by the low-growing California broom, which is generally an understory species within higher quality coastal sage scrub. Nonnative species present in the disturbed coastal sage scrub include black mustard, fennel, Russian thistle, red-stemmed filaree, and nonnative grasses. This community is generally less dense than the higher-quality, undisturbed Diegan coastal sage scrub.

A previous report by RECON (2006) indicated that a fire had burned much of the project site. The areas on the site identified as disturbed, are reflective of a post-burn recovery in an urban area. The site has many native shrubs present; however, these shrubs are generally less woody and smaller than in undisturbed areas. The fire also allowed for an invasion of nonnative understory species, as indicated by the presence of a larger percentage of weedy herbaceous species on the site.

Native Grassland

Approximately 5.6 acres of native grassland is present in and around the nonnative grasslands in the southwest corner of the project site. This plant community generally consists of native perennial bunch grasses but is often partially converted to nonnative annual grasslands by the invasion of exotic annual grasses. Native grasslands often have a large component of nonnative grasses but are distinguished as native when the cover by native grass species is 10 percent or greater. Native grasslands are found on many soil types and often transition into coastal sage scrub habitat. This community contains native bunch grasses such as purple needlegrass, fascicled tarweed, and blue-eyed grass. Within the native grasslands onsite are sensitive plant species, including Orcutt's brodiaea.

Nonnative Grassland

Nonnative grassland is characterized by a dense to sparse cover of annual grasses reaching to 3 feet high, which may include numerous native wildflowers, particularly in years of high rainfall. Approximately 27.3 acres of the project site is covered by nonnative grassland. Nonnative grasslands are usually found on fine-textured, usually clay soils, that range from being moist or waterlogged in the winter to being very dry during the summer and fall. Nonnative grasses onsite consist of slender wild oat, smooth brome, foxtail chess, and wild barley. The dominance of nonnative grasses and other annual weed species varies throughout the site depending on level of disturbance. Nonnative grassland was also identified in the offsite area proposed for an access road connecting at the northeast corner of the project site (RECON 2008).

Riparian Scrub

A small seep, the size of approximately 0.2 acre, is present on the eastern edge of the property. A few arroyo willows, southwestern spiny rush, and cattails are present. This riparian scrub occurs within a small section of disturbed wetland and is contiguous with a larger area of riparian habitat within drainage complex C identified as DFG jurisdiction by Glenn Lukos Associates (**Figure 5.6-2**). The potential ACOE and DFG jurisdictional wetland habitats are described separately in the wetlands section.

Disturbed Wetland and Ponded Areas

Eight seasonally ponded areas have been identified on the project site, three of which were classified as disturbed wetlands by RECON (2006) totaling 0.3 acre. These three areas generally coincide or are connected to the riparian habitat identified by Glenn Lukos Associates as DFG jurisdictional riparian habitat. Portions of the disturbed wetland areas were also identified as potential wetlands under ACOE jurisdiction by Glenn Lukos Associates (2008). The two disturbed wetland areas located in the southeastern portion of the project site are located at the base of two identified drainages (Glenn Lukos Associates 2008) that exhibit

wetland characteristics. These areas contained water or saturated soil during the spring surveys and support plant species including cattails, southwestern spiny rush, curly dock, and annual beard grass.

The remaining five seasonal ponds were not identified as DFG or ACOE jurisdiction, as they are isolated pools. Two of the pools are within disturbed habitats and three are within nonnative grasslands. These were determined to be low-quality pools that may have been created by disturbances through off-road vehicle activity and compaction of the soil. The ponded areas lacked any typical vernal pool topography and do not appear to be naturally occurring vernal pools.

5.6-2 Sensitive Biological Species

Disturbed

Disturbed areas are present on approximately 24.2 acres of the project site including near the developed roadways (La Costa Avenue and Rancho Santa Fe Road) and adjacent developments, dirt trails and access roads, bare areas, and areas dominated by weedy, nonnative species. A large area in the southwest portion of the site appears to have been disced or mowed recently and is also included in this category. Plant species most commonly seen in the area include black mustard, nonnative grasses, cardoon, and fennel.

Wildlife

Wildlife species present on the project site are typical of species found in the existing vegetation communities located in San Diego County. Wildlife species detected onsite or with the potential for occurrence are discussed below. A complete list of detected wildlife species is provided in Appendix F of this EIR. **Figure 5.6-2** includes the locations of sensitive wildlife species observed in surveys.

Amphibians

Most amphibians require moisture for at least a portion of their lifecycle, with many requiring a permanent water source for habitat and reproduction. Terrestrial amphibians have adapted to more arid conditions and are not completely dependent on a perennial or standing source of water. These species avoid desiccation by burrowing beneath the soil or leaf litter during the day and during the dry season.

Reptiles

The diversity and abundance of reptile species vary with habitat type. Many reptiles are restricted to certain vegetation communities and soil types although some of these species will also forage in adjacent communities. Other species are more ever-present, using a variety of vegetation types for foraging and shelter.

Western fence lizards were observed onsite. A side-blotched lizard and Belding's orange-throat whiptails have been observed on the site during previous surveys (RECON 2006). Other species expected to use the site include western fence lizard and southern Pacific rattlesnake.

Birds

The diversity of bird species varies with respect to the character, quality, and diversity of vegetation communities present on a site. Coastal sage scrub typically supports a fairly high diversity of bird species while disturbed habitats tend to support a low diversity of species.

Species commonly observed within the coastal sage scrub onsite include Bewick's wren, bushtit, yellow-rumped warbler, Cassin's kingbird, Anna's hummingbird, California towhee, and California thrasher. Coastal California gnatcatchers were also observed within the coastal sage scrub onsite. Mourning dove, house finch, and western meadowlark are commonly observed within the grasslands and disturbed areas. A white-tailed kite was observed flying over the project site, and a red-tailed hawk has been observed flying over the project site in past surveys. In addition, there is a low potential for Cooper's hawks to nest adjacent to the property (RECON 2008).

Mammals

Coastal sage scrub and grassland communities typically provide cover and foraging opportunities for a variety of mammal species. Many mammal species are nocturnal and must be detected during daytime surveys by observing their sign, such as tracks, scat, and burrows. Desert cottontail rabbit, coyote, and woodrat were observed onsite, and California ground squirrel is expected to use the site.

Sensitive Biological Resources

For the purposes of this EIR, species will be considered sensitive if they are (1) listed or proposed for listing by state or federal agencies as threatened or endangered; (2) on List 1B (considered endangered throughout its range) or List 2 (considered endangered in California but more common elsewhere) of the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Vascular Plants of California; (3) included on the HCP/OMSP list of covered species; (4) included on the City of Carlsbad HMP (City of Carlsbad 1999) or Multiple Habitat Conservation Program (MHCP) (SANDAG 2003) list of species evaluated for coverage or list of narrow endemic plant species; or (5) considered rare, endangered, or threatened by the California Natural Diversity Database (CNDDB) or other local conservation organizations or specialists.

Noteworthy plant species are considered those on List 3 (more information about the plant's distribution and rarity needed) and List 4 (plants of limited distribution) of the CNPS Inventory. Sensitive habitat types are those identified by the HCP/OMSP, CNDDB, or Holland (1986), or considered sensitive by other resource agencies.

The project site is located within the HCP/OMSP. The HCP/OMSP was approved for the project site in 1995. HCP/OMSP term *covered species* are those that are included in the incidental take authorization issued to the project proponents. The term *noncovered species* is used to identify species that are not included in the incidental take authorization. The majority of the impacts to sensitive habitats and covered species are mitigated through the dedication of 521.41 acres of open space within the Rancheros/Southeast II component as defined in the HCP/OMSP for Properties in the Southeast Quadrant of the City of Carlsbad, California (City of Carlsbad 1995a). State and federal agencies regulate noncovered species and sensitive vegetation communities.

Determination of the potential occurrence for listed, sensitive, or noteworthy species is based upon known ranges and habitat preferences for the species (Zeiner et al. 1988a, 1988b, 1990; Skinner and Pavlik 1994; Reiser 2001); species occurrence records from the CNDDB; and species occurrence records from previous studies onsite and other sites in the vicinity of the project site.

Sensitive Vegetation Communities

Six vegetation communities on the project site (see **Figure 5.6-1**) are considered sensitive by resource agencies due to either restricted range or cumulative losses throughout the region. These communities are Diegan coastal sage scrub, disturbed coastal sage scrub, native grassland, nonnative grassland, seasonal ponded areas, and riparian scrub. The ponded areas would also be considered a sensitive community if they were determined to be vernal pools. Given the lack of native vernal pool indicator plant species in three of the ponded areas and the negative results of the protocol focused surveys for endangered fairy shrimp species (RECON 2001c) in the five ponded areas, these basins do not appear to be naturally occurring vernal pools.

Sensitive Plant Species

Table 5.6-2 lists sensitive plant species with their status, typical habitat, and potential of occurrence within the project site. The following three sensitive plant species were observed on the project site during the surveys: thread-leaved brodiaea, Orcutt's brodiaea, and California adolphia. Four noteworthy plant species were also observed onsite: Palmer's grappling hook, southwestern spiny rush, western dichondra, and small-flowered microseris. All of these species except small-flowered microseris are covered by the HCP/OMSP and the Carlsbad HMP.

<u>Sensitive Plant Species Observed</u>

Thread-leaved brodiaea

Thread-leaved brodiaea is a California endangered species, federally threatened species, and a CNPS List 1B species. This species is also covered under the HCP/OMSP, the MHCP, and as a narrow endemic species under the HMP. This plant may occur in coastal sage scrub, chaparral, and cismontane woodland, but is most commonly found in heavy clay soils in native grasslands or in association with vernal pools. It is difficult to distinguish from grasses, unless surveyed during its

flowering season, when on its leafless flowering stalk may bear blue or red-purple flowers in May and June. Population densities vary widely from year to year, and this below average rainfall year may have resulted in a below average population density. Two surveys were conducted to locate this species during the blooming period. During the first survey, 94 individuals were located within the nonnative grasslands in the center of the southern section of the property. During the second survey, 121 additional individuals were located for a total of 215 thread-leaved brodiaea identified.

Orcutt's brodiaea

Orcutt's brodiaea is covered under the HCP/OMSP, the MHCP, and as a narrow endemic species under the HMP. It is also a CNPS List 1B species that is found only in San Diego County and Baja California, Mexico. It is a perennial bulb that generally occurs in grasslands and woodlands in association with vernal pools, streams, and seeps. It is also difficult to distinguish from grasses, unless surveyed during its flowering season. The population density can also vary widely depending on average rainfall; thus, the below average rainfall in 2006 could have resulted in a below average population density observed.

Table 5.6-2
Sensitive Plant Species Observed or with the Potential for Occurrence

Species	State/ Federal Status	Other Jurisdictional Status	Typical Habitat/Comments
San Diego thornmint *Acanthomintha ilicifolia*	CE/FT	HCP/OMSP; NE, HMP	Chaparral, coastal sage scrub, valley and foothill grassland/clay soils. **Historically observed onsite**. Suitable habitat present; low potential to occur.
California adolphia *Adolphia californica*	-/-	HCP/OMSP	Coastal sage scrub, chaparral. **Observed onsite.**
San Diego ambrosia *Ambrosia pumila*	-/FE	HCP/OMSP; NE, HMP	Creekbeds, seasonally dry drainages, floodplains. No suitable habitat. Not expected to occur.
Del Mar manzanita *Arctostaphylos glandulosa* ssp. *crassifolia*	-/FE	HCP/OMSP; NE, HMP	Southern maritime chaparral. No suitable habitat. Not observed onsite.
San Diego sagewort *Artemisia palmeri*	-/-	HCP/OMSP	Coastal sage scrub, chaparral, riparian. Low to moderate potential to occur.
Encinitas coyote bush *Baccharis vanessae*	CE/FT	HCP/OMSP; NE, HMP	Chaparral. No suitable habitat. Not observed onsite.
Thread-leaved brodiaea *Brodiaea filifolia*	CE/FT	HCP/OMSP; NE, HMP	Valley and foothill grassland, vernal pools. **Observed onsite.**
Orcutt's brodiaea *Brodiaea orcuttii*	-/-	HCP/OMSP; NE, HMP	Closed-cone coniferous forest, meadows, cismontane woodland, valley and foothill grassland, vernal pools. **Observed onsite** in 2006.
Wart-stemmed ceanothus *Ceanothus verrucosus*	-/-	HCP/OMSP; HMP	Chaparral. Not observed onsite. No suitable habitat present.
Orcutt's spineflower *Chorizanthe orcuttiana*	CE/FE	NE, HMP	Openings in coastal chamise chaparral. Only a few extant populations occur from Encinitas to Point Loma. No suitable habitat present; not expected to occur.
Long-spined spineflower *Chorizanthe polygonoides* var. *longispina*	-/-	-	Open chaparral, coastal sage scrub, montane meadows, valley and foothill grasslands; vernal pools/clay. Moderate habitat present; low potential to occur.

Species	State/ Federal Status	Other Jurisdictional Status	Typical Habitat/Comments
Summer holly *Comarostaphylis. diversifolia* ssp. *diversifolia*	-/-	HCP/OMSP; HMP	Chaparral. No suitable habitat present. Not observed onsite.
Western dichondra *Dichondra occidentalis*	-/-	HCP/OMSP	Chaparral, cismontane woodland, coastal sage scrub, valley and foothill grassland/generally post-burn. **Observed onsite.**
Blochman's dudleya *Dudleya blochmaniae* ssp. *blochmaniae*	-/-	HCP/OMSP; NE, HMP	Coastal sage scrub. Not detected during previous focused surveys (City of Carlsbad et al. 1995a); low potential to occur.
Variegated dudleya *Dudleya variegata*	-/-	-	Openings in chaparral and coastal sage scrub; open, rocky grasslands. Moderate habitat present; low to moderate potential to occur.
Sticky-leaved liveforever *Dudleya viscida*	-/-	HCP/OMSP; HMP	Coastal sage scrub; steep, north-facing slopes/gabbroic soils. Known from just north of site. Moderate habitat present; low to moderate potential to occur.
San Diego button-celery *Eryngium aristulatum* var. *parishii*	CE/FE	NE; HMP	Vernal pools. Marginal habitat present; low to moderate potential to occur.
Cliff spurge *Euphorbia misera*	-/-	HCP/OMSP; HMP	Coastal sage scrub, coastal bluff scrub. Not detected during previous focused surveys (City of Carlsbad et al. 1995a); low potential to occur.
Coast barrel cactus *Ferocactus viridescens*	-/-	HCP/OMSP; HMP	Chaparral, coastal sage scrub, valley and foothill grassland. Not detected during previous focused surveys (City of Carlsbad et al. 1995a); low potential to occur.
Palmer's grappling hook *Harpagonella palmeri* var. *palmeri*	-/-	HCP/OMSP	Chaparral, coastal sage scrub, valley and foothill grassland. **Observed onsite**.
Orcutt's hazardia *Hazardia orcutti*	-/-	HCP/OMSP; NE, HMP	Open chamise chaparral. Only one U.S. population known from Encinitas. Not detected during previous focused surveys and not expected to occur (City of

Species	State/ Federal Status	Other Jurisdictional Status	Typical Habitat/Comments
			Carlsbad et al. 1995a).
San Diego marsh elder *Iva hayesiana*	-/-	HCP/OMSP	Riparian, playas. No suitable habitat; not expected to occur.
Southwestern spiny rush *Juncus actus* ssp. *leopoldii*	-/-	HCP/OMSP	Coastal dunes (mesic) meadows (alkaline), coastal salt marsh. **Observed onsite.**
Del Mar Mesa sand aster *Lessingia filaginifolia* var. *filaginifolia* (=*Corethrogyne filaginifolia* var. *linifolia*)	-/-	HCP/OMSP; NE, HMP	Chaparral, coastal sage scrub. Not detected during previous focused surveys and not expected to occur (City of Carlsbad et al. 1995a).
Small-flowered microseris *Microseris douglasii* ssp. *platycarpha*	-/-	-	Inland clay soils, grasslands, often near vernal pools. **Observed onsite.**
San Diego goldenstar *Muilla clevelandii*	-/-	HCP/OMSP; NE, HMP	Chaparral, coastal sage scrub, valley and foothill grassland, vernal pools/clay soils. Observed in vicinity (City of Carlsbad 1995a); low to moderate potential to occur.
Spreading navarretia *Navarretia fossalis*	-/FT	NE, HMP	Vernal pools. Marginal habitat present; low to moderate potential to occur.
California adder's-tongue fern *Ophioglossum californicum* (=*Ophioglossum lusitanicum* ssp. *californicum*)	-/-	HCP/OMSP	Clay mesa soils. Observed in vicinity (City of Carlsbad 1995a). Typically found around vernal pools; not expected to occur.
Nuttall's scrub oak *Quercus dumosa*	-/-	HCP/OMSP; HMP	Coastal chaparral. No suitable habitat present; not observed and not expected to occur.
Ashy spike-moss *Selaginella cinerascens*	-/-	HCP/OMSP	Chaparral, coastal sage scrub. **Present onsite.**
Parry's tetracoccus *Tetracoccus dioicus*	-/-	-	Chaparral, coastal sage scrub. Not observed onsite and not expected to occur.

Notes: Sensitivity Codes:
Federal Candidates and Listed Plants
FE = Federally listed, endangered FT = Federally listed, threatened
State Listed Plants
CE= State listed, endangered
City of Carlsbad Status
HCP/OMSP = Habitat Conservation Plan/Ongoing Multi-Species Plan for Properties in the Southeast Quadrant of the City of Carlsbad

Species	State/ Federal Status	Other Jurisdictional Status	Typical Habitat/Comments

HMP = Habitat Management Plan for Natural Communities in the City of Carlsbad
NE = Narrow endemic species in HMP

During the May 30, 2006, rare plant survey, 151 Orcutt's brodiaea were identified at the head of the center drainage. A population of this species was identified on the site in 1986 as reported in the CNDDB. The HCP/OMSP records only two populations of five individuals each within the Rancheros-Southeast II component.

California adolphia

This xeric shrub is a CNPS List 2 species that occurs in Diegan coastal sage scrub, often associated with California buckwheat and California sagebrush. California adolphia is present and often a dominant species within the Diegan coastal sage scrub in several locations throughout the site. As **Figure 5.6-2** depicts, three patches of California adolphia are located within the southeast portion of the project site. Approximately 80 plants were observed within the 0.3-acre area.

Southwestern spiny rush

Spiny rush is a CNPS List 4 species. It is a large bushy rush commonly found in marsh habitats in San Diego County. It can be found in a variety of soil types wherever ponded water or saturated soils are present. Although spiny rush is commonly found in alkali marsh habitat, it is less common in freshwater marsh habitats or a variety of other habitats including the disturbed wetland (seasonal ponding areas) and riparian scrub habitat found on the project site. Southwestern spiny rush is present on the south side of the project site. Approximately 21 plants were observed within a 0.5-acre area of disturbed wetland and riparian scrub.

Palmer's grappling hook

Palmer's grappling hook is a CNPS List 4 species. This small herbaceous annual flowers from March to May, then produces spiny nutlets that look like tiny grappling hooks. It may be found in grasslands, coastal sage scrub, and chaparral habitats below 2,700 feet; but in San Diego are typically found in open grassy slopes or open coastal sage scrub habitat on clay soils. Approximately 380 individuals were identified within the native grasslands throughout the western half of the property.

Western dichondra

Western dichondra is a CNPS List 4 species. This small perennial herb can form a ground cover and flowers from March to May. Western dichondra is found in chaparral, cismontane woodland, and coastal sage scrub, where it often grows hidden beneath shrubs. It also may occur after fire in these habitats as well as in rocky outcrops in grasslands. Western dichondra is present in three small areas within the nonnative grasslands and coastal sage scrub on the western side of the property.

Small-flowered microseris

Small-flowered microseris is a CNPS List 4 species. Small-flowered microseris is a small annual herb and is found onsite in the clay lens areas within the native grassland.

Sensitive Plant Species Potentially Occurring

Several other sensitive species are known to occur in the project area and are considered as potentially occurring on the site based on vegetation communities identified. In addition, a number of other sensitive species have been previously observed within the Rancheros/Southeast II component of the HCP/OMSP, which includes the La Costa Town Square parcel.

San Diego thornmint

San Diego thornmint is federally listed as threatened, state listed as endangered, a CNPS List 1B species, and a narrow endemic species. San Diego thornmint is an annual species restricted in distribution to San Diego County and Baja California, Mexico, where it occurs on friable clay soils on mesas and slopes, and is associated with coastal sage scrub and chaparral habitats. In San Diego County, this plant is known from Encinitas south to Otay.

A population of this species was mapped on the project site in 1986 as reported in the CNDDB. There is a potential that this population should have been mapped offsite to the south of La Costa Avenue given the textual description of the plant's location; however, the habitat on the La Costa Town Square site is similar and is suitable to support this species. Rare plant surveys conducted by RECON and reported in the 2006 Biological Technical Report did not detect this species. However, given that a historical population has been mapped onsite, that seeds may remain viable for many years, and that suitable habitat is present; this species is assumed to be present in the seed bank onsite.

Prostrate navarretia

Spreading navarretia is a federally threatened species that is found within vernal pools and playas. This species is also covered under the MHCP and is a narrow endemic species under the HMP. It blooms between April and June and is not covered by the HCP/OMSP. This species was not detected within the five ponded areas. Suitable habitat onsite is marginal but this species has a low to moderate potential to occur given that surveys were conducted during a low rainfall year.

San Diego button-celery

San Diego button-celery is a state and federal endangered species found within the vernal pools in San Diego and Riverside counties. This species is also covered under the MHCP, and as a narrow endemic species under the HMP. This species is not covered by the HCP/OMSP and was not detected within the five ponded areas. Suitable habitat onsite is marginal but this species has a low to moderate potential to occur given that surveys were conducted during a low rainfall year.

San Diego goldenstar

San Diego goldenstar is a covered species under the HCP/OMSP, the MHCP, and as a narrow endemic species under the HMP, and is a CNPS List 1B species. This plant grows in grasslands and vernal pool habitats and on the edges of coastal sage scrub and chaparral. Though common goldenstar was located onsite during

the rare plant surveys conducted by RECON in 2006, San Diego goldenstar was not identified.

Sensitive Wildlife

Sensitive Wildlife Species Observed

Table 5.6-3 lists the sensitive wildlife species known to occur or potentially occurring on the project site. The following five bird species were observed on the project site during the most current surveys: Coastal California gnatcatcher (a federally listed species), California horned lark, southern California rufous-crowned sparrow, yellow-breasted chat, and white-tailed kite. Additionally, three additional California species of special concern were identified on the project site or in the vicinity of the project site during the previous surveys: western spadefoot, Belding's orange-throat whiptail, and loggerhead shrike. All of these species are covered by the HCP/OMSP.

Table 5.6-3
Sensitive Wildlife Species Known to Occur
(or Potentially Occurring) on the Project Site

Species	Status	Habitat	Occurrence/Comments
Invertebrates			
Harbison's dun skipper *Euphyes vestries harbisoni*	MHCP, HMP	Riparian habitats. Larval host plant *Carex spissa*.	Host plant not observed; not expected to occur.
Quino checkerspot butterfly *Euphydryas editha quino*	FE, MHCP	Open, dry areas in foothills, mesas, lake margins. Larval host plant *Plantago erecta*.	Adult emergence mid-January through April. Site outside of required survey area for 2001. Out of known range; not expected to occur.
Hermes copper *Lycaena hermes*	HCP/OMSP, *, HMP, NE	Chaparral and coastal sage scrub where host plant *Rhamnus crocea* occurs.	Adult emergence late May to July. Host plant not observed; not expected to occur.
San Diego fairy shrimp *Branchinecta sandiegonensis*	FE, MHCP, *, HMP, NE	Vernal pools.	Not detected during focused wet and dry season surveys. Not expected to occur within the pools onsite.

Species	Status	Habitat	Occurrence/Comments
Riverside fairy shrimp *Streptocephalus woottoni*	FE, MHCP, *, HMP, NE	Vernal pools.	Not detected during focused wet and dry season surveys. Not expected to occur within the pools onsite.
Amphibians (Nomenclature from Collins)			
Western spadefoot *Spea hammondii*	HCP/OMSP, CSC, MHCP	Vernal pools, floodplains, and alkali flats within areas of open vegetation.	**Observed onsite** during surveys in June 2003 (P&D Environmental 2003).
Reptiles (Nomenclature from Collins)			
Southwestern pond turtle *Clemmys marmorata pallida*	HCP/OMSP, CSC, FSS, MHCP	Ponds, small lakes, marshes, slow-moving, sometimes brackish water.	No suitable habitat present; not expected to occur.
Coronado skink *Eumeces skiltonianus interparietalis*	HCP/OMSP, CSC	Grasslands, open woodlands and forest, broken chaparral. Rocky habitats near streams.	Marginal habitat present; low potential to occur.
San Diego horned lizard *Phrynosoma coronatum blainvillii*	HCP/OMSP, CSC, MHCP, *	Chaparral, coastal sage scrub with fine, loose soil. Partially dependent on harvester ants for forage.	Known to occur within 2 miles of the site. Suitable habitat present; moderate potential to occur.
Belding's orange-throated whiptail *Cnemidophorus hyperythrus beldingi*	HCP/OMSP, CSC, MHCP,HMP	Chaparral, coastal sage scrub with coarse sandy soils and scattered brush.	**Observed onsite during previous surveys** (RECON 1990).
Silvery legless lizard *Anniella pulchra pulchra*	HCP/OMSP, CSC	Herbaceous layers with loose soil in coastal scrub, chaparral, and open riparian habitats. Prefers dunes and sandy washes near moist soil.	Suitable habitat present; moderate potential to occur onsite.
Coast patch-nosed snake *Salvadora hexalepis virgultea*	HCP/OMSP, CSC	Grasslands, chaparral, sagebrush, desert scrub. Found in sandy and rocky areas.	Marginal habitat present since most of the site is heavy clay soils. Low potential to occur.
Red diamond rattlesnake *Crotalus ruber ruber*	HCP/OMSP, CSC	Desert scrub and riparian habitats, coastal sage scrub, open chaparral, grassland, and agricultural fields.	Suitable habitat present; high potential to occur onsite.
Birds (Nomenclature from American Ornithologists' Union)			
White-tailed kite (nesting) *Elanus leucurus*	CFP, *	Nest in riparian woodland, oaks, sycamores. Forage in	**Observed flying over site**. Potential to nest in the few oak trees onsite and forage over

Species	Status	Habitat	Occurrence/Comments
		open, grassy areas. Year-round resident.	the grasslands.
Northern harrier (nesting) *Circus cyaneus*	HCP/OMSP, CSC, MHCP	Coastal lowland, marshes, grassland, agricultural fields. Migrant and winter resident, rare summer resident.	Suitable habitat present; low potential to nest onsite.
Sharp-shinned hawk (nesting) *Accipiter striatus*	CSC	Open deciduous woodlands, forests, edges, parks, residential areas. Migrant and winter visitor.	Winter foraging habitat present; out of nesting range.
Cooper's hawk (nesting) *Accipiter cooperii*	HCP/OMSP; CSC, MHCP, HMP	Mature forest, open woodlands, wood edges, river groves. Parks and residential areas. Migrant and winter visitor.	No suitable nesting habitat present; not expected to nest onsite.
Golden eagle (nesting and wintering) *Aquila chrysaetos*	CSC, CFP BEPA, MHCP	Require vast foraging areas in grassland, broken chaparral, or sage scrub. Nest in cliffs and boulders. Uncommon resident.	Suitable foraging habitat present; low potential to occur onsite. No suitable nesting habitat present.
Merlin *Falco columbarius*	CSC	Rare winter visitor. Grasslands, agricultural fields, occasionally mud flats.	Suitable habitat present; low potential to occur onsite in winter.
Prairie falcon (nesting) *Falco mexicanus*	CSC	Grassland, agricultural fields, desert scrub. Uncommon winter resident. Rare breeding resident. Breeds on cliffs.	Suitable foraging habitat present. No nesting habitat present; not expected to nest onsite.
Western burrowing owl (burrow sites) *Speotyto cunicularia hypugaea*	CSC, MHCP, HMP	Grassland, agricultural land, coastal dunes. Require rodent burrows. Declining resident.	Marginal habitat present; low potential to occur onsite.
Southwestern willow flycatcher *Empidonax traillii extimus*	HCP/OMSP, SE, FE, FSS, MHCP, HMP	Nesting restricted to willow thickets. Also occupies other woodlands. Rare spring and fall migrant, rare summer resident. Extremely localized breeding.	No suitable habitat present; not expected to occur.

Species	Status	Habitat	Occurrence/Comments
California horned lark *Eremophila alpestris actia*	HCP/OMSP, CSC	Sandy shores, mesas, disturbed areas, grasslands, agricultural lands, sparse creosote bush scrub.	**Observed onsite.**
Coastal cactus wren *Campylorhynchus brunneicapillus couesi*	CSC, MHCP, *	Maritime succulent scrub, coastal sage scrub with *Opuntia* thickets. Rare localized resident.	*Opuntia* not present in sufficient quantity to support species. Not expected to occur.
Coastal California gnatcatcher *Polioptila californica californica*	HCP/OMSP, FT, CSC, MHCP, HMP	Coastal sage scrub, maritime succulent scrub. Resident.	Observed onsite during previous surveys (City of Carlsbad et al. 1995a and RECON 1990). **Observed onsite** during 2006 focused surveys.
Loggerhead shrike *Lanius ludovicianus*	HCP/OMSP, CSC	Open foraging areas near scattered bushes and low trees.	**Observed onsite** during previous surveys (RECON 2006).
Least Bell's vireo (nesting) *Vireo bellii pusillus*	HCP/OMSP, SE, FE, MHCP, HMP	Willow riparian woodlands. Summer resident.	No suitable habitat present; not expected to occur.
Southern California rufous-crowned sparrow *Aimophila ruficeps canescens*	HCP/OMSP, CSC, MHCP, HMP	Coastal sage scrub, grassland. Resident.	**Observed onsite.**
Bell's sage sparrow *Amphispiza belli belli*	HCP/OMSP, CSC, MHCP	Chaparral, coastal sage scrub. Localized resident.	Suitable habitat present; high potential to occur.
Yellow-breasted chat (nesting) *Icteria virens*	HCP/OMSP, CSC, MHCP, HMP	Dense riparian woodland. Localized summer resident.	**Observed onsite.**
Mammals (Nomenclature from Jones et al. 1982)			
Pale big-eared bat *Corynorhinus townsendii pallescens*	CSC	Caves, mines, buildings. Found in a variety of habitats, arid and mesic.	Individual or colonial. Extremely sensitive to disturbance; no roosting habitat present; not expected to occur.
Townsend's western big-eared bat *Corynorhinus townsendii townsendii*	HCP/OMSP, CSC, MHCP	Caves, mines, buildings. Found in a variety of habitats, arid and mesic.	Individual or colonial. Extremely sensitive to disturbance; no roosting habitat present. Not expected to occur.
Western mastiff bat *Eumops perotis californicus*	HCP/OMSP, CSC, MHCP	Woodlands, rocky habitat, arid and semiarid lowlands, cliffs, crevices, buildings, tree	No roosting habitat present; low potential to occur onsite.

Species	Status	Habitat	Occurrence/Comments
		hollows.	
San Diego black-tailed jackrabbit *Lepus californicus bennettii*	HCP/OMSP, CSC, MHCP	Open areas of scrub, grasslands, agricultural fields.	Suitable habitat present; high potential to occur.
Pacific little pocket mouse *Perognathus longimembris pacificus*	FE, CSC, MHCP	Open coastal sage scrub; fine, alluvial sands near ocean.	No suitable soils; not expected to occur.
Dulzura California pocket mouse *Chaetodipus californicus femoralis*	HCP/OMSP, CSC	Brushy areas of coastal sage scrub, chamise-redshank and montane chapparal, sagebrush, annual grassland, valley foothill hardwood, valley foothill hardwood—conifer and montane hardwood. Probably most attracted to interface of grassland and brush.	Suitable habitat present; potential to occur.
Northwestern San Diego pocket mouse *Chaetodipus fallax fallax*	HCP/OMSP, CSC, MHCP	San Diego County west of mountains in sparse, disturbed coastal sage scrub or grasslands with sandy soils.	Known to occur within 2 miles of the site. Suitable habitat present; moderate potential to occur.
Southern grasshopper mouse *Onychomys torridus ramona*	HCP/OMSP, CSC	Alkali desert scrub and desert scrub preferred. Can also occur in succulent shrub, wash, and riparian areas; coastal sage scrub, mixed chaparral, sagebrush, low sage, and bitterbrush. Low to moderate shrub cover preferred.	Suitable habitat present; potential to occur.
San Diego desert woodrat *Neotoma lepida intermedia*	HCP/OMSP, CSC	Coastal sage scrub and chaparral. `	Unidentified woodrat observed onsite. High potential to occur.

Note: Status Codes

Listed/Proposed:
FE = Listed as endangered by the federal government

Species	Status	Habitat	Occurrence/Comments

FT = Listed as threatened by the federal government
SE = Listed as endangered by the State of California

Other:
BEPA = Bald and Golden Eagle Protection Act
CFP = California fully protected species
CSC = California Department of Fish and Game species of special concern
FC = Federal candidate for listing (taxa for which the U.S. Fish and Wildlife Service has on file sufficient information on biological vulnerability and threat(s) to support proposals to list as endangered or threatened; development and publication of proposed rules for these taxa are anticipated).
FSS = Federal (Bureau of Land Management and U.S. Forest Service) sensitive species.
HCP/OMSP = Habitat Conservation Plan/Ongoing Multi-Species Plan for Properties in the southeast Quadrant of the City of Carlsbad, California. Prepared by City of Carlsbad, Fieldstone/
La Costa Associates, California Department of Fish and Game, and U.S. Fish and Wildlife Service.

* Taxa closely associated with a habitat that is declining in California at an alarming rate (e.g., wetlands, riparian, old growth forests, desert aquatic systems, native grasslands). Taxa listed with an asterisk fall into one or more of the following categories:

- Taxa considered endangered or rare under Section 15380(d) of CEQA guidelines
- Taxa that are biologically rare, very restricted in distribution, or declining throughout their range
- Population(s) in California that may be peripheral to the major portion of a taxon's range but that are threatened with extirpation within California

Coastal California gnatcatcher

The coastal California gnatcatcher is federally listed as threatened and a DFG species of special concern. This bird is a resident species restricted to the coastal slopes of southern California, from Ventura County southward through Los Angeles, Orange, Riverside, and San Diego counties into Baja California, Mexico. The coastal California gnatcatcher typically occurs in coastal sage scrub, although this bird also uses chaparral, grassland, and riparian woodland habitats where they occur adjacent to coastal sage scrub. Populations of this species have declined as a result of urban and agricultural development.

Four territories were identified on the project site in 1990. Focused surveys conducted in 2001 by RECON biologists did not reveal any coastal California gnatcatchers. Focused surveys conducted in 2006 by RECON biologists identified

three territories including one pair and an additional three individual California gnatcatchers within three drainages that still support native habitat onsite.

California horned lark

The California horned lark is a DFG species of special concern. The horned lark ranges throughout North America. However, the range of the California horned lark subspecies is along the coastal slopes of California from Sonoma County to San Diego County and includes most of the San Joaquin Valley. California horned larks that occur in coastal San Diego County are found during the breeding season, although other subspecies are found in San Diego County during the winter. In San Diego County, the California horned lark typically inhabits areas with sparse vegetation, including sandy shores, grasslands, mesas, and agricultural lands. Decline of this species is generally attributed to urbanization and human disturbance. California horned larks were observed onsite in 2003 and during 2006 surveys.

Southern California rufous-crowned sparrow

The southern California rufous-crowned sparrow is a DFG species of special concern. This localized resident species ranges throughout southern California in steep, rocky areas of coastal sage scrub and chaparral habitats. Southern California rufous-crowned sparrows are also known to inhabit grassland areas adjacent to coastal sage scrub. Widespread losses of coastal sage scrub habitat as a result of agricultural and urban development have greatly decreased the amount of habitat suitable for rufous-crowned sparrows. Southern California rufous-crowned sparrows were detected onsite in 2003 and during the 2006 surveys.

Yellow-breasted chat

The yellow-breasted chat is a DFG species of special concern, and a covered species under the HCP/OMSP, Carlsbad HMP, and North County MHCP. Yellow-breasted chat breeding range extends from southern California south to central

Mexico; their range includes most of the United States and they arrive in California to breed during April or May. Breeding occurs in dense brush or scrub, usually along streams or marshy areas with dense riparian woodlands. One yellow-breasted chat was observed in the coastal sage scrub on the southern border onsite.

White-tailed kite

The white-tailed kite is a California fully protected species. Nesting sites of white-tailed kites are considered sensitive. This raptor occurs in coastal lowland areas from Oregon to northern Baja California, Mexico. Nesting occurs in riparian woodlands, oaks, or sycamore groves that border grassland or open fields. This species forages over open areas and grasslands. White-tailed populations in southern California have declined due to the loss of nesting and foraging habitat. A white-tailed kite was observed flying overhead. It has a potential to nest in one of the few oak trees onsite and forage over the grasslands onsite.

<u>Sensitive Wildlife Species Observed During Previous Surveys</u>

Western spadefoot

The western spadefoot toad is a DFG species of special concern and is a California narrow endemic ranging from Shasta County southward into Baja California. Its known elevation range extends from near sea level to 4,472 feet. This species requires rain pools that pond water for at least three weeks to successfully reproduce. They also require suitable upland habitat in which to burrow and forage. Competing species that threaten the western spadefoot include mosquitofish used for mosquito abatement and the increase in the nonnative bullfrog populations. Conversion of occupied habitat for urbanization or agricultural uses also threatens the continuation of this species. This species was identified in the HCP/OMSP as present within the Rancheros/Southeast II component, which includes the La Costa Town Center parcel. The site supports moderately suitable habitat for the species with a few ponded areas that might hold water long enough to allow successful reproduction of the species. This

species was identified onsite during a survey conducted by P&D Environmental in 2003 (RECON 2006), and impacts to this species are mitigated through the dedication of the approved HCP/OMSP conservation areas.

Belding's orangethroat whiptail

The Belding's orangethroat whiptail is a DFG species of special concern. This species ranges from southwestern San Bernardino County to the tip of Baja California, Mexico, in areas of low, scattered brush and grass with loose sandy loam soils. It can be found in open coastal sage scrub, chaparral, washes, streamsides, and other sandy areas with rocks, patches of brush, and rocky hillsides. The Belding's orangethroat whiptail feeds primarily on subterranean termites. It is active during the spring and summer months and hibernates during the fall and winter. Adult Belding's orangethroat whiptails generally hibernate from late July or early August until late April. The immature whiptail has a shorter inactivity period, usually hibernating from December through March. Hibernating sites are on well-drained slopes with southern exposure and little or no vegetation cover (road cuts tend to be suitable). The Belding's orangethroat whiptail has declined within its range as a result of habitat losses and fragmentation. Two Belding's orangethroat whiptails were identified on the project site in 1990. The habitat remains suitable for this species and it is expected to still be present onsite.

Loggerhead shrike

The loggerhead shrike is a DFG species of special concern. This species ranges throughout most of the United States and Mexico. The loggerhead shrike is a nonmigratory species that occurs throughout San Diego County. The loggerhead shrike occupies a variety of habitats including grassland, agricultural areas, chaparral, sage scrub, and desert scrub at elevations less than 3,000 feet. Population declines of the loggerhead shrike have been attributed to increases in habitat loss associated with urbanization. A loggerhead shrike was observed flying over the nonnative grassland on the northeast portion of the site in 2003.

Sensitive Wildlife Species Not Observed

Several other sensitive animals are known to occur in the vicinity and have a potential to be present on the project site. San Diego fairy shrimp and Riverside fairy shrimp are federally and state listed species that have a potential to occur on the site. A focused survey for listed fairy shrimp species was conducted by Cynthia Jones and Wendy Loeffler (RECON 2001b) within the five ponded areas located throughout the project site in March and April 2001 (**Figure 5.6-1**). Surveys were conducted according to USFWS survey guidelines.

San Diego fairy shrimp

This fairy shrimp, a state and federally listed species, is found in vernal pools and other pooling areas that only pond water during the wet season. The species is adapted to hatch when the pools and pooling areas fill with water. The adults lay cysts that settle in the soil as the pond dries. They are able to remain in this dormant stage until the next time the area fills with water. They are then able to complete their reproductive cycle in as little as 2 weeks.

Protocol surveys were conducted in 2001 on five ponded areas to determine the presence or absence of this species onsite, which included both wet season and dry season sampling surveys according to USFWS protocol. A letter reporting negative survey results was submitted to the USFWS on December 19, 2001. An additional ponded area was surveyed in the 2003 dry season and a letter report was submitted to USFWS dated March 2, 2004. USFWS protocols require that surveys be conducted during two consecutive wet seasons for the duration the ponds are filled with water during contiguous wet and dry seasons.

Focused wet season surveys were conducted in the five ponded areas during March and April 2001 by RECON biologists Wendy Loeffler and Cynthia Jones. Dry season surveys were conducted in five ponded areas in November and December 2001. Soil samples were collected by Wendy Loeffler in November and sent to Christopher Rogers of Jones and Stokes for analysis. San Diego fairy shrimp were not detected in any of the ponded areas during either of the two surveys.

Results of both surveys were detailed in the December 19, 2001, letter report provided in Appendix F. Given the negative results of the surveys conducted in 2001 on the five ponded areas, the potential for occurrence of this species is low.

Riverside fairy shrimp

This fairy shrimp, a state and federally listed species, is found in vernal pools and other pooling areas that only pond water during the wet season. The species is adapted to hatch when the pools and pooling areas fill with water. The adults lay cysts that settle in the soil as the pond dries. They are able to remain in this dormant stage until the next time the area fills with water. They are able to complete their reproductive cycle in as little as 2 weeks.

Protocol surveys were conducted in 2001 on five ponded areas to determine the presence or absence of this species onsite, which included both wet season and dry season sampling surveys according to USFWS protocol. A letter reporting negative survey results was submitted to the USFWS on December 19, 2001. An additional ponded area was surveyed in the 2003 dry season and a letter report was submitted to USFWS dated March 2, 2004. USFWS protocols require that surveys be conducted during two consecutive wet seasons for the duration the ponds are filled with water or during contiguous wet and dry seasons.

Focused wet season surveys were conducted in the five ponded areas during March and April 2001 by RECON biologists Wendy Loeffler and Cynthia Jones. Dry season surveys were conducted in the five ponded areas in November and December 2001. Soil samples were collected by Wendy Loeffler in November and sent to Christopher Rogers of Jones and Stokes for analysis. Riverside fairy shrimp were not detected in any of the ponded areas during either of the two surveys. Given the negative results of the surveys conducted on the five ponded areas, the potential for occurrence of this species is considered low.

Wildlife Movement Corridors

The project area is surrounded by development on all sides and does not provide a long-term viable/unobstructed corridor for the movement of wildlife. A marginal corridor could be argued from the southeastern corner of the project site but the corridor narrows to less than 100 feet in width, is surrounded by residential and commercial development, and is then broken by two major roads (Camino De Los Coches and La Costa Avenue) before the property may be accessed. The potential for wildlife movement to occur across the project site as a long-term viable wildlife corridor is low.

Wetland and Nonwetland Jurisdictional Waters

Glenn Lukos Associates regulatory specialists conducted a wetland jurisdictional delineation study and Significant Nexus Analysis on the project site. Five ephemeral drainages were delineated and evaluated by these investigators. **Figure 5.6-3** depicts the existing jurisdictional waters by both the ACOE and DFG on the site. As shown in **Tables 5.6-4** and **5.6-5**, the ephemeral drainages potentially under ACOE jurisdiction total approximately 0.41 acre and 3,037 feet in length, and those under DFG jurisdiction total approximately 0.44 acre and 3,981 feet in length. These ephemeral streams appear to be streams that exhibit signs of stream flow only during significant storm events. Of the potential ACOE jurisdiction, approximately 0.06

5.6-3 Existing Jurisdictional Waters

Table 5.6-4
Potential ACOE Impacts

Drainage Names	Potential ACOE Non-RPWs (Acres)	Potential ACOE Jurisdictional Wetland (Acres)	Total Potential ACOE Jurisdiction Impacted (Acres)
Drainage A	0.01	0.00	0.01
Drainage B	0.04	0.02	0.06
Drainage C	0.14	0.04	0.18
Drainage D	0.01	0.00	0.01
Man-Made Water Quality Basin	0.15	0.00	0.15
Total	**0.35**	**0.06**	**0.41**

RPW = Relatively Permanent Water

Table 5.6-5
DFG Impacts

Drainage Names	DFG Ephemeral Drainages (Acres)	DFG Riparian Habitat (Acres)	Total DFG Jurisdiction Impacts (Acres)
Drainage A	0.03	0.00	0.03
Drainage B	0.04	0.02	0.06
Drainage C	0.15	0.19	0.34
Drainage D	0.01	0.00	0.01
Total	**0.23**	**0.21**	**0.44**

acre was determined to exhibit wetland characteristics. The two isolated seasonal ponded areas located at the southeastern edge of the project site consist of a small depressional feature (approximately 30 square feet in size) and a seep (approximately 30 feet by 20 feet) that was adjacent to an ephemeral drainage. The vegetated riparian habitats in and around these depressions account for approximately 0.21 acre and are included in the DFG total above.

A man-made water quality basin is located adjacent to Rancho Santa Fe Road within the northern portion of the project area. The basin supports approximately 0.15 acre of unvegetated waters. This man-made water quality basin is subject to

ACOE jurisdiction pursuant to Section 404 of the CWA. The man-made water quality basin is included in the ephemeral drainages acreage.

The Glenn Lukos Associates delineation (2008) is concerned with determining state and federal jurisdiction with regard to wetland and riparian resources, whereas the biological survey is concerned with mapping vegetation communities and identifying sensitive biological resources. The acreages of potential jurisdictional wetland and riparian habitat are not expected to have a one-to-one correspondence with mapped vegetation communities as these were independent analyses focused on different objectives. The analysis of impacts to sensitive habitats incorporates impacts to jurisdictional habitats and any additional sensitive habitat areas not identified in the wetland delineation report.

The five ponded areas described in the biological survey report do not display any connection to waters of the U.S; therefore, these seasonal ponds are not subject to a CWA Section 404 permit. However, they may be regulated by the RWQCB through the Porter-Cologne Water Quality Control Act.

The delineation report states that there are four drainages and one man-made basin present onsite. Proposed modifications to these ephemeral drainages and man-made basin will require review by DFG as defined under the California Fish and Game Code section 1602 and would likely require issuance of and adherence to a Streambed Alteration Agreement (see Regulatory Setting.) There are no endangered species present within the ponded areas; therefore, the project would not be subject to any additional agreements from DFG (RECON 2006).

As noted in the Glenn Lukos Associates report (2008), there is a man-made water quality basin present onsite located adjacent to Rancho Santa Fe Road within the northern portion of the project. The basin, during storm events, flows directly into Batiquitos Lagoon and, therefore, is subject to ACOE jurisdiction.

Applicable Regulations and Habitat Plans

U.S. Army Corps of Engineers

Under Section 404 of the CWA, the ACOE has regulatory authority over the discharge of dredged or fill materials into the "waters of the U.S." The term "waters of the United States" is defined in 33 Code of Federal Regulations (CFR) Part 328 and includes (1) all navigable waters (including waters subject to the ebb and flow of the tide); (2) all interstate waters and wetlands; (3) all other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use or degradation of which could affect interstate or foreign commerce; (4) all impoundments of water mentioned above; (5) all tributaries to waters mentioned above; (6) the territorial seas; and (7) all wetlands adjacent to waters mentioned above.

In the absence of wetlands, the limits of ACOE jurisdiction in nontidal waters, such as intermittent streams, extend to the ordinary high water mark (OHWM), which is defined at 33 CFR 328.3(e) as: ". . . that line on shore established by the fluctuation of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil; destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas."

Wetlands are defined at 33 CFR 328.3(b) as: "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support . . . a prevalence of vegetation typically adapted for life in saturated soil conditions."

In 2007, the U.S. Environmental Protection Agency (EPA) and ACOE issued joint guidance that clarifies their scope of jurisdiction in light of the U.S. Supreme Court's decision in the cases *Rapanos v. United States* and *Carabell v. United States*. For project sites that include waters other than Traditional Navigable Waters (TNW) and/or their adjacent wetlands or Relatively Permanent Waters (RPW) tributary to TNW and/or their adjacent wetlands, ACOE must apply the significant nexus standard. For "isolated" waters or wetlands, ACOE and EPA must evaluate

whether other interstate commerce clause nexuses are associated with isolated features on project sites for which a jurisdictional determination is being sought from the ACOE. For ACOE to evaluate, project applicants must prepare and submit a Rapanos Approved Jurisdictional Approval Form.

California Department of Fish and Game

DFG is responsible for conserving, protecting, and managing California's fish, wildlife, and native plant resources. To meet this responsibility, the law requires any person, state or local governmental agency, or public utility to notify DFG before beginning an activity that will substantially modify a river, stream, or lake. DFG regulates alterations to "streambeds" through the development of a Streambed Alteration Agreement pursuant to Section 1602 of the Fish and Game Code. An agreement is required whenever a project would "divert, obstruct or change the natural flow or bed, channel or bank of any river, stream or lake designated by the Department." This applies to all perennial, intermittent, and ephemeral rivers, streams, and lakes in the state; applicability and terms of the agreement requirement to a particular site is determined through notification to and response from DFG.

Where a state-listed threatened or endangered species occurs on a project site, DFG also would be responsible of the issuance of a Memorandum of Understanding (MOU) to ensure the conservation, enhancement, protection, and restoration of state-listed threatened or endangered species and their habitats.

DFG regulates all "rivers, streams, lakes and streambeds which may exhibit intermittent flows of water." DFG jurisdiction (defined in Section 1600 *et seq.*) closely mirrors the jurisdiction of ACOE. Exceptions are DFG's exclusion of isolated wetlands, waters such as small ponds not located on a drainage course, wet meadows, or vernal pools (those not associated with a river, stream, or lake); the addition of artificial stock ponds and irrigation ditches constructed on uplands; and the addition of riparian habitat supported by a river, stream, or lake regardless of the riparian area's federal wetland status.

U.S. Fish and Wildlife Service

The USFWS is authorized under the ESA to establish lists of endangered and threatened plants and animals and to identify critical habitats for listed species. If a listed species or critical habitat may be present within the impact area of the proposed project, a biological assessment is required. If it is then determined that a proposed project will affect a listed endangered or threatened species or critical habitat, a formal consultation and approved habitat conservation program is required with USFWS in order to identify mitigation measures required to be added as a condition of project approval, as a precondition to issuance of an "incidental take permit." If the proposed project will potentially impact an endangered plant, habitat, or animal, the project will be required to comply with the ESA.

The proposed project is included in the HCP/OMSP for Properties in the Southeast Quadrant of the City of Carlsbad, California (City of Carlsbad 1995a). The document was created by the City of Carlsbad; Fieldstone, La Costa Associates; DFG; and USFWS to provide for the conservation of sensitive wildlife and habitat in the context of a proposed large-scale development plan. The HCP/OMSP identifies 66 species of concern and provides an impact analysis of the proposed development in regard to these species. In addition, the plan provides for the dedication of open space both onsite and offsite as mitigation for impact to the species of concern and affiliated habitat.

San Diego Regional Water Quality Control Board

The San Diego RWQCB is one of nine regional boards under the SWRCB. Under the direction of the SWRCB, the RWQCB exercises authority under the federal CWA and correlative state statutes to regulate the discharge of "waste" into waters of the U.S. within its San Diego region of influence. Regulation in part is done through obtainment of Section 401 Water Quality Certification. Section 401 Certification is based on a finding that the proposed project Section 404 discharge will comply with all pertinent water quality standards as established by the RWQCB. As part of Section 401 Certification, conditions may be devised by the RWQCB in order to

remove or mitigate potential impacts to water quality standards. If a project is denied certification, a Section 404 permit cannot be issued for the project. As the drainages and basin have the potential to be ACOE jurisdictional waters, they do not need to be addressed separately pursuant to the Porter-Cologne Act (California Water Code Section 13260). However, the five ponded areas are isolated from ACOE jurisdictional waters and may indeed need to be addressed separately pursuant to the Porter-Cologne Act.

Habitat Conservation Plan/Ongoing Multi-Species Plan

The project site is located within the HCP/OMSP. The Section 10(a) Implementation Agreement and HCP/OMSP among the UFWS, City, DFG, the Villages of La Costa project prior landowner, and other conservation groups was fully signed in June of 1995. The HCP/OMSP covers 1,940.2 acres of land essentially surrounded by existing urban uses in the southeast quadrant of Carlsbad, conserving habitat for plant and wildlife species and mitigating the impacts of anticipated urbanization. The Villages of La Costa Master Plan has established and defined permanent preservation of Conserved Habitat Area and appropriate Impact Areas within each of the three Villages of La Costa projects.

Initiated prior to enactment of California's Natural Communities Conservation Planning (NCCP) Act, the HCP/OMSP technically is exempt from the NCCP program; however, it is consistent with NCCP Guidelines and with two planning efforts that are enrolled in the NCCP programs as OMSP: the City's HMP and the North County MHCP. The plan fulfills the NCCP goals and strengthens the HMP and MHCP efforts by:

- Providing for the preservation and management of up to 885.1 acres of coastal sage scrub and other habitats in key locations that will support viable populations of indigenous plants and animals and maintain the link between the City's natural communities and the larger regional ecosystem; and

- Reconciling the current and future needs of diverse public and private interests through a cooperative effort that will sustain and improve sensitive biological resources while allowing necessary economic development and anticipated urbanization to proceed.

In this way, the HCP/OMSP constitutes a completed aspect of NCCP for the City and subregion.

Consistent with the federal and state ESAs as well as the NCCP program, the HCP/OMSP addresses the needs of 66 listed and unlisted species associated with habitats in the plan area. It focuses on a number of animal species that are representative of the diversity and sensitivity of resources in Carlsbad and region, including the federally listed coastal California gnatcatcher, and provides protection for nearly 80 percent of all sensitive plant populations in the plan area. Utilizing the best available scientific information, the HCP/OMSP meets the requirements of the ESAs by:

- Minimizing and mitigating anticipated impacts on the species of concern to the maximum extent practicable; and

- Conserving habitat, habitat linkages, corridors, and buffers in a way that, together with the other impact minimization and mitigation measures, ensures that the likelihood of the species' survival and recovery will not be appreciably reduced.

Also in accordance with the ESAs, the plan ensures adequate funding for implementation of the conservation and mitigation measures and includes procedures for responding to unforeseen circumstances.

The HCP/OMSP is also consistent with the Carlsbad General Plan, providing for the conservation of sensitive resources and the development of land and facilities in accordance with the City's land use, circulation, and open space elements, and growth management plans as well as the HMP.

As shown in **Figure 5.6-4**, the plan area for the HCP/OMSP consists of two sets of lands:

- 1,278.2 acres identified as "Rancheros-Southeast II," which includes 846.2 acres that are the project site for the Rancho Santa Fe Road realignment, 347.0 acres that are the Rancheros component of the La Costa Master Plan, and 85.0 acres in San Marcos Creek; and

- 662.0 acres identified as "Northwest," another component of the La Costa Master Plan.

Combined, the lands account for 13 percent of all undeveloped land remaining in Carlsbad.

5.6.2 Thresholds for Determining Significance

Appendix G of the CEQA Guidelines is used to provide direction for determination of a significant biological resource impact from the proposed project. For the purposes of this EIR, a significant impact would occur if the proposed project would:

- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service;

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by DFG or USFWS;

- Interfere substantially with the movement (i.e., sever all reasonable access to a critical resource, such as a water source) of any native resident or migratory fish or wildlife species or with established native resident or

migratory wildlife corridors, or impede the use of native wildlife nursery sites;

5.6-4 HCP Preserve Areas

- Have a substantial adverse effect on wetlands as defined by Section 404 of the Clean Water Act or Section 1600 et seq. of the California Fish and Game Code; or

- Conflict with any local policies, plans or ordinances protecting biological resources, such as an adopted HCP, NCCP, other approved local, regional, or state habitat conservation plan, or a tree preservation policy or other ordinance.

Impacts to the vegetation communities, flora, and fauna observed or expected to occur on the site were determined to be significant or less than significant based upon sensitivity of the resource and the extent of the impact. Resources are generally considered significant if they are limited in distribution, and their ecological role is critical within the regional or local context.

5.6.3 Environmental Impact

Anticipated biological impacts for the proposed project are assessed according to guidelines set forth in the HCP/OMSP. The entire project site is designed for development resulting in 100 percent impact to biological resources. Impacts to the covered species and their habitats are permitted by the HCP/OMSP and the associated Implementing Agreement. The HCP/OMSP provides species-specific mitigation measures for some impacts to species of concern and conserved habitats, which are discussed below.

Vegetation Communities

Implementation of the proposed project will impact approximately 17.4 acres of Diegan coastal sage scrub and disturbed coastal sage scrub, 5.6 acres of native grassland, 27.3 acres of nonnative grassland, 0.2 acre of riparian scrub, and 0.3 acre of disturbed wetland. This is considered a significant impact. Implementation of Mitigation Measure B-1 would reduce the impacts to vegetation communities to a level less than significant.

Given the lack of vernal pool indicator plant species and the negative results of the 2001 protocol focused surveys for endangered fairy shrimp species, the pools onsite do not appear to be naturally occurring vernal pools. The wetland delineation survey also did not indicate the presence of vernal pools. Therefore, no impacts to vernal pools are expected during the proposed project. Impacts to disturbed and developed areas are not considered significant and do not require mitigation.

Sensitive Biological Resources

Sensitive Plant Species

The proposed development will impact thread-leaved brodiaea and Orcutt's brodiaea, and potentially impact San Diego thornmint. The impact associated with these covered, narrow endemic species is considered significant and has been partially mitigated by the open space dedication of the Rancheros/Southeast II component of the HCP/OMSP for Properties in the Southeast Quadrant of the City of Carlsbad. Implementation of Mitigation Measure B-1 for onsite occurrence of sensitive plant species would further reduce the onsite impacts to a level of less than significant. Impacts to the following sensitive or noteworthy species would also be considered significant but are mitigated on a habitat basis under the HCP/OMSP through dedication of the Rancheros/Southeast II open space: California adolphia, southwestern spiny rush, Palmer's grappling hook, western dichondra, and small-flowered microseris. The impacts to sensitive species listed in **Table 5.6-2** with a potential to occur onsite would be considered significant but are also mitigated under the HCP/OMSP.

Sensitive Wildlife

The following eight sensitive species are expected to be impacted by development of the project site: coastal California gnatcatcher, white-tailed kite, yellow-breasted chat, California horned lark, loggerhead shrike, southern California rufous-crowned sparrow, western spadefoot, and Belding's orange-throated whiptail. These species are included in the list of covered species under

the HCP/OMSP. This is considered a significant impact. Implementation of Mitigation Measures B-1 and B-2 will reduce the impacts associated with sensitive wildlife to a level less than significant. Impacts to sensitive wildlife species listed in **Table 5.6-3** with a potential to occur onsite would be considered significant but are mitigated under the HCP/OMSP through dedication of open space.

Impacts to the endangered San Diego or Riverside fairy shrimp species are not covered by the HCP/OMSP and would be considered significant. These species were not detected onsite during focused surveys in 2001 and the potential for them to be present within the remaining ponded areas is low given the negative results of the previous focused surveys. If either of these species is found onsite, mitigation for impacts would be required. Since these species are federally listed, if they are determined to be onsite and will be taken by development of the project, take authority must be obtained from USFWS through a Section 7 Consultation.

Wildlife Movement Corridors

Because of the surrounding urban development and lack of a viable/unobstructed wildlife movement corridor, the project will not have a significant impact on wildlife movement corridors.

Wetland and Nonwetland Jurisdictional Waters

A Significant Nexus Report (Glenn Lukos Associates 2008) and Jurisdictional Delineation Report (Glenn Lukos Associates 2006) were prepared for the proposed project. The Significant Nexus Report reevaluated the jurisdiction of ACOE using the guidance provided following the Rapanos decision. Furthermore, the report included the required Rapanos-Approved Jurisdictional Approval Forms.

The proposed project would impact all identified jurisdictional water and wetlands on the project site as described in the existing setting above. This is considered a significant impact. The impact is not covered by the HCP/OMSP and will require additional mitigation. Implementation of Mitigation Measure B-3 and as shown in

Table 5.6-6 will reduce the impact to wetland and nonwetland jurisdictional waters to a level less than significant. Additionally, an individual Section 404 permit from ACOE, a 1602 Streambed Alteration Agreement from DFG, and a 401 Water Quality Certification from the RWQCB will be required. Also, the RQWCB requires that all urban runoff generated from any future development on the property be treated before being discharged offsite. This will be accomplished through the implementation of structural and nonstructural Best Management Practices (BMPs) designed for the treatment of stormwater runoff.

Indirect Impacts

The HCP/OMSP has designated several areas of conserved habitat within the plan area. Three conserved parcels are identified within the Southeast II component: Parcel A, which is located to the northeast of the project site, and Parcels B and C located to the north of the site. As depicted

Table 5.6-6
Jurisdiction Mitigation

	Impact Acreage	Mitigation Ratio	Mitigation Acreage
Ephemeral Drainages (ACOE and DFG Jurisdiction)	0.23	1:1	0.23
Riparian Habitat/Wetland[1] (DFG Jurisdiction)	0.21	3:1	0.63
Man-Made Water Quality Basin (ACOE Jurisdiction)	0.15	1:1	0.15

[1] Includes 0.06 ACOE potential wetlands.

in **Figure 5.6-4**, the project site is not directly adjacent to any of these conserved areas; however, Parcel A is located nearby to the northeast across Camino Junipero. There is a potential for indirect impacts to this conserved parcel from development of the project site.

Indirect impacts are impacts to the biological resources that occur over short or long periods of time due to the project construction and operation. Although biological resources may not initially be directly impacted, over time they may be affected indirectly due to the relative proximity of the development. Specifically, indirect project-related impacts would occur, including increased human activity, increased ambient noise, higher unnatural nighttime light levels, increased threat of road kill by traffic, spread of invasive plant species into surrounding areas, and increased levels of scavengers attracted by trash on the project site. Common wildlife species using habitats onsite would avoid habitats affected by these "spillover" impacts, thereby decreasing diversity beyond the actual development envelope.

Construction and subsequent occupation of the project site could cause indirect or spillover impacts to the Rancheros/Southeast II HCP/OMSP open space (City of Carlsbad 1995a) located approximately 0.25-mile northeast of the project site. As stated in the Biological Technical Report, noise levels during project construction "… are not expected to be excessively above ambient levels within the conserved areas" (RECON 2006). However, scavengers attracted by trash during

construction and invasive landscape materials could pose indirect impacts to the conservation areas. Therefore, Mitigation Measures B-4, B-5, and B-6 are proposed to reduce these indirect impacts to biological resources to a level less than significant.

Applicable Regulations and Habitat Plans

The proposed project is consistent with the HCP/OMSP, which is consistent with the federal and state laws and guidelines including:

- The federal ESA,
- The California ESA and California Natural Communities Conservation Planning Act,
- NCCP Process and Conservation Guidelines, and
- The federal special 4(d) rule for the coastal California gnatcatcher.

The proposed project is also consistent with the information requirements and approval criteria that pertain to the HCP/OMSP as:

- An HCP prepared in accordance with Section 10(a) of the federal ESA;
- Supporting documentation for a management agreement under Section 2081 of the California ESA; and
- An OMSP as defined in California's NCCP Process Guidelines.

Additionally, the proposed project is consistent with the Carlsbad General Plan, providing for the conservation of sensitive resources and the development of land and facilities in accordance with the City's land use, circulation, and open space elements and growth management plans as well as the HMP.

Therefore, the proposed project would not result in a significant impact associated with any local policies or ordinances protecting biological resources, or conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or state habitat conservation plan.

5.6.4 Mitigation Measures

B-1. Thread-leaved brodiaea, Orcutt's brodiaea, and San Diego thornmint are narrow endemic species under the Carlsbad HMP; thus additional species-specific mitigation is required prior to issuance of any grading permit for the project. Restoration of habitat for the brodiaea species shall be accomplished by the developer and to the satisfaction of the City of Carlsbad Planning Department (with concurrence by the Wildlife Agencies), through the relocation of bulbs to suitable habitat for these species including the same soil type and microhabitat characteristics as the impacted populations. A suitable open space preserve located within the same geographic region and approved by the City of Carlsbad shall be acquired by the developer for the brodiaea relocation and for San Diego thornmint preservation. An open space acquisition and restoration plan shall be prepared prior to disturbance of these species and shall be submitted to and approved by the City of Carlsbad Planning Department. This plan shall detail the relocation procedures to be used along with a 5-year maintenance and monitoring program to ensure survival.

B-2. Clearing and grading operations are prohibited within habitat where the coastal California gnatcatcher and Cooper's hawks or other native or migratory raptors may be nesting. This restriction shall occur from the January 15 beginning of the Cooper's hawks or other native or migratory raptors breeding season through the July 31 end of the coastal California gnatcatcher breeding season. Clearing may occur during this time frame if no active nests are detected or it has been established that the young have become independent of the nest. A preconstruction clearance survey shall be conducted by a qualified biologist prior to January 15 to make this determination. In addition, removal of any trees occupied by an active raptor nest must be avoided until after the nesting season (July 15). A 200-foot buffer surrounding any active raptor nest shall also be established where no clearing activities shall be allowed until the nesting

season is completed (City of Carlsbad 1995a). This measure shall be placed as a condition on the grading permit.

B-3. Both the creation and restoration/enhancement actions are required by this mitigation measure. Impacts to the ephemeral drainages shall be mitigated at a 1:1 ratio for a total of approximately 0.26 acre. Impacts to the riparian scrub/seep shall be mitigated at a ratio of 3:1 for a total of 0.63 acre. Prior to issuance of a grading plan or other disturbance to the riparian scrub/seep, a restoration plan shall be prepared by the developer and approved by the City of Carlsbad Planning Department (with concurrence by the Wildlife Agencies) prior to disturbance (including grading) of the drainage or basin areas. The plan shall include mitigation for impacts to waters of the U.S. These mitigated areas may be satisfied by contribution to an approved mitigation site, where impacts to state or federal jurisdictional waters (as defined) are mitigated in an ACOE, DFG, or RWQCB mitigation bank.

B-4. During construction, trash that could attract scavengers that could prey on sensitive wildlife must be maintained and kept to a minimum. Trash containers with animal-resistant lids must be provided on the site during construction. This measure shall be incorporated into the project.

B-5. The developer shall provide all homebuyers a list of invasive plant species (*Cal EPPC List: Exotic Pest Plants of Greatest Ecological Concern in California, October 1999* by the California Exotic Pest Plant Council (Cal EPPC)) that should not be used in landscaping. Additionally, these species shall be identified in the Covenants, Conditions, and Restrictions (CC&Rs) of the homeowners association as plants to be avoided in landscaping. Developer shall establish a homeowner's association and corresponding CC&Rs. Said CC&Rs shall be submitted to and approved by the Planning Director prior to final map approval. Prior to issuance of a building permit, the Developer shall provide the Planning Department with a recorded copy of the official CC&Rs that have been approved by the California Department of Real Estate and the Planning Director.

B-6. The homeowners, homeowner associations, and the public shall be informed prior to occupancy of ways to avoid impacts to the conserved resources through a public information program developed in cooperation with the City. The program shall include:

- Public information brochure that describes the natural resources and prohibited activities within conserved habitat; and
- Landscaping and fuel break planting brochure for homeowners and homeowner associations adjacent to conserved habitat.

5.6.5 Level of Significance after Mitigation

Vegetation Communities

Implementation of Mitigation Measure B-1 will reduce the impacts to vegetation communities to a level less than significant.

Sensitive Biological Resources

Sensitive Plant Species

Implementation of Mitigation Measure B-1 will reduce the impacts associated with sensitive plant species to a level less than significant.

Sensitive Wildlife

Implementation of Mitigation Measures B-1 and B-2 will reduce the impacts associated with sensitive wildlife to a level less than significant.

Wetland and Nonwetland Jurisdictional Waters

Implementation of Mitigation Measure B-3 will reduce the impacts to wetland and nonwetland jurisdictional waters to a level less than significant.

Indirect Impacts

Implementation of Mitigation Measures B-4, B-5, and B-6 will reduce the indirect impacts to biological resources to a level less than significant.

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5.7 HYDROLOGY/WATER QUALITY

Portions of this section are based on the *Hydrology Study for La Costa Town Square Tentative Map* (O'Day Consultants 2008a), provided in Appendix G of this EIR. In addition, Appendix H contains the *Storm Water Management Plan for La Costa Town Square Commercial* (O'Day Consultants 2009a), the *Storm Water Management Plan for La Costa Town Square Offices* (O'Day Consultants 2008b), and the *Storm Water Management Plan for La Costa Town Square Residential* (O'Day Consultants 2009b).

5.7.1 Environmental Setting

Regional Hydrologic Setting

The project site is located within the Carlsbad Hydrologic Unit (HU) (4.00). The Carlsbad HU is a triangular area of approximately 210 square miles, extending from Lake Wohlford on the east to the Pacific Ocean on the west, and from Vista on the north to Cardiff-by-the-Sea on the south. The unit, which includes the cities of Oceanside, Carlsbad, Leucadia, Encinitas, Cardiff-by-the-Sea, Vista, and Escondido, is drained by Buena Vista, Agua Hedionda, San Marcos, and Escondido creeks. The Carlsbad HU contains four major coastal lagoons: Buena Vista, Agua Hedionda, Batiquitos, and San Elijo.

All major drainage basins in the San Diego region contain groundwater basins. The basins are relatively small in area and usually shallow. Although these groundwater basins are limited in size, the groundwater yield from the basins has been historically important to the development of the region. A number of the larger groundwater basins can be of future significance to the region for storage of both imported waters and reclaimed wastewaters. Nearly all of the local groundwaters of the region have been intensively developed for municipal and agricultural supply purposes.

Project Site Hydrologic Setting

Surface Water

The project site is located within the San Marcos Hydrologic Area (HA) (4.50) and Batiquitos Lagoon watershed (4.51), a hydrologic subarea (HSA) of the Carlsbad HU, San Marcos HA. The Batiquitos Lagoon HSA is divided into two major drainage basins known as the San Marcos Creek watershed and the Encinitas Creek watershed. The two predominant watercourses in the vicinity of the project site are San Marcos Creek (a perennial stream) and Encinitas Creek (an intermittent stream). San Marcos Creek is located to the north of the project and flows west. Encinitas Creek is located to the southeast of the project and drains to the south. Surface runoff from the project site ultimately enters Encinitas Creek, which runs to Batiquitos Lagoon in Carlsbad before entering the Pacific Ocean. Existing 100-year flows in Encinitas Creek are estimated to be 1,025 cubic feet per second (cfs).

Groundwater

According to the RWQCB Basin Plan for the San Diego Region (California RWQCB 1994), the project site does not overlay a groundwater basin with beneficial uses as described below, nor is any part of downstream areas located above a groundwater basin with beneficial uses.

Beneficial Uses

Beneficial uses of groundwater and surface water resources have been established for each water body within the San Diego County Region. According to the Basin Plan:

> Beneficial uses are defined as the uses of water necessary for the survival or well being of man, plants, and wildlife. These uses of water serve to promote the tangible and intangible economic, social, and environmental goals of mankind. Examples include drinking, swimming, industrial and agricultural water supply, and the support of fresh and saline aquatic habitats.

According to the Basin Plan, beneficial uses have been designated for specific coastal water bodies, inland surface waters, and groundwaters.

In 1972, the SWRCB adopted a uniform list and description of beneficial uses to be applied throughout all basins of California. During the 1994 Basin Plan update, beneficial use definitions were revised and new beneficial uses were added. These beneficial uses are now defined statewide and are designated within the San Diego Region. The beneficial uses identified in this section apply to Encinitas Creek and Batiquitos Lagoon. **Table 5.7-1** depicts the beneficial uses of each of the two water bodies. Terms used in **Table 5.7-1** are defined below.

Table 5.7-1
Beneficial Uses of Project Affected Watersheds

	Inland Surface Waters	**Coastal Waters**
Beneficial Uses	**Encinitas Creek**	**Batiquitos Lagoon**
MUN	+	
AGR	√	
REC-1	√	√
REC-2	√	√
BIOL		√
EST		√
WARM	√	
WILD	√	√
RARE		√
MAR		√
MIGR		√
SPWN		√

Notes: √ Existing Beneficial Use
+ Indicates that the water body has been exempted by the Regional Board from the municipal use designation under the terms and conditions of State Board Resolution No. 88-63, "Sources of Drinking Water" Policy. Specifically, Resolution No. 89-33 provides an initial list of surface and groundwater hydrologic units (HUs), areas (HAs), and subareas (HSAs) which the Regional Board has previously determined do not support the MUN or "Sources of Drinking Water" designation. Since 1989, additional areas have also been identified as exceptions to the "Sources of

Drinking Water" Policy. These ground and surface water HUs, HAs, and HSAs are identified with a "+" in the table above.

Municipal and Domestic Supply (MUN). Includes uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.

Agricultural Supply (AGR). Includes uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.

Contact Water Recreation (REC-1). Includes uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and SCUBA diving, surfing, white water activities, fishing, or use of natural hot springs.

Non-Contact Water Recreation (REC-2). Includes the use of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tide pool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.

Preservation of Biological Habitats of Special Significance (BIOL). Includes water that supports designated areas of habitats, such as established refuges, parks, sanctuaries, ecological reserves, or Areas of Special Biological Significance (ASBS), where the preservation or enhancement of natural resources requires special protection.

Estuarine Habitat (EST). Includes water that supports estuarine ecosystems including, but not limited to, preservation or enhancement of estuarine habitats, vegetation, fish, shellfish, or wildlife (e.g., estuarine mammals, waterfowl, shorebirds).

Warm Freshwater Habitat (WARM). Includes water that supports warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

Wildlife Habitat (WILD). Includes water that supports terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife, (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.

Rare, Threatened, or Endangered Species (RARE). Includes water that supports habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened, or endangered.

Marine Habitat (MAR). Includes water that supports marine ecosystems including, but not limited to, preservation or enhancement of marine habitats, vegetation such as kelp, fish, shellfish, or wildlife (e.g., marine mammals, shorebirds).

Migration of Aquatic Organisms (MIGR). Includes water that supports habitats necessary for migration, acclimatization between fresh and salt water, or other temporary activities by aquatic organisms, such as anadromous fish.

Spawning, Reproduction, and/or Early Development (SPWN). Includes water that supports high-quality aquatic habitats suitable for reproduction and early development of fish. This use is applicable only for the protection of anadromous fish.

Impaired Waterbodies

Section 303(d) of the federal CWA requires states to identify waterbodies that do not meet water quality standards and are not supporting their beneficial uses. These waters are placed on the Section 303(d) List of Impaired Waterbodies. Placement on this list triggers development of a pollution control plan called a

Total Maximum Daily Load (TMDL) for each waterbody and associated pollutant/stressor on the list. The list establishes a schedule for developing a control plan to address the impairment. California's 2006 Section 303(d) List of Water Quality Limited Segments is the most current approved list. A 2008 update to the list is underway.

Encinitas Creek is included on the 2006 California 303(d) List of Impaired Waterbodies. It is listed for phosphorus. Phosphorus is a nutrient; excess phosphorus is a concern because it stimulates the growth of algae. Excessive algal growth, death, and decay can severely deplete oxygen supplies in water, endangering fish and other forms of aquatic life.

Legal Basis and Authority

Federal and state laws have been enacted that establish the requirements for adequate planning, implementation, management, and enforcement for the control of water quality. The principal federal and state laws pertaining to the regulation of water quality are the 1972 Federal Water Pollution Control Act, or subsequently known as the CWA, and Division 7 of the 1969 California Water Code, Porter-Cologne Water Quality Control Act. CWA is the primary federal statute governing the protection of water quality and was established to provide a comprehensive program to protect the nation's surface waters and was passed in 1948 with subsequent amendments in 1972 and 1987. The Porter-Cologne Water Quality Control Act (California Water Code Section 13000 et seq.) is California's statutory authority for the protection of water quality. The SWRCB and nine RWQCBs are responsible for ensuring implementation and compliance with the provisions of the federal CWA and California's Porter-Cologne Act. Along with the SWRCB and RWQCBs, water quality protection is the responsibility of numerous water supply and wastewater management agencies, as well as city and county governments, and requires the coordinated efforts of these various entities. In addition, federal and state regulations and policies have been developed to augment and clarify the laws and to provide detail not included in the laws discussed above.

Certain statutory provisions in two other federal laws, the National Environmental Policy Act of 1969 and the Endangered Species Act, supplement the CWA. Federal regulations implementing the CWA provisions for water quality planning and management are contained in 40 CFR 130, *EPA Requirements for Water Quality Planning and Management* and 40 CFR 131, *EPA Procedures for Approving State Water Quality Standards*.

The objective of the CWA is to "restore and maintain the chemical, physical and biological integrity of the Nation's waters" to make all surface waters "fishable" and "swimmable." The seven goals set forth in the law to achieve this objective are to:

1. Eliminate the discharge of pollutants to navigable waters by 1985;
2. Provide water quality which protects and fosters propagation of fish, shellfish and wildlife and allows recreation in and on the water by 1983;
3. Prohibit discharge of toxic pollutants in toxic amounts;
4. Provide financial assistance to construct publicly owned treatment systems;
5. Develop and implement area wide waste treatment management plans;
6. Develop technology necessary to carry out these goals; and
7. Develop and implement programs for control of non point sources of pollution.

The CWA also established the National Pollutant Discharge Elimination System (NPDES) in 1972, which contains effluent limitation guidelines, water quality requirements, and permit program requirements for discharges to waters of the U.S. The CWA allows the EPA to delegate NPDES permitting authority to states with approved environmental regulatory programs. California is one of the delegated

states. The NPDES permits relative to this project are the General Construction Storm Water Permit and the regional General Municipal Storm Water Permit.

General Construction Storm Water Permit

Pursuant to Section 402(p)(4), the EPA promulgated regulations for NPDES permit applications for discharges. On November 16, 1990, the EPA published final regulations that prohibit storm water discharge to waters of the U.S. from construction projects that encompass 5 or more acres of soil disturbance, unless the discharge is in compliance with a NPDES Permit. These regulations, known as the Phase I regulations (Title 55 FR 47990), rely on NPDES permit coverage to address storm water runoff from (1) operators of medium[1] and large[2] Municipal Separate Storm Sewer Systems (MS4s), (2) construction activity disturbing 5 acres of land or greater, and (3) 10 categories of industrial activity. On December 8, 1999, the EPA promulgated regulations known as Phase II. The regulations set forth in the Storm Water Phase II Final Rule (Title 64 FR 68722) require permits for discharges from operators of small[3] MS4s and from construction sites disturbing at least 1 acre of land. Phase II is intended to further reduce adverse impacts to water quality in receiving waters and aquatic habitats by instituting controls on the unregulated sources of storm water discharges that have the greatest likelihood of continued environmental degradation.

The SWRCB Order No. 99-08, NPDES General Permit No. CAS000002, General Permit for Stormwater Discharges Associated with Construction Activity, is the current general stormwater construction activity permit for the State of California and the RWQCB. This permit was modified and reissued on August 19, 1999, based on a court challenge by the San Francisco, Santa Monica, San Diego, and Orange CoastKeeper and BayKeeper groups. The Court issued a judgment and directed the SWRCB to modify the provisions of the General Permit, in part, to require

[1] An incorporated place or county with a population of 100,000 to 249,999.
[2] An incorporated place or country with a population of 250,000 or greater.
[3] An MS4 that is not permitted under the municipal Phase I regulations, and which is "owned or operated by the United States, a state, city, town, parish, district, association, or other public body (created by or pursuant to state law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes" (40 CFR Section 122.26(6)(16)).

permittees to implement specific sampling and analytical procedures related to BMPs implemented on the construction site. BMPs must (1) prevent further impairment by sediment in storm waters discharged directly into waters listed as impaired for sediment or silt; and (2) prevent other pollutants, that are known or should be known by permittees to occur on construction sites and that are not visually detectable in storm water discharges, from causing or contributing to exceedances of water quality objectives. Based on the Court's direction, the two areas of the permit that were modified were the Storm Water Pollution Prevention Plan (SWPPP) and the Monitoring Program and Reporting Requirements portions of the permit.

Specific conditions of the NPDES permit that may directly affect the planning and design requirements of the proposed project are:

- Develop and implement storm water and receiving water monitoring programs to evaluate discharges of pollutants from storm water conveyance systems to any receiving waters.
- Develop and implement an illicit connection/illegal discharge detection program to identify and eliminate non-storm water discharges to storm water conveyance systems.
- To the maximum extent practicable, develop and implement BMPs to control discharges of pollutants to any receiving waters.
- Implement an annual analysis of the effectiveness of the overall storm water pollution control management program.

To be in compliance with the Permit, all projects involving 1 acre or more of soil disturbance require NPDES permits, which must include the following:

- Notice of Intent (NOI). Certification to be signed by owner of the construction site and submitted to the SWRCB with the associated fee.
- SWPPP. Required elements of a SWPPP include (1) Site description addressing the elements and characteristics specific to the site; (2)

Descriptions of BMPs for erosion and sediment controls; (3) BMPs for construction waste handling and disposal; (4) Implementation of approved local plans; (5) Proposed post-construction controls, including description of local post-construction erosion and sediment control requirements and post-construction BMPs; (6) Non-storm water management; (7) Identify a sampling and analysis strategy and sampling schedule for discharges from construction activity which discharge directly into water bodies listed on the 303(d) list of impaired water bodies; and (8) For all construction activity, identify a sampling and analysis strategy and sampling schedule for pollutants, which are not visually detectable in storm water discharges, which are known to occur on the construction site, and which could cause or contribute to an exceedance of water quality objectives in the receiving waters.

- Monitoring Program and Reporting Requirements. These requirements include inspection of prevention measures, record keeping and annual certification of compliance, initially due July 1, 1993, and then subsequently each July 1st thereafter. Dischargers of storm water associated with construction activity that directly enters a water body listed on the 303(d) list of impaired water bodies for sediment must conduct a sampling and analysis program for the pollutants (sedimentation, siltation, or turbidity) causing the impairment. In addition, a sampling and analysis plan must be developed for no visible pollutants to address potential discharges should specific conditions warrant as defined in the permit. Discharges that flow through tributaries that are not listed on the 303(d) list of impaired water bodies or that flow into MS4 are not generally subject to these sampling and analysis requirements.

General Municipal Storm Water Permit

The RWQCB adopted an areawide Municipal Storm Water Permit, Order No. R9-2007-0001 (previously 2001-01), NPDES No. CAS0108758, "Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Water Sewer Systems (MS4) Draining the Watersheds of the County of San Diego,

the Incorporated Cities of San Diego County and the San Diego Unified Port District, and the San Diego County Regional Airport Authority" (adopted January 24, 2007). Under an areawide Municipal Storm Water Permit, copermittees[4] are ultimately held responsible for everything in their storm water conveyance systems, including industrial and construction storm water runoff. Order No. R9-2007-0001 contains requirements for the control of pollutants resulting from storm water and urban runoff from all municipalities and agencies within its jurisdiction.

As the MS4 permit is an NPDES permit, which is updated, revised, and reviewed every 5 years, the 2007 permit has added significant requirements to the previous permit, which was adopted in November 2001. Under the previous permit, the RWQCB specifically required copermittees to:

> Inventory existing storm water pollution control programs, illicit discharge detection programs, monitoring programs and data, storm water conveyance system maps, land use maps, and existing laws, ordinances, and codes giving the dischargers the authority to implement and enforce storm water pollution control programs in their areas of jurisdiction and where necessary, promulgate the authority to carry out all functions of the storm water management programs.

The revised 2007 permit maintains the purpose and intent of the previous permit; however, it expands on the requirements to facilitate a more effective storm water management program at local and regional levels. One of the key components of the updated permit is the specific requirement for municipalities to require projects to incorporate Low-Impact Development (LID) principles into their plans. LID concepts were previously encouraged and often required through the review

[4] Copermittees to Order No. R9-2007-0001 are dischargers of runoff. The 21 copermittees are the 18 incorporated cities in San Diego County, the County of San Diego, the San Diego Unified Port District, and the San Diego County Regional Airport Authority. Utilizing their land use authority, copermittees authorize and realize benefits from the urban development, which generates the pollutants and runoff that impair receiving waters. Since the copermittees utilize their legal authority to authorize urbanization, they must also exercise their legal authority to ensure that the resulting increased pollutant loads and flows do not further degrade receiving waters.

of site design BMPs and types of treatment BMPs; however, the revised permit establishes a specific requirement for compliance. Additional substantive changes that may affect individual projects are summarized below.

The 2007 permit includes significant modifications that have been made to Order No. 2001-01 (previous iteration of the MS4 permit). These significant modifications include:

- Treatment control BMPs selected for implementation at Priority Development Projects must have a high or medium pollutant efficiency rating.

- Municipalities must ensure that approved treatment control BMPs are correctly constructed and maintained, including the development of a database.

- Municipalities must prepare and implement a Hydromodification Management Plan. This Plan shall address the changes in a watershed's runoff characteristics resulting from development, together with associated morphological changes to channels receiving the runoff. These changes are defined as "hydromodification."

- Phased grading is required for construction projects. The municipalities must determine the Maximum Disturbed Area allowed to be graded at any time.

- Advanced Treatment is required for construction. When municipalities determine that sediment from construction sites is an exceptional threat to water quality, they may require runoff to be treated.

The municipal storm water permit requires copermittees to utilize planning procedures, including a master plan, to develop, implement, and enforce controls to reduce the discharge of pollutants from MS4s that receive discharges from areas of new development and significant redevelopment. The permit addresses controls to reduce pollutants in discharges from MS4s after construction is

completed. With respect to land use planning for new development and redevelopment, at a minimum each copermittee is required to assess its general plan, modify development project approval processes, revise environmental review processes, and conduct education efforts focused on new development and redevelopment to minimize the short- and long-term impacts on receiving water quality.

As part of modifying development project approval processes, the previous permit included a requirement for each copermittee to develop a Standard Urban Storm Water Mitigation Plan (SUSMP). The purpose of a SUSMP is to define programs to reduce the negative impacts to receiving waters resulting from urban runoff. The SUSMP defines both standard and "priority project" BMP requirements. Priority projects must incorporate permanent storm water BMPs into the project design, including site design and source control BMPs, BMPs applicable to individual priority project categories, and treatment control BMP requirements. Per the SUSMP, priority projects must prepare and submit a Water Quality Technical Report (WQTR) or Storm Water Management Plan (SWMP). Under the 2001 iteration of the MS4 permit, the City of Carlsbad Public Works Department published an SUSMP. The document is the guiding manual for construction and permanent storm water BMPs that are required by the City of Carlsbad.

The SUSMP requires developers to prepare an SWMP that includes an analysis of the project's anticipated and potential pollutants of concern, pollutants of concern in downstream receiving waters, conditions of concern, and proposed BMPs to reduce storm water flows and the associated pollutant loads generated from their project site. The BMPs must include source control BMPs, site design BMPs, and treatment BMPs. The permit also included a requirement for treatment BMPs to achieve water quality treatment quantities through specific numeric sizing criteria. This would require post-construction BMPs to treat, infiltrate, or filter a specific quantity (flow or volume) of water, helping to facilitate pollutant removal and water quality protection and runoff control.

Best Management Practices

BMPs are generally used at two different stages of a development project. BMPs are used in the short term during construction and in the long term during operation of a particular facility. BMPs are subdivided into source control, site design, and treatment BMPs. As the name implies, source control BMPs are designed to prevent pollution of storm water. Site design BMPs are planning and design features that facilitate LID principles and reduce the need for end-of-pipe and mechanical treatment, and treatment BMPs are used to treat runoff pollution. The most practical approach is to use source control BMPs and site design BMPs as the primary system, and treatment BMPs as the secondary system. Treatment BMPs are more effective and efficient when used to handle pollutants that get past the source control and site design BMPs.

5.7.2 Thresholds for Determining Significance

Appendix G of the CEQA Guidelines is used to provide direction for determination of a significant hydrology or water quality impact from the proposed project. For the purposes of this EIR, a significant impact would occur if the proposed project would:

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation onsite or offsite;

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream, bioswale, or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite;

- Create or contribute runoff water that would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff;

- Have a potentially significant environmental impact on surface water quality, to either marine, fresh, or wetland waters, or result in an increase in pollutant discharges to receiving waters;

- If tributary to an already impaired water body (as listed on the CWA Section 303(d) list) which would result in an increase in any pollutant for which the water body is already impaired; or

- Cause or contribute to an exceedance of applicable surface or groundwater receiving water quality objectives or degradation of beneficial uses.

5.7.3 Environmental Impact

The proposed project involves the construction of a mixed-use center that includes a community shopping center, single-family detached residential units, and multifamily residential units, encompassing approximately 83 acres. Implementation of the proposed project would result in changes to the topographical conditions of the area and development of the site. Because a majority of the project site is in its natural condition, a substantial increase in impervious surfaces and corresponding storm water runoff volume is anticipated. Of the approximately 83-acre project site, a majority of the site will be graded and developed with commercial and residential uses with supporting infrastructure. Approximately 9.1 acres will be preserved for open space. The project estimates that approximately 22 percent of the multifamily parcels, 20 percent of the single-family parcel, and 73 percent of the commercial parcel will be impervious. Overall, approximately 51 percent of the total project area will be impervious surfaces.

Onsite or Offsite Erosion or Siltation

Implementation of the proposed project would include the use of machinery and materials handling and storage (e.g., gravel, asphalt) during all phases of the proposed project. These activities would entail the use of graders and other earthmoving equipment during initial site preparation. The use of this machinery and other vehicles would generate dust and would require the use of water trucks to meet fugitive dust requirements. The use of these water trucks increases the potential for silt to exit the project site and enter the watershed in the project vicinity (Encinitas Creek watershed). Increased erosion may also occur due to construction activities and the modification and/or filling and rerouting of existing drainage patterns. Therefore, the proposed project has the potential to result in significant adverse impacts related to erosion and siltation. Mitigation Measure WQ-1 will require that an erosion control plan be approved by the City Engineering Department prior to issuance of a grading permit for the project. Implementation of this mitigation measure will reduce the potential impacts from erosion and siltation to a level less than significant.

Flooding and Storm Water Drainage System Capacity

Because the site is currently undeveloped, the project includes new storm drains, curbs, and gutters to capture and direct flows into two detention basins, which are incorporated in the project site plan to regulate the flow rate of water being discharged. The new storm drains will be connected to existing storm drains that currently underlie the street alignments bordering the project site. The westerly portion of the site will be directed into vegetated swales and by private storm drains into an onsite detention basin located along the northerly right-of-way of La Costa Avenue. The easterly portion of the site will flow through vegetated swales along the eastern boundary of the commercial site, or along La Costa Avenue, prior to combining with storm water from the residential portion of La Costa Town Square and various portions of Villages of La Costa (the Oaks) and flow into the existing detention basin built with the Oaks project. These detention basins are designed to prevent an increase in downstream flows resulting from this

development. Most of the drainage system will be private, with some owned by the City of Carlsbad.

All surface runoff and storm water collected by the proposed drainage system will ultimately connect to existing City of Carlsbad storm drains in the public right-of-way, eventually discharging into Encinitas Creek, which flows into Batiquitos Lagoon and then the Pacific Ocean.

Table 5.7-2 shows the existing and proposed project runoff from the project site by tributary area. A basin refers to a tributary area that is part of the project site, which drains to an existing storm drain.

Table 5.7-2
Runoff to Existing and Proposed Detention Basins

Existing		Proposed	
Basin A	Q=91.8 CFS	Basin 1	Q=144.7 CFS*
Basin B	Q=73.4 CFS	Basin 3	Q=28.3 CFS
Basin C	Q=54.8 CFS	Basin A	Q=42.2 CFS
Total	Q=220.0 CFS	**Total**	Q=215.2 CFS

* This flow goes into the existing detention basin upstream from Camino de los Coches.

As shown in **Table 5.7-2**, the total runoff from the site in its existing undeveloped conditions is 220.0 cfs. Total runoff from the site in its proposed developed conditions would be 215.2 cfs. Runoff to two of the existing storm drain systems would be reduced; one of the systems is reduced by the use of an onsite detention basin and the other by diverting flow to proposed Tributary Area 1. Although runoff to a third existing storm drain would be increased, the flow would be directed into a larger detention basin built as part of the Villages of La Costa Project. This detention basin was designed to accommodate flows from the project site. Storm water flows from the project site will not exceed the capacity of the existing storm drain system and, therefore, project impacts related to the capacity of the storm drain system would be less than significant.

As shown above in **Table 5.7-2,** the proposed project would result in less runoff from the site than under existing conditions through the incorporation of the detention facilities that are part of the project design. Therefore, the proposed project would not result in increased flooding onsite or offsite and impacts related to flooding would be less than significant.

Bioswales

A bioswale is a shallow depression created in the earth to accept and convey stormwater runoff. A bioswale uses natural means, including vegetation and soil, to treat stormwater by filtering out contaminants being conveyed in the water. Bioswales are used as design features and are intended to minimize pollutant transport and improve water quality. The bioswales for the proposed project include subdrains and deepened edge footings to reduce the risk of the undermining of, and water migration beneath, the adjacent hardscape, which will reduce the risk of potential adverse effects on adjacent hardscape features. Based on the proposed locations of the vegetated swales and present subsurface conditions, it is unlikely that substantial quantities of water entering the bioswales will migrate into the borrow pit underlying Rancho Santa Fe Road.

Water Quality

With regard to general water quality impacts from storm water and other runoff, the various pollutants potentially generated on the project site may adversely affect water quality in a variety of ways. A summary of the general adverse environmental effects that can result from the most common pollutant categories is provided below, and potential project impacts related to construction and post-construction conditions are described in the following sections. The project site would have the potential to produce the following pollutants:

- **Sediments** – Sediments are soils or other surface materials eroded and then transported or deposited by the action of wind, water, ice, or gravity. Sediments can increase turbidity, clog fish gills, reduce spawning habitat,

lower young aquatic organisms' survival rates, smother bottom dwelling organisms, and suppress aquatic vegetation growth. Sediments are typically a concern during the construction phase of a project.

- **Nutrients** – Nutrients are inorganic substances, such as nitrogen and phosphorus. They commonly exist in the form of mineral salts that are either dissolved or suspended in water. Primary sources of nutrients in urban runoff are fertilizers and eroded soils. Excessive discharge of nutrients to water bodies and streams can cause excessive aquatic algae and plant growth. Such excessive production, referred to as eutrophication, may lead to excessive decay of organic matter in the water body, loss of oxygen in the water, release of toxins in sediment, and the eventual death of aquatic organisms.

- **Metals** – Metals are raw material components in nonmetal products such as fuels, adhesives, paints, and other coatings. Primary sources of metal pollution in storm water are typically commercially available metals and metal products. Metals of concern include cadmium, chromium, copper, lead, mercury, and zinc. Lead and chromium have been used as corrosion inhibitors in primer coatings and cooling tower systems. At low concentrations that naturally occur in soils, metals are not toxic. However, at higher concentrations, certain metals can be toxic to aquatic life. Humans can be impacted from contaminated groundwater resources and bioaccumulation of metals in fish and shellfish. Environmental concerns regarding the potential for release of metals to the environment have already led to restricted metal usage in certain applications.

- **Organic Compounds** – Organic compounds are carbon based. Commercially available or naturally occurring organic compounds are found in pesticides, solvents, and hydrocarbons. Organic compounds can, at certain concentrations, indirectly or directly constitute a hazard to life or health. When rinsing off objects, toxic levels of solvents and cleaning compounds can be discharged to storm drains. Dirt, grease, and grime

retained in the cleaning fluid or rinse water may also adsorb levels of organic compounds that are harmful or hazardous to aquatic life.

- **Trash and Debris** – Trash (such as paper, plastic, polystyrene packing foam, and aluminum materials) and biodegradable organic matter (such as leaves, grass cuttings, and food waste) are general waste products that may have a significant impact on the recreational value of a water body and aquatic habitat. Excess organic matter can create a high biochemical oxygen demand in a stream and thereby lower its water quality. Also, in areas where stagnant water exists, the presence of excess organic matter can promote septic conditions resulting in the growth of undesirable organisms and the release of odorous and hazardous compounds such as hydrogen sulfide.

- **Oxygen Demanding Substances** – This category includes biodegradable organic material as well as chemicals that react with dissolved oxygen in water to form other compounds. Proteins, carbohydrates, and fats are examples of biodegradable organic compounds. Compounds such as ammonia and hydrogen sulfide are examples of oxygen demanding compounds. The oxygen demand of a substance can lead to depletion of dissolved oxygen in a water body and possibly the development of septic conditions.

- **Oil and Grease** – Oil and grease are characterized as high molecular weight organic compounds. Primary sources of oil and grease are petroleum hydrocarbon products, motor products from leaking vehicles, esters, oils, fats, waxes, and high molecular-weight fatty acids. Introduction of these pollutants to the water bodies is typical due to the wide uses and applications of some of these products in municipal, residential, commercial, industrial, and construction areas. Elevated oil and grease content can decrease the aesthetic value of the water body, as well as the water quality.

- **Bacteria and Viruses** – Bacteria and viruses are ubiquitous microorganisms that thrive under certain environmental conditions. Their proliferation is typically caused by the transport of animal or human fecal wastes from the watershed. Excessive bacteria and viruses in water can alter the aquatic habitat and create a harmful environment for humans and aquatic life. The decomposition of excess organic waste causes increased growth of undesirable organisms in the water.

- **Pesticides** – Pesticides (including herbicides) are chemical compounds commonly used to control nuisance growth or prevalence of organisms. Excessive application of a pesticide may result in runoff containing toxic levels of its active component.

Project construction has the potential to result in substantial additional sources of polluted runoff, which could have short-term impacts on surface water quality through activities such as demolition, clearing and grading, excavation of undocumented fill materials, stockpiling of soils and materials, concrete pouring, painting, and asphalt surfacing. Project construction would involve various types of equipment such as dozers, scrapers, graders, loaders, compactors, dump trucks, cranes, water trucks, and concrete mixers. Stockpiled soils and other construction materials for use during later construction phases would be stored outdoors during construction. Pollutants associated with these construction activities that could result in water quality impacts include soils, debris, other materials generated during demolition and clearing, fuels and other fluids associated with the equipment used for construction, paints, other hazardous materials, concrete slurries, and asphalt materials.

These pollutants could impact water quality if they are washed offsite by storm water or non-storm water, or are blown or tracked offsite to areas susceptible to wash-off by storm water or non-storm water. Pollutants washed offsite would be discharged through the City of Carlsbad storm drain system to Encinitas Creek and eventually Batiquitos Lagoon. Sediment is the most common pollutant associated with construction sites because of the associated earth-moving activities and areas of exposed soil. Sediment that is washed offsite can result in turbidity in

receiving waters that can impact aquatic species. In addition, when sediment is deposited into receiving waters, it can smother species, alter the substrate and habitat, and alter the drainage course. Hydrocarbons such as fuels, asphalt materials, and oils, and hazardous materials such as paints and concrete slurries discharged from the site could impact aquatic plants and animals downstream. Debris and trash discharged from the site could be washed offsite via existing storm drainage channels to downstream receiving waters and could impact wildlife as well as aesthetic value of water bodies.

In addition, when installed, landscaping could also result in water quality impacts due to the use of fertilizers. If fertilizers are discharged, they could adversely affect aquatic plants and animals downstream in receiving waters through a reduction in oxygen levels and increased eutrophication. Eutrophication is the process of over-enrichment of nutrients in a water body, fostering an increase in biotic life that results in a significant loss of dissolved oxygen. Therefore, the proposed project has the potential to result in significant adverse impacts related to overall water quality. It should be noted, however, that applicable standards of the NPDES permit for the San Diego County area shall be met prior to project implementation.

The proposed project has prepared an SWMP that defines in detail the post-construction BMPs to be implemented for the proposed project. The SWMP provides all information as required by the City of Carlsbad SUSMP.

In the SWMP, the proposed project designs and incorporates the current BMPs using Best Available Technologies/Best Conventional Technologies (BAT/BCT) available at this time for pollution control and erosion/sediment control, as referenced in the *California Storm Water Best Management Practices Handbook for Construction, New Development and Redevelopment* (California Storm Water Quality Association 2003) and meeting all regulatory standards. Examples of BMPs, and BAT/BCTs, include but are not limited to:

<u>Construction</u>

- Project phasing of grading and development

- Preservation of existing vegetation to the maximum extent practicable
- Stabilized construction entrances and exits
- Desilting basins for pollutant and siltation control during construction (resource based if possible)
- Geotextiles and mats for erosion control during construction
- Storm drain inlet/outlet protections for siltation control
- Slope drains for erosion control
- Silt fences/sand bag barriers for siltation control
- Materials and waste management

Post-construction

- Energy dissipation structures and riprap at storm water discharge points to stabilize flow and reduce velocities
- Mulching cleared or freshly seeded areas for erosion/sedimentation control
- Storm drain inlet/outlet protections for siltation control
- Use of low-water requirement vegetation in landscaping
- Selection of slope planting species with low fertilization requirements
- Requirement that permanent (or temporary per City direction) irrigation systems be inspected on a regular basis and properly maintained
- Bioswales and landscaped areas for runoff filtration
- Detention basins for flow control and sedimentation

The proposed project will comply with all requirements of the San Diego MS4 Permit per SWRCB Order No. R9-2007-0001 (NPDES Permit No. CAS0108758), Order 99-08 (General Construction Permit CAS000002), and any other applicable NPDES order. In accordance with such permits, a SWPPP and a Monitoring Program Plan shall be developed prior to issuance of grading permits, and a complete and accurate NOI shall be filed with the SWRCB, meeting all regulatory standards. A copy of the acknowledgement from the SWRCB that an NOI has been received

for the proposed project shall be filed with the City when received. A copy of the completed NOI from the SWRCB showing the construction permit number for the proposed project also shall be filed with the City when received. BMPs shall be included in the SWPPP and shall be designed in accordance with standards for SWPPPs, as outlined in the general permit.

In addition, Mitigation Measure WQ-3 would require all sales or leases to include, through CC&Rs, language to enforce proper removal of toxic and hazardous waste products, agreements not to discharge toxic chemicals or fluids into any street or storm drain system, adherence to all laws for use of chemical landscaping treatments, and BMPs to reduce surface pollutants. Implementation of Mitigation Measures WQ-3 and the requirements as defined above reduce the potential for water quality impact from the project to a level less than significant.

Listed Impaired Water Bodies

As previously described, the proposed project has the potential to impact water bodies (through pollutant discharges, erosion, and sedimentation). Therefore, the proposed project has the potential to contribute to the increased impairment of Encinitas Creek, a California Section 303(d)-listed waterbody. This potential impact would be considered significant. Implementation of Mitigation Measures WQ-1 and WQ-2 and the requirements as defined above in Water Quality will reduce this potential impact to a level less than significant.

Groundwater

As described earlier, the specific project site is not underlain by a groundwater basin that is of beneficial use, nor is any other downstream area underlain by beneficial use groundwater, based on review of the Basin Plan. Therefore, the project would not result in impacts to beneficial use groundwater resources.

However, limited nonbeneficial use groundwater (such as seeps or perched groundwater) may be encountered during construction in alluvial areas or stream drainages. Also, construction activities in areas underlain by granitic bedrock or

decomposed granite may encounter limited groundwater in fractures or other porous zones. Potential impacts to these limited nonbeneficial groundwater resources would be less than significant.

5.7.4 Mitigation Measures

Mitigation measures to reduce impacts related to erosion/sedimentation, water quality, and impaired water bodies include:

WQ-1. Prior to issuance of a grading permit, the applicant shall prepare and submit for review and approval of the Carlsbad City Engineer, a Storm Water Pollution Prevention Program (SWPPP) to demonstrate that pollutants will be controlled through compliance with the City of Carlsbad Standard Urban Stormwater Mitigation Plan (SUSMP), General Construction Stormwater Permit (Order No. 99-08, NPDES CAS000002), and the General Municipal Stormwater Permit (Order No. R9-2007-0001, NPDES CAS0108758). The applicant shall be responsible for monitoring and maintaining the BMP erosion control measures identified below on a weekly basis in accordance with the City's grading and erosion control requirements (Municipal Code Section 15.16. et seq.). The locations of all erosion control devices shall be noted on the grading plans. BMPs that shall be installed include, but are not limited to, the following:

- Silt fence, fiber rolls, or gravel bag berms
- Check dams
- Street sweeping and vacuuming
- Storm drain inlet protection
- Stabilized construction entrance/exit
- Hydroseed, soil binders, or straw mulch
- Containment of material delivery and storage areas
- Stockpile management
- Spill prevention and control
- Waste management for solid, liquid, hazardous, and sanitary waste-contaminated soil
- Concrete waste management

WQ-2a. Prior to issuance of permits or approvals for any public or private right-of-way improvements or site development plans, the developer shall prepare and submit for review and approval of the Carlsbad City Engineer, improvement plans that demonstrate that pollutants will be controlled through compliance with the City of Carlsbad SUSMP and Stormwater Management Program (SWMP). Approval of such plans shall be subject to a determination by the Carlsbad City Engineer that the proposed project has incorporated the post-development water quality pollution control site design BMPs, source control BMPs, and structural treatment control BMPs identified below into the project design to the maximum extent practicable:

- Street sweeping
- Inlet basin labeling
- Filtering bioretention units
- Pervious pavement
- Vegetated swales
- Detention/infiltration basins
- Covered trash enclosures

WQ-2b. Project shall be required to show that it complies with the applicable hydromodification provisions of Order R9-2007-0001 and is designed so that post-project runoff flow rates and directions do not exceed pre-project runoff flow rates and directions for applicable design storms.

WQ-3. In conjunction with the sale, rental or lease of a residence or business property, all prospective owners and tenants shall be notified in writing through Covenants, Conditions, and Restrictions (CC&Rs) that they shall:

a. Establish or work with established disposal programs for the removal and proper disposal of toxic and hazardous waste products.

b. Not discharge or cause to be discharged any toxic chemicals or hydrocarbon compounds, such as gasoline, motor oil, antifreeze,

solvents, paints, paint thinners, wood preservatives and other such fluids, into any public or private street or into any storm drain or storm drain conveyance.

c. Use and/or dispose of all pesticides, fungicides, herbicides, insecticides, fertilizers, and other such chemical treatments in accordance with federal, state, County, and City requirements as prescribed on their respective containers.

d. Employ BMPs to eliminate or reduce surface pollutants when planning any changes to the landscaping and/or surface improvements.

Developer shall establish a homeowner's association and corresponding CC&Rs. Said CC&Rs shall be submitted to and approved by the Planning Director prior to final map approval. Prior to issuance of a building permit, the Developer shall provide the Planning Department with a recorded copy of the official CC&Rs that have been approved by the California Department of Real Estate and the Planning Director.

5.7.5 Level of Significance after Mitigation

Onsite or Offsite Erosion or Siltation

Implementation of Mitigation Measure WQ-1 will require that an erosion control plan will be reviewed and approved prior to issuance of a grading permit for the project. This would reduce potential impacts from runoff to result in substantial erosion or siltation onsite or offsite to a level less than significant.

Water Quality

Implementation of Mitigation Measure WQ-2 will require occupants of the project premises to be notified through recorded CC&Rs of specific measures required for avoidance of water quality impacts. This requirement and standard SWMP and

BMP requirements will reduce potential impacts to surface water quality or potential pollutant discharges to receiving waters to a level less than significant.

Listed Impaired Water Bodies

Implementation of Mitigation Measure WQ-2 and standard SWMP and BMP requirements will reduce potential impacts from discharge of pollutants to listed impaired water bodies to a level less than significant.

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5.8 GEOLOGY AND SOILS

Portions of the following section are summarized from the following geotechnical reports:

- *Review of DRAFT Tentative Map, La Costa Town Center-Commercial Area East of Rancho Santa Fe Road, APN 223-050-68 and 223-060-31, La Costa, City of Carlsbad, California* (February 21, 2000). (GeoSoils, Inc. 2000a) (Appendix I)

- *Update Preliminary Geotechnical Report, La Costa Town Center, La Costa Avenue and Rancho Santa Fe Road, La Costa, City of Carlsbad, California* (October 20, 2000). (GeoSoils, Inc. 2000b) (Appendix I)

- *Review of Site Development Plan, La Costa Town Center-Commercial Area South of Rancho Santa Fe Road, APN 223-050-68 and 70 and 223-060-31 and 32, La Costa, City of Carlsbad, California* (March 6, 2001). (GeoSoils, Inc. 2001a) (Appendix I)

- *Review of Tentative Map for La Costa Town Center-Residential, APN 223-050-70 and 223-060-32, La Costa, City of Carlsbad, California* (March 6, 2001). (GeoSoils, Inc. 2001b) (Appendix I)

- *Compilation of Reports, La Costa Town Square, Carlsbad Tract No. C.T. 01-09, Rancho Santa Fe Road and La Costa Avenue, Carlsbad, California* (April 23, 2007). (Southern California Soil & Testing, Inc. 2007)

- *Update Letter Plan Review La Costa Town Square M.S. 04-08 Rancho Santa Fe Road and La Costa Avenue, Carlsbad, California* (January 6, 2009). (Southern California Soil & Testing, Inc. 2009) (Appendix I)

5.8.1 <u>Environmental Setting</u>

Seismicity

As is common in most of southern California, the project site is located within a seismically active region. No active fault is known to exist on or in the immediate vicinity of the project site and the site is not located within an Earthquake Fault Zone. The nearest active fault is the Rose Canyon Fault Zone, located approximately 7 miles west of the project site. Seismic hazards that may affect the site include groundshaking, ground rupture along a preexisting fault, liquefaction, and dynamic settlement. The seismic hazards affecting the site are discussed below.

Table 5.8-1 shows the closest faults to the project site and their approximate distance from the project site.

Table 5.8-1
Major Faults and Fault Zones

Fault Name	Approximate Distance from the Project Site in Miles
Coronado Bank-Agua Blanca	22
Elsinore	24
La Nacion	17
Newport-Inglewood-Offshore	13
Rose Canyon	7
San Diego Trough-Bahia Sol.	33

Ground Shaking and Ground Rupture

The seismic hazard most likely to impact the project site is ground shaking resulting from an earthquake on a major regional active fault. Due to the relative proximity of the Rose Canyon Fault Zone to the project site, the most significant ground shaking from one of the regional faults will most likely occur on the Rose Canyon Fault Zone. A maximum credible earthquake of magnitude 6.9 on the Rose Canyon Fault Zone could produce a peak horizontal ground acceleration of 0.31g

(equals 31 percent of the acceleration of gravity) within the project site (GeoSoils, Inc. 2000b). Ground rupture generally is considered to occur along preexisting fault strands. As no active fault has been mapped within the project site or in the vicinity of the project site, ground rupture onsite is considered unlikely.

Liquefaction and Dynamic Settlement

Liquefaction and dynamic settlement of soils can be caused by strong vibratory motion due to earthquakes. Both research and historical data indicate that loose, saturated, granular soils are susceptible to liquefaction and dynamic settlement while the stability of silty clay and clay is not adversely affected by vibratory motion. Liquefaction is typified by a total loss of shear strength in the affected soil layer, thereby causing the soil to flow as a liquid. This effect may be manifested by excessive settlements and sand boils at the ground surface.

Landslides

Slope failure or landslides are caused when the stability of a slope changes from a stable to an unstable condition. A change in the stability of a slope can be caused by a number of factors, acting together or alone, and could include seismic events, erosion, weakening through heavy rains, liquefaction, or other loss of soil structure. Human activities such as construction, earthwork that changes the shape of a slope or imposes new loads on an existing slope, or the removal of deep-rooted vegetation that binds to colluvium or bedrock can also contribute to the potential for landslides. The varied topography, steep slopes, and underlying geology and soil types present conditions that give greater potential for landslides to occur.

Geology and Soils

The proposed La Costa Town Square project site is located within the coastal subprovince of the Peninsular Ranges Geomorphic Province, near the western edge of the southern California batholith. The proposed La Costa Town Square

project site encompasses approximately 83 acres and is located in the southeastern portion of Carlsbad.

Site topography is characterized by hilly terrain, sloping in a generally southerly direction, dissected by several south-trending drainages. Overall topographic relief is approximately 135 feet, with onsite elevations ranging from approximately 265 feet to 400 feet AMSL. Vegetation in the undisturbed area of the site consists of a moderate to heavy growth of natural and nonnative grasses and brush. Currently, the project site consists of vacant, undeveloped land, covered with soft wood shrubs.

There are 2:1 (horizontal and vertical) cut slopes with a maximum height of about 35 feet adjacent to La Costa Avenue along the southern and southwestern boundaries of the site. A rock/soil stockpile generated by recent grading for the proposed office development site north of La Costa Avenue is present in the central portion of the site. In addition, the northwestern part of the site is to be utilized as a borrow area for the proposed office development site.

Geology of the Project Site

The bedrock underlying the majority of the project site consists of volcanic/metavolcanic rock of the Santiago Peak Volcanics. Sedimentary bedrock of the Delmar Formation underlies the southwesterly portion of the site. The geologic units of the project site are described below.

- Santiago Peak Volcanics (Jsp): The eastern portion of the site, including the proposed residential portion of the project and the easternmost part of the commercial area, is underlain by Jurassic-age metavolcanic rock of the Santiago Peak Volcanics. This material typically becomes very hard at relatively shallow depths below the surface and produces a variable rock/soil mixture discovered during excavation. Blasting is frequently required for deeper excavation in the Santiago Peak Volcanics. The Jurassic-aged Santiago Peak Volcanics comprise the majority of the underlying bedrock. These rocks were deposited as an alternating

succession of volcanic flows, tuffs, and breccias and typically have an andesite or dacite composition. Subsequently, this sequence of rocks was folded, faulted, and weakly metamorphosed. Often this unit is highly fractured and faulted along northwest-to-southwest zones. Fracture zones are steeply dipping, tight, and clay–filled.

- Delmar Formation (Td): The western portion of the site, including most of the commercial development is underlain by Eocene-age sedimentary deposits assigned to the Delmar Formation. These deposits consist of heterogeneous interbedded sandstones, siltstones, mudstones, and claystones. Local variations of bedding inclination within the Delmar Formation are a characteristic that could affect stability in natural or excavated slopes. The claystone members of the Delmar Formation often possess low shear strength and contain randomly oriented remolded clay seams.

- Alluvium (Qal): The alluvial deposits are typically composed of loose, porous, clay-sand gradual mixtures with boulders that have accumulated along canyon bottoms. The maximum thickness was observed at approximately 13 feet in the drainages. These sediments are generally poorly consolidated and susceptible to settlement when subjected to an increase in vertical loads as might result from the placement of fill or structures. Limited quantities of alluvial deposits are present in the drainages along the southwestern and southeastern parts of the site.

- Fill Material (Qaf): Some undocumented fill materials are present on the western portion of the site and in the drainages along the southwestern and southeastern margins of the site.

- Slopewash (Qsw): Slopewash and colluvial deposits consist of poorly consolidated sandy clays to clayey sands and are potentially compressible. These soils occur on a small portion of the eastern edge of the project site.

Soils of the Project Site

The soil types present onsite consist of Altamont clay, Huerhuero loams, Salinas clay loam, and San Miguel-Exchequer rocky silt loam. Each of these soil types is described below.

- Altamont Clay: Altamont clay occurs on 15 to 30 percent slopes and it covers two small sections of the southern edge of the project site. This soil type consists of well-drained clays that formed in material weathered from calcareous shale. This type of Altamont soil occurs on uplands and has an average slope of 17 percent. Soil depth ranges from 4 to 18 inches and covers soft calchareous shale. Permeability of this soil type is slow, runoff is medium to rapid, and the erosion hazard is moderate to high.

- Huerhuero Loam: The Huerhuero series consists of moderately well-drained loams with a clay subsoil that developed in sandy marine sediments. Huerhuero loam, 5 to 9 percent slopes, eroded, is present on the western section of the project site. This soil is moderately sloping and has moderate sheet erosion. Huerhuero loam, 9 to 15 percent slopes, eroded, is located south of the Huerhuero loam, 5 to 9 percent slopes, eroded, onsite. This soil is strongly sloping and has moderate sheet erosion. Runoff is medium and the erosion hazard is moderate.

- Salinas Clay Loam: The Salinas series consists of well-drained and moderately well-drained clay loams that formed in sediments washed from Diablo, Linne, Las Flores, Huerhuero, and Olivenhain soils. These soils are on floodplains and alluvial fans. A small section of Salinas clay loam, 2 to 9 percent slopes, is located on the southeastern boundary of the property near the drainage that is just offsite. This soil is gently to moderately sloping. Runoff is slow to medium and the erosion hazard is slight to moderate.

- San Miguel-Exchequer Rocky Silt Loam: The majority of the project site is composed on San Miguel-Exchequer rocky silt loams, 9 to 70 percent

slopes. This complex occurs on mountainous uplands, at elevations of 400 to 3,300 feet. San Miguel silt loam is slowly permeable in the subsoil; Exchequer silt loam is moderately permeable. Both soils have good drainage, medium to rapid runoff, and a moderate to very high erosion hazard.

Erosion

Erosion is displacement of sediment, soil, rock, and other particles usually by the agents of currents such as wind, water, or ice by downward or downslope movement in response to gravity. A combination of many factors can contribute to erosion, including the amount and intensity of precipitation, the texture of the soil, the gradient of the slope, ground cover (vegetation, rocks, etc.), and land use. Often the eroded debris (silt or sediment) becomes a pollutant via storm water runoff.

Expansive Soils

Certain types of clay soils expand when they are saturated and shrink when dried. These expansive soils can pose a threat to the integrity of improvements built on them without proper engineering, especially if the appropriate design measures are not incorporated and the human activities resulting from the project causes the moisture content of the soils to change. These soils are derived primarily from weathering of feldspar minerals and volcanic ash. The expansion and contraction of the soil vary with the soil moisture content, and can be aggravated by the way a property is maintained or irrigated. Expansive soil movements and the damage they cause generally occur very slowly and spread over a wide area. The soils underlying the project site contain varying amounts of clay and, therefore, have the potential to be expansive.

City of Carlsbad Hillside Development Regulations

The intent of the Hillside Development Regulations is to:

- Implement the goals and objectives of the Land Use and Open Space/Conservation Elements of the Carlsbad General Plan;

- Ensure hillside conditions are properly identified and incorporated into the planning process;

- Preserve and/or enhance the aesthetic qualities of natural hillsides and manufactured slopes by designing projects that relate to the slope of the land, minimizing the amount of project grading, and incorporating contour grading into manufactured slopes located in highly visible public locations; and

- Ensure that the alteration of natural hillsides will be done in an environmentally sensitive manner whereby lagoons and riparian ecosystems will be protected from increased erosion and no substantial impacts to natural resource areas, wildlife habitats, or native vegetation areas will occur.

No property with a slope of 15 percent or more and an elevation differential greater than 15 feet shall be developed unless a Hillside Development Permit has been issued. In general, the Hillside Development Regulations prohibit development on slopes greater than 40 percent and the creation of manufactured slopes greater than 40 feet in height; however, there are certain exemptions to these regulations. The slope height requirement is not applicable to nonresidential projects. However, justification for slope heights in excess of 40 feet is required.

In terms of grading volume, up to 7,999 cy/ac is considered acceptable under the Hillside Development Regulations, 8,000 to 10,000 cy/ac of grading is considered potentially acceptable, and grading over 10,000 cy/ac is considered unacceptable. The grading volume requirement is not applicable to nonresidential projects. However, justification for grading in excess of 10,000 cy/ac is required.

Also, under the Hillside Development Regulations, all manufactured slopes greater than 20 feet in height and 200 feet in length and that are located adjacent to or are substantially visible from a circulation element road, collector street, or usable public space area shall be contour graded. Contour graded slopes that are developed in nonresidential projects shall be designed to vary slope gradient between 2:1 and 3:1. All manufactured slopes shall be landscaped consistent with the City's Landscape Manual. A modification to the Hillside Development Regulation may be approved if:

- The proposed modification will result in significantly more open space or undisturbed area than would a strict adherence to the requirements of the Hillside Development Regulations; or

- The proposed modification will result in the development of manufactured slopes that are more aesthetically pleasing and natural appearing than would a strict adherence to the requirements of the Hillside Development Regulations.

Outside the coastal zone, the following are excluded from the Hillside Development and Design Standards of the Hillside Development Regulations:

- Hillside areas where a circulation element roadway or a collector street must be located provided that the proposed alignment(s) are environmentally preferred and comply with all other city standards;

- Grading volumes, slope heights, and graded areas that are directly associated with circulation element roadways or collector streets, provided that the proposed alignments(s) are environmentally preferred and comply with all the City standards; or

- Hillside areas with unusual geotechnical or soil conditions that necessitate corrective work that may require significant amounts of grading.

Building Codes

The International Building Code, published by the International Code Council, forms the basis for about one-half of the state building codes in the United States, including California's. The International Building Code has been adopted by the state legislature together with Additions, Amendments, and Repeals to address the specific building conditions and structural requirements in California. The California Code of Regulations (CCR) (Title 24, Part 2 of the California Building Code) provides minimum standards for building design and construction. Local codes are permitted to be more restrictive than Title 24, but are required to be no less restrictive. Chapter 16 of the California Building Code describes general Design Requirements, including (but not limited to) regulations governing seismically resistant construction and construction to protect people and property from hazards associated with excavation cave-ins and falling debris or construction materials. Chapters 18 and A33 deal with site demolition, excavations, foundations, retaining walls, and grading, including (but not limited to) requirements for seismically resistant design, foundation investigations, stable cut and fill slopes, and drainage erosion control.

The City of Carlsbad adopted the building code as stated in the California Building Standards Code for regulating the erection, construction, repair, moving, removal, demolition, occupancy, equipment, use, height, area, and maintenance of all buildings or structures in the city.

5.8.2 Thresholds for Determining Significance

Appendix G of the CEQA Guidelines is used to provide direction for determination of a significant geology and soils impact from the proposed project. For the purposes of this EIR, a significant impact would occur if the proposed project would:

- Expose people or structures to potentially substantial adverse effects, including the risk of loss, injury, or death involving:

- Rupture of a known earthquake fault as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map;
- Strong seismic ground shaking;
- Seismic-related ground failure, including liquefaction; or
- Landslides.

- Result in substantial soil erosion or loss of topsoil;

- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction or collapse; or

- Be located on expansive soil, as defined in Table 18-1-B of the International Building Code.

5.8.3 Environmental Impact

Seismicity

Ground Shaking and Ground Rupture

Because the project site is located in a seismically active region, the area is likely to be subject to at least one moderate to major earthquake during the design life of the structures. Although the site is not identified on the Alquist-Priolo Earthquake Fault Zoning Map (California Geological Survey 2004), several faults and fault zones exist within the southern California region. The Alquist-Priolo Act forbids development on active surface faults and establishes zones around these faults whereby special building code standards to protect against seismic related hazards may apply. The provisions of this Act do not apply as no Alquist-Priolo zone or known active fault has been mapped to include the project area. As described earlier, the nearest known active fault is the Rose Canyon Fault, located approximately 7 miles southwest of the project site. During such an earthquake, the danger from fault offset through the site is remote, but relatively strong ground

shaking is likely to occur. This is considered a potentially significant impact to exposing people or structures to hazardous effects of ground shaking. There is no potential for ground rupture to occur onsite, as no faults are known to occur.

Ground Failure, Liquefaction, and Dynamic Settlement

A potential hazard that can result from strong earthquake-related ground shaking is ground failure or soil liquefaction. The onsite topsoil, alluvium, and undocumented fill soils may be susceptible to liquefaction. Improvements constructed over these deposits may be susceptible to post-liquefaction-induced settlements. In addition, embankments constructed over liquefiable deposits might be susceptible to lateral spreading. This is considered a potentially significant impact.

Landslides

It is anticipated that Delmar Formation mudstones and claystones will be present in some of the proposed cut-and-fill over-cut slope, as well as in existing natural slopes that will be overlain by sliver fills. These materials generally possess relatively weak strength parameters with respect to slope stability and have been known to be associated with landslides and slope instability in some areas of northern San Diego County. Additional investigation will be required to evaluate this issue. This is considered a potentially significant impact.

The recommendations to ensure the stability of the structures, ground, and slopes given the potential for seismic events are provided in the *Compilation of Reports for La Costa Town Square* in Appendix I of this EIR. These recommendations are preliminary and may change as the details of the project design are finalized. As stated, impacts of the proposed project related to stability of structures, ground, or slope would be significant unless the project is designed and constructed in accordance with engineering measures that address the specific site conditions. The project will adhere to local and state building codes, to be verified by a City of Carlsbad building inspector, and will implement Mitigation Measure GS-1. This

will reduce the hazardous conditions of seismic-related events to a level less than significant.

Geology and Soils

Project Grading and Hillside Development

The grading of the project site includes maximum cut slopes of 25 feet. Graded cut slopes are planned at gradients of 2:1 or less. Maximum thickness of fills is planned on the order of 35 feet (south central canyon fill). Graded fill slopes are planned at gradients of 2:1 or less. The tallest slope will be approximately 50 feet, located at the detention basin on the southern portion of the open space Lot 26.

The overall grading for the project south of Rancho Santa Fe Road is 10,993 cy/ac. The proposed future multifamily parcel northwest of Rancho Santa Fe Road was graded with the road project and completed several years ago. Total grading volume for the commercial and office portion of the project is 12,143 cy/ac and is allowed per Carlsbad Municipal Code Section 21.95.140 (d) (Hillside Development Ordinance), which allows exemption for nonresidential grading volumes and slope heights. Because commercial development requires large, relatively flat areas for buildings, parking, and pedestrian access, grading on a hillside condition such as La Costa Town Square will require more grading to occur. There is a 100-foot elevation difference from the main entrance on Rancho Santa Fe Road (elevation 374 feet AMSL) to the low portion of the site on La Costa Avenue (elevation 274 feet AMSL). To make up the elevation difference, significant elevation changes are made with the project design in an effort to minimize grading and yet provide a commercial center that remains accessible for pedestrians and vehicles.

The residential grading volume is 11,454 cy/ac and exceeds the potentially acceptable range by 1,454 cy/ac. The residential portion of the site is adjacent to Rancho Santa Fe Road (a prime arterial) and no direct access is possible. Proposed access from La Costa Avenue is at elevation 262 feet AMSL, which is 137 feet lower that the highest portion of the site at approximately elevation 400 feet AMSL adjacent to Rancho Santa Fe Road. Moving from La Costa Avenue back

into the site at suitable street grades puts the highest elevation of the residential street adjacent to Rancho Santa Fe Road at elevation 382 feet AMSL with a pad elevation for lot 50 at 383 feet AMSL or 46 feet below natural grade. As stated in Carlsbad Municipal Code Section 21.95.130, exclusion in paragraph 2, the proposed high grading volume is directly associated with a circulation road that restricts access to the property and requires access from a much lower elevation.

The Hillside Development Ordinance allows the decision-making body to approve modifications to ordinance's development and design guidelines if the modification will result in manufactured slopes that are more aesthetically pleasing and natural appearing than would a strict adherence to the requirements of the ordinance. The proposed modification will result in the development of highly landscaped manufactured slopes that are not visible from Rancho Santa Fe Road and will be aesthetically pleasing and natural appearing. Reducing the grading quantities would require much steeper streets for many residents to get access to the property and be less appealing for the new residents. Approval of the modification to the development and design guidelines of the Hillside Development Ordinance would not cause a significant impact to geology and soils.

Part of the site is determined to be nonrippable, and blasting may be required to complete project grading (Dudek 2008a). As described in EIR Section 5.9 Hazards, blasting could present certain hazards to health and human safety; hazards from geotechnical stability could also be introduced from potential blasting activity. While blasting, care would be taken in proximity to proposed cut slopes and existing structural areas. Over-blasting of hard rock could result in weakened rock conditions that could require remedial grading/construction to stabilize the utilities and/or affected cut slopes. Geotechnical stability on these cut slopes will be monitored following potential blasting activity. Should blasting be required, it would be conducted in a very localized and controlled manner, and would be required to follow state and local construction safety regulations. These regulations, continuous monitoring, and remedial construction would ensure that impacts to the geotechnical stability of the site as a result of blasting would be less than significant.

Soil Erosion and Loss of Soils

Implementation of the proposed project would require grading, excavation, and other construction-related activities that could cause soil erosion from exposed soil at an accelerated rate during storm events, if not properly controlled. The amount and rate of erosion would vary depending on a number of factors, including the time of year of construction, the amount and intensity of rainfall, and the amount of natural and/or artificial fill. Therefore, implementation of the proposed project could result in significant adverse impacts related to erosion and loss of soils. Recommendations for grading/earthwork and other pertinent geotechnical design considerations will be formulated consistent with the recommendations of the final geotechnical report and will be included in the final grading and building plans for the proposed project. The project will implement Mitigation Measure GS-1, which will require the project to minimize potential for erosion and loss of topsoil, and will reduce any potential impact to a level less than significant.

As described earlier in EIR Section 5.7 Hydrology/Water Quality, the RWQCB adopted a new areawide Municipal Stormwater Permit, Order No. 2001-01, NPDES No. CAS0108758. This permit addresses controls to reduce pollutants in discharges from MS4s after construction is completed. As part of modifying development project approval processes, the permit includes a requirement for the copermittees to prepare SUSMPs for all new development. The purpose of the SUSMPs is to reduce the negative impacts to receiving waters resulting from urban runoff from development. The SUSMPs, as developed by the copermittees, will require developers to implement post-construction BMPs to reduce stormwater flows and the associated pollutant loads generated from their project site.

In addition, a mandated SWPPP will be prepared for the project site. The SWPPP will address BMPs, which will reduce to acceptable levels or eliminate pollutants in storm water discharge. Compliance with the SWPPP may be monitored by site inspections from the RWQCB. In addition to the requirements of the NPDES program, provisions of the 2007 California Building Code and the City's Grading Code also require reduction of erosion impacts.

Unstable Geology or Soils

- Compressible Soils: The site is underlain by potentially compressible fill, slopewash, residual soils, alluvial deposits, and highly weathered formational deposits. These materials are considered unsuitable, in their present condition, for the support of structural fills or settlement-sensitive improvements, and will require removal and replacement as compacted fill.

- Deep Fill and Cut/Fill Transitions: Proposed grading may result in fills up to about 70 to 80 feet in depth (including compressible soil removal) underlying portions of the site. Experience indicates that even well-compacted fill will compress due to stresses within the fill mass, as well as foundation loads. Although this compression settlement per unit of fill depth is anticipated to be relatively small (0.3 to 0.4 inch per 10 feet), cumulative compression of fill extending to depths such as those anticipated may result in significant settlements. Although total settlements due to compression are important in foundation design, differential settlements are even more significant. In addition, grading for the subject project will likely result in cut/fill transitions. This configuration may result in differential settlements due to the potential for formational soil and rock or fill to compress differently.

- Metavolcanic Rock: Approximately two-thirds of the eastern portion of the site is underlain by nonrippable metavolcanic rock. This material will require blasting to achieve proposed grades. Cuts in volcanic rock will generate variable rock/soil mixtures depending upon depth below the existing surface, rock hardness, and blasting techniques employed. It is likely that mixing of fines with rock will be required in some cases to achieve soil/rock mixtures suitable for placement as compacted fill. In addition, a large stockpile of shot rock resulting from offsite grading and construction exists at the north-central portion of the site. This material will also require mixing with soil prior to placement as compacted fill. An

additional consideration is the potential presence of adverse fractures within rock exposed in cut slopes.

- Borrow Pit: Rocky borrow pit fill will be exposed in a substantial length of the proposed cut slope southeast of Rancho Santa Fe Road. The rocky fill is not a suitable slope-face material due to a relatively high potential for erosion and/or surface instability.

Based on the exploration and analysis provided in the *Compilation of Reports for La Costa Town Square*, Southern California Soil & Testing, Inc. (2007) concludes that the proposed project is feasible from a geotechnical standpoint, provided the recommendations presented in the report are implemented in the design and construction of the project. No significant geotechnical constraints were identified onsite that cannot be mitigated to below a level of significance by proper planning, design, and sound construction practices. While a potential impact related to unstable geologic conditions could exist, implementation of Mitigation Measure GS-1 will reduce any potential impact to a level less than significant.

Expansive Soils

It is anticipated that large quantities of highly expansive soils will be generated during grading operations. The presence of highly expansive soils at finish grades will result in increased foundation and pavement cost. In addition, highly expansive soils are not suitable for placement as fill in the outer portions of fill slopes. This is a potentially significant impact. As described above, a final geotechnical report that addresses site-specific geotechnical considerations is required to be submitted to the City Engineer for approval. Recommendations for grading/earthwork, which may generate expansive soils, slope stability, foundations, earth retaining walls, seismic design, and other pertinent, geotechnical design considerations, will be formulated consistent with the recommendations of the final geotechnical report and included in the grading and building plans for the proposed project. Therefore, implementation of Mitigation Measure GS-1 will reduce any potential impact from expansive soils to a level less than significant.

5.8.4 Mitigation Measures

GS-1. Prior to issuance of a grading permit, a final geotechnical report that addresses site-specific geotechnical considerations shall be submitted to the City Engineer for approval. The final geotechnical report shall update the recommendations provided in the *Compilation of Reports for La Costa Town Square* (Southern California Soil & Testing, Inc. 2007 and 2009) preliminary geotechnical report for this project. These recommendations shall address engineering measures for project-specific site conditions, which minimize seismic-related impacts, erosion and loss of topsoil, unstable geologic units, or expansive soils. The project construction and maintenance shall comply with the recommendations of the final report and any modifications proposed by the City Engineer.

5.8.5 Level of Significance after Mitigation

Seismic-Related Hazards

Implementation of Mitigation Measure GS-1 will reduce potential impacts associated with seismic-related hazards to a level less than significant.

Erosion and Loss of Topsoil

Implementation of Mitigation Measure GS-1 will reduce potential impacts associated with erosion and loss of topsoil to a level less than significant.

Unstable Geologic Units

Implementation of Mitigation Measure GS-1 will reduce potential impacts associated with unstable geologic units to a level less than significant.

Expansive Soils

Implementation of Mitigation Measure GS-1 will reduce any potential impact from expansive soils to a level less than significant.

5.9 HAZARDS

5.9.1 Environmental Setting

The project site and vicinity have the potential to be impacted by a number of different hazards to human health and safety. These potential hazards include natural hazards such as those associated with floodplains and high fire hazard areas. Other potential hazards are related to human activities. These potential hazards include the transport, use, and storage of hazardous materials; wildfires; flooding from failure of the Mahr Reservoir Dam; electromagnetic fields (EMFs); blasting for site grading; and interference with emergency access, evacuation routes, or evacuation plans.

Hazardous Materials

Hazardous materials are used for a variety of purposes including maintenance and operations at airfields and waterfront ports, manufacturing, service industries, various small businesses, agriculture, medical uses, schools, and households. Many chemicals used in household cleaning, construction, dry cleaning, film processing, landscaping, and automotive maintenance and repair are considered hazardous. Businesses that handle/generate hazardous materials are monitored by the EPA. Small-quantity hazardous waste generators include facilities such as automotive repair, dry cleaners, and medical offices.

Currently, the project site consists of vacant, undeveloped land. According to EPA's EnviroMapper database, no hazardous materials sites are located within the project site or in the vicinity of the project site. Hazardous materials may be transported on Rancho Santa Fe Road or La Costa Avenue.

The City of Carlsbad Household Hazardous Waste Program protects residents from dangers resulting from the use, transport, and disposal of hazardous materials used at home. This program informs residents of common household hazardous materials such as household cleaners, pest traps and bug sprays, mercury thermometers, electronic waste, motor oil and filters, batteries, common garage

and automobile materials, chlorine and other pool chemicals, and landscaping chemicals. The program offers regular service locations at City facilities for residents to bring their hazardous materials for proper disposal and care.

Existing Hazardous Materials Plans, Policies, and Regulations

Hazardous Materials Transportation Act

The transportation of hazardous materials is regulated by the Hazardous Materials Transportation Act (HMTA), which is administered by the Research and Special Programs Administration (RSPA) of the U.S. Department of Transportation (DOT). HMTA provides DOT with a broad mandate to regulate the transport of hazardous materials, with the purpose of adequately protecting the Nation against risk to life and property which is inherent in the commercial transportation of hazardous materials. The Hazardous Materials Transportation Program governs the safe transportation of hazardous materials by all modes, excluding bulk transportation by water. RSPA carries out these responsibilities by prescribing regulations and managing a user-funded grant program for planning and training grants for states and Indian tribes. DOT regulations that govern the transportation of hazardous materials are applicable to any person who transports, ships, causes to be transported or shipped, or who is involved in any way with the manufacture or testing of hazardous materials packaging or containers. DOT regulations pertaining to the actual movement govern every aspect of the movement, including packaging, handling, labeling, marking, placarding, operational standards, and highway routing.

Federal and State of California Occupational Safety and Health Administration (OSHA) Worker Safety Regulations

The federal and state OSHA regulations can be found in Title 29 of the Code of Federal Regulations (CFR) and Title 8 of the California Code of Regulations (CCR). These regulations govern issues such as appropriate personal protective equipment, labeling requirements, requirements for use of equipment such as

ladders that can present a health and safety concern, use of respirator, when necessary and other worker safety issues.

San Diego County, Site Assessment and Mitigation Program

The San Diego County Site Assessment and Mitigation (SAM) Program of the County Department of Environmental Health (DEH), provides staff whose primary purpose is to protect human health, water resources, and the environment within San Diego County by providing oversight of assessments and cleanups in accordance with the California Health and Safety Code (H&SC) and the CCR. The SAM's Voluntary Assistance Program also provides staff consultation, project oversight, and technical or environmental report evaluation and concurrence (when appropriate) on projects pertaining to properties contaminated with hazardous substances. SAM maintains an environmental assessment case listing at http://www.co.sandiego.ca.us/deh/lwq/sam/index.html.

The California Health and Safety Code, Underground Storage Tank Regulations

Chapter 6.7 of the H&SC outlines the requirements for underground storage tanks (USTs) and identifies requirements for corrective actions, cleanup funds, liability, and the responsibilities of owners and operators of USTs.

County of San Diego, Underground Storage Tank Program

The DEH Hazardous Materials Division (HMD) UST Program administers and enforces federal and state laws and regulations and local ordinances for the construction/installation, modification, upgrade, and removal of USTs in San Diego County. If contamination is discovered or likely to be present, owners or operators of USTs are required by law to report the contamination to the HMD and SAM Programs and to take corrective action.

Wildfire Hazards

The project site consists of vacant, undeveloped land. The vegetation communities on the site include Diegan coastal sage scrub, disturbed coastal sage scrub, native grassland, nonnative grassland, disturbed seasonal ponding areas, and riparian scrub. The remainder of the site is disturbed. Generally, vegetation remaining on the site may be a potential for wildfire hazards. Correspondence from the City of Carlsbad Fire Department indicates that the site had a wildfire occur prior to 2003, which reduced the fuel load at the site (City of Carlsbad 2007). Since that time, a substantial amount of brush and grass has repopulated the site.

Land uses near the proposed project site are primarily residential, with single-family residential development bordering the project site to the northwest and east and multifamily residential units bordering the site to the south. Additionally, a small shopping center is located to the south of the project site. The nearest open space is in the form of small open parcels scattered throughout the nearby residential neighborhoods, and a large open space hillside approximately 0.3 mile northeast of the proposed single-family residential portion of the project site. The potential for wildfire hazards in adjacent land uses is considered relatively low.

Dam Failure and Flooding

The Stanley A. Mahr Reservoir (also known as the La Costa Dam) is located approximately 0.6 mile northeast of the project site. The reservoir site encompasses approximately 18.75 acres and is owned by the Vallecitos Water District. The reservoir and dam were designed and built as a storage facility for treated sewage effluent. The existing earth fill dam and reservoir were constructed in 1981 and the dam is 80 feet in height. The dam spillway is designed to accommodate the Probable Maximum Flood discharge of 310 cfs. The spillway discharges to the north through two culverts under the access road and then to a small natural drainage way. The tributary watershed for the reservoir is a natural canyon of approximately 26 acres in area with an anticipated 10-year peak flow rate of 31 cfs.

A report entitled *Stanley A. Mahr Reservoir Dam, Dam Breach Analysis and Inundation Study*, conducted by Hunsaker & Associates (Appendix J of this EIR) presents the results of a dam breach analysis and downstream inundation mapping for the reservoir. The inundation area in the vicinity of the project site is illustrated in **Figure 5.9-1**. The purpose of the dam breach analysis was to show areas of potential flooding in the highly unlikely event of a dam failure, so that public safety personnel can evacuate and control those areas. The inundation mapping is also a requirement of the California Office of Emergency Services.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FEMA 2007) the project site is not located within a flood zone.

Blasting and Rock Crushing

The bedrock underlying the majority of the project site consists of volcanic/metavolcanic rock of the Santiago Peak Volcanics. Sandstone bedrock of the Delmar Formation underlies the southwesterly portion of the site. Sedimentary bedrock of the Lusardi Formation locally underlies a canyon and lower natural slope area in the southeasterly portion of the site. During site grading, blasting or the use of rock breaking equipment may be required if rock encountered cannot be ripped by bulldozers. The proposed project site is currently vacant and blasting would

5.9-1 Hazards

not result in damage to any existing onsite structures. Use of blasting and rock crushing equipment would be required to follow state and local construction safety regulations.

Airports

There are no airports located within a 2-mile radius of the proposed project site. The nearest airport, McClellan-Palomar Airport, is located approximately 4 miles northwest of the site. McClellan-Palomar Airport is owned and operated by the County of San Diego and there is currently one regularly scheduled airline that provides commercial service to the airport. According to the San Diego Regional Airport Authority's Airport Land Use Compatibility Plan (2004), McClellan-Palomar Airport has an area of influence that spans a 3-mile radius and includes the cities of Carlsbad, Encinitas, Oceanside, San Marcos and Vista.

Emergency Plans

Carlsbad has adopted the City of Carlsbad Emergency Plan, which addresses the City's planned response to an extraordinary emergency situation. The City's plan identifies certain open space areas and public buildings to serve as emergency shelters when residents must be relocated. The Emergency Plan also identifies primary road arterials to move people in the event of an emergency. These arterials are El Camino Real, Carlsbad Boulevard, La Costa Avenue, Rancho Santa Fe Road, and Carlsbad Village Drive. Carlsbad Police, Fire, and other personnel would assist in the execution of an Emergency Plan.

Electromagnetic Fields

As depicted in **Figure 5.9-1**, SDG&E electric transmission line easement borders the project site to the northeast. Within the easement, SDG&E operates three electric power lines energized at voltages greater than 50 kilovolts (kV) near the northeast corner of the project site, adjacent to residential parcel 4. These lines consist of two 230 kV circuits and one 138 kV circuit.

Electric transmission lines are known to generate EMFs, which are invisible lines of force that surround any electrical device including household and office appliances such as hairdryers and computers. There is some concern and controversy over the health effects caused by long-term exposure to high levels of EMF with possible links to cancer and leukemia. A considerable amount of research has been conducted regarding the health effects of EMF levels. The scientific evidence suggesting that extremely low frequency electric and magnetic field exposures pose any health risk is weak (National Institute of Environmental Health Sciences 1999). Additional information regarding the health effects of EMF is available through various agencies, including SDG&E and EPA.

5.9.2 Thresholds for Determining Significance

Appendix G of the CEQA Guidelines is used to provide direction for determination of a significant hazards impact from the proposed project. For the purposes of this EIR, a significant impact would occur if the proposed project would:

- Routinely transport, use or dispose of hazardous materials, release hazardous materials or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;
- Be located on a list of hazardous materials sites;
- Increase the risk of loss, injury or death of persons or structures resulting from wildfire hazards;
- Increase the risk of loss, injury or death of persons or structures resulting from dam inundation and flooding;
- Increase the risk of loss, injury or death of persons or structures resulting from construction-related blasting;
- Be located within an airport land use plan or within two miles of a public airport or public use airport; or

- Impair implementation of, or physically interfere with an adopted emergency response plan or emergency evacuation plan.

There are currently no federal, state, or local thresholds of significance regarding EMF levels.

5.9.3 Environmental Impact

Hazardous Materials

The County DEH does not currently list any hazardous materials on the Site Assessment and Mitigation program list. The California Department of Toxic Substances Control and EPA have not documented hazardous material on the project site. As the site is currently vacant, and there is no known history of hazardous materials occurring onsite, the project will not have an impact on known hazardous materials sites.

Although no schools are located within 0.25 mile of the project site, development of the project site will result in new commercial, office, and residential uses, which may result in hazardous materials being used, stored, and discarded within the community. Commercial uses that handle hazardous materials require licensed disposal of these materials. In addition, the project site plan identifies two locations for future underground fuel storage tanks at potential gas station sites. These tanks will be required to be installed in accordance with the California H&SC. In addition, the County DEH administers and enforces federal, state, and local laws and ordinances governing USTs and is also responsible for regulating hazardous materials business plans and chemical inventory, medical waste, and hazardous waste permitting.

The City of Carlsbad website http://www.carlsbadca.gov/waste/index.html provides information and programs for the proper disposal of hazardous wastes through two waste disposal contractors, Waste Management and Clean Harbors Environmental Services. Waste Management of North County/Coast Waste Management operates a household hazardous waste (HHW) drop-off location

located in Oceanside at 2880 Industry Street. Information on additional HHW centers is available at http://northcounty.wm.com/buyback.asp. In addition, the City contracts with Clean Harbors to collect, by appointment and for a nominal fee (currently $10), HHW from residents' homes by calling (800) 444-4244 to schedule collection of up to 15 gallons or 125 pounds of materials. HHW collected by Clean Harbors includes: electronic waste, household cleaners, paint, batteries, used motor oil and filters, pool cleaners, fluorescent bulbs, and automobile fluids.

Transportation, use, and disposal of hazardous materials and wastes would be performed in accordance with the regulations and requirements of the U.S. DOT, California OSHA, and the County DEH. A spill contingency plan would be in place during project-specific construction, operation, or maintenance to mitigate any accidental release of hazardous materials. In the event of an accidental hazardous materials spill, City, county, and state hazardous materials response teams are sufficiently prepared to contain the spill and protect the health and safety of the public, and would oversee site cleanup and remediation until such time as they declare the project site nonhazardous to residents and users. Based on existing programs to regulate and provide proper disposal of hazardous materials, a less than significant impact from hazardous materials use or response to spills would occur with implementation of the project.

Wildfire Hazards

Wildfire risks would occur from undisturbed natural vegetation located onsite or in the project vicinity. As the proposed project would redevelop all natural terrain onsite, and the project is immediately surrounded by urban development on all sides (with the exception of the small adjacency to the open space easement corridor at the northeast corner of the site), there would be no chance of wildfire originating onsite or adjacent parcels. The nearest open space that could fuel a wildfire is over 0.30 mile from the northeast corner of the project site. Dozens of homes exist between the project site and this open space area. Furthermore, the project site is and will be serviced by sufficient fire hydrant access points as discussed in EIR Section 5.11 Public Services and Utilities, and building construction will include fire protection features onsite including fire truck access and

dedicated fire lanes. As a result, a less than significant impact associated with wildfire hazards is anticipated.

Dam Failure and Flooding

The project site may experience some incidental flooding mainly along Rancho Santa Fe Road and La Costa Avenue. Additionally, the eastern corner of the project site could experience dam failure flooding, as well as the southern portion of the project site (surrounding the proposed detention basins). The eastern portion of the project site is proposed to be developed with single-family homes. The proposed grading and street walls as part of the project engineering design may reduce the velocity and extent of flood waters resulting from dam failure inundation to nonsignificant levels for human life hazards. While evacuation plans are established as described in this section and the site is located adjacent to two emergency escape routes, loss of property due to flooding caused by dam failure could occur and is considered a significant impact. Mitigation Measure H-1 would reduce the potential impact from dam failure and flooding to a level less than significant.

The project site is not located within a designated flood zone; therefore, no impact associated with this issue would occur. The topography and drainage characteristics of the site will be altered and flooding and drainage control mechanisms are required to ensure that the rate and volume of runoff from the project are held at the pre-development levels. This will ensure that flooding hazards are not increased to properties and development located downstream of the proposed project. Section 5.7 Hydrology/Water Quality of this EIR provides further discussion of this issue.

Blasting and Rock Crushing for Site Grading

Based upon future elevations provided on the tentative map, planned grading will result in excavations up to approximately 30 feet in depth. The geotechnical reports provided in Appendix I of this EIR indicate that blasting will likely be

necessary at depths on the order of plus or minus 5 feet and greater in areas of volcanic/metavolcanic bedrock (**Figure 5.9-2**).

While blasting, care would be taken in proximity to proposed cut slopes and existing structural areas, including existing municipal underground utilities. Blasting procedures would conform to all applicable local, state, and federal laws and ordinances. The proposed project is required to take all necessary precautions to protect life and property during construction, including the use of an approved blasting mat where there exists the danger of throwing rock or overburden. The contractor would be required to keep explosive materials that are needed on the project site in locked protective boxes.

The use of explosives during grading of the site would result in the generation of carbon monoxide, particulates, and to a lesser extent, nitrogen oxide, as discussed in Section 5.3 Air Quality of this EIR. Any estimates of emissions from explosive use must be regarded as approximations. The primary pollutants of concern associated with the use of explosives would be PM_{10} and $PM_{2.5}$; however, there is no precise way of quantifying the amount of dust generated.

Approximately 127,000 cubic yards of rock material is anticipated to be excavated, stockpiled in the center of the site, and crushed onsite for fill or export (**Figure 5.9-3**). As this activity is located approximately 850 feet from the nearest residences, there is no hazard impact expected to the surrounding community from rock crushing operation. Adherence to construction regulations, and laws and ordinances governing oversight of the use of rock crushing and blasting materials,

5.9-2 Potential Blasting Area

8.5 x 11

5.9-3 Rock Crushing Area

8.5 x 11

would further avoid any potential impact to construction personnel or, in the case of blasting, to residences adjacent to potential blasting areas; therefore, the project would have a less than significant impact from blasting and rock crushing activity.

Airport

Because the project is not located within 2 miles of a public or private airport, and is not located within the boundaries of an airport land use plan, there is no significant impact to airport operations. Since the project site is located outside the McClellan-Palomar Airport area of influence and is not in an area covered by an airport land use plan, there would be no significant impacts to an adopted airport land use compatibility plan.

Emergency Plans

The project would add residents and structures to the project vicinity. As shown in Section 5.2 Transportation/Circulation of this EIR, several road segments and intersections will be significantly impacted with implementation of the project. The project is located along two major roads, Rancho Santa Fe Road and La Costa Avenue, which are designated emergency access or emergency evacuation routes. The project offers three driveways for access to the commercial parcel, one driveway for the office parcel, and sufficient access from the residential and multifamily residential parcels to adjacent streets to allow sufficient traffic circulation for evacuation.

The Police Department response time for the project area is 6 minutes for Priority 1 emergencies. The City of Carlsbad Fire Department provides all basic fire and emergency medical services to the project site. Additionally, the Fire Department has agreements with other agencies to provide additional services such as hazardous materials incident responses. As discussed in Section 5.11 Public Services and Utilities of this EIR, the nearest fire station is located 0.75 mile north of the site on Rancho Santa Fe Road. Fire Station 6 is supported by Fire Station 2, located at El Camino Real and Arenal Road approximately 3.5 miles from the site

with a 5-minute response time. Fire hydrants will be installed at intervals defined by City requirements along roads adjacent and within the project site, and fire lane access required by City regulation will be provided onsite. The project would therefore not impact the ability to provide emergency services to the project site.

The project would not impede the ability of emergency services and personnel to reach the project site or other nearby locations. The City's Emergency Plan assumes and reflects the land use, population density, and circulation network buildout conditions of the General Plan. The project is consistent with the City's General Plan as described in EIR Section 5.1 Land Use and Planning and, therefore, the project would not impact the execution of the Carlsbad Emergency Plan.

Electromagnetic Fields

A SDG&E electric transmission line easement borders the project site to the northeast. Concerns have been raised over the effects of EMF and studies conducted regarding the effects of EMF have centered around above-ground transmission lines. No accepted threshold of significance or known health hazard has been established and there are currently no federal, state, or local regulations regarding EMF levels. The project does not propose any development within the SDG&E easement. Development in the northeastern portion of the site consists of residential units; however, the nearest lot will be approximately 85 feet from the easement. Therefore, excessive exposure to EMFs is not anticipated and implementation of the proposed project will not result in a significant impact.

5.9.4 Mitigation Measures

H-1. Prior to approval of a final map subdividing the single-family residential portion of the project site, a grading plan shall be prepared and shall determine the extent of dam inundation area of the existing Stanley A. Mahr Reservoir. All of the single-family residential lots within the dam inundation area shall receive notification as part of the standard ownership disclosure package and Covenants, Conditions, and Restrictions (CC&Rs)

that their property is inside the Stanley A. Mahr Reservoir dam inundation area, and is subject to flooding, resulting in the potential loss of property, in the event of dam failure.

Developer shall establish a homeowner's association and corresponding CC&Rs. Said CC&Rs shall be submitted to and approved by the Planning Director prior to final map approval. Prior to issuance of a building permit, the Developer shall provide the Planning Department with a recorded copy of the official CC&Rs that have been approved by the California Department of Real Estate and the Planning Director.

5.9.5 Level of Significance after Mitigation

Dam Failure Flooding

Implementation of Mitigation Measure H-1 will reduce potential impacts to human health and safety and loss of property resulting from dam inundation and related flooding to a level less than significant.

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5.10 VISUAL AESTHETICS/GRADING

5.10.1 Environmental Setting

The project site is bounded on the north and west by Rancho Santa Fe Road; to the south by La Costa Avenue and an existing multifamily residential development; to the northwest by existing single-family developments and open space along the abandoned Rancho Santa Fe Road alignment; and to the north by the realigned Rancho Santa Fe Road and a SDG&E utility easement. Currently, the project site consists of vacant, undeveloped land, containing six vegetation communities: Diegan coastal sage scrub, disturbed coastal sage scrub, native grassland, nonnative grassland, riparian scrub, and disturbed wetland. The remainder of the site is disturbed. The project site elevation ranges from a low of approximately 260 feet AMSL in the canyon east of the La Costa Avenue entrance to a high of approximately 400 feet AMSL on the northern portion of the site. The site slopes generally to the west and southwest.

Existing views of the project site are mainly available from Rancho Santa Fe Road and La Costa Avenue. Homes that will look onto the project site are located north of Rancho Santa Fe Road and south or southeast of La Costa Avenue. The residential neighborhoods north of the project site and Rancho Santa Fe Road have views to the south that include the residential communities south of La Costa Avenue and the rolling landscape beyond. Likewise, residential neighborhoods east and south of La Costa Avenue have views to the north or west that include the residential communities north and west of Rancho Santa Fe Road and the rolling landscape beyond. Site photographs including the existing viewsheds with proposed project are described in the environmental impact portion of this section.

City of Carlsbad Scenic Corridor Guidelines

The City adopted Scenic Corridor Guidelines in July 1988. The guidelines identify the scenic corridors within Carlsbad and provide recommendations for preserving the character of the corridors. Significant vistas within the area are also identified

in the guidelines. The Scenic Corridor Guidelines are intended to be used as a guide for improvements that take place within or adjacent to the rights-of-way for identified scenic corridors. La Costa Avenue is identified as a "community theme corridor" in the Scenic Corridor Guidelines. La Costa Avenue, Olivenhain Road, and Rancho Santa Fe Road are identified as "community scenic corridors" in the Scenic Corridor Guidelines, but specific guidelines have not been established for these roads.

Landscape Manual

The City of Carlsbad adopted a Landscape Manual in November 1990 to aid project applicants and their landscape architects in understanding the City's policies toward landscaping. It is a comprehensive document listing programs, policies, and minimum requirements relating to landscaping within Carlsbad. Where conflict with the municipal code or other standards occurs, the more stringent landscaping standard would apply, although variances are permitted on a case-by-case basis when undue hardships or special circumstances would make the variance necessary.

City of Carlsbad Hillside Development Regulations

Hillside Development Regulations have been established in the City of Carlsbad. The intent and requirements of the regulations are described in the Environmental Setting in EIR Section 5.8 Geology and Soils.

Grading Ordinance

Carlsbad Municipal Code Chapter 15.16 establishes minimum requirements for grading, including clearing and grubbing of vegetation, which are supplementary to subdivision or zoning regulations located elsewhere in the Code. Chapter 15.16 seeks to further enhance and improve the physical environment of the community and, subject to economic feasibility, preserve the natural scenic character of the City. The Grading Ordinance is intended to ensure compatibility of graded land development sites with surrounding land forms and land uses and prevent

unnecessary and unauthorized grading, including clearing and grubbing of vegetation, to further protect public and private property.

Light and Glare

The City Municipal Code does not have a specific section dedicated to prevention of nuisance light and glare through regulation; rather, lighting is addressed in the Carlsbad Zoning Ordinance for each land use type. For the local shopping center land use, the Zoning Ordinance requires exterior lighting for all employee and visitor parking areas, walkways, and building entrances and exits, but requires light sources to be designed to avoid direct or indirect glare to any offsite public properties or public rights-of-way.

5.10.2 Thresholds for Determining Significance

Appendix G of the CEQA Guidelines and the City of Carlsbad Hillside Development Regulations are used to provide direction for determination of a significant visual aesthetics/grading impact from the proposed project. For the purposes of this EIR, a significant impact would occur if the proposed project would:

- Have a substantially adverse effect on a scenic vista or scenic corridor;
- Substantially degrade the existing visual character or quality of the site and its surroundings;
- Propose development on slopes greater than 40 percent and the creation of manufactured slopes greater than 40 feet in height;
- Create manufactured slopes greater than 20 feet in height and 200 feet in length that are not contoured and which are located adjacent to or are substantially visible from a circulation element road, collector street, or useable public open space area (Section 21.95.120(F)(1) of the Carlsbad Municipal Code);

- Propose to grade more than 10,000 cubic yards of cut or fill per acre; or
- Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

5.10.3 Environmental Impact

Scenic Vistas and Corridors

Scenic vistas from the project site may include westward views of the ocean, eastward views of a 1,000-foot-high hill near the project site, or the rolling landscape observed in any direction. The highest component of the project would be the theme tower at 55 feet above ground. Commercial structures are proposed to be one and two stories in height (maximum of 35 feet), though some may include additional tower elements, which would extend to a maximum height of 44 feet. Most of the proposed residential development would be two stories and of similar character as the surrounding residential developments outside the project site. Therefore, the project would create a less than significant impact to scenic vistas. There are no state or local designated scenic vistas that would be impacted by the proposed project.

The Scenic Corridor Guidelines identify La Costa Avenue as a "Community Theme Corridor" and La Costa Avenue and Olivenhain Road/Rancho Santa Fe Road as "Community Scenic Corridors." The Scenic Corridor Guidelines have not established specific guidelines for these roads. As the proposed project will implement visually appealing landscaping and building designs consistent with other appropriate City guidelines, no impact associated with scenic corridors would occur.

Visual Quality of Site and Surroundings

The project is consistent with the goals and objectives of the General Plan, Implementing Policies and Action Programs, the Municipal Code, the Scenic Corridor Guidelines, Landscape Manual, and other associated City regulatory

tools. Implementation of these regulations will ensure that the development of the proposed project is compatible with existing development surrounding the project site.

Short Term Effects

The project site will be visually disrupted during the construction phase of the project. Similar to any project, new construction, landscaping, and other construction-related work will result in a temporary aesthetic impact onsite. Overall, the aesthetic impact as a result of grading activities will be minimal as much of the site is already graded from the realignment of Ranch Santa Fe Road. The City requires that all graded areas not scheduled for construction within 90 days be hydroseeded. Ninety percent germination is required by means of rainfall or with an irrigation system if rainfall is insufficient. As the project is required to comply with this requirement, no visual/aesthetic impact associated with grading activities is anticipated to occur. Construction of the buildings will be a short-term activity and will not result in the obstruction of any scenic vista or view open to the public. No significant impact resulting from the visual impacts during project grading and building construction is anticipated to occur.

Long Term Effects

The proposed project will introduce urban development on a currently vacant site. The project does not have the potential to block any significant scenic views from the surrounding land uses as no scenic views through or of the project site have been identified in the Scenic Corridor Guidelines. However, views onto the project site from surrounding roadways (Rancho Santa Fe Road and La Costa Avenue) would change with development of the site. **Figure 5.10-1** depicts locations from which visual simulations of the project were created. **Figure 5.10-2** through **Figure 5.10-4** depict generalized visual simulations of the project based on landform change that would occur.

Figure 5.10-2 depicts the view of the commercial site from the neighborhood southeast of the project site. The 55-foot height of the theme tower would be

observed from this neighborhood. The residential parcel, similar in character to the existing neighborhood in the foreground, is not depicted, though some houses would partially shield the commercial parcel from this viewpoint. As shown in the photograph, the proposed project would not adversely affect views of the ocean and hills observed in the distance.

Figure 5.10-3 depicts the view of the site looking west toward the commercial parcel from the neighborhood northeast of the project site. Like the viewshed described above, the houses on the project's single-family residential parcel would partially shield the commercial parcel from this viewpoint and would be similar in character to the residential development of the surrounding neighborhoods and within this viewshed. The maximum proposed height of the project and the lower project ground elevation relative to this neighborhood, would not cause views of distant hillsides to be interrupted by the project.

Figure 5.10-4 depicts the view of the commercial parcel from the existing neighborhood north of the proposed single-family residential parcel. The single-family residential parcel, not depicted in the foreground, would partially shield the commercial parcel from this viewpoint and would contain residential units similar in character to this neighborhood and surrounding residential development. The proposed buildings on the commercial property would be noticeable from this viewpoint; however, they would not impact views of the distant landscaped ridgeline.

5.10-1 Offsite Visual Simulation References

8.5 x 11

5.10-2 Offsite Visual Simulation (West View, Site 2)

11 x 17

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5.10-3 Offsite Visual Simulation (Southwest View, Site 8)

11 x 17

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5.10-4 Offsite Visual Simulation (South View, Site 6)

11 x 17

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General Plan Goals, Objectives, and Policies

Analysis of these viewsheds demonstrates that the project will have a less than significant impact on the scenic views enjoyed from surrounding vantage points by existing adjacent residential uses. Implementation of the General Plan goals, objectives, and implementing policies and action programs, the Municipal Code, Landscape Manual, and other associated City regulatory tools will ensure that the development of the proposed project is compatible with existing development surrounding the project site. The following General Plan goals and objectives discuss aesthetic issues relevant to the proposed project:

- *Land Use Element – Overall Land Use Pattern - Objective B.2:*

  To create a visual form for the community, that is pleasing to the eye, rich in variety, highly identifiable, reflecting cultural and environmental values of the residents.

  Project Consistency: The project objective is to create a distinctive sense of place and identity for the surrounding La Costa community and villages. The landscape theme for the project aims to reinforce and strengthen the European/Tuscan form of style and architecture. Landscape features such as open plazas, visual landmarks, water features, specialty paving, site furniture, and tree and rich landscape plantings will be the cornerstone to the landscape concept. As a result, the project creates a visual form for the community, which is pleasing to the eye, rich in variety, highly identifiable, and reflecting cultural and environmental values of the residents.

- *Land Use Element – Commercial - Objective B.3:*

  To establish and maintain commercial development standards to address landscaping, parking, signs, and site and building design, to ensure that all existing and future commercial developments are compatible with surrounding land uses.

Project Consistency: The proposed commercial design and arrangement serve to protect and enhance the environment, character, and image of Carlsbad. The project includes commercial uses located in one- and two-story configurations. The open space buffers will create privacy to the residences from surrounding roadways and commercial uses. The commercial development is designed to offer compatible, conveniently located shopping for City residents. The landscape theme for the project aims to reinforce and strengthen the European/Tuscan form of style and architecture. Landscape features such as open plazas, visual landmarks, water features, specialty paving, site furniture, and tree and rich landscape plantings will be the cornerstone to the landscape concept. As a result, the project maintains high commercial development standards addressing landscaping, parking, signs, and site and building design, ensuring that the development is visually compatible with surrounding land uses.

- *Circulation Element - Objective B.5:*

  To provide safe, adequate and attractively landscaped parking facilities.

  Project Consistency: The commercial parcel will provide 1,477 at-grade parking spaces. Landscaping on the commercial parcel will feature open plazas, visual landmarks, water features, specialty paving, site furniture, and tree and rich landscape plantings, which will contribute to the attractiveness of the parking facilities. As a result, the project provides safe, adequate, and attractively landscaped parking facilities.

- *Arts Element – Objective B.4:*

  To develop, modify, and improve, with a consideration for aesthetic issues (in addition to engineering, safety, cost, and other issues), City land forms, landscaping, and architecture.

  Project Consistency: The landscape theme for the project aims to reinforce and strengthen the European/Tuscan form of style and architecture.

Landscape features such as open plazas, visual landmarks, water features, specialty paving, site furniture, and tree and rich landscape plantings will be the cornerstone to the landscape concept. Therefore, the proposed project develops, modifies, and improves City land forms, landscaping, and architecture.

Urban Decay

Urban decay can occur through physical deterioration that is so prevalent and substantial that it impairs the proper utilization of affected real estate or the health, safety, and welfare of the surrounding community. Physical deterioration includes, but is not limited to, abnormally high business vacancies, abandoned building and commercial sites, boarded doors and windows, parked trucks and long-term unauthorized use of properties and parking lots, dumping of refuse or overturned dumpsters on properties, dead trees or shrubbery and uncontrolled weed growth, and homeless encampments.

A market analysis was performed in June 2008 and updated in February 2009 (CBRE Consulting 2008, 2009; Appendix K of this EIR) to analyze the potential for the proposed project (specifically, the retail center) to cause urban decay in the surrounding neighborhood. The study estimated stabilized sales for the commercial uses and captured the amount estimated to be generated by market area residents. By analyzing a market area expanding to the cities of Del Mar, Encinitas, Solana Beach, Carlsbad, and unincorporated San Diego County, the study identified nine existing and six planned commercial centers of comparable size. The study estimated recaptured sales "leakage" (i.e., spending outside the market area by local residents) and accounted for sales volume increases that would occur through anticipated population growth in the market area. The update was prepared to examine the current national recession and consider whether the project would so exacerbate any negative economic conditions in the local retail sector as to be the cause of urban decay (CBRE Consulting 2009).

The study and update concluded that whether or not the La Costa Town Square opens, there are likely to be some store closures in the project's market area and,

because of depressed economic conditions, it will take longer to find replacement tenants than would be the case under normal economic conditions. The updated analysis also noted that while retail vacancy rates countywide increased from 3.0 percent in third quarter 2008 to 3.4 percent in the fourth quarter, "vacancy rates of 5.0 percent or lower are generally considered healthy by commercial real estate brokers" (CBRE Consulting 2009).

Market-area store closures have been affected by national retail chain closures affecting Linens 'n Things, Circuit City, Mervyns, and EXPO Design Center; and by older Vons and Albertsons markets that lacked size and amenities to compete with newer grocery stores and had been underperforming before the economic downturn. While the national economic conditions will continue to impact the local market area, the more favorable local demographic conditions of the project's market area can be expected to sustain local retail demand and ultimately draw new businesses to the area as the economy improves. Thus, while there may continue to be vacant stores within the market area, such vacancies are not likely to cause physical deterioration of commercial areas in Encinitas and Carlsbad and, therefore, such vacancies would not constitute urban decay and no long-term visual impacts are expected to occur.

Grading/Landform

According to the proposed grading plan, approximately 66.6 acres (or 80 percent) of the 83-acre project site will be graded. Implementation of the grading plan will result in a total of 793,000 cubic yards of grading. As described in EIR Section 5.8 Geology and Soils, graded cut and fill slopes are planned at gradients of 2:1 or less.

Previous grading of the multifamily residential parcel resulted in the parcel being approximately 8 to 9 feet higher than the intersection of Paseo Lupino and Rancho Santa Fe Road. The pad elevation located at the western portion of the parcel will be approximately 20 feet above Rancho Santa Fe Road and 30 feet higher than the old alignment of Rancho Santa Fe Road to the northwest.

Proposed grading for the single-family residential parcel will result in the parcel at the easterly edge of the project site (at Lot 52) to be approximately 40 feet below Rancho Santa Fe Road. The residential lot nearest to the commercial lot (Lot 34) will be approximately 5 feet below Rancho Santa Fe Road. The tallest slope will be approximately 50 feet, located at the detention basin on the southern portion of the open space Lot 26. In addition, a slope at the rear of residential Lot 21 would be approximately 45 feet in height. Proposed grading between other lots in the single-family residential area creates some slopes in excess of 35 feet in height. These slope heights are caused by the need to transition from an elevation at La Costa Avenue ranging from 262 to 290 feet AMSL feet to the elevation at Rancho Santa Fe Road ranging from 378 to 420 feet AMSL, an average elevation change of 123 feet. These slopes in excess of 35 feet high are located in the interior of the residential area and, with construction of homes, would have limited visibility from offsite.

The Hillside Development Ordinance allows the decision-making body to approve modifications to the ordinance's development and design guidelines if the modification will result in manufactured slopes that are more aesthetically pleasing and natural appearing than would a strict adherence to the requirements of the ordinance. The proposed modification will result in the development of highly landscaped manufactured slopes that are not visible from Rancho Santa Fe Road and will be aesthetically pleasing and natural appearing. Reducing the grading quantities would require much steeper streets for many residents to get access to the property and be less appealing for the new residents. Approval of the modification to the development and design guidelines of the Hillside Development Ordinance would not cause a significant visual aesthetics/grading impact.

Grading for the commercial parcel will result in building pads located approximately 22 feet below Rancho Santa Fe Road at the intersection of Paseo Lupino. The parcel will then slope in a southerly direction toward La Costa Avenue. The building pads located farther west along Rancho Santa Fe Road near La Costa Avenue will be approximately 3 feet below Rancho Santa Fe Road. At the westerly project driveway on La Costa Avenue, the commercial building pads will

be approximately 21 feet above La Costa Avenue. Continuing east on La Costa Avenue, the office building pads will be approximately 17 feet above La Costa Avenue west of the driveway and 26 feet above La Costa Avenue east of the driveway. At the intersection of La Costa Avenue and Camino De Los Coches, the pad for the office building will be approximately 30 feet above La Costa Avenue.

As described in EIR Section 5.1 Land Use and Planning, while grading for the proposed commercial and office parcels would exceed 10,000 cy/ac, the Hillside Development Regulations states that nonresidential development is not required to comply with the volume of grading and slope height requirements of the ordinance and allows the decision-making body to approve the grading plan based on "written and graphic exhibits to justify the proposed grading." In addition, grading for the office site would result in slopes of up to approximately 26 to 30 feet in height adjacent to La Costa Avenue that are at a 2:1 slope ratio and are not proposed to be contour graded. This would require City Council approval of a modification to the contour grading standard (Section 21.95.120 F) of the Hillside Development Regulations. Features of the grading design in this area of the project that support modification of the contour grading standard are the provision of vegetated swales at the top and toe of the slope to carry drainage within a landscape feature, rather than in a pipe or concrete culvert; and the site plan for the project, which would locate the office building a minimum of 190 feet from La Costa Avenue, thus providing a landscaped foreground view from La Costa Avenue and from the residences on the south side of the street. Approval of these exceptions and modifications to the development and design guidelines of the Hillside Development Regulations for the commercial and office parcels would require the developer to demonstrate that proposed landscaping and site design features justify the proposed grading and would not cause a significant visual aesthetics/grading impact.

Light and Glare

The project site is located in an urbanized area with primarily residential uses adjacent to the site and a neighborhood commercial center located adjacent to the southwest. Another neighborhood commercial center is located on the south

side of La Costa Avenue at Rancho Santa Fe Road. Additional intermittent night-lighting until 10 PM occurs from two tennis courts in the multifamily residential development located along Calle Timiteo; and along Camino De Los Coches, tennis courts and ballfields are located in Stagecoach Park and at La Costa Canyon High School. These existing uses generate a moderate level of light and glare in the immediate project area, primarily from street lighting and private yard lighting in the residential areas, parking lot lighting at the commercial centers, and as-needed recreational lighting at the tennis courts, park, and high school. Nighttime traffic on Rancho Santa Fe Road is another substantial existing source of light and glare. While the proposed project will introduce new light and potential sources of glare from the project site, primarily associated with the commercial center, the most noticeable change to the nighttime environment would result from conversion of 83 acres of unlighted space to urban uses as designated by the Carlsbad General Plan. The project will be required to comply with City standards regarding building and street lighting, as well as architectural design criteria for planned commercial uses, to avoid impacting residential land uses (sensitive land uses) surrounding the site. This would be accomplished by shielding of light fixtures and directing light downward to prevent spillover into adjacent properties and the review of an exterior lighting plan, subject to the review and approval by the City Planning Director. Due to the absence of adjacent habitat areas, nighttime lighting at the project site would not cause a significant impact to wildlife. Therefore, impacts associated with light and glare would be less than significant.

5.10.4 Mitigation Measures

No mitigation measures are proposed as no visual aesthetics/grading impacts have been identified associated with scenic vistas and corridors, short- or long-term visual quality of the project site or surroundings, light and glare. In addition, potential impacts associated with grading/landform would be determined in accordance with the procedures for approval of the project per the Hillside Development Regulations.

5.11 PUBLIC SERVICES AND UTILITIES

The analysis provided in this section is focused on the proposed La Costa Town Square's environmental impact related to public services and utilities, including:

- Water supply and facilities
- Wastewater treatment facilities
- Gas and electric
- Police services
- Fire services
- School services
- Library services
- Solid waste

The proposed La Costa Town Square project site is located within the City of Carlsbad's LFMP Zone 11. **Figure 5.1-2**, in the Land Use and Planning section of this EIR, depicts the project site and location of Zone 11 in relationship to other City of Carlsbad LFMP zones. The following analysis is based on information provided in the *City of Carlsbad Growth Management Program, LFMP Zone 11, 2nd Amendment* (June 2000).

The purpose of the LFMP is to provide a plan for supplying public facilities needed to accommodate development within Zone 11. The development of the proposed project may result in an increase in demand for water, reclaimed water, sewer, gas and electric, police services, fire services, school services, and solid waste services.

5.11.1 Water Supply and Facilities

Environmental Setting

Water Supply

San Diego County imports 90 percent of its water from northern California and the Colorado River. This water is imported to San Diego County by the San Diego County Water Authority (SDCWA) and the Metropolitan Water District (MWD) of southern California.

SDCWA was formed in 1944 and became a member of MWD in 1946 to obtain Colorado River water for San Diego County (SDCWA 2007a). SDCWA currently has 23 member agencies, which include six cities, two water districts, three irrigation districts, eight municipal water districts, one public utility district, and one federal agency (a military base). Its service area encompasses approximately 1,438 square miles and a population of approximately three million people. SDCWA receives 90 percent of its imported water from MWD. SDCWA is MWD's largest member agency, purchasing up to 30 percent of MWD's supplies annually.

SDCWA has recognized that San Diego County must diversify its water supplies, thereby decreasing the percentage of imported water in the region's total supply mix. Currently, SDCWA is actively locating, evaluating, and developing new water sources that will help meet the County's needs. In 2003, SDCWA began receiving water transfers from the Imperial Irrigation District that are delivered by an exchange of water supplies with MWD. SDCWA also develops emergency supply strategies to ensure a secure, long-term water supply for its member agencies.

Water service in Carlsbad is provided by three agencies: City of Carlsbad Municipal Water District (CMWD), Vallecitos Water District (VWD), and OMWD. The project site is located within the OMWD service area. As of May 2006, OMWD included over 48 square miles of North San Diego County and served a population of approximately 60,000 customers. At that time its service area was estimated to be at 85 percent of buildout. OMWD includes portions of the cities of Encinitas, Carlsbad, San Diego, Solana Beach, and San Marcos, as well as the San Diego County unincorporated communities of Olivenhain, Elfin Forest, Rancho Santa Fe, Fairbanks Ranch, and 4S Ranch. By the year 2010, OMWD anticipates to serve a population of approximately 100,000 people. Residential, industrial, and commercial customers make up 86 percent of OMWD water consumption, while

agricultural water consumption comprises 10 percent of sales. The District has 375 miles of distribution lines, 16 water storage tanks, and two hydroelectric plants.

The portion of LFMP Zone 11 served by OMWD currently has all of the required water service facilities in place. OMWD does not foresee a need for any additional major water facilities in the area. However, the following two pipelines are proposed to serve the ultimate buildout of the portion of LFMP Zone 11 within the OMWD service area:

- 12-inch pipeline from existing 12-inch stub in Calle Barcelona east to existing water line in Calle Acervo.
- 16-inch pipeline from existing stub in Calle Acervo southerly along proposed alignment of future collector streets to an existing water line in Rancho Santa Fe Road.

The approach to phasing taken by the Zone 11 LFMP is based on ensuring that needed facilities are in place prior to or commensurate with development. There are seven separate phases within Zone 11, labeled Phases A through G, and thresholds for the major water facilities within each phase can be easily established, thereby determining the appropriate water service requirements. The phasing boundaries allow for independent review and development for the water facilities within each boundary.

The proposed La Costa Town Square development is located within Phase C. The special conditions for Phase C include:

1. Water facilities will be provided at the time of development to the satisfaction of OMWD.
2. All development within Phase C shall pay the appropriate water fees established by OMWD.

There is no special financing required for Phase C.

Adequate water service exists with 12-inch to 18-inch waterlines adjacent to the project site in La Costa Avenue, in a portion of Rancho Santa Fe Road adjacent to the northwest portion of the proposed commercial site, within the abandoned portion of Rancho Santa Fe Road adjacent to the proposed multifamily residential site, along the east boundary of the single-family residential site, and adjacent to the SDG&E easement along the north boundary of the single-family residential site. The commercial and office sites will be served from the existing waterline in La Costa Avenue and the single-family residential area will be served by the two existing adjacent waterlines located north and east of the project site. Current development plans do not show the connection point for the multifamily residential area, though both of the waterlines in the abandoned portion of Rancho Santa Fe Road and adjacent to the SDG&E easement, which serves the existing development on Paseo Lupino, are adequate to provide service.

Long-Term Reliability

During an extended drought, the primary issue is water resource reliability. The continued implementation of recycled water, groundwater recovery, conservation, groundwater storage, and conjunctive use programs by both MWD and SDCWA will enhance the region's ability to reduce dependency on imported supplies during extended drought periods. However, these sources alone are not sufficient to meet imported water needs. Other sources of imported water, such as the SDCWA-Imperial Irrigation District water transfer, are necessary to meet Carlsbad's long-term water needs. The transfer protects against shortages and stabilizes the price of a significant portion of the SDCWA's overall supplies (SDCWA 2007a).

In April 2007, SDCWA adopted an updated 2005 Urban Water Management Plan (UWMP) (SDCWA 2007b), which identifies a variety of water resources projected to be developed through the year 2030 to ensure long-term water supply reliability for the region. SDCWA relied on the SANDAG regional growth projections for water supply planning. SDCWA's 2005 UWMP includes the required water supply reliability planning processes to ensure a long-term water supply for its member agencies and to address water shortage and catastrophic interruptions in the supply.

Although SDCWA relies on MWD as its sole imported water supply, MWD has ensured long-term reliability through its UWMP and Integrated Resource Planning process. In addition to imported water, SDCWA identifies supply goals for supplemental sources of water for the year 2030, including groundwater, recycled water, and seawater desalination. Through its imported water supply and identified supplemental water sources, SDCWA plans to meet the County's needs through the year 2030 (SDCWA 2007a).

Olivenhain Water Storage Project

Completed in 2003, the Olivenhain Emergency Water Storage Project (OMWD 2003) is located 1 mile southwest of Escondido, just west of Lake Hodges. Expected to provide a surface spanning 200 acres, the Olivenhain Water Storage Project is as deep as 300 feet and holds enough water to provide 60 days of water in case of a loss of the imported water system. The Olivenhain Water Storage Project is an element of the SDCWA's Emergency Storage Project (ESP) for San Diego County. The OMWD project components include the following:

- Open, raw-water-storage reservoir with a capacity of 24,470 acre-feet of water
- Roller-compacted concrete dam
- 25-million-gallon-per-day (mgd) water treatment plant, expandable to 91 mgd;
- Pipeline connected to the City of San Diego's Lake Hodges reservoir
- Flow control facility
- 5 miles of 48-inch treated water pipeline and 72-inch raw water pipeline
- Pump station
- Electrical substation

The dam is a state-of-the-art roller-compacted dam, rising 318 feet, making it the highest dam of its kind in the United States. The water treatment plant encompasses advanced membrane ultrafiltration techniques, which allow OMWD

to enhance water quality and economically compete with private-sector water treatment and water softening industries.

The OMWD Comprehensive Master Plan (2006a) describes the storage and infrastructure projects listed above. Other OMWD infrastructure used to ensure storage and delivery of long-term water supply include other storage tanks, two reservoir projects in the northeast portion of the District, and proposed enhancements to recycled water pipelines, including those along La Costa Avenue south of Rancho Santa Fe Road.

Senate Bill 610

Existing water supply planning law requires every urban water supplier to identify, as part of its urban water management plan, the existing and planned sources of water available to the supplier over a prescribed 5-year period. Senate Bill 610 (SB 610), which was passed by the Senate on September 13, 2001, requires additional information to be included as part of an UWMP if groundwater is identified as a source of water available to the supplier. This bill requires an urban water supplier to include in the UWMP a description of all water supply projects and programs that may be undertaken to meet total projected water use. SB 610 requires a city or county that determines that a development project is subject to CEQA to identify any public water system that may supply water for the project and to request that system to prepare a specified water supply assessment for that project, if that project would develop larger than a defined amount, or require greater water demands than a defined amount. The assessment would be required to include, among other information, an identification of existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed project and water received in prior years pursuant to those entitlements, rights, and contracts. California Water Code Section 10912 requires that a Water Supply Assessment be prepared if a project is defined as:

1) A proposed residential development of more than 500 dwelling units;

2) A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space;

3) A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space;

4) A proposed hotel, motel, or both, having more than 500 rooms;

5) A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40-acres of land, or having more than 650,000 square feet of floor area;

6) A mixed-use project that includes one or more of the projects specified in this subdivision, or

7) A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project.

Thresholds for Determining Significance

Appendix G of the CEQA Guidelines and the Local Facilities Management Plan (LFMP) Zone 11 Performance Standards are used to provide direction for determination of a significant water impact from the proposed project. For the purpose of this EIR, a significant impact would occur if the proposed project would:

- Not meet the LFMP performance standards that "line capacity to meet demand, as determined by the appropriate water district, must be provided concurrent with development" and "a minimum 10-day average storage capacity must be provided prior to any development;" or

- Require the construction of new water facilities or reclaimed water facilities, the construction of which may cause significant environmental impacts.

Environmental Impact

Water Supply

SDCWA is taking steps to reduce its dependency on imported water supplies from MWD through water transfers and the development of local projects (including demand management). Regional long-term reliability will be beneficially impacted by the implementation of major storage facilities by both MWD and SDCWA. These facilities will provide emergency storage sufficient to handle their respective service area needs with major aqueduct outages for as long as 6 months. In addition, other facilities planned by each agency will add to the overall system reliability through redundancy and system enhancements. The Olivenhain Water Storage Project provides as much as 24,470 acre-feet of usable water storage as part of the SDCWA's ESP, reserving 3,600 acre-feet for exclusive use to OMWD customers. Additionally, compliance with the Zone 11 LFMP will ensure that adequate water supply facilities will be provided to accommodate development within the LFMP Zone 11 area of Carlsbad.

The LFMP Zone 11 performance standard requires that "line capacity to meet the demand as determined by the appropriate water district must be provided concurrent with development." By letter of January 8, 2009, OMWD states that "[t]he District has or will have adequate facilities to serve the project" (see EIR Appendix L). Also contained in Appendix L is the La Costa Town Square Water System Analysis prepared for OMWD by AECOM, which further states that "the development can be served during a peak hour demand condition with a minimum residual pressure greater than 60 psi [pounds per square inch], and during a maximum day plus 1,500 gpm fire flow demand condition with residual pressures greater than 20 psi in the vicinity of the fire" (AECOM 2009). The proposed La Costa Town Square will comply with the LFMP Zone 11 performance standard by providing adequate line capacity concurrent with the project development; therefore, no impact associated with water supply line capacity is anticipated to occur.

Long-Term Reliability and LFMP Performance Standards

Compliance with the LFMP Zone 11 performance standards will ensure that adequate water supply facilities will be provided to accommodate development within the Zone 11 area of Carlsbad. The LFMP Zone 11 performance standards require that "a minimum 10-day average storage capacity must be provided prior to any development." OMWD has indicated that there is currently sufficient storage capacity in the District system to serve its needs as determined by the OMWD Board of Directors. They also indicate that the district has plans to provide for an average 10-day storage capacity based on ultimate buildout of the district and in accordance with the district's capital improvement program (CIP) and Comprehensive Master Plan (OMWD 2006a). Therefore, implementation of the proposed project will not result in a significant impact associated with 10-day storage capacity.

Potable Water

The project's buildout average potable water demands were established using the 2006 Potable Water Forecast and Peaking Factor Technical Memorandum issued by OMWD (2006b). This report analyzed actual water demand by residential density category and water pressure zone and reported a maximum water demand factor for future planning purposes in any given water pressure zone. However, not enough commercial connections were available in the district in a given water pressure zone to be able to provide a similar maximum water demand factor. Therefore, the 2003 City of Carlsbad Water Master Plan Update was used to determine projected commercial use. As depicted in **Table 5.11-1**, the total projected average potable water demand at buildout of the project site is 186,862 gallons per day (gpd).

Table 5.11-1
Proposed Project Average Potable Water Demand

Land Use	Amount	Demand Rate	Water Use
Single-Family Residences	64 units	[1]700 gpd/unit	44,800 gpd
Multifamily Residences	128	[1]500 gpd/unit	64,000 gpd

Commercial/Office	339,400 sf	[2]2,300 gpd/10,000 sf	78,062 gpd
ESTIMATED PROJECT TOTAL			**186,862 gpd**

Sources: [1] Olivenhain Municipal Water District, Potable Water Forecast and Peaking Factor Technical Memorandum, 2006b
[2] Carlsbad Municipal Water District, Water Master Plan Update, March 2003

The Water System Analysis in Appendix L shows connections to existing 12-inch and 18-inch waterlines in La Costa Avenue and Rancho Santa Fe Road. In addition, a looped water supply system will be provided for the commercial development areas with an extension from the existing 18-inch waterline in the abandoned portion of Rancho Santa Fe Road through the proposed multifamily development site and crossing Rancho Santa Fe Road at Paseo Lupino. The proposed single-family development area will also be served by a looped water supply from connections at La Costa Avenue and at the north end of Sitio Lima. The Zone 11 LFMP requires that major water facilities must be provided prior to or concurrent with development. As the proposed project complies with the LFMP, no impact associated with potable water supplies will occur.

Water Supply Assessment

The project's water demand as shown in **Table 5.11-1** is projected to be 186,862 gpd. Under California Water Code Section 10912, a Water Supply Assessment would need to be prepared by OMWD if the project met one of several criteria. The project does not propose to develop more than 500 dwelling units, nor more than 500,000 square feet of commercial space or 250,000 square feet of office space. The project is not expected to employ more than 1,000 employees. The project has no hotel, motel, industrial, manufacturing or related uses.

The final standard that would require preparation of a Water Supply Assessment would be if the project demands an amount of water equivalent to, or greater than, the amount of water required by a 500-dwelling unit project. In 2006, OWMD completed a study that analyzed actual water usage for all residential customers in its service area. This study further provided water use by pressure zone area. The pressure zone in which the project is located found that single-family residential units used a maximum average of 700 gpd, while multifamily residential units used

a maximum average of 500 gpd. Therefore, 500 single-family units would demand 350,000 gpd, while 500 multifamily units would demand 250,000 gpd. Using either metric, the project's estimated water demand of 186,862 gpd as shown in **Table 5.11-1** would not meet the equivalent demand of a 500-dwelling unit project. Therefore, the preparation of a Water Supply Assessment is not required for the proposed project, and sufficient information of water supply to the project site is provided by the SDCWA 2005 UWMP and Zone 11 LFMP.

While supply to the district is guaranteed by the CWA and MWD, future events may occur that could reduce the reliability of water supply to OMWD customers, such as the proposed project. These events could include environmental restrictions, contamination, or severe regional drought. The 2006 OMWD Comprehensive Master Plan accounts for this possibility, and would utilize the Olivenhain ESP, which would guarantee supply for at least 60 days. Furthermore, a full range of water conservation techniques would be implemented depending on the level of emergency, including reduction or forbidding of landscaping irrigation, car washing, fountain or similar water usage, increased monitoring of water distribution breaks or runoff, or denial of provision of services to new customers. The Comprehensive Master Plan, with full emergency supply measures and customer restrictions implemented, states that OMWD could provide potable water to all customers accounted for under the plan, including the proposed development at the project site, even if MWD were only able to supply 50 percent of the water entitled to the District. With the current availability of an adequate water supply to serve the project and OMWD's existing and on-going emergency water supply plans and projects, the potential for impacts to water supply from implementation of the project is considered less than significant.

Construction of New Water Facilities

The proposed project will not impact the availability of water supplies and the project area portion of LFMP Zone 11 has all of the needed water supply pipelines in place to serve the project. In addition, OMWD does not foresee a need for any additional major water facilities in the area. Therefore, the proposed project would not require the provision of new or physically altered water facilities and no

significant impact to the environment as a result of construction or expansion of water facilities will result.

Mitigation Measures

No mitigation measures are proposed, as no significant impact associated with water supply or water supply facilities has been identified.

5.11.2 Sewer and Wastewater Treatment Facilities

Environmental Setting

Sewer Facilities

Sewer service in Carlsbad is provided by three independent sewer agencies: The City of Carlsbad Sewer Service District (CSSD), Leucadia Wastewater District (LWD), and Vallecitos Water District (VWD). The LWD provides sewer service to the southern portion of Zone 11, in which the project site is located. The LWD service area consists of approximately 16 square miles and services approximately 60,000 residents, which includes the original service area in Leucadia, the La Costa area in Carlsbad, and northern Encinitas. Zone 11 is located within three major sewage drainage basins, two of which are located in the LWD service area and are designated as drainage basins 8 and 10 in the LWD service area study. The proposed project is located within drainage basin 8.

All of the sewage generated by Zone 11 within LWD drainage basin 8 will flow, by gravity, through local and major sewer facilities within Zone 11 to the major trunk sewer in Olivenhain Road. The major trunk sewer ties into another major trunk sewer in El Camino Real and flows, by gravity, to the Leucadia Pumping Station near the intersection of La Costa Avenue and El Camino Real. The sewage is then pumped through force mains in La Costa Avenue and Carlsbad Boulevard to a point where it resumes gravity flow and continues through the Ponto interceptor, which is parallel to the railroad tracks, to the Encina Water Pollution Control

Facilities, a 13.75 MG per day wastewater treatment plant and ocean outfall operated by the Encina Wastewater Authority (EWA).

Use of Reclaimed Water

The LWD has suggested that all the open space within its service area in Zone 11 be irrigated with reclaimed water. Potential areas of open space that possibly could be irrigated with reclaimed water include any common landscaped areas.

Thresholds for Determining Significance

Appendix G of the CEQA Guidelines and the Local Facilities Management Plan (LFMP) Zone 11 Performance Standards are used to provide direction for determination of a significant wastewater impact from the proposed project. For the purpose of this EIR, a significant impact would occur if the proposed project would:

- Not meet the LFMP performance standard: "trunk-line capacity to meet demand, as determined by the appropriate sewer districts, must be provided concurrent with development;" or
- Result in substantial adverse physical impacts associated with the provision of new or physically altered wastewater facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable wastewater treatment capacity.

Environmental Impact

Sewer Facilities

The Zone 11 LFMP includes five separate phases, A through E. Thresholds for the major sewer facilities within each phase can be easily established, thereby determining the appropriate mitigation measures. Phasing boundaries are based on the natural drainage basins of the proposed facilities within the zone. The

approach to phasing taken by the Zone 11 LFMP is based on ensuring that needed facilities are in place prior to or concurrent with development. The phasing boundaries allow for independent review and development of the sewer facilities within each boundary. The project site is located with Phase C. The special conditions for Phase C are:

1. The developer shall meet with and obtain approval from the LWD regarding sewer infrastructure available or required to serve this project.
2. Building permits will not be issued for development of the subject property unless the appropriate agency determines that sewer and water facilities are available.

The proposed project will comply with the Phase C special condition and will provide trunk-line capacity to meet demand as determined by the sewer district. Therefore, implementation of the proposed project will not result in a significant impact associated with trunk-line capacity.

Proposed Buildout Facilities within Zone 11

The majority of the major sewer trunk lines served by LWD are within Zone 11. The LWD Planning Study recommends new pipeline along Rancho Santa Fe Road up to 10 inches in diameter. The LWD Planning Study does not recommend any other major sewer trunk lines within Zone 11. Two 12-inch sewer lines exist from stubs in La Costa Avenue and Camino de Los Coches to the existing 12-inch sewer line in Stagecoach Park. These two pipelines will be needed to serve the portion of Zone 11 in LWD that is north of the existing La Costa Avenue and east of the existing Camino De Los Coches.

The location and sizes of proposed major sewer lines are only approximated for the purpose of the project's Facilities Plan. The exact sizes and locations will be defined as individual sewer line improvement projects within Zone 11 are designed per LWD's current standards. Because the Zone 11 LFMP requires that the developer shall obtain approval from the LWD regarding sewer infrastructure

available or required to serve this project, no impact to LWD facilities or service capacity would result from the proposed project.

Construction of New Wastewater Treatment or Sewer Facilities

As described above, the proposed project will not impact the capacity of existing wastewater treatment facilities or capacities of trunk lines. The portion of LFMP Zone 11 has all of the major wastewater pipelines in place and LWD does not foresee a need for any additional major wastewater facilities in the project area, identified sewer trunk lines to serve the area are found to be sufficient, and the project will comply with all requirements of development in LFMP Zone 11 including payment of appropriate sewer fees established by LWD.

The proposed project will need to provide for minor onsite planning, design, and sewer connections to the multifamily residential parcel as the existing sewer line that crosses Rancho Santa Fe Road has been abandoned (LWD 2009). Connections for service to the commercial and single-family parcels can be accommodated by the existing infrastructure and will be provided with conditions at the time of service request. The conditions include but are not limited to avoiding planting over the sewer infrastructure (particularly in the proposed sewer easement east of Office Lot number 2), submission of plumbing plans for review and approval including properly sized and located outdoor grease interceptors, and payment of sewer inspection and connection fees. Installation of reclaimed water lines for landscape irrigation is a standard requirement for projects of this scale in order that the alternative irrigation system is available for connection when reclaimed water service is extended to the project area.

The provision of sewer lines onsite is assumed under general construction impacts. Therefore, the proposed project would not require the provision of new or physically altered major sewer trunk lines and no significant impact to the environment as a result of construction or expansion of LWD facilities will result.

Mitigation Measures

No mitigation measures are proposed, as no significant impact associated with wastewater treatment facilities has been identified.

5.11.3 Gas and Electric

Environmental Setting

SDG&E provides gas and electricity service in the area surrounding the project site. Numerous power plants located within and outside California provide energy throughout the state, including the project site. Electricity and natural gas are supplied via grids and transmission lines, respectively. California has experienced energy shortages during the past years, with peak demand approaching or reaching daily load supply. During a power shortage, rolling, or rotating blackouts may be ordered that affect entire grids.

SDG&E provides gas and electricity to the residential development located south and west of the site. Additionally, SDG&E operates three electric power lines near the northeast corner of the project site, adjacent to open space parcels 65 and 66. These lines consist of two 230 kilovolts (kV) circuits and one 138 kV circuit.

To promote the safe and reliable maintenance and operation of utility facilities, the California Public Utilities Commission (CPUC) has mandated specific clearance requirements between utility facilities and surrounding objects or construction activities.

Thresholds for Determining Significance

Appendix G of the CEQA Guidelines and the Local Facilities Management Plan (LFMP) Zone 11 Performance Standards are used to provide direction for determination of a significant gas and electric impact from the proposed project. For the purposes of this EIR, a significant impact would occur if the proposed project would:

- Result in substantial adverse physical impacts associated with the provision of new or physically altered transmission facilities, the need for new or physically altered energy transmission facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable levels of service;
- Result in a substantial increase in demand upon existing sources of energy; or
- Require the development of new energy sources.

Environmental Impact

Implementation of the project will result in energy usage within the project site. The level of increase is dependent upon the type of development being built. Projected usage of electricity and natural gas based on development of the project site is provided in **Table 5.11-2** and **Table 5.11-3**.

Table 5.11-2
Projected Yearly Electrical Power Usage

Land Use	Usage Factor (kwh/du/year or kwh/sf/year)	Increase in du or sf	Projected Electrical Power Usage (kwh/year)
Residential	5,626.50	206 du	1,159,059
Retail/Office	13.55	339,400 sf	4,598,870
Total		**206 du/339,700 sf**	**5,757,929**

Sources: South Coast Air Quality Management District (2007)and EDAW
Notes: kwh = kilowatt hours, du = dwelling unit, sf = square feet

Table 5.11-3
Projected Monthly Natural Gas Usage

Land Use	Usage Factor (cf/du/month or cf/sf/month)	Increase in du or sf	Projected Natural Gas Usage (cf/month)
Single-Family Residential	6,665.0 cf/du	64 du	426,560
Multifamily Residential	4,011.5 cf/du	142 du	569,633
Retail/Shopping Centers/Office	2.9 cf/sf	339,400 sf	984,260
Total		**206 du/339,400 sf**	**1,980,453**

Sources: South Coast Air Quality Management District (2007) and EDAW
Notes: cf = cubic feet, du = dwelling unit, sf = square feet

Table 5.11-2 depicts the net increase in electrical power usage based on the proposed site development plan. As depicted in **Table 5.11-2**, the net increase in electrical power usage on the project site is 5,757,929 kilowatt hours per year.

Table 5.11-3 depicts the net increase in natural gas usage due to the proposed project development. As depicted in Table **5.11-3**, the use of natural gas based on the site development plan is 1,980,453 cubic feet per month.

The existing gas and electric infrastructure located within or adjacent to the project site would provide adequate service to the proposed project. As such, the project would not result in substantial adverse physical impacts associated with the provision of new or physically altered local infrastructure facilities. Any increases in electrical load would require only routine adjustments to the network of distribution lines, such as adding new lines. The proposed development activities will not result in the use of a substantial amount of fuel, a substantial increase in demand upon existing sources of energy, or the development of new energy sources. The proposed development results in additional natural gas and electricity demands; however, energy demands created by the project are typical of urban development. The impact to gas and electric services resulting

from implementation of the proposed development activities will not be significant.

Mitigation Measures

No mitigation measures are proposed, as implementation of the proposed development activities will not result in a significant impact to gas and electric services.

5.11.4 Police Services

Environmental Setting

The City of Carlsbad provides police protection services to the project site. The Police Department Public Safety and Service Center is located approximately 6.2 miles from the project site at 2560 Orion Way. The Department's 563,000-square-foot building also contains the Carlsbad Fire Department administration offices. The Carlsbad Police Department now has a total of 162 personnel: 115 sworn and 47 civilian. The Department has no current plans to expand their facilities.

The Police Department divides Carlsbad into 10 areas, called Beats 1 through 10. The project site is located within Beat 10. Beat 10 generally includes the portion of the city south of Alga Road and east of El Camino Real. The response time within Beat 10 is currently 7.83 minutes for Priority 1 emergencies based on statistics from the period of January 1 – July 2, 2008. Response time for calendar year 2007 was 7.37 minutes.

Thresholds for Determining Significance

Appendix G of the CEQA Guidelines is used to provide direction for determination of a significant police services impact from the proposed project. For the purpose of this EIR, a significant impact would occur if the proposed project would:

- Result in substantial adverse impacts associated with the provision of new or physically altered police facilities, the construction of which could cause

significant environmental impacts in order to provide acceptable response times to the project site.

Environmental Impact

According to the Carlsbad Police Department (City of Carlsbad 2008) the proposed project would not adversely impact the level of service they presently provide to the area. Since the current levels of service are adequate for the proposed project, there are no plans for expansion of facilities at this time. No impact associated with provision of new or physically altered police services is anticipated.

Mitigation Measures

No mitigation measures are proposed, as no significant impact to police services has been identified.

5.11.5 Fire Services

Environmental Setting

The City of Carlsbad Fire Department provides all basic fire and advanced emergency medical services to the project site. Additionally, the Fire Department has agreements with other agencies to provide additional services such as hazardous materials incident responses. The nearest City fire station to the project site is City Fire Station 6, located on Rancho Santa Fe Road 0.75 mile north of the project site. City Fire Station 6 is supported by City Fire Station 2, located at El Camino Real and Arenal Road approximately 3.5 miles from the site. Each of the facilities has a Type 1 Engine and is staffed by three personnel each. In addition to the two nearest facilities, companies from City Fire Stations 5 and 4, San Marcos Fire Station 2, and Encinitas Fire Station 3 augment the Department's response to emergencies.

The performance standard for fire facilities is no more than 1,500 dwelling units outside of a 5 minute response time. A 30-miles-per-hour average driving rate is used to determine the 5 minute response time. The 5 minute response time begins when the fire struck leaves the fire station. This is equivalent to an approximate 2.5-mile driving distance from the fire station.

In 2006, the Fire Department responded to approximately 7,000 calls for service, of which 68 percent were Emergency Medical Service calls related to potential life-threatening medical emergencies and/or rescues, 26 percent were service calls and false alarms, 3 percent were responses to hazardous conditions, such as chemical spills, and 3 percent were fire-related.

Fire Flow Demands

According to the Zone 11 LFMP, a residential development (with 4 du/acre or less) requires a fire flow demand of 1,500 gallons per minute (gpm), while a commercial development requires a fire flow demand of 3,500 gpm. Each water district uses their fire flow demands in conjunction with maximum daily demands to analyze their water systems.

Thresholds for Determining Significance

Appendix G of the CEQA Guidelines and the Local Facilities Management Plan (LFMP) Zone 11 Performance Standards are used to provide direction for determination of a significant fire protection services impact from the proposed project. For the purposes of this EIR, a significant impact would occur if the proposed project would:

- Not meet the LFMP performance standard that no more than 1,500 dwelling units should be outside of a five minute response time; or
- Result in substantial adverse impacts associated with the provision of new or physically altered fire facilities, the construction of which could cause

significant environmental impacts in order to provide acceptable response times to the project site.

Environmental Impact

Implementation of the proposed project will result in an increase in demand for fire protection services within the project site. The increase is due to the expected new residential, commercial, and office land uses and additional demand for fire prevention inspections. Since the development of the site has been considered in the planning of stations and staffing levels citywide, the project alone will not create a need for additional personnel or equipment and no impact associated with this project will occur.

According to the Zone 11 LFMP, all future development in Zone 11 is within the 5-minute response time of Fire Station 6 (and partially within the 5-minute response time of Fire Station 2). Zone 11 will conform to the fire performance standards through buildout. Therefore, Zone 11 meets the adopted performance standard and will continue to meet the performance standard through buildout of the city. Additionally, the Zone 11 LFMP states that there are no special conditions that need to be complied with prior to development and operation of the proposed land uses.

The Water System Analysis prepared for the project (see Appendix L) determined that a minimum residual pressure greater than 60 pounds per square inch (psi) and 1,500 gpm fire flow demand condition with residual pressures greater than 20 psi in the vicinity of the fire for the residential development area; and a minimum residual pressure greater than 60 psi and 4,000 gpm fire flow demand condition with residual pressures greater than 20 psi in the vicinity of the fire for the commercial and office development areas (AECOM 2009).

The fact that the site is within the 5-minute response time of Fire Station 6 and the Fire Department will be able to provide at least 1,500 gpm of fire flow for the proposed residential development areas and 3,500 gpm of fire flow for the

proposed commercial and office development areas, will ensure that the proposed project will not impact City fire facilities in Zone 11 or within Carlsbad.

The proposed project would not require the provision of new or physically altered City of Carlsbad fire facilities and no significant impact to the environment as a result of construction or expansion of fire facilities will result.

Mitigation Measures

No mitigation measures are proposed, as no significant impact to fire facilities has been identified.

5.11.6 School Services

Environmental Setting

The proposed project is located within the Encinitas Union School District (EUSD), which serves primary or elementary school students (K-6), and the San Dieguito Union High School District (SDUHSD), which serves secondary students (7-12).

Encinitas Union School District

There are eight elementary schools within the EUSD. The project site is located within the Mission Estancia Elementary School boundaries. As **Table 5.11-4** depicts, the school's maximum capacity is 665 students and at this time the school is operating within its capacity.

Table 5.11-4
Encinitas Union Elementary School District School Serving the Project Site

School Name	Location	Capacity	Current Enrollment	School Calendar
Mission Estancia Elementary	3330 Calle Barcelona Carlsbad, CA 92009	665	520	Traditional

School				

Source: Encinitas Union Elementary School District, August 2007

San Dieguito Union High School District

Diegueño Middle School and La Costa Canyon High School of the SDUHSD will serve the project site secondary students. As depicted in **Table 5.11-5**, Diegueño Middle School is currently beneath its capacity and La Costa Canyon High School is close to its capacity.

Table 5.11-5
San Dieguito High School District Schools
Serving the Project Site

School Name	Location	Capacity	Current Enrollment	School Calendar
Diegueño Middle School	2150 Village Park Way Encinitas, CA 92024	1,217	900	Traditional
La Costa Canyon High School	3451 Camino de Los Coches Carlsbad, CA 92009	2,679	2,532	Traditional

Source: San Dieguito Union High School District, August 2007

In 1998, Senate Bill 50 (SB 50) was signed into law. SB 50 defines the maximum development fee school districts are able to impose on new development to mitigate impacts of projects to school facilities, such as generating additional students in districts where the existing facilities are already at capacity. The Statuary Maximum fee that EUSD and SDUHSD can impose for residential development is $2.97 per-square-foot of assessable space and $0.47 per-square-foot of chargeable and covered nonresidential space. The maximum school impact fee charged for residential development may be increased if the school district meets specified findings, pursuant to SB 50. If a developer pays the school fees allowed under SB 50, the project's impacts to the school district are considered by law to be fully mitigated.

Thresholds for Determining Significance

Appendix G of the CEQA Guidelines and the Local Facilities Management Plan (LFMP) Zone 11 Performance Standards are used to provide direction for determination of a significant school impact from the proposed project. For the purposes of this EIR, a significant impact would occur if the proposed project would:

- Not meet the LFMP performance standard that "school capacity to meet projected enrollment within the zone as determined by the appropriate school district must be provided prior to project occupancy;" or
- Require the construction of new school facilities, the construction of which may cause significant environmental impacts.

Environmental Impact

Encinitas Union School District

According to the Zone 11 LFMP, EUSD has entered into an agreement with Real Estate Collateral Management, the major landholder of the area, which provides for the dedication of school sites in exchange for school availability letters. This agreement has been in force for the last several years and has resulted in the dedication of the La Costa Heights, Mission Estancia, and the El Camino Creek elementary school sites.

Student generation rates per dwelling unit were used to determine the number of students that the proposed project would generate. The student generation factor for single-family detached units is 0.366; therefore, the proposed 64 single-family units would generate 23 additional elementary school students in the area. The multifamily units' student generation factor is 0.486; as a result, the proposed 128 multifamily units would generate an additional 63 students. All together, the proposed project would generate a total of 86 additional elementary school students. According to EUSD, Mission Estancia Elementary School is currently

operating under its capacity and the projected 86 students would be accommodated at this school. EUSD has no plans to expand Mission Estancia Elementary School. However, EUSD plans to construct a new elementary school on a site within the Encinitas Ranch Project.

EUSD will finance the construction of school facilities to serve these students through the imposition of fees on local development in accordance with Government Code Section 65995 *et seq*. and Education Code Section 17620, as well as other capital funds. Currently, EUSD's pro-rata share of the residential statutory school fee of $2.97 per square foot is $1.41 per square foot of habitable residential space; and its pro-rata share of the commercial statutory school fee of $0.47 per square foot is $0.22 per square foot of enclosed and covered space. EUSD foresees no problems with providing services to the proposed project at this time; therefore, no impact associated with this issue is anticipated to occur. EUSD foresees no problems with providing services to the proposed project at this time; therefore, no impact associated with this issue is anticipated to occur.

San Dieguito Union High School District

Diegueño Middle School and La Costa Canyon High School serve the project site and surrounding areas with school enrollment depending on development within the region. Student generation rates per dwelling unit were used to determine the number of students that the proposed project would generate. Since the student generation rate is 0.10 students per unit for a middle school, 192 new dwelling units would generate an additional 20 new students. For high school, the student generation rate is 0.21 students per dwelling unit and an additional 41 new students would be generated. All together, the proposed project would generate 61 additional students to the two schools serving the project.

According to SDUHSD, the proposed project would contribute to the need for additional classrooms and support facilities at Diegueño Middle School. In conjunction with other future development of the La Costa area, this project would affect future year enrollment that would approach the capacity of La Costa Canyon High School and require further expansion.

SDUHSD has no revenue budgeted for expansion of the schools. One method used to secure capital revenue would be statutory school fees. Currently, SDUHSD's pro-rata share of the residential statutory school fee of $2.63 per square foot is $1.385 per square foot of habitable residential space; and its pro-rata share of the commercial statutory school fee of $0.42 per square foot is $0.225 per square foot of enclosed and covered space. Another method proposed by SDUHSD in lieu of the residential statutory school fee would be annexing the residential portion of the project to SDUHSD's Community Facilities District 95-2. The cost to annex the residential portion of the project is the actual cost of public noticing and the annexation map, totaling approximately $7,500.

Because of the small number of students generated by the project, fees paid pursuant to SB 50, and the possibility of the developer to pay statutory school fees for the entire project or annexation of residential property into Community Facilities District 95-2 with statutory school fees applied to the commercial portion of the project only, the impact to schools would not be significant and no further mitigation is required. The proposed project on its own would not necessitate the development of new schools or physically altered facilities; therefore, no impact from the construction or expansion of schools would result from the project.

Mitigation Measures

No mitigation measures are proposed, as no significant impact associated with school services has been identified.

5.11.7 Library

Environmental Setting

The Carlsbad City Library System, a department of the City of Carlsbad, operates and plans for the provision of library services to residents of the city. The Library System contains four library branches. The Central Library, also known as the Dove Library, is located at 1775 Dove Lane, approximately 3.8 miles from the project site.

It is the nearest public library branch that would serve the project. The library contains over 64,000 square feet of space and over 200,000 items for public use. The Central Library also contains several community reading rooms, youth programs, and computer access terminals.

The Georgina Cole Library, Adult Learning Program Center, and Centro de Informacíon are all located near downtown Carlsbad, approximately 10.5 miles from the project site. The Georgina Cole Library provides access to over 164,000 items in over 24,000 square feet of space, and several meeting rooms, computer terminals, and programs are available to the community.

The Adult Learning Program and Centro de Informacíon are being relocated to the new Carlsbad Learning Center under one new building with upgraded facilities, which opened in late 2008. In addition to a library collection, this new 11,000-square-foot facility will offer literacy programs, homework assistance, public computers, study rooms, and programs for special events. Other library department spaces include the Cannon Art Gallery and Schulman Auditorium.

Thresholds for Determining Significance

Appendix G of the CEQA Guidelines and the Local Facilities Management Plan (LFMP) Zone 11 Performance Standards are used to provide direction for determination of a significant library impact from the proposed project. For the purpose of this EIR, a significant impact would occur if the proposed project would:

- Not meet the LFMP performance standard that no less than 800 square feet of library space per 1,000 population would be constructed; or
- Result in substantial adverse impacts associated with the provision of new or physically altered library facilities, the construction of which could cause significant environmental impacts in order to provide acceptable response times to the project site.

Environmental Impact

In 2007, Carlsbad's population was estimated to be 101,377 residents, and by the year 2030, SANDAG projects the city's population will increase to approximately 127,046 residents. To meet the LFMP performance standard, the City should currently provide at least 81,102 square feet of library space and by the Year 2030 would need to provide at least 101,634 square feet of library space. The library system currently provides a total of over 102,200 square feet of library space, or 126 percent of the currently-required space; therefore, the potential population from the proposed project would not impede the ability of the library department to meet its current LFMP performance standard. Furthermore, the three library buildings have all been modernized and expanded since the year 2000 and will be able to provide quality services for the near future. However, the LFMP standard may not be reached in the year 2030 if population projections remain accurate and no additional library space is provided. Accordingly, the project will pay its portion of the public facility fees identified in the LFMP toward library project funding. No specific construction or expansion of library facilities will be required with implementation of the proposed project; therefore, there is a less than significant impact from the project on the adequate provision of library services.

Mitigation Measures

No mitigation measures are proposed, as no significant impact associated with library services has been identified.

5.11.8 Solid Waste

Environmental Setting

The City of Carlsbad provides solid waste services through its contractor, Waste Management, Inc. The services provided consist of residential, commercial, and industrial solid waste and designated recyclables (including residential yard waste) collection service to over 20,000 single-family households and over 2,000

commercial accounts. The Coast Waste Management facility, located at 5960 El Camino Real in Carlsbad, serves the project site. This transfer site utilizes the trash flow at the same site. According to Waste Management, Inc. (2003), there is no need to expand facilities or staff at this time.

Waste Management of North County/Coast Waste Management operates a HHW drop-off location located in Oceanside at 2880 Industry Street. Information on additional HHW centers is available at http://northcounty.wm.com/buyback.asp. In addition, the City contracts with Clean Harbors to collect, by appointment and for a nominal fee (currently $10), HHW from resident's homes by calling (800) 444-4244 to schedule collection of up to 15 gallons or 125 pounds of materials. HHW collected by Clean Harbors includes: electronic waste, household cleaners, paint, batteries, used motor oil and filters, pool cleaners, fluorescent bulbs, and automobile fluids.

Solid waste from Carlsbad is hauled to four County-owned landfills, with the majority of the solid waste being sent to the Otay Mesa facility (78 percent) and the Sycamore Canyon Facility (9.9 percent). The Otay Mesa facility has a permitted daily capacity of 3,500 tons but is receiving only 981 tons daily, with an estimated life expectancy, according to the 1996 Siting Element, of 37 years to 2033. The Sycamore Canyon landfill has a permitted daily capacity of 2,500 tons per day but is receiving only 900 tons daily. Based on the 1996 City Siting Element, the landfill has an estimated life expectancy of 62 years, to 2058 (City of Carlsbad 2001).

Threshold for Determining Significance

For the purposes of this EIR, a significant impact would occur if the proposed project would:

- Result in the need for the physical alteration or expansion of existing solid waste facilities or the need for new solid waste facilities, in which the alteration, expansion or construction could cause a significant environmental impact.

Environmental Impact

During the construction of the proposed residential and commercial developments, a significant amount of construction-related waste will be generated. The type of construction waste will range from construction worker personal waste to hazardous materials associated with architectural coatings. According to Waste Management, Inc., the amount of construction-related waste that will be generated is not considered significant. The contractors will be responsible for recycling of the construction materials, while Waste Management will provide containers necessary for all types of collection needs. Any hazardous materials-related waste is required by federal, state, and local regulations to be disposed of appropriately.

According to Waste Management, the 192 residential units will result in an additional 2 hours of labor collection time. The current rate for residential waste collection services is $14.52 per month, with an average weight of 50 pounds per collection. The specific increases in services within the commercial parcels are dependent on what types of businesses will occupy the buildings. Waste Management (2003) foresees no problems with providing service for the project site. Therefore, no impact associated with waste services is anticipated.

Table 5.11-6 provides the anticipated solid waste generation for the La Costa Town Square Project.

Table 5.11-6
Project Generated Solid Waste

Proposed Land Use	Size	Solid Waste Generation Rate (Pounds per Day)	Project Generated Solid Waste (Pounds per Day)
Shopping Center	284,400 sq. ft.	25 lbs/100 sq. ft.	71,100
Offices	55,000 sq. ft.	2 lbs/100 sq. ft.	1,100
Single-family Residential	64 du	13.5 lbs/du	864
Multifamily Residential	128 du	8 lbs/du	1,024

Total	**74,088**

Source: Waste Management, Inc. 2003
sq. ft. = square feet
du = dwelling unit
lbs = pounds

As depicted in **Table 5.11-6**, the proposed project would generate approximately 74,088 pounds of solid waste per day or 13,521 tons of solid waste per year. The City has indicated that it has achieved a 44 percent diversion rate for solid waste. Therefore, the amount of proposed project solid waste that must be accommodated by the landfills would be reduced by 5,949 tons per year to 7,572 tons per year. As discussed earlier in this section, the majority of solid waste generated by Carlsbad is sent to the Otay Mesa and Sycamore Canyon landfills. Both landfills are operating well below their permitting capacity.

Although the proposed project would increase demand for solid waste collection and increase the quantity of solid waste being hauled to existing and usable landfills, it would not generate solid waste that exceeds present or planned landfill capacity. Therefore, no significant impact associated with solid waste would occur.

Mitigation Measures

No mitigation measures are proposed, as no significant impact to solid waste facilities has been identified.

CHAPTER 6.0
ANALYSIS OF LONG-TERM EFFECTS

CEQA requires the discussion of the cumulative impacts, growth-inducing impacts, and long-term impacts of a proposed project. As well, global climate change impacts are discussed in Section 6.2. The following sections address these issues as they relate to implementation of the proposed project.

6.1 CUMULATIVE IMPACTS

The CEQA Guidelines define cumulative effects as "two or more individual effects that, when considered together, are considerable or which compound or increase other environmental impacts." The Guidelines further state that the individual effects can be the various changes related to a single project or the changes involved in a number of other closely related past, present, and reasonably foreseeable probable future projects (CEQA Guidelines Section 15355). The Guidelines allow for the use of two alternative methods to determine the scope of projects for the cumulative impact analysis:

- List Method – A list of past, present, and reasonably anticipated future projects producing related or cumulative impacts, including those projects outside the control of the agency.
- Regional Growth Projections Method – A summary of projections contained in an adopted general plan or related planning document that is designed to evaluate regional or areawide conditions (CEQA Guidelines Section 15130).

For the purpose of this EIR, the issuance of the Notice of Preparation (July 2007) is considered the baseline from which to analyze future known or anticipated cumulative impacts, and the Regional Growth Projections Method has been utilized for the analysis. The cumulative analysis is based on buildout assumptions of the SANDAG 2030 Regional Growth Forecasts on a subregional level that includes

the City's General Plan buildout projections. This method was selected because it would describe a reasonable point in time at which to begin the cumulative impact analysis without being subject to frequent revision as new, incremental projects are identified. It accommodates a greater projection of population and development growth assumed under long-term land use planning than a list of known or anticipated future projects (limited to short- and intermediate-term development) and, therefore, may analyze cumulative impacts of the proposed project over a longer time span with continued growth and development.

6.1.1 SANDAG 2030 Regional Growth Forecasts

SANDAG estimates regional growth for the San Diego County area for the purposes of planning and public policy development. The most recent growth projections available when the NOP was published for the EIR, is the 2030 forecast prepared by SANDAG, which is an extensive analysis of the regional economic and demographic conditions. SANDAG provides estimates and forecasts of employment, population, and housing for the period ranging from 2010 to 2030. These forecasts serve as a basis for growth forecasts made by SANDAG.

SANDAG projections are available by Countywide, City, Major Statistical Areas, Subregional Areas, and Community Planning Areas. **Table 6.1-1** shows the current estimates and future projections for population, housing, and employment for the City of Carlsbad and the County of San Diego. The population of Carlsbad is expected to increase approximately 62 percent between 2000 and 2030 to approximately 127,046 persons, compared to the entire County's population, which is expected to increase by approximately 42 percent. The City of Carlsbad is expected to experience a higher increase (48 percent) in housing units between 2000 and 2030 compared to the County of San Diego (33 percent). The City of Carlsbad is also expected to experience a greater increase (55 percent) in employment growth than the County (32 percent) from 2000 to 2030.

Table 6.1-1
Projections for the County of San Diego and the City of Carlsbad

	Total Population		Total Housing		Total Employment[1]	
	2000	2030	2000	2030	2000	2030
County of San Diego	2,813,833	3,984,753	1,040,149	1,383,803	1,384,673	1,828,612
City of Carlsbad	78,247	127,046	33,798	49,899	50,780	78,784

[1] Includes military
Source: SANDAG 2008.

6.1.2 Geographic Scope for Cumulative Impact Analysis

The geographic scope of the cumulative impact analysis varies depending upon the environmental issue being analyzed. For the purposes of this EIR, the city limits of Carlsbad define the geographic scope for the analysis of cumulative impacts to land use and planning, public services and utilities, and visual aesthetic/grading. The City's General Plan, the Growth Management Plan, and development policies address land use, public services and utilities, and aesthetic and grading issues. Carlsbad's limits also define geographic scope for cultural resources and hazards issues since the proposed project as mitigated does not require any grading or development that would contribute to cumulative cultural resources or hazards impacts outside of the city limits.

Carlsbad's limits also define the geographic scope for biological resources as the City's Habitat Management Plan provides guidelines for the regulation and management of biological resources within the city limits.

The North County subregional area is used as the geographic scope for the analysis of geology/soils due to the location of existing faults in the region.

The San Diego Air Basin is used as the geographic scope for the analysis of cumulative air quality impacts due to the existence of Regional Air Quality Strategy plans and requirements set forth by the SDAPCD that apply to all cumulative projects within the San Diego Air Basin.

The Carlsbad Hydrologic Unit/San Marcos Creek and Batiquitos Lagoon watersheds define the geographic scope related to hydrology and water quality

as cumulative development in these watersheds could impact the drainage and water quality of the watershed and downstream water bodies.

The geographic scope for traffic/circulation is defined in **Figure 5.2-1** in Section 5.2 Transportation/Circulation of this EIR. This study area covers most of Carlsbad east of I-5 and extends into portions of Encinitas and San Marcos as well as portions of unincorporated San Diego County.

The circulation system within and immediately adjacent to the site defines the geographic scope for the analysis of cumulative noise impacts due to the anticipated project contribution of vehicular traffic-generated noise on existing roadways and onsite construction- and operations-generated noise on surrounding land uses.

6.1.3 Cumulative Impact Analysis

Land Use and Planning

The project consists of the development and operation of a mixed-use development containing commercial, office, multifamily residential, and single-family residential. The project site is surrounded by existing developed urban land uses and the proposed development has been determined to be compatible with these existing surrounding land uses. In addition, the analysis in Section 5.1 of this EIR has determined that no significant project impact would occur to existing land use plans and policies, including the Carlsbad General Plan, the La Costa Master Plan, and specific regulatory and environmental documents adopted by the City. Land uses in Carlsbad will significantly change during buildout of the Carlsbad General Plan and achievement of orderly growth will be dependent upon other future development occurring in a manner that is also consistent with the General Plan, Growth Management Plan, and other applicable development regulations cited in Section 5.1. Based on the project's land use compatibility and consistency with existing land use plans and policies, the project would not contribute to potential cumulative land use impacts that might result from other future development.

Transportation/Circulation

Implementation of the proposed project will introduce new vehicular and alternative transportation trips to and from the project site on the existing roadway network in the vicinity of the project. Under the project plus future development projections, several road segments and intersections would have a significant impact as analyzed in Section 5.2 Transportation/ Circulation of this EIR. Some of these could be mitigated to a level less than significant and, therefore, cumulatively considerable impacts could not result where project-level impacts were determined to be mitigated.

However, there are five local road segments, I-5 segments, and two intersections that would experience a significant project-level and/or cumulatively considerable impact without further mitigation as a result of the project-generated trips plus trips generated through anticipated future growth. These road segments and intersections are:

- Rancho Santa Fe Road segment between Island Drive and Melrose Drive
- Rancho Santa Fe Road segment between San Marcos Boulevard and Island Drive
- Olivenhain Road segment between El Camino Real and Rancho Santa Fe Road
- Leucadia Boulevard segment between Quail Gardens Drive and El Camino Real
- San Elijo Road between Rancho Santa Fe Road and Elfin Forest Road in Year 2030 scenario
- I-5 Freeway segments
- Intersection of Rancho Santa Fe Road and El Camino del Norte
- Intersection of Rancho Santa Fe Road and San Marcos Boulevard

A cumulative transportation/circulation impact is anticipated to remain significant and unmitigated at these road segments and intersections.

Air Quality

Buildout of the area as forecasted in the SANDAG 2030 Regional Growth Forecasts will result in an increase in air emissions in the area due to mobile source emissions associated with vehicle trip generation, area emissions from the usage of natural gas, landscape maintenance equipment, and consumer products, and stationary sources (i.e., electrical generation), which will result in a cumulative air quality impact. The implementation of subsequent projects will result in increase vehicle miles traveled and natural gas and electric power consumption. These subsequently result in increases in the emissions of criteria air pollutants and ozone precursors, i.e., CO, PM_{10}, $PM_{2.5}$, ROG, and NO_X. Mobile sources and area sources are the major contributors to air pollution in Carlsbad as well as the SDAB. Implementation of the proposed project will contribute to increased emissions in the area and will result in a project-level significant air quality impact. Since the San Diego Air Basin is a "nonattainment basin," any additional air emission is considered to contribute to a cumulatively significant impact; therefore, the proposed development on the project site will contribute to a significant cumulative impact on the air quality in the region. The cumulative air quality impact is anticipated to remain significant and unmitigated.

Noise

Roadway noise levels will generally increase as development occurs through buildout of the SANDAG 2030 Regional Growth Forecasts, including the City's projected buildout. Cumulative buildout will increase the traffic-generated noise on surrounding roadways and other types of noise typically associated with urban uses will also increase. Implementation of adopted noise regulations, such as the City's Noise Element and noise standards, will avoid a cumulative noise impact. The proposed project's contribution to a significant cumulative noise impact would not be significant, as the project-specific noise impact to offsite land uses is not significant. The proposed project's impact to groundborne vibration from

blasting and excessive intermittent noise from blasting and drilling will be limited to project-related impacts from these actions as no other groundborne vibration sources or blasting/drilling operations exist in the immediate project vicinity.

Paleontological Resources

Development within Carlsbad may result in impacts to paleontological resources. Based on the proven paleontological resource value of the Eocene-age sedimentary rocks, the mass excavation of the commercial portion of the project site has the potential to impact paleontological resources. Implementation of the City's adopted Cultural Resource Guidelines and state regulations will avoid a cumulative impact to paleontological resources. The proposed project's contribution to a cumulative impact would not be significant, as project-specific impacts will be mitigated to a level less than significant. Therefore, the proposed project will not contribute to a significant cumulative paleontological resources impact.

Biological Resources

The increase in urbanization of open space and native habitat will result in the development of vacant land in the area within the City's HCP/OMSP. The City's HCP/OMSP anticipates future development within the city and addresses biological impacts on a cumulative level. Implementation of the City's HCP/OMSP will avoid a significant cumulative impact to biological resources. The project site is within the Rancheros/Southeast II component of the HCP/OMSP and is consistent with the HCP/OMSP. In addition, project-specific impacts to 17.4 acres of Diegan coastal sage scrub and disturbed coastal sage scrub, 5.6 acres of native grassland, 27.3 acres of nonnative grassland, 0.2 acre of riparian scrub, 0.3 acre of disturbed seasonal ponding areas, California adolphia, southwestern spiny rush thread-leaved brodiaea, Orcutt's brodiaea, San Diego thornmint, Palmer's grappling hook, western dichondra, small-flowered microseris, western spadefoot, Belding's orangethroat whiptail, California horned lark, loggerhead shrike, southern California rufous-crowned sparrow, white-tailed kite, yellow-breasted chat, coastal California gnatcatcher, and impacts to all jurisdictional waters and

wetlands can be mitigated to a level less than significant. Since the proposed project is consistent with the City's HCP/OMSP and project-level impacts will be reduced to a less than significant level with the implementation of mitigation measures, the proposed project will not contribute to a significant cumulative biological resources impact.

Hydrology/Water Quality

The geographic scope for hydrology/water quality includes the Carlsbad Hydrologic Unit/San Marcos Creek and Batiquitos Lagoon watersheds. Implementation of the proposed project would substantially increase impervious surfaces and corresponding storm water runoff volume, as well as have impacts related to onsite or offsite erosion or siltation, water quality, and listed impaired water bodies. However, all the project-level impacts can be mitigated to a level less than significant. Development of cumulative projects will be subject to all applicable Regional Water Quality Control Board regulations that address both short-term and long-term water quality. The proposed project will not contribute to a significant cumulative hydrology/ water quality impact.

Geology and Soils

The geographic scope for geology and soils includes the project site and the North County subregional area within the framework of the regional geologic setting. Development of cumulative projects will result in an increase in population that would be exposed to hazardous geologic conditions. Geologic and soils conditions are site-specific and cumulative impacts to geological resources would be considered significant if the project would be impacted by geologic hazards and if the impact could combine with offsite geologic hazards. The proposed project's contribution to a cumulative impact associated with geology and soils would not be cumulatively considerable, because the project-specific impact will be mitigated to a level less than significant. Additionally, project geologic impacts are confined to the project site and would not create a geologic impact offsite. Because all site-specific geology and soils impacts will be reduced to a level less

than significant with existing requirements and mitigation measures contained in EIR Section 5.8 Geology and Soils, and the geologic conditions in the southern California region will essentially be the same whether or not the proposed project is implemented, the proposed project will not contribute to a cumulatively significant impact related to geology and soils.

Hazards

Development of Carlsbad has the potential to expose additional persons to hazardous materials and hazards. Implementation of city, county, state, and federal regulations and policies adopted to protect the population from hazards will avoid a cumulative hazards impact. In addition, the proposed project will not create a hazard or expose people to hazardous uses and the project-level impact is less than significant. Because the project-level impact associated with dam failure and flooding is mitigated to a level less than significant, the proposed project would not contribute to a significant cumulative hazardous materials and hazards impact.

Visual Aesthetics/Grading

Urban development will result in a change in aesthetics within the region. New development in currently vacant areas will alter the natural terrain and topography. Local planning policies and development standards, including specific policies related to visual resources and grading design standards will reduce aesthetics impacts as a result of development, avoiding a cumulatively significant aesthetics impact. In addition, the proposed project's contribution to a potential cumulative aesthetics impact would not be significant as the project-specific visual aesthetics/grading impact will be mitigated to less than significant. Therefore, the project will not contribute to a significant cumulative visual aesthetics/grading impact.

Public Services and Utilities

Increases in demand for public services and utilities will occur as the population and development in Carlsbad increases. The provision of adequate public services and facilities is a requirement of the City's Growth Management Plan. Impacts to public services and utilities will be addressed on a project-by-project basis through service agreements or compliance with growth management standards, thereby avoiding a cumulative impact. Project-level public services and utilities impacts and environmental impacts associated with the alteration, expansion, or construction of new facilities, will be avoided. Therefore, the project will not contribute to a significant cumulative public services and utilities impact.

6.2 GLOBAL CLIMATE CHANGE

One of the basic purposes of CEQA is to, "inform governmental decision makers and the public about the potential, significant environmental effects of proposed activities" (CEQA Guidelines Section 15002(a)(1)). Furthermore, the CEQA Statutes "require a finding that a project may have a 'significant effect on the environment' if one or more of the following conditions exists:

(1) A proposed project has the potential to degrade the quality of the environment, curtail the range of the environment, or to achieve short-term, to the disadvantage of long-term, environmental goals.

(2) The possible effects of a project are individually limited, but cumulatively considerable. As used in this paragraph, 'cumulatively considerable' means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.

(3) The environmental effects of a project will cause substantial adverse effects on human beings, either directly or indirectly." (Public Resources Code Section 21083(b))

This section includes a discussion of existing climate conditions, climate change, and GHG emissions sources in California; a summary of applicable regulations; and a description of the potential impacts of the project related to climate change.

6.2.1 Environmental Setting

Attributing Climate Change – Greenhouse Gases

Certain gases in Earth's atmosphere, classified as GHGs, play a critical role in determining surface temperatures. Solar radiation enters the atmosphere from space. A portion of the radiation is absorbed by the earth's surface, and a smaller portion of this radiation is reflected back toward space. This absorbed radiation is then emitted from the earth, not as high-frequency solar radiation, but as lower-frequency infrared radiation. The frequencies at which bodies emit radiation are proportional to temperature. Earth has a much lower temperature than the sun; therefore, it emits lower-frequency (longer-wavelength) radiation. Most solar radiation passes through GHGs; however, GHGs have strong absorption properties in wavelength bands along the electromagnetic spectrum, whereas the atmosphere, in its natural composition, does not. This range of absorption spectra (from wavelengths of 8–13 micrometers) is known as the "infrared atmospheric window" region of the electromagnetic spectrum, where infrared radiation is selectively absorbed by GHGs. As a result, radiation that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the "greenhouse effect," is responsible for maintaining a habitable climate on Earth. Without the greenhouse effect, Earth would not be able to support life as we know it.

Prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO_2), methane (CH_4), ozone, nitrous oxide (N_2O), and fluorinated compounds. Climate change is defined as a change in the climate that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere, and that is in addition to natural climate variability observed over comparable time periods. Human-caused emissions of these GHGs exceeding natural ambient

concentrations are responsible for intensifying the greenhouse effect and have led to a trend of unnatural warming of Earth's climate, known as global climate change (UNFCCC 2008). It is extremely unlikely that global climate change of the past 50 years can be explained without the contribution from human activities (IPCC 2007a).

Impacts of Climate Change

According to overwhelming scientific consensus on the subject, climate change is already under way. GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants (discussed in Section 5.3 Air Quality of this EIR), which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about 1 day), GHGs have long atmospheric lifetimes (1 year to several thousand years). GHGs persist in the atmosphere long enough to be dispersed around the globe. Although the exact lifetime of any particular GHG molecule depends on multiple variables and cannot be pinpointed, it is understood that more CO_2 is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, and other forms of sequestration. Approximately 54 percent of the total annual human-caused CO_2 emissions are sequestered within a year through ocean uptake, uptake by forest regrowth in the Northern Hemisphere, and other terrestrial sinks; the remaining 46 percent of human-caused CO_2 emissions remain stored in the atmosphere (Seinfeld and Pandis 1998).

Similarly, impacts of GHGs are borne globally. The quantity of GHGs that it takes to ultimately result in climate change is not precisely known; suffice it to say that the quantity is enormous and that no single project would be expected to measurably contribute to a noticeable incremental change in the global average temperature, or to global or local climate or microclimate.

Global average ambient concentrations of CO_2 have increased dramatically since preindustrial times, from approximately 280 parts per million (ppm) to approximately 353 ppm in 1990 and approximately 380 ppm in 2000. Global average temperature has risen approximately 0.76 degree Celsius (°C) since 1850;

if global CO_2 emissions were to be curbed today, it would continue to rise an additional 0.5°C by the end of this century. This phenomenon is caused by the inertia of the climate system and time scale of the main sequestration mechanism in the carbon cycle—the ocean. In other words, global climate is committed to an additional 0.5°C of warming associated with human activities that have already occurred. Because GHG emissions associated with fossil fuel combustion, population growth, technological advances, and current standards of living will continue to occur, a more likely range of scenarios for global average temperature rise would be 1.8 - 4.0°C by the end of the century, depending on the global emissions scenario that ultimately occurs. (For example, the Intergovernmental Panel on Climate Change's B1 scenario—low population growth, clean technologies, and low emissions—is the best-case scenario; its A2 scenario—high population growth, fossil-fuel dependence, and high emissions—is the worst-case scenario; and its A1B scenario is a moderate scenario.)

Impacts associated with the incremental increase in global temperature have already begun to occur. Such impacts are projected to occur in numerous forms: sea level rise, reduction in the extent of polar and sea ice, changes to ecosystems, changes in precipitation patterns, reduced snowpack, agricultural disruption, increased intensity and frequency of storms and temperature extremes, increased risk of floods and wildfires, increased frequency and severity of drought, effects on human health from vectorborne disease, species extinction, and acidification of the ocean.

It is accepted that some level of climate change impacts will occur as a result of human-caused climate change. However, international treaties on the subject of climate change attempt to avoid "dangerous" climate change—in other words, to manage the risk of foreseeable impacts to a "tolerable" level of climate change that would avoid most catastrophic impacts. For this to occur, CO_2 concentrations should be stabilized at 350–400 ppm, with an associated global average temperature increase of no more than 2°C–2.4°C above preindustrial times. Timing is also a key issue, because of the very long lifetimes of GHGs. To avoid "dangerous" climate change, global CO_2 emissions would be required to peak during the 2000–2015 period (IPCC 2007a, 2007b).

Greenhouse Gas Emissions Sources and Inventory

Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors (CEC 2006). In California, the transportation sector is the largest emitter of GHGs, followed by electricity generation (CEC 2006). Emissions of CO_2 are byproducts of fossil-fuel combustion. CH_4, a highly potent GHG, results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) largely associated with agricultural practices and landfills. CO_2 sinks, or reservoirs, include vegetation and the ocean, which respectively absorb CO_2 through photosynthesis and dissolution, two of the most common processes of CO_2 sequestration.

California is the 12th to 16th largest emitter of CO_2 in the world (CEC 2006). California produced 484 million gross metric tons of CO_2 equivalent (CO_2e) in 2004. CO_2e is a measurement used to account for the fact that different GHGs have different potential to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. This potential, known as the global warming potential (GWP) of a GHG, depends on the lifetime, or persistence, of the gas molecule in the atmosphere. For example, as described in Appendix C, "Calculation References," of the *General Reporting Protocol* of the California Climate Action Registry (CCAR) (2009), 1 ton of CH_4 has the same contribution to the greenhouse effect as approximately 23 tons of CO_2. Therefore, CH_4 is a much more potent GHG than CO_2. Expressing emissions in CO_2e takes the contributions of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only CO_2 were being emitted.

Combustion of fossil fuels in the transportation sector was the single largest source of California's GHG emissions in 2004, accounting for 41 percent of total GHG emissions in the state (CEC 2006). This sector was followed by the electric power sector (including both in-state and out-of-state sources) (22 percent) and the industrial sector (21 percent) (CEC 2006).

6.2.2 Regulatory Setting

Federal Plans, Policies, Regulations, and Laws

As of this writing, there are no adopted federal plans, policies, regulations or laws mandating reductions in GHG emissions that cause addressing global warming. According to the EPA, "the United States government has established a comprehensive policy to address climate change" that includes slowing the growth of emissions; strengthening science, technology and institutions; and enhancing international cooperation. To implement this policy, "the Federal government is using voluntary and incentive-based programs to reduce emissions and has established programs to promote climate technology and science." The federal government's goal is to reduce the GHG intensity (a measurement of GHG emissions per unit of economic activity) of the American economy by 18 percent over the 10-year period from 2002 to 2012. In addition, EPA administers multiple programs that encourage voluntary GHG reductions, including ENERGY STAR, Climate Leaders, and Methane Voluntary Programs (EPA 2007).

With respect to GHGs, the U.S. Supreme Court ruled on April 2, 2007, that CO_2 is an air pollutant as defined under the CAA, and that EPA has the authority to regulate emissions of GHGs.

State Plans, Policies, Regulations, and Laws

Various statewide and local initiatives to reduce the state's contribution to GHG emissions have raised awareness that, even though the various contributors to and consequences of global climate change are not yet fully understood, global climate change is under way, and that there is a real potential for severe adverse environmental, social, and economic effects in the long term. Because every nation emits GHGs and therefore makes an incremental cumulative contribution to global climate change, cooperation on a global scale will be required to reduce the rate of GHG emissions to a level that can help to slow or stop the human-caused increase in average global temperatures and associated changes in climatic conditions.

Relevant Statutes

Assembly Bill 1493

In 2002, then-Governor Gray Davis signed Assembly Bill (AB) 1493 (Chapter 200, Statutes of 2002), which amended Section 42823 of the California Health and Safety Code and added Section 43018.5 to the code. AB 1493 required the ARB to develop and adopt, by January 1, 2005, regulations that achieve "the maximum feasible reduction of GHGs emitted by passenger vehicles and light-duty truck and other vehicles determined by ARB to be vehicles whose primary use is noncommercial personal transportation in the state."

To meet the requirements of AB 1493, ARB approved amendments to the California Code of Regulations (CCR) adding GHG emission standards to California's existing motor vehicle emissions standards in 2004. Amendments to CCR Title 13 Sections 1900 (CCR 13 1900) and 1961 (CCR 13 1961) and adoption of Section 1961.1 (CCR 13 1961.1) require automobile manufacturers to meet fleet average GHG emission limits for all passenger cars, light-duty trucks within various weight criteria, and medium-duty passenger vehicle weight classes beginning with the 2009 model year. For passenger cars and light-duty trucks 3,750 pounds (lbs) or less loaded vehicle weight (LVW), the 2016 GHG emission limits are approximately 37 percent lower than the during the first year of the regulations in 2009. For medium-duty passenger vehicles and light-duty trucks 3,751 LVW to 8,500 lbs gross vehicle weight (GVW), GHG emissions would be reduced by approximately 24 percent between 2009 and 2016.

In January 2007, the judge hearing the case accepted a request from the California Attorney General's office that the trial be postponed until a decision is reached by the U.S. Supreme Court on a separate case addressing GHGs. In the Supreme Court case, *Massachusetts, et al., v. Environmental Protection Agency, et al.*, the primary issue in question was whether the CAA provides authority for EPA to regulate CO_2 emissions. EPA contended that the CAA does not authorize regulation of CO_2 emissions, whereas Massachusetts and 10 other states, including

California, sued EPA to begin regulating CO_2. As mentioned above, the U.S. Supreme Court ruled on April 2, 2007, that GHGs are "air pollutants" as defined under the CAA and that EPA is granted authority to regulate CO_2 (*Massachusetts v. U.S. Environmental Protection Agency* [2007] 549 U.S. 05-1120).

On December 12, 2007, the U.S. District Court rejected the automakers' claim and ruled if California receives appropriate authorization from EPA (the last remaining factor in enforcing the standard) that these regulations would not be consistent with federal law. This authorization to implement more stringent standards in California was requested in the form of a CAA Section 209(b) waiver in 2005. Since that time, EPA has failed to act in granting California authorization to implement the standards. Governor Arnold Schwarzenegger and Attorney General Edmund G. Brown Jr. filed suit against EPA for the delay. EPA denied California's request for the waiver to implement AB 1493 in late December 2007. The State of California has filed suit against EPA for its decision to deny the CAA waiver. The recent change in administration has directed EPA to reexamine its position for denial of California's CAA waiver and for its past opposition to GHG emissions regulation. It appears likely that California will receive the waiver, notwithstanding the previous denial by EPA, in early 2009.

Assembly Bill 32, the California Global Warming Solutions Act of 2006 (Health and Safety Code § 38500 et seq.)

In September 2006, Governor Schwarzenegger signed AB 32 (Chapter 488, Statutes of 2006), the California Global Warming Solutions Act of 2006, which enacted Sections 38500–38599 of the California Health and Safety Code. AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and a cap on statewide GHG emissions. AB 32 requires reduction of statewide GHG emissions to 1990 levels by 2020 (an approximately 25 percent reduction in existing statewide GHG emissions). This reduction will be accomplished through an enforceable statewide cap on GHG emissions that will be phased in starting in 2012. To effectively implement the cap, AB 32 directs ARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources. AB 32 specifies that regulations adopted in

response to AB 1493 should be used to address GHG emissions from vehicles. However, AB 32 also includes language stating that if the AB 1493 regulations cannot be implemented, then ARB should develop new regulations to control GHG emissions from vehicles under the authorization of AB 32.

AB 32 requires ARB to adopt a quantified cap on GHG emissions representing 1990 emissions levels and disclose how it arrives at the cap; institute a schedule to meet the emissions cap; and develop tracking, reporting, and enforcement mechanisms to ensure that the state achieves the reductions in GHG emissions necessary to meet the cap. AB 32 also includes guidance to institute emissions reductions in an economically efficient manner and conditions to ensure that businesses and consumers are not unfairly affected by the reductions.

Senate Bill 107 (2006)

SB 107 (Chapter 464, Statutes of 2006) requires investor-owned utilities in the state such as San Diego Gas and Electric Company to increase their total procurement of eligible renewable energy resources by at least an additional 1 percent of retail sales per year so that 20 percent of retail electricity sales come from renewable-energy sources by December 31, 2010. Previously, state law required achievement of this 20 percent requirement by 2017.

Senate Bill 1368 (Public Utilities Code §§ 8340-41)

SB 1368 (Chapter 598, Statutes of 2006) is the companion bill of AB 32 and was signed by Governor Schwarzenegger in September 2006. SB 1368 required the California Public Utilities Commission (CPUC) to establish a GHG emission performance standard for base-load generation from investor-owned utilities by February 1, 2007. Similarly, the California Energy Commission (CEC) was tasked with establishing a similar standard for local publicly owned utilities by June 30, 2007. These standards cannot exceed the GHG emission rate from a base-load, combined-cycle natural-gas-fired plant. The legislation further requires that all electricity provided to California, including imported electricity, be generated from plants that meet the standards set by CPUC and CEC. In January 2007, CPUC

adopted an interim GHG Emissions Performance Standard, which requires that all new long-term commitments for base-load generation entered into by investor-owned utilities have emissions no greater than a combined-cycle gas turbine plant (i.e., 1,100 lb of CO_2 per megawatt-hour). A "new long-term commitment" refers to new plant investments (new construction), new or renewal contracts with a term of 5 years or more, or major investments by the utility in its existing base-load power plants. In May 2007, CEC approved regulations that prohibit the state's publicly owned utilities from entering into long-term financial commitments with plants that exceed the standard adopted by CPUC of 1,100 lb of CO_2 per megawatt-hour.

Senate Bill 1505 (2006)

SB 1505 (Chapter 877, Statutes of 2006) establishes environmental performance standards for the production and use of hydrogen fuel for transportation purposes in the state. In general, SB 1505 specifically requires the following:

- Hydrogen-fueled vehicles must reduce GHG emissions by at least 30 percent compared to emissions from new gasoline vehicles.
- At least one-third of the hydrogen produced or dispensed for transportation purposes in the state must be made from renewable sources of electricity.
- Well-to-tank emissions of smog-forming pollutants from hydrogen fuel dispensed in the state must be reduced by at least 50 percent when compared to gasoline.
- Emissions of toxic contaminants must be reduced to the maximum extent feasible compared to gasoline on a site-specific basis.

Senate Bill 97 (2007)

SB 97, signed in August 2007 (Chapter 185, Statutes of 2007; Public Resources Code, Sections 21083.05 and 21097), acknowledges that climate change is a prominent environmental issue that requires analysis under CEQA. This bill directs the Governor's Office of Planning and Research (OPR) to prepare, develop, and transmit to the California Resources Agency by July 1, 2009, guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA. The California Resources Agency is required to certify and adopt those guidelines by January 1, 2010. This bill also removes, both retroactively and prospectively, as legitimate causes of action in litigation any claim of inadequate CEQA analysis of effects of GHG emissions associated with environmental review for projects funded by the Highway Safety, Traffic Reduction, Air Quality and Port Security Bond Act of 2006 (Proposition 1B) or the Disaster Preparedness and Flood Protection Bond Act of 2006 (Proposition 1E). This provision will be repealed by operation of law on January 1, 2010; at that time such projects, if any remain

unapproved, will no longer enjoy protection against litigation claims based on failure to adequately address issues related to climate change. This bill would protect only a handful of public agencies from CEQA challenges on certain types of projects for a few years' time.

Senate Bill 375

SB 375, signed in September 2008, aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation. SB 375 requires Metropolitan Planning Organizations (MPOs) to adopt a Sustainable Communities Strategy (SCS) or Alternative Planning Strategy (APS), which will prescribe land use allocation in that MPO's Regional Transportation Plan (RTP). ARB, in consultation with MPOs, will provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. These reduction targets will be updated every 8 years but can be updated every 4 years if advancements in emissions technologies affect the reduction strategies to achieve the targets. ARB is also charged with reviewing each MPO's SCS or APS for consistency with its assigned targets. If MPOs do not meet the GHG reduction targets, transportation projects will not be eligible for funding programmed after January 1, 2012.

This bill also extends the minimum time period for the Regional Housing Needs Allocation (RHNA) cycle from 5 years to 8 years for local governments located within an MPO that meets certain requirements. City or County land use policies (including General Plans) are not required to be consistent with the RTP (and associated SCS or APS). However, new provisions of CEQA would incentivize qualified projects that are consistent with an approved SCS or APS, categorized as "transit priority projects."

Senate Bill 1078

SB 1078 addresses electricity supply and requires that retail sellers of electricity, including investor-owned utilities and community choice aggregators, provide a minimum 20 percent of their supply from renewable sources by 2017. SB 107 changed the target date of this bill's implementation to 2010. This Senate bill would affect statewide GHG emissions associated with electricity generation.

<u>Executive Orders</u>

Executive Order S-20-04 (2004)—The California Green Building Initiative

Governor Schwarzenegger signed Executive Order S-20-04, the California Green Building Initiative, on December 14, 2004, establishing the state's priority for energy and resource–efficient high-performance buildings. The executive order sets a goal of reducing energy use in state-owned and private commercial buildings by 20 percent in 2015, using nonresidential Title 20 and Title 24 standards adopted in 2003 as the baseline. The California Green Building Initiative also encourages retrofitting, construction, and operation of private commercial buildings in compliance with the state's Green Building Action Plan.

Executive Order S-3-05 (2005)

Executive Order S-3-05, which was signed by Governor Schwarzenegger on June 1, 2005, proclaims that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce the Sierra Nevada's snowpack, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To combat those concerns, the executive order established targets for total GHG emissions. Specifically, emissions are to be reduced to the 2000 level by 2010, to the 1990 level by 2020, and to 80 percent below the 1990 level by 2050.

The executive order directed the secretary of the California Environmental Protection Agency to coordinate a multiagency effort to reduce GHG emissions to the target levels. The secretary will also submit biannual reports to the governor and legislature describing progress made toward reaching the emission targets; impacts of global warming on California's resources; and mitigation and adaptation plans to combat these impacts. To comply with the executive order, the Secretary of the California Environmental Protection Agency created the California Climate Action Team, made up of members of various state agencies and commissions. The California Climate Action Team released its first report in March 2006. The report proposed to achieve the targets by building on voluntary actions of California businesses and actions by local governments and communities, as well as through state incentive and regulatory programs.

California Solar Initiative

As part of the California Solar Initiative, the state has set a goal to create 3,000 megawatts of new solar-produced electricity by 2017 through the provision of approximately $3.3 billion in incentives to existing residential customers and all nonresidential customers by CPUC and to new residential customers by CEC.

California Code of Regulations Title 24

Although not originally intended to reduce GHG emissions, California Code of Regulations Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. Energy efficient buildings require less electricity, natural gas, and other fuels. Electricity production from fossil fuels and on-site fuel combustion (typically for water heating) results in GHG emissions. Therefore, increased energy efficiency results in decreased GHG emissions.

Governor's Office of Planning and Research Technical Advisory

On June 19, 2008, OPR issued a Technical Advisory on addressing climate change impacts of a proposed project under CEQA (OPR Climate Change Advisory). The OPR Climate Change Advisory recommends that lead agencies quantify, determine the significance of, and (as needed) mitigate the cumulative climate change impacts of a proposed project. The OPR Climate Change Advisory identifies that each lead agency is required under CEQA to exercise its own discretion in choosing how to determine significance, in the absence of adopted thresholds or significance guidelines from the state, ARB, or the applicable local air district.

Governor's Office of Planning and Research Preliminary Draft CEQA Guideline Amendments for GHG Emissions

OPR has recently issued *Preliminary Draft CEQA Guideline Amendments for Greenhouse Gas Emissions* pursuant to SB 97, which the Resources Agency has not approved. They are designed to be consistent with the existing CEQA framework for environmental analysis, including but not limited to the determination of baseline conditions, determination of significance, and evaluation of mitigation measures. OPR did not identify a specific threshold of significance for greenhouse gas emissions, nor has the OPR prescribed assessment methodologies or specific

mitigation measures. The preliminary draft amendments encourage lead agencies to consider many factors in making their own determinations based on substantial evidence.

California Air Resources Board Proposed Scoping Plan

In September 2008, ARB published its *Climate Change Proposed Scoping Plan* (*Proposed Scoping Plan*), which is the plan to achieve GHG reductions in California required by AB 32 (ARB 2008g). The *Proposed Scoping Plan* contains the main strategies California will implement to achieve reduction of 169 million metric tons (MMT) of CO_2e, or approximately 30 percent, from the state's projected 2020 emission level of 596 MMT of CO_2e under a business-as-usual scenario (this is a reduction of 42 MMT CO_2e, or almost 10 percent, from 2002-2004 average emissions). The *Proposed Scoping Plan* also includes a breakdown of the amount of GHG reductions ARB recommends for each emissions sector of the state's GHG inventory. The largest GHG reductions are recommended from improved vehicle emission standards (estimated reductions of 31.7 MMT CO_2e), a low-carbon fuel standard (15 MMT CO_2e), energy efficiency measures in buildings and appliances (26.3 MMT CO_2e), and a renewable portfolio standard for electricity production (21.3 MMT CO_2e). ARB also recommends that reductions be achieved through local government actions and regional GHG targets; however, the exact amount is still to be determined. The *Proposed Scoping Plan* acknowledges that land use change shall play an important role that affects various emission sectors including transportation, energy, water and wastewater, solid waste and recycling. The ultimate assignments to local governments to achieve GHG reductions will become known as ARB finalizes its scoping plan. Also noteworthy is the fact that the *Proposed Scoping Plan* does not include any direct discussion about GHG emissions generated by construction activity. The *Proposed Scoping Plan* was approved by ARB on December 11, 2008.

Local Plans and Programs

The City does not have any adopted plans or programs specifically designed to address the emission of GHGs that contribute to global climate change.

6.2.3 Cumulative Impact Analysis

Global climate change is caused by the addition of massive quantities of GHGs to the atmosphere due primarily to human activities in the last 150 years from all over the world. For example, about 26 billion metric tons of CO_2 were added to the Earth's atmosphere in 2005 alone. If viewed apart from the GHG emissions produced by activities elsewhere in the world, the mass of GHG emissions generated by an individual development project such as the proposed project would be so minute that the concentration of GHGs in the atmosphere would essentially remain the same. Analyzing project-level climate change impacts is considered speculative under CEQA Guidelines Section 15145 since there is no universally accepted threshold of significance or method of analysis. However, the increasing concentration of GHGs in the atmosphere is caused by the aggregate GHG emissions from a variety of human activities throughout the world, including development projects. Therefore, it is appropriate to evaluate a project's contribution to global climate change in this cumulative, worldwide context.

Methodology

There is no available adopted or widely accepted methodology (at least, not adopted by any air district or state agency) for evaluating GHG emissions from new development. In the case of the proposed project, CO_2 emissions associated with construction and operations were modeled using URBEMIS 2007, Version 9.2.4. CO_2 emissions were used as a proxy for all GHG emissions associated with the proposed project. Indirect emissions associated with energy consumption were estimated using methodology recommended in CCAR's current General Reporting Protocol Version 3.1.

CO_2 emissions associated with VMT are the best indicator of GHGs associated with a land development project. However, it is important to note that other GHGs have a higher GWP than CO_2. For example, 1 lb of CH_4 associated with off-site waste disposal or wastewater treatment processes consistent with the proposed project has an equivalent GWP of 23 lb of CO_2 (CCAR 2009). In other words, as a GHG, CH_4 is 23 times as efficient as CO_2. Nonetheless, emissions of other GHGs

would be low relative to CO_2 emissions. It is important to note that CO_2 emissions consistent with buildout of the proposed project may not necessarily be considered "new" emissions, given that the project itself does not create "new" emitters (people) of GHGs. In other words, the proposed project does not create people, but facilitates their movement from one location to another.

Thresholds of Significance

No air district in California, including SDAPCD, has adopted a significance threshold for GHG emissions generated by a proposed project, or a methodology for analyzing impacts related to GHG emissions or global climate change. By adoption of AB 32 and Public Resources Code Sections 21083.05 and 21097, however, the State of California has established GHG reduction targets and has determined that GHG emissions as they relate to global climate change are a source of adverse environmental impacts in California that should be addressed under CEQA. Although AB 32 did not amend CEQA, the legislation does include language identifying the various environmental problems in California caused by global warming (Health and Safety Code, Section 38501(a).) SB 97, in contrast, did amend CEQA to require OPR to prepare CEQA Guidelines revisions addressing the mitigation of GHGs or their consequences. The proper context for addressing the issue in an EIR is the discussion of cumulative impacts, since while the emissions of one single project will not cause global climate change, GHG emissions from multiple projects throughout the world could result in a cumulative impact with respect to global climate change.

To meet GHG emission targets of AB 32, California would need to generate in the future less GHG emissions than current levels. It is recognized, however, that for most projects there is no simple metric available to determine if a single project would substantially increase or decrease overall GHG emission levels or conflict with the goals of AB 32.

AB 32 demonstrates California's commitment to reducing the rate of GHG emissions and the state's associated contribution to climate change, without intent to limit population or economic growth within the state. Thus, to achieve the

goals of AB 32, which are tied to GHG emission rates of specific benchmark years (i.e., 1990), California would have to achieve a lower rate of emissions per unit of population (per person) than it has now. Further, in order to accommodate future population and economic growth, the state would have to achieve an even lower rate of emissions per unit than was achieved in 1990. The goal to achieve 1990 quantities of GHG emissions by 2020 means that this goal will need to be accomplished with 30 years of continued population and economic growth beyond 1990 in place. Thus, future projects that would not encourage reductions in GHG emissions (or continue at "business as usual" emission rates) would conflict with the policy decisions contained in the spirit of the Climate Solutions Act, thus impeding California's ability to comply with the mandate. In addition, if a project would be affected by the reasonably foreseeable effects of climate change, the project should be designed to adapt to altered future conditions.

While the text of AB 32 focuses on major stationary and area sources of GHG emissions, the primary objective is to reduce California's contribution to global warming by reducing California's total annual production of GHG emissions. The impact that GHG emissions have on global climate change is not dependent on whether they were generated by stationary, mobile, or area sources, or whether they were generated in one region or another. Thus, helping to meet the state's requirements for GHG emissions reductions is the best metric for determining whether the proposed project would contribute to global warming. In the case of the proposed project, if the project does not substantially reduce, compared to "business as usual" (i.e., emissions at today's rates) its potential GHG emissions to a rate that provides for the efficiency to attain 1990 levels by the year 2020, then for purposes of this project the associated increase in the amount of mass emission would be considered substantial, and the impact of the project would be cumulatively considerable (significant). Based on ARB's *Proposed Scoping Plan*, the project would need to produce 30 percent less GHG emissions than under "business as usual" circumstances to attain the efficiency targets that would help the state attain AB 32 goals.

6.2.4 Impact Analysis

Short-term construction and long-term operation of the proposed project would generate emissions of GHGs. Construction emissions would be associated with vehicle engine exhaust from construction equipment, vendor trips, and employee compute trips. Operational emissions would be associated with area, mobile, and stationary sources. Area-source emissions would be associated with activities such as natural gas use, maintenance of landscaping and grounds, and other sources. Mobile-source emissions of GHGs would include project-generated vehicle trips associated with visitors, employees, and deliveries to the project site. In addition, increases in stationary-source emissions could occur at off-site utility providers associated with electricity generation and water distribution that would supply the proposed project.

GHG emissions generated by the proposed project would predominantly consist of CO_2. In comparison to criteria air pollutants, such as ozone and PM_{10}, CO_2 emissions persist in the atmosphere for a substantially longer period of time. While emissions of other GHGs, such as CH_4, are important with respect to global climate change, emission levels of other GHGs are less dependent on the land use and circulation patterns associated with the proposed land use development project than are levels of CO_2.

Buildout of the proposed project would add approximately 25,516 vehicle trips per day to the project area (Urban Systems Associates 2008). If the total trips, as well as area-source and off-site stationary-source GHG emissions are considered, operation of the project would generate total GHG emissions of approximately 41,781 metric tons CO_2e annually during the lifetime of the project. Construction of the proposed project would generate finite quantities of approximately 605 and 839 metric tons of CO_2 in 2010, and 2011, respectively over the duration of construction activities (refer to **Table 6.2-1**). Construction would contribute GHG emissions to a much lesser extent than operation of the proposed project for which emissions occur annually over the lifetime of the project.

6.2.5 Project Design Features that Reduce Greenhouse Gas Emissions

In 2006 the California Climate Action Team (CAT) prepared a recommended list of strategies for the state to pursue to reduce climate change emissions in the state, including strategies to promote smart land use: the integration of transportation and land use decisions. These strategies generally encourage jobs/housing proximity, promote transit-oriented development, and encourage high-density residential/commercial development along transit corridors. The proposed project is consistent with the CAT smart land use strategies in the following respects:

- The proposed project includes a mixture of housing types including affordable apartments and high-density units as well as nonresidential uses such as a grocery, retail shops, and other commercial uses adjacent to one another.
- The project proposes a commercial shopping center intended to serve the daily commercial needs of existing nearby residential areas.
- Pedestrian trails would interconnect the residential and nonresidential components of the project and link the proposed project site to an existing trail network.
- The project would make improvements to an existing bus stop on Rancho Santa Fe Road, including a turnout lane and bus shelter.

These project design features would promote reduced GHG emissions by creating the opportunity for residents to drive shorter distances, bike, or walk to commercial uses; providing an enhanced transit stop to serve the proposed commercial uses and high-density residential uses; and connecting the project site to the existing trail network. However, the efficacy of these design features is uncertain and it is unlikely that they would lead to a 30 percent reduction in GHG emissions from "business as usual" conditions. Therefore, the incremental GHG emissions associated with the proposed project would cause a cumulatively considerable incremental contribution to the significant cumulative (worldwide) impacts of climate change when viewed in connection with worldwide GHG emissions.

Table 6.2-1
Summary of Modeled Project-Generated, Construction- and Operation-Related Emissions of Greenhouse Gases (Carbon Dioxide Equivalent)

Source	Estimated Emissions (CO_2e)[1] (Metric Tons)
Direct Construction Emissions	
2010	605
2011	839
Operational Emissions (2011)	
Area source	1,119 TPY
Mobile source	37,768 TPY
Energy consumption onsite[2]	2,569 TPY
Water consumption (energy for conveyance, treatment, distribution, and wastewater treatment)[3]	325 TPY
Total GHG Emissions	**41,781 TPY**

Notes:
CO_2e = carbon dioxide equivalent; TPY = metric tons per year

[1] Emissions were modeled using the URBEMIS 2007 (Version 9.2.4) computer model, based on trip generation rates obtained from Section 5.2 "Transportation and Circulation" of this EIR; proposed land uses identified in Chapter 3.0, "Project Description,"; and default model assumptions where detailed information was not available. URBEMIS accounts for emissions from vehicles and natural gas use. URBEMIS output is in units of tons CO_2/year, whereas a standard unit for reporting GHG emissions is in metric tons CO_2e/year. URBEMIS does not include emission factors for CH_4 and N_2O. Tons were converted to metric tons using the factor of 0.907 metric tons per ton.

[2] Project indirect operational emissions for electricity generation were calculated using GHG emission factors from the California Climate Action Registry (CCAR) General Reporting Protocol, Version 3.1 January 2009, Appendix C.

[4] Water consumption data was obtained from Section 3.4 "Public Services" and corresponding electricity consumption data was obtained from the CEC report on Energy – Water Relationship (CEC 2005). CCAR emission factors were used to calculate GHG emissions due to water consumption.

Notes: The values presented in this table do not include the full life-cycle of GHG emissions that may occur over the production/transport of materials used during construction of the project or solid waste disposal over the life of the project, end-of-life of the materials and processes that would contribute to GHG emissions that occur as an indirect result of the project, etc. Doing so would require analysis beyond the current capabilities in impact assessment, and would lead to a false and misleading level of precision in reporting of project-related GHG emissions. Further, indirect emissions associated with in-state energy production, solid waste disposal, and wastewater treatment would be regulated under AB 32 at the source or facility that would handle these processes. The emissions associated with offsite facilities in California would be closely controlled, reported, capped, and traded under AB 32 and ARB programs. Therefore, this category of emissions would be consistent with AB 32 requirements.
Refer to Appendix C for detailed assumptions and modeling output files.

To establish additional context in which to consider the order of magnitude of project-generated GHG emissions, it may be noted that facilities (i.e., stationary sources of GHG emissions) that generate greater than 25,000 metric tons CO_2/year are mandated to report GHG emissions to the ARB pursuant to AB 32.

Additionally, the ARB has proposed a threshold of 7,000 metric tons CO_2e/year for operational emissions (excluding transportation) for industrial projects in its preliminary draft proposal *Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the California Environmental Quality Act*. The South Coast Air Quality Management District (SCAQMD) has identified a draft screening level of 3000 metric tons of CO_2e/year for determining significance for residential and commercial projects. In this context, which is presented for informational purposes only, the project's annual operational emissions would appear substantial. However, these requirements apply to stationary combustion sources of GHG emissions, and should not be treated as a numeric threshold applicable to development projects.

Mitigation Measures

Implementation of Air Quality Mitigation Measure AQ-1, which would reduce operational emissions of criteria air pollutants and precursors, would also act to reduce GHG emissions associated with project operation. Mitigation measure AQ-1 is relevant to GHG emissions because both criteria air pollutant and GHG emissions are frequently associated with combustion byproducts. In addition, the applicant shall implement the following measures to reduce direct and indirect GHG emissions associated with the proposed project unless it can be demonstrated to the City of Carlsbad that the measures would not be feasible. Certain measures could already be considered components of the project, but are provided here for purposes of completeness.

A. <u>Energy Efficiency</u>

1. Install efficient lighting and lighting control systems. Site and design buildings to take advantage of daylight.
2. Use trees, landscaping and sun screens on the west and south exterior building walls to reduce energy use.
3. Install light colored "cool" roofs, cool pavements where appropriate, and strategically placed shade trees.

4. Provide information on energy management services for large energy users.
5. Install energy efficient heating and cooling systems, appliances and equipment, and control systems.
6. Limit the hours of operation of outdoor lighting except where infeasible for security reasons.
7. Use solar heating, automatic covers, and efficient pumps and motors for pools and spas at the residential development.
8. Provide education on energy efficiency.

B. Renewable Energy

1. Educate consumers about existing incentives for renewable energy.
2. Install solar panels on carports.

C. Water Conservation and Efficiency

1. Create water efficient landscapes with native, drought-resistant species.
2. Install water-efficient irrigation systems and devices, such as soil moisture-based irrigation controls.
3. Use reclaimed water for landscape irrigation. Install the infrastructure to deliver and use reclaimed water.
4. Design buildings to be water-efficient. Install water-efficient fixtures and appliances.
5. Restrict watering methods (e.g., prohibit systems that apply water to non-vegetated surfaces) and control runoff.
6. Restrict the use of water for cleaning outdoor surfaces and vehicles.
7. Implement low-impact development practices that maintain the existing hydrologic character of the site to manage storm water and protect the environment.

8. Devise a comprehensive water conservation strategy appropriate for the project and location. The strategy may include many of the specific items listed above, plus other innovative measures that are appropriate to the proposed project.
9. Provide education about water conservation and available programs and incentives.

D. Solid Waste Measures

1. Reuse and recycle construction and demolition waste (including, but not limited to, soil, vegetation, concrete, lumber, metal, and cardboard).
2. Provide interior and exterior storage areas for recyclables and green waste and adequate recycling containers located in public areas.
3. Provide education and publicity about reducing waste and available recycling services.

E. Transportation and Motor Vehicles

1. Limit idling time for commercial vehicles, including delivery and construction vehicles through the following measures – signage and provision of power outlets for every two dock doors. Install signs prohibiting diesel trucks from idling for more than five minutes and requiring them to connect to the power outlet to run any auxiliary equipment.
2. Use electric or natural gas equipment at the loading docks.
3. Promote ride sharing programs with future tenants e.g., by designating a certain percentage of parking spaces for ride sharing vehicles, designating adequate passenger loading and unloading and waiting areas for ride sharing vehicles, and providing a web site or message board for coordinating rides.
4. Create car sharing programs. Accommodations for such programs include providing parking spaces for the car share vehicles at convenient locations accessible by public transportation.
5. Provide the necessary facilities and infrastructure to encourage the use of low or zero-emission vehicles (e.g., electric vehicle charging facilities).
6. Incorporate bicycle lanes and routes into residential street systems.
7. Incorporate bicycle-friendly intersections into street design.
8. For commercial development, provide adequate bicycle parking to promote cyclist safety, security, and convenience.

9. Create bicycle lanes and walking paths directed to the location of schools, parks and other destination points.

Measures that are not applicable or not feasible for the proposed project include the following:

- Use on-site generated biogas, including methane, in appropriate applications.
- Recover by-product methane to generate electricity.

The project does not include any land uses that will be bulk methane generators; therefore this measure does not apply to the project.

- Institute a telecommute and/or flexible work hours program. Provide information, training, and incentives to encourage participation. Provide incentives for equipment purchases to allow high-quality teleconferences.

It is currently infeasible for the applicant and the City to institute a telecommute program since the identity of the future tenants is not known at this time.

Implementation of project design features outlined in Section 6.2.5 and the mitigation measures mentioned above would reduce the proposed project's GHG emissions; however, the current state of the science precludes an exact quantification of the additional percentage reduction that would occur from implementation of these additional mitigation measures. Moreover, vehicular emissions constitute approximately 91 percent of the project's GHG emissions. The combination of transportation-related mitigation measures that will be implemented for the project are anticipated to reduce mobile-source related GHG emissions in the range of 5-10 percent (CAPCOA 2008). No other feasible mitigation measures exist to reduce the impact to a level of less than significant. Therefore, this impact would remain significant and unavoidable.

6.3 GROWTH-INDUCING IMPACTS

This section of the EIR considers the ways implementation of the proposed project could directly or indirectly encourage economic or population growth in the region. CEQA refers to growth inducement as ways in which the proposed project would foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment (CEQA Section 15126.2 (d)).

The project consists of the development and operation of a mixed-use development containing commercial, office, and multifamily and single-family residential. The level of development and demand for utilities and infrastructure that would result from approval of the proposed project does not exceed buildout assumptions of the Zone 11 LFMP. The LFMP process includes restrictions on the timing and phasing of development in relation to the provision of community services and infrastructure. The City's Growth Management Plan Policies, which are enforced in the LFMPs, would continue to monitor growth in the area to maintain adequate levels of service for the people living in Carlsbad. With the incorporation of the LFMP process and the City's Growth Management Plan policies, development cannot proceed until adequate infrastructure is financially guaranteed to meet demand.

The project site is located adjacent to an existing circulation network. Although the project site is vacant, major extensions of infrastructure (i.e., sewer trunk line) will not be required for implementation as proposed development will be located adjacent to existing utilities and infrastructure within Rancho Santa Fe Road and La Costa Avenue. Areas immediately adjacent to the site are developed. This area is part of the Villages of La Costa Master Plan and has been developed. The extension of infrastructure from these roadways will not open any unplanned areas for development. Growth inducement as a result of infrastructure extensions is not anticipated.

The proposed project will be developed with 14 dwelling units less than permitted for the site by the Growth Management Control Point and, therefore, has been determined to be consistent with the City's Growth Management Chapter of the General Plan. In addition, the density of the project is consistent with the City of

Carlsbad General Plan, La Costa Master Plan, and Zone 11 LFMP. As such, it will not result in a significant population increase beyond what is projected in the General Plan. The creation of jobs through the proposed commercial land use is not at a level that would attract individuals living outside the region to relocate to Carlsbad or nearby areas. Most likely, the jobs and housing created by the proposed project are anticipated to serve the existing population within the City limits.

The project would provide temporary construction jobs associated with the construction of various industrial, commercial, residential, and public services uses. The short-term nature of the construction jobs is not anticipated to lead to significant long-term population growth in the region.

6.4 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

Development of the proposed project will result in the consumption of nonrenewable energy resources, which will have a significant irreversible effect on such resources. The proposed project will also result in the development of an urban use on a site that is currently vacant and partially utilized for agricultural production. Once developed, reverting to a less urban use or open space is highly unlikely. Development of the project site will constrain future land use options.

Several irreversible commitments of limited resources would result from implementation of the proposed project. The resources include but are not limited to the following: lumber and other related forest products; sand, gravel, and concrete; asphalt; petrochemical construction materials; steel, copper, lead and other metals; and water consumption.

6.5 UNAVOIDABLE SIGNIFICANT ENVIRONMENTAL IMPACTS

Analysis of environmental impacts caused by the proposed project has been performed and is contained in Section 5.0. Unavoidable significant environmental impacts were identified for the following impact areas and were analyzed as part of this EIR:

Remain Significant After Mitigation

- Transportation/Circulation (project-level and cumulative)
- Air Quality (project-level and cumulative)
- Climate Change (cumulative)
- Noise (project-level)

Mitigated To a Level Less Than Significant

- Noise (cumulative)
- Paleontological Resources (project-level and cumulative)
- Biological Resources (project-level and cumulative)
- Hydrology/Water Quality (project-level and cumulative)
- Geology and Soils (project-level and cumulative)
- Hazards (project-level)

6.6 EFFECTS NOT FOUND TO BE SIGNIFICANT

Analysis of environmental impacts caused by the proposed project has been performed and is contained in Section 5.0 of the EIR. The following impact areas were analyzed as part of the Initial Study and this EIR and were found to be not significant:

Initial Study

- Agricultural Resources (project-level and cumulative)
- Cultural Resources (project-level and cumulative)
- Mineral Resources (project-level and cumulative)
- Population and Housing (project-level and cumulative)
- Recreation (project-level and cumulative)

Environmental Impact Report

- Land Use (project-level and cumulative)
- Hazards (cumulative)
- Public Services and Utilities (project-level and cumulative)
- Visual Aesthetics/Grading (project-level and cumulative)

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CHAPTER 7.0
ALTERNATIVES

CEQA requires the consideration of alternative development scenarios and the analysis of impacts associated with the alternatives. Through comparison of these alternatives to the proposed project, the advantages of each can be weighed and analyzed. Section 15126.6 of the CEQA Guidelines states that an EIR "shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project, but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives" (Section 15126.6(a)).

Additionally, sections 15126.6(e) and 15126.6(f) of the Guidelines state:

- The specific alternative of "no project" shall also be evaluated along with its impact. If the environmentally superior alternative is the "no project" alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives.
- The range of alternatives required in an EIR is governed by a "rule of reason" that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice. The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determines could feasibly attain most of the basic objectives of the project. The range of feasible alternatives shall be selected and discussed in a manner to foster meaningful public participation and informed decision making.

Pursuant to the guidelines stated above, a range of alternatives to the proposed project is considered and evaluated in this EIR. These alternatives were developed

in the course of project planning and environmental review, and reflect project objectives. The discussion in this section provides:

1. A description of alternatives considered.

2. An analysis of whether the alternatives meet most of the basic objectives of the project.

3. A comparative analysis of the alternatives under consideration and the proposed project. The focus of this analysis is to determine if alternatives are capable of eliminating or reducing the significant environmental effects of the project to a less than significant level. **Table 7.0-1** provides a summary of this analysis.

Table 7.0-1
Summary Comparison of Project Alternatives to Proposed Project

Impact Category	**Alternative 1** NP: No Development Alternative	**Alternative 2** NP: Existing General Plan, Existing Master Plan, HCP Alternative	**Alternative 3** Biological Open Space Alternative
Land Use and Planning	*	*	*
Transportation/Circulation	Less	Similar	Less
Air Quality	Less	Similar	Less
Noise	Less	Similar	Less
Paleontological Resources	Less	Similar	Similar
Biological Resources	Less	Similar	Less
Hydrology/Water Quality	Less	Similar	Less
Geology and Soils	Less	Similar	Less
Hazards	Less	Similar	Less
Visual Aesthetics/Grading	*	*	*
Public Services and Utilities	*	*	*
Global Climate Change	Less	Similar	Less
Conclusion	**Environmentally Superior to the proposed project**	**Environmentally Similar to the proposed project**	**Environmentally Superior to the proposed project**

NP = No Project
Less = impact of the project alternative is less than impact of proposed project
Similar = impact of project alternative is similar to impact of proposed project

Greater = impact of project alternative is greater than impact of proposed project
* = No significant impact identified for the proposed project

Objectives for the Project

- Strengthen the City's tax base through sales and property taxes and provide increased shopping and job opportunities for local residents.
- Ensure that the surrounding residential areas are adequately served by a commercial center that fulfills daily shopping needs, which will minimize the length of local vehicular trips and encourage transit use, which include convenience goods, food, and personal services in accordance with the La Costa Master Plan.
- Unify land uses by setting forth design guidelines and an implementation program that creates a unique and distinctive sense of place and identity for the community and is consistent with the City's Landscape Manual.
- Conform to and implement the City's Growth Management Program and HCP/OMSP and conform to the General Plan after a minor land use boundary amendment and its associated policies and goals.
- Offer safe, attractive, well-balanced residential areas with a range of housing types, styles, and price levels in a variety of locations, which are compatible with surrounding areas.
- Provide open space features onsite for the benefit of residents and neighboring communities to support active and passive recreation opportunities and a high-quality living environment.
- Allow for walkability features for pedestrian access to the site and bicycle linkages to the surrounding communities through a logical connection of trails, sidewalks, and bicycle facilities.
- Comply with the provisions of Carlsbad Municipal Code Section 21.85.040 by providing the required number of affordable housing units offsite.

- Develop a plan that is sensitive to existing hillside areas, balances earthwork, and provides contour grading where feasible to minimize visual impacts from surrounding public viewing areas.
- Enhance employment opportunities for the City through the creation of construction- and commercial-related jobs that are fully integrated into the community.
- Encourage sustainability in design to foster "green" development that reduces project energy needs and water consumption.
- Improve the water quality of site runoff through sustainable design features, such as a natural bioswale.

Alternatives were designed to generally meet the same project objectives as feasibly as possible. The proposed project would have significant impacts to transportation/circulation, air quality, noise, paleontological resources, biological resources, hydrology/water quality, geology and soils, hazards, and global climate change. The following environmental areas would not be able to be reduced to a level of less than significant, with all feasible mitigation incorporated: transportation/circulation, air quality, noise, and global climate change. The following environmental areas would not have a significant impact through implementation of the proposed project and would not need to be analyzed under each alternative: land use and planning, visual aesthetics/grading, and public services and utilities.

The alternatives discussed below are intended to reduce or avoid the significant environmental impacts associated with the proposed project.

Alternatives Being Considered

The alternatives considered in this EIR include:

1. Alternative 1 – No Project Alternative: No Development

2. Alternative 2 – No Project: Existing General Plan, Existing Master Plan, and HCP Alternative

3. Alternative 3 – Biological Open Space Alternative

Alternatives Considered but Rejected

Alternative Location

An EIR is typically required to analyze an offsite project alternative. Section 15126(f)(2) of the CEQA Guidelines states, in part, that the "key question and first step in analysis is whether any of the significant effects of the project would be avoided or substantially lessened by putting the project in another location. Only locations that would avoid or substantially lessen any of the significant effects of the project need to be considered for inclusion in the EIR." However, for this EIR, City of Carlsbad staff members have determined that there is no feasible offsite alternative location for the project. The City employed a 5-minute drive time from the project site to evaluate locations suitable for a commercial shopping center and mixed-use project of the same size to adequately serve the needs of the community. The survey found no other vacant commercially designated sites in the vicinity that could accommodate the size of the project.

No Commercial Development

The No Commercial Development Alternative concept assumes that the proposed commercial parcel would remain undeveloped, natural open space, and the single-family and multifamily residential parcels would be developed similar to the proposed project. This alternative was determined to be infeasible because it does not meet several core objectives of the project, including strengthening and diversifying the City's tax base; providing an area available to the surrounding community that fulfills daily shopping needs and minimizes local trips; enhancing employment opportunities through construction and commercial-related jobs; and conforming to the La Costa Master Plan, which designated the

site for local commercial development to serve the La Costa community. Therefore, this alternative was rejected from further consideration.

High-Density Residential Only Development

The High-Density Residential Only Development assumes that, in addition to the proposed program for development of the multifamily and commercial parcels, high-density multifamily development would instead be planned for the proposed single-family residential parcel. However, this alternative was determined to be infeasible because it would not provide the proper balance of housing types as seen in the surrounding community. Furthermore, it would not conform to the Master Plan and General Plan vision of low-medium residential development on this site, could cause greater population and related infrastructure requirements to provide services to the area than are available, and would not be consistent with the City's Growth Management Program. This alternative would not meet the project objectives of offering safe, attractive, well-balanced residential areas with a range of housing types, styles, and price levels in a variety of locations that are compatible with surrounding areas. Therefore, this alternative was rejected from further consideration.

Office Space Development on Proposed Multifamily Residential Parcels

The Office Space Development Alternative concept assumes that the proposed multifamily residential parcel would instead be planned for office space development on the 9.9-acre area. However, this alternative was determined to be infeasible because it would not provide the increased diversity in housing options envisioned for the site available to a wide range of incomes. Furthermore, it would not meet the proposed project objectives of complying with Carlsbad Municipal Code Section 21.85.040 by offering safe, attractive, well-balanced residential areas with a range of housing types, styles, and price levels in a variety of locations that are compatible with surrounding areas. Therefore, this alternative was rejected from further consideration.

No Project Alternative

According to CEQA Section 15126.6(e), the No Project Alternative shall be evaluated along with the proposed project. The No Project Alternative allows decision makers to compare the impacts of approving the proposed project to the impacts of not approving the proposed project. When the project contains the revision of an existing land use plan (here, the City of Carlsbad General Plan), the No Project Alternative will be the continuation of the existing plan into the future, limiting development to that considered under the plan. When the project is a development project on identifiable property, the No Project Alternative is the circumstance under which the project does not proceed, and the discussion would compare the environmental effects of the property remaining in its existing state without development against the effects that would occur if the project is approved.

For this EIR, an analysis of both the No Project: No Development; and No Project: Existing General Plan, Existing Master Plan, and Habitat Conservation Plan (HCP) Alternative are provided below.

7.1 ALTERNATIVE 1 – NO PROJECT: NO DEVELOPMENT ALTERNATIVE

7.1.1 Description of Alternative

The No Project: No Development Alternative assumes that no development would occur on the proposed site and the site would remain vacant. This alternative would avoid most of the significant environmental effects associated with implementation of the proposed project. This alternative is technically feasible; however, it does not meet any of the objectives of the proposed project as identified in Section 3.0 Project Description of this EIR. Additionally, this alternative does not meet the objectives of the City's General Plan, as the project site is identified for the following land use designations: Office and Related Commercial (O), Local Shopping Center (L), Open Space (OS), and Low-Medium Density Residential (RLM). Therefore, the City's General Plan expects development of the property at some point in the future. This alternative would not strengthen the City's tax base or provide shopping and job opportunities, would not ensure that

the commercial services under the La Costa Master Plan are fulfilled, and would not offer additional residential areas with a range of housing types and prices. **Table 7.0-1** provides a comparison of Alternative 1 to the proposed project.

7.2 ALTERNATIVE 2 – NO PROJECT: EXISTING GENERAL PLAN, EXISTING MASTER PLAN, AND HCP ALTERNATIVE

7.2.1 Description of Alternative

The No Project: Existing General Plan, Existing Master Plan, and HCP Alternative assumes that the project site would be developed pursuant to the existing General Plan Land Use designations, La Costa Master Plan, and HCP. The existing general plan land use designations of the project site include Office and Related Commercial (O), Local Shopping Center (L), Open Space (OS), and Low-Medium Density Residential (RLM). **Table 7.2-1** provides a summary comparison of Alternative 2 to the proposed project.

7.2.2 Comparison of Environmental Impacts of Alternative to Proposed Project

Land Use and Planning

This alternative would not avoid or reduce a significant impact to land use and planning as no significant land use and planning impact has been identified associated with the implementation of the proposed project.

Table 7.2-1
Summary Comparison of Alternative 2 - Existing General Plan, Existing Master Plan, and HCP Alternative to Proposed Project

Impact Category	Alternative 2 - Existing General Plan, Existing Master Plan, and HCP Alternative
Land Use and Planning	No significant impacts for the proposed project
Transportation/Circulation	Similar – this alternative would generate only 1 to 2% increase or decrease in daily traffic trips.
Air Quality	Similar – this alternative's change in construction-related emissions and operational emissions would be minimal in comparison to total ADT generated by the project.
Noise	Similar – this alternative's change in traffic-related noise would be minimal in comparison to existing ADT and the increase in ADT that would be generated by the project.
Paleontological Resources	Similar – this alternative would have a similar impact to paleontological resources because a similar level of site disturbance would occur.
Biological Resources	Similar – this alternative would have a similar impact to biological resources because the same biological resources would be impacted on the project site.
Hydrology/Water Quality	Similar – this alternative would affect the existing drainage patterns onsite in a way similar to the proposed project.
Geology and Soils	Similar – this alternative would be exposed to similar geotechnical conditions on the project site.
Hazards	Similar – this alternative would result in a similar impact associated with blasting and hazardous materials.
Visual Aesthetics/Grading	No significant impacts for the proposed project.
Public Services and Utilities	No significant impacts for the proposed project.
Global Climate Change	Greater – this alternative would result in a greater impact to global climate change because of increased emissions of greenhouse gases.

Transportation/Circulation

This alternative would result in a similar transportation/traffic impact as compared to the proposed project. The project proposes 192 dwelling units (64 single-family and 128 multifamily units), which is an increase of 110 dwelling units in comparison to the number of single-family homes (82) that would be allowed on the project site under the existing General Plan and La Costa Master Plan. This results in an increase of 844 ADT in comparison to the existing General Plan and La Costa Master Plan. However, the proposed project would change approximately 2.6

acres from the Local Shopping Center (L) designation to Low-Medium Density Residential (RLM), which would result in a net reduction of approximately 1,300 ADT. In addition, the existing Office (O) designation is approximately 25 percent greater than the planned office area under the proposed project, which would increase the trip generation from 20 trips per 1,000 square feet of office use to 80 trips per 1,000 square feet of local shopping center use. While no precise development plan for Alternative 2 has been prepared, it can be estimated that any change in the total of 25,516 ADT generated by the project site under the proposed project would be approximately 1 to 2 percent increase or decrease in comparison to the No Project: Existing General Plan, Existing Master Plan, and HCP Alternative.

Air Quality

As stated under Transportation/Circulation, above, implementation of the No Project: Existing General Plan, Existing Master Plan, and HCP Alternative would result in approximately 1 to 2 percent increase or decrease in ADT in comparison to the proposed project. Therefore, implementation of this alternative would result in a similar air quality impact as compared to the proposed project.

Noise

As stated under Transportation/Circulation, above, implementation of the No Project: Existing General Plan, Existing Master Plan, and HCP Alternative would result in approximately 1 to 2 percent increase or decrease in ADT in comparison to the proposed project. Therefore, implementation of this alternative would result in a similar noise impact as compared to the proposed project and the mitigation required to reduce the significant noise impact to a level less than significant would be similar to the proposed project. Temporary significant and unmitigated noise and vibration impacts related to blasting and drilling would be similar to the proposed project.

Paleontological Resources

Implementation of Alternative 2 would result in a paleontological resources impact similar to the proposed project, since development of this alternative would require a similar level of grading and site disturbance as the proposed project.

Biological Resources

Both the No Project: Existing General Plan, Existing Master Plan, and HCP Alternative and the proposed project would be required to comply with the City's Habitat Management Plan (HMP). The General Plan and Master Plan designate 4.4 acres of open space (traversing the site in a northeast to southwest direction), while the proposed project would result in 3.7 acres of open space (traversing the site in north to south direction). In addition, 1.9 acres of open space would be provided in the multifamily parcel and 3.5 acres in the single-family parcel. Since Alternative 2 and the proposed project would impact similar existing biological resource sites, implementation of Alternative 2 would result in similar biological resources impact as the proposed project, regardless of the lesser amount of open space under Alternative 2.

Hydrology/Water Quality

Implementation of Alternative 2 would result in a similar hydrology/water quality impact as the proposed project since development of this alternative would affect the existing drainage patterns onsite in a way similar to the proposed project. The drainage patterns would be affected due to factors such as grading and increased surface impermeability. The overall intensity and amount of runoff resulting from the implementation of Alternative 2 are expected to be similar to the proposed project. Therefore, the No Project: Existing General Plan, Existing Master Plan, and HCP Alternative would result in a similar hydrology/water quality impact.

Geology and Soils

Implementation of Alternative 2 would result in geology and soils impacts similar to the proposed project since Alternative 2 development would be exposed to similar geotechnical conditions such as seismic-related hazards, erosion and loss of topsoil, unstable geologic units, or expansive soils as the proposed project. As well, similar grading and hillside development requirements would apply to this alternative. Therefore, the No Project: Existing General Plan, Existing Master Plan, and HCP Alternative would result in a similar geology and soils impact.

Hazards

Implementation of Alternative 2 would result in a similar hazardous materials impact as residential, office, and commercial uses allowed under this alternative would result in a similar level of storage, use, and disposal of hazardous materials as would the proposed project. While slightly more office space and less residential development would occur under this alternative, the increase in office space and decrease in residential uses would not significantly increase or decrease the level of hazardous materials stored, used, or disposed. Additionally, Alternative 2 would result in a similar risk of dam inundation and subject structures to flooding as the proposed project. Alternative 2 would further result in a similar hazards impact as the proposed project since development of this alternative would require blasting on the site similar to the blasting activities required by the proposed project development. As risk from wildfires, electromagnetic fields, airport operations, and conflict with emergency plans or operations was found less than significant for the project, these are not required to be considered for this alternative. Therefore, implementation of the No Project: Existing General Plan, Existing Master Plan, and HCP Alternative would result in a similar hazards impact as would implementation of the proposed project.

Visual Aesthetics/Grading

This alternative would not avoid or reduce a significant impact to aesthetics/grading as no significant aesthetics/grading impact has been identified associated with implementation of the proposed project.

Public Services and Utilities

This alternative would not avoid or reduce a significant impact to public services and utilities as no significant public services and utilities impact has been identified associated with implementation of the proposed project.

Global Climate Change

Implementation of Alternative 2 would not result in a measurable change in emissions of greenhouse gas precursors associated with automobile trips generated from the alternative land use mix. Therefore, this alternative would result in similar impacts to Global Climate Change compared to implementation of the proposed project.

7.2.3 Conclusion

Alternative 2 is environmentally similar to the proposed project. This alternative would create fewer residential units, but potentially more shopping center and office space than the proposed project. This minor change in land use would generate only 1 to 2 percent more or less traffic than would the proposed project. All significant environmental effects associated with the project's traffic/circulation impacts (i.e., air quality, noise, and global climate change) would remain significant and subject to similar mitigation measures under Alternative 2. Land use, aesthetics, and public services and utilities impacts are less than significant impacts of the proposed project and are, therefore, not evaluated for this alternative. All other impacts associated with this alternative would be similar compared to the proposed project. Alternative 2 also does not meet certain project objectives such as offering well-balanced residential areas with a range of housing types, styles, and price levels.

7.3 ALTERNATIVE 3 – BIOLOGICAL OPEN SPACE ALTERNATIVE/ENVIRONMENTALLY SUPERIOR ALTERNATIVE

7.3.1 Description of Alternative

The Biological Open Space Alternative would result in the dedication of Biological Open Space to the east of the proposed Open Space Corridor in place of the proposed 64 single-family residential units. The remainder of the project would be developed with the same multifamily residential, shopping center, and office uses as the proposed project. **Table 7.3-1** provides a comparison of this alternative to the proposed project.

7.3.2 Comparison of Environmental Impacts of Alternative to Proposed Project

Land Use and Planning

This alternative would not avoid or reduce a significant impact to land use and planning as no significant land use and planning impact has been identified associated with the implementation of the proposed project.

Table 7.3-1
Alternative 3 - Summary Comparison of Biological Open Space Alternative/ Environmentally Superior Alternative

Impact Category	Alternative 3 - Biological Open Space Alternative/Environmentally Superior Alternative
Land Use and Planning	No significant impact for the proposed project.
Transportation/Circulation	Less – this alternative would generate fewer daily traffic trips (approximately 640 fewer daily trips).
Air Quality	Less – this alternative would result in less construction-related emissions and operational emissions.
Noise	Less – this alternative would result in less of a noise impact because fewer daily trips would be generated.
Paleontological Resources	Similar – this alternative would have similar impact to paleontological resources because the same area of the site where such resources are potentially present would be developed.
Biological Resources	Less – this alternative would have less of an impact to biological resources because the single-family residential parcel would be designated as biological open space.
Hydrology/Water Quality	Less – this alternative would affect less of the existing drainage patterns onsite.
Geology and Soils	Less – this alternative would expose fewer residents to geology and soils impacts.
Hazards	Less – this alternative would result in less of an impact associated with blasting and hazardous materials.
Visual Aesthetics/Grading	No significant impact for the proposed project.
Public Services and Utilities	No significant impact for the proposed project.
Global Climate Change	Less – this alternative would result in fewer greenhouse gas emissions.

Transportation/Circulation

Alternative 3 would result in less of a transportation/circulation impact as compared to the proposed project. Under this alternative, the 64 single-family residences would not be built, which would result in 640 fewer daily traffic trips. Therefore, the Biological Open Space Alternative would result in less of a transportation/circulation impact than would the proposed project.

Air Quality

Implementation of this alternative would result in a lesser air quality impact as compared to the proposed project because Alternative 3 would result in less construction and 640 fewer daily traffic trips. As a result, this alternative would result in a lesser air quality impact than would the proposed project.

Noise

Implementation of Alternative 3 would generate fewer daily traffic trips because the single-family residential parcel would not be developed and it would be preserved as biological open space. Therefore, the Biological Open Space Alternative would result in a lesser noise impact as compared to the proposed project. As well, the potential need for blasting and rock drilling would be reduced, resulting in less noise and vibration impacts from these sources.

Paleontological Resources

This alternative would result in a similar impact associated with paleontological resources as the proposed project. The area preserved as biological open space under this alternative contains Santiago Peak Volcanics, which has no paleontological resource potential because of the magmatic origin of the rocks. Therefore, Alternative 3 would result in an impact associated with the paleontological resources sites similar to the proposed project, since the rest of the Alternative 3 project site (an area with potential paleontological resource sites) would be developed exactly the same as it would be under the proposed project.

Biological Resources

Under this alternative, approximately 9.06 acres of Diegan coastal sage scrub, 12.5 acres of nonnative grassland, 0.25 acre of disturbed ponded areas, and 0.03 acre of riparian scrub would be preserved as biological open space. Alternative 3 would designate approximately 24.4 acres (not including 1.9 acres on the multifamily parcel) as open space, while the proposed project would designate

approximately 9.2 acres (not including 1.9 acres on the multifamily parcel) of open space. Additionally, Alternative 3 would preserve the areas identified as containing southern California rufous-crowned sparrow, loggerhead shrike, and California adolphia, and one ponded area. Direct impacts to these biological resources would, therefore, be reduced under this alternative. However, indirect impacts from the similar adjacent commercial uses, lighting, noise, and increased traffic may be similar to the proposed project. Overall, implementation of the Biological Open Space Alternative would result in less of a biological impact than would the proposed project.

Hydrology/Water Quality

This alternative would result in a lesser hydrology/water quality impact since the residential parcel would not be developed and would be preserved as biological open space. This alternative would retain the proposed single-family residential portion of the site under current undeveloped conditions and minimize impacts from diversion of runoff. The reduced development area would simultaneously lessen the impact from impervious surfaces and associated runoff and the amount of pollutants generated by residential land uses. Therefore, implementation of the Biological Open Space Alternative would result in a lesser hydrology/water quality impact.

Geology and Soils

Implementation of Alternative 3 would result in a lesser impact associated with geology and soils since the residential parcel would not be developed and would be designated as biological open space. Therefore, implementation of the Biological Open Space Alternative would result in a lesser geology and soils impact.

Hazards

This alternative would result in less of a hazards impact since implementation of this alternative would result in the preservation of the residential parcel as biological

open space. As a result, no impact associated with household hazardous waste associated with the proposed 64 single-family homes would occur. Additionally, no seismic groundshaking and dam failure flooding hazards associated with residences on the residential parcel would occur since the parcel would be preserved as open space. As a result, implementation of this alternative would result in a lesser hazards impact.

Visual Aesthetics/Grading

This alternative would not avoid or reduce a significant impact to aesthetics as no significant aesthetics impact has been identified associated with the implementation of the proposed project.

Public Services and Utilities

This alternative would not avoid or reduce a significant impact to public services and utilities as no significant public services and utilities impact has been identified associated with the implementation of the proposed project.

Global Climate Change

Implementation of Alternative 3 would result in fewer emissions of greenhouse gas precursors associated with fewer number of automobile trips generated from the alternative land use mix. Therefore, this alternative would result in less impact to global climate change than implementation of the proposed project.

7.3.3 Conclusion

Alternative 3 is the environmentally superior alternative and is also environmentally superior to the proposed project. Implementation of this alternative would result in less of an impact to transportation/circulation, air quality, noise, biological resources, hydrology/water quality, geology and soils, hazards, and global climate change. The impact to paleontological resources would be similar to the proposed project. Land use, aesthetics, and public services and utilities impacts

are not required to be evaluated under this alternative. However, development according to this alternative would not meet certain basic objectives of the proposed project. The Alternative 3 project would not increase the City's tax base for residential uses as much as the proposed project, and would offer a lesser range of housing types, styles and price levels.

CHAPTER 8.0
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CHAPTER 9.0
RESPONSES TO COMMENTS ON DRAFT EIR

This section of the Final EIR contains comments and responses to written comments received during the public review period on the Draft EIR.

Table 9-1 shows the comments received that address environmental issues raised in the EIR.

Table 9-1
Comments Received on the La Costa Town Square
Draft Environmental Impact Report

Comment	Received From	Date
A	State Clearinghouse	May 12, 2009
B	U.S. Fish and Wildlife Service and California Department of Fish and Game	June 2, 2009
C	California Department of Transportation	May 8, 2009
D	California Department of Toxic Substances Control	April 27, 2009
E	San Diego County Archaeological Society	April 10, 2009
F	City of Encinitas	May 11, 2009
G	City of San Marcos	May 11, 2009
H	Colorado River Board	April 2, 2009
I	David Harrison	March 31, 2009
J	M. M. Zomorrodian	April 8, 2009
K	Selden McCabe	April 24, 2009
L	Neal Meyers	April 26, 2009
M	Glenn Lukos Associates	April 22, 2009
N	Therese White	April 29, 2009
O	Fred and Joy Lane	May 4, 2009
P	Ernie Trujillo	May 9, 2009
Q	Andy Davis	May 11, 2009

Comment	Received From	Date
R	Cat Reeve	May 11, 2009
S	Bruce Ehlers	May 11, 2009
T	Jennifer Carney	May 13, 2009
U	Patricia Bleha	May 18, 2009
V	William Bleha	May 18, 2009
W	Al Clark	May 19, 2009
X	Juliet Bleha	May 19, 2009
Y	Kristine Breese	May 28, 2009