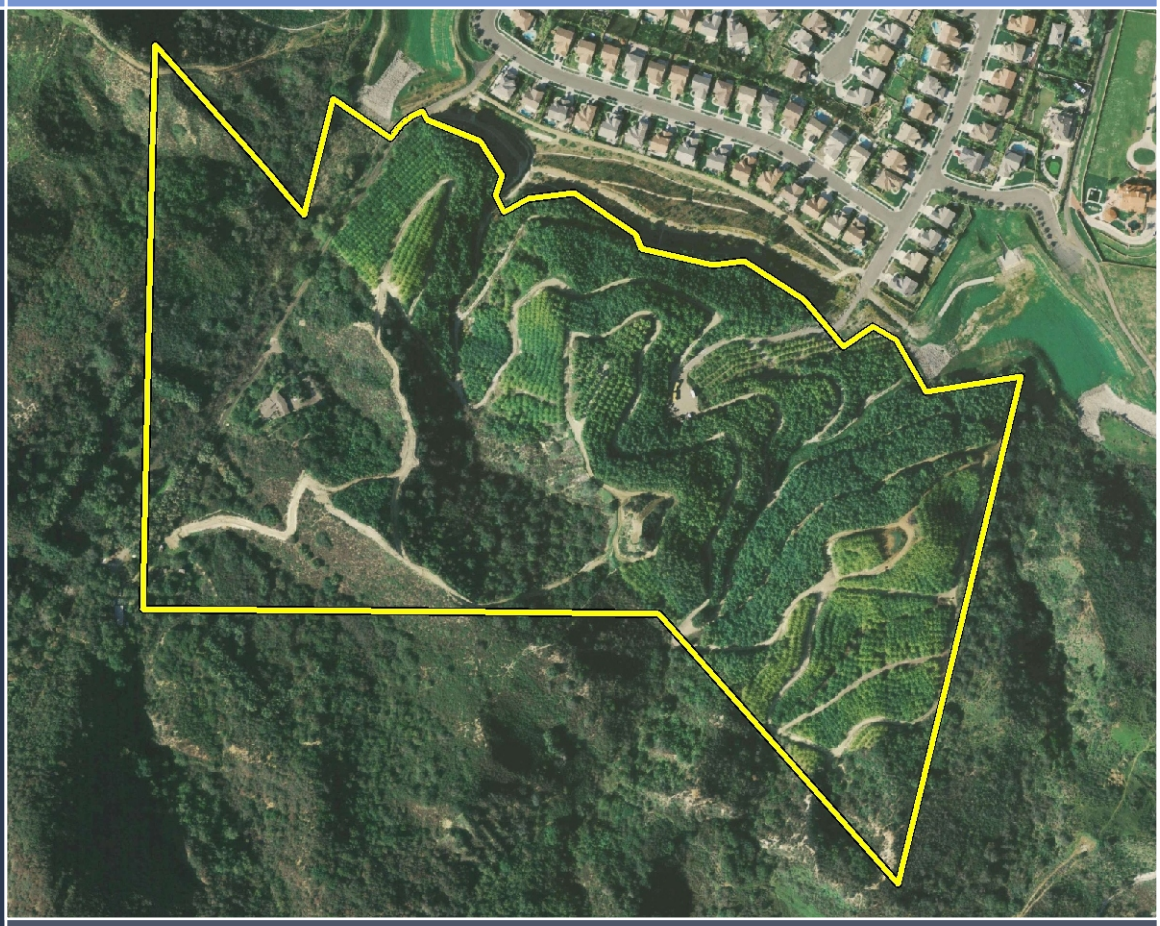
Draft EIR for the

Rancho de Paseo Valencia Project

SCH # 2009041015



FEBRUARY 2011

PREPARED FOR:

City Of Corona
Community Development Department
400 S. Vicentia Avenue
Corona, CA 92882

PREPARED BY:

DUDEK
1650 Spruce Street, Suite 240
Riverside, CA 92507

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ACRONYMS AND ABBREVIATIONS

$\mu g/m^3$	micrograms per cubic meter
ADT	average daily trips
amsl	above mean sea level
ANSI	American National Standards Institute
Basin	South Coast Air Basin
BFSA	Brian F. Smith & Associates
BMP	best management practice
CC&R	covenants, conditions, and restrictions
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CFP	Community Facilities Plan
cfs	cubic feet per second
CH_4	methane
City	City of Corona
CNBBB	California Natural Diversity Database
CNEL	Community Noise Equivalent Sound
CNPS	California Native Plant Society
CNUSD	Corona-Norco Unified School District
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
County	County of Riverside
CWA	Clean Water Act
dB	decibel
du/ac	dwelling units per acre
EIR	Environmental Impact Report
EPA	U.S. Environmental Protection Agency
ER	Estate Residential
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map

GHG	greenhouse gas
GIS	geographic information system
gpd	gallons per day
GSI	GeoSoils, Inc.
H_2S	hydrogen sulfide
HCP	habitat conservation plan
HOA	Homeowner's Association
LAFCO	Local Agency Formation Commission
Ldn	day-night level
LLG	Linscott, Law & Greenspan Engineers
LOS	Level of Service
mg/m^3	milligrams per cubic meter
MMRP	Mitigation Monitoring and Reporting Program
mph	miles per hour
MRZ	Mineral Resource Zone
MSHCP	Multiple Species Habitat Conservation Plan
N_2O	nitrous oxide
NCCP	Natural Communities Conservation Plan
NO_2	nitrogen dioxide
NOI	Notice of Intent
NOP	Notice of Preparation
NO_x	oxides of nitrogen
NPDES	National Pollution Discharge Elimination System
O_3	ozone
Pb	lead
$PM_{2.5}$	particulate matter less than 2.5 microns
PM_{10}	particulate matter less than 10 microns
ppm	parts per million
RCP	reinforced concrete pipe
RM	Rural Mountainous
RR	Rural Residential
RR1	Rural Residential 1

SB	Senate Bill
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SO_2	sulfur dioxide
SO_4	sulfates
SR-91	State Route 91
SWPPP	Storm Water Pollution Prevention Plan
TTM	Tentative Tract Map
TMDL	Total Maximum Daily Load
UCR	University of California, Riverside
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VOC	volatile organic compound
WDR	Storm Water Discharge Requirements
Y.B.P.	years before present

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SECTION 1.0
INTRODUCTION

1.1 PURPOSE AND SCOPE OF THE ENVIRONMENTAL IMPACT REPORT

This Environmental Impact Report (EIR) addresses the potential environmental consequences of the proposed Rancho de Paseo Valencia Project, which would create 34 single-family residential lots.

The City of Corona (City) is the Lead Agency in preparing this EIR in accordance with California Environmental Quality Act of 1970 (CEQA) statutes (California Public Resources Code, Section 21000 et seq., as amended) and implementing state CEQA Guidelines (California Code of Regulations, Title 14 (14 CCR), Section 15000 et seq.).

The proposed project is located within the City of Corona which is in western Riverside County, California. The City is south of the City of Norco and southwest of the City of Riverside. Unincorporated Riverside County borders the City along the southern and eastern areas. The Cleveland National Forest also borders a portion of the City in the south. The regional location of the proposed project is illustrated in Figure 3-1 and the local vicinity is shown on Figure 3-2.

The 65.4-acre subject property consists of hilly irregular-shaped site, in the foothills of the Santa Ana Mountains with approximately 39.9 acres located in the City of Corona and 25.5 acres currently within unincorporated Riverside County (County) just inside the Cleveland National Forest. The 25.5 acres within the County includes 1.1 acres which will be annexed to the City along with the other 24.4 acres of County land; however, because this 1.1 acre parcel is not owned by the applicant it is excluded from the proposed. On-site elevations range from approximately 1,200 feet above mean sea level (amsl) in the northwest corner to about 1,600amsl in the southeast corner. The portion of the site within the City consists primarily of citrus and avocado groves while the remaining area currently within the County consists of dense chaparral and coastal sage scrub. Adjacent property to the east and north consists of single-family residential with undeveloped vacant land to the west and north.

EIRs are informational documents "which will inform public agency decision makers and the public generally of the significant environmental effect of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project" (14 CCR 15121). The purpose of this EIR is to evaluate the environmental effects of the proposed residential development. The EIR does not set forth City policy about the desirability of the potential project, but rather is an informational document to be used by interested parties including City decision makers, City staff, the general public, and other government agencies. The EIR provides relevant information concerning the potential environmental effects and mitigation associated with the construction and operation of the proposed residential subdivision

and development. The EIR also provides alternatives which in some cases may lessen anticipated environmental impacts of the project.

1.2 CALIFORNIA ENVIRONMENTAL QUALITY ACT REQUIREMENTS

The proposed project would require discretionary action by the City. A discretionary action must be thoroughly reviewed by the lead agency (in this case the City) to fully document and disclose any potential environmental effects. This EIR has been prepared in accordance with CEQA (Public Resources Code Sections 21000 et. seq.) and the state CEQA Guidelines published by the Resources Agency of the State of California (14 CCR 15000 et. seq.) and fully examines all potential environmental impacts of the proposed project and incorporates feasible mitigation where needed to lessen any potentially significant impacts to a less than significant level. This EIR represents the independent judgment of the City regarding the proposed project. The CEQA process for the Rancho de Paseo Valencia Project is outlined in Figure 1-1.

In compliance with 14 CCR 15082, the City circulated a Notice of Preparation (NOP) dated March 30, 2009, to interested agencies, groups, and individuals, including the California State Clearinghouse. The State Clearinghouse monitors compliance of state agencies in providing timely responses, assigns a state identification number (in this case, 2009041015) and assists with distribution of the EIR to potentially interested state agencies. The NOP is included in Appendix A of this EIR. The NOP was intended to encourage interagency communication concerning the proposed action and provide sufficient background information about the proposed action so that agencies, organizations, and individuals could respond with specific comments and questions on the scope and content of the EIR. The 30-day public comment period for the NOP ended on May 1, 2009.

A scoping meeting for the public and any other interested parties/agencies was held on April 14, 2009, at the Eisenhower Elementary School in Corona. The City and the EIR consultant presented information on the project and solicited input from the community. All comments received during the NOP review period and public agency scoping meeting were considered during the preparation of this Draft EIR.

California Environmental Quality Act Process Flow Chart

Rancho de Paseo Valencia EIR

Public agency determines the activity is a "project" under CEQA

▼

Public agency determines the project is not otherwise exempt from CEQA

▼

Public agency evaluates project and determines that there is a possibility that the project may have a significant effect on the environment

▼

Lead Agency decides to prepare EIR or Negative Declaration

▼

Lead Agency sends Notice of Preparation (NOP) to responsible agencies and State Clearinghouse (30 days) — *MARCH 30, 2009*

▼

Public Scoping Session — *APRIL 16, 2009*

▼

Lead Agency prepares draft EIR

▼

Lead Agency files Notice of Completion (NOC) and gives public notice of availability of draft EIR

▼

Public Review Period (45 days) — *FEBRUARY 3, 2011-MARCH 21, 2011*

▼

Prepare Response to Comments and circulate to commenting agencies at least 10 days before a decision on the project

▼

Consideration and approval of final EIR by decision-making body

▼

Decision on project — *SPRING 2011*

▼

File Notice of Determination (NOD) with County Clerk and State Clearinghouse

DUDEK

6327-01

MARCH 2010

SOURCE: City of Corona 2010

FIGURE 1-1

California Environmental Quality Act Flowchart

Rancho de Paseo Valencia EIR

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1.3 SCOPE OF THE ENVIRONMENTAL IMPACT REPORT

The comment letters received during the NOP public scoping period indicated that the following environmental topical categories would be analyzed in this EIR:

- Aesthetics
- Agriculture Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Geology /Soils
- Hazards and Hazardous Materials
- Hydrology/Water Quality
- Land Use/Planning
- Noise
- Public Services and Utilities
- Transportation/Traffic.
- Greenhouse Gas Emissions

Aside from the environmental analyses contained herein for the issues listed above, this EIR also contains several other sections including the following: Cumulative Impacts (Section 6); Other California Environmental Quality Act Requirements (Section 7); Effects Found Not to be Significant (Section 8); and Project Alternatives (Section 9). The remaining contents of the EIR document are provided as set forth in the Table of Contents.

1.4 PROJECT SPONSORS AND CONTACTS

The City of Corona is the lead agency under CEQA. Manuel Valencia is the project applicant or sponsor. Dudek is the environmental consultant to the City for the project. Key contact persons for each are as follows:

Local Lead Agency:
City of Corona
Jason Moquin, Senior Planner
Community Development Department
400 South Vicentia Avenue
Corona, California 92882
951.736.2268

Project Applicant:
Manuel Valencia
1253 Enterprise Court
Corona, California 92882
951.279.4877

Environmental Consultant:
Dudek
Sarah Lozano, Project Manager
1650 Spruce Street, Suite 240
Riverside, California 92507
949.300.2100

1.5 REVIEW OF THE DRAFT ENVIRONMENTAL IMPACT REPORT

This Draft EIR has been distributed to local, state, and federal responsible and trustee agencies, groups and individuals interested in the project or who responded to the NOP or expressed interest in the project. The document will be available for review and comment for a 45-day period. Throughout this review period, the EIR and all technical appendices are available for review at the following locations:

City of Corona
Community Development Department
400 South Vicentia Avenue
Corona, California 92882

City of Corona Library
650 South Main Street
Corona, California 92882

The document can also be viewed on the City's website: www.discovercorona.com.

Interested agencies, organizations, and individuals are encouraged to submit written comments regarding the adequacy of the analysis presented in the Draft EIR. Written comments should be addressed to Mr. Jason Moquin, Senior Planner, with the City of Corona at the address listed in Section 1.4.

Upon completion of the 45-day public review period (February 3, 2010, through March 19, 2010), written responses to all comments will be prepared by the City and incorporated into the Final EIR. Once the Final EIR has been completed, the City will hold a public hearing to consider certification of the Final EIR and various other project approval decisions. All commentors who submitted comments on the Draft EIR will be provided a copy of the written responses prepared to their comment letter at least 10 days prior to the scheduled City Council hearing.

1.6 RELATED ENVIRONMENTAL INFORMATION

In addition to the project technical studies (included as appendices to this Draft EIR), a number of other environmental documents and technical studies were consulted to aid in the preparation of this Draft EIR. These documents include the City's General Plan, the City's General Plan EIR, and the Mountain Gate Specific Plan and associated amendment and environmental documents. These documents are available for review at the City of Corona Community Development Department (see address listed in Section 1.5).

1.7 INCORPORATION BY REFERENCE

Several documents have been utilized throughout the preparation of this Draft EIR. Data from a number of other environmental documents have therefore been incorporated by reference.

Pursuant to CEQA, an EIR may incorporate by reference all or a portion of another document that is a matter of public record or is generally available to the public in order to reduce the size of an EIR. These documents are available for public review and inspection at the City of Corona Development Department (see Section 1.5). Wherever this data is incorporated by reference, the analysis in the EIR will summarize the incorporated portions of the document, and if this is not possible, the analysis will briefly describe the data being incorporated (14 CCR 15150(c)). These documents include the City of Corona General Plan EIR (certified March 17, 2004) and the Mountain Gate Specific Plan EIR (certified 1989). When documents have been incorporated, text will be summarized and referenced accordingly.

1.8 MITIGATION MONITORING AND REPORTING PROGRAM

As mandated by 14 CCR 15097 and 15091, the City will prepare a Mitigation Monitoring and Reporting Program (MMRP) prior to project approval. The MMRP will include all mitigation measures outlined in the EIR, the responsible entity for implementation, implementation timing (prior to construction, during construction, post construction), and any follow-up reporting requirements (such as submittal of materials to regulatory agencies).

1.9 INTENDED USES OF THE ENVIRONMENTAL IMPACT REPORT

As the designated lead agency, the City of Corona has assumed responsibility for preparing this document. The City will use the information included in this EIR to consider potential impacts to the physical environment associated with the project when making the decision to approve the project. The Draft EIR will be made available for review to the public and public agencies for 45 days to provide comments on the "sufficiency of the document in identifying and analyzing the possible impacts on the environment and ways in which the significant effects of the project might be avoided or mitigated" (14 CCR 15204(a)).

The City and other agencies will use the EIR and supporting documentation in its decision to issue discretionary permits, including:

Lead Agency Actions

City of Corona:

- Mountain Gate Specific Plan (SP-89-1) Amendment (08-005) – Specific Plan Amendment to include 25.5 acres into Planning Area 26 under the Estate Cluster Residential designation (Hillside Overlay Zone). Amendment results in modifications to the overall land use statistical summary present in the Specific Plan. Amendment also includes addition of "Hillside Street" requirements within Planning Area 26.

Tentative Tract Map (34760) – to subdivide the 64.3-acre site into 34 residential lots with associated streets and open space areas. Annexation (110) – Annexation of 25.5 acres within the City's Sphere of Influence of the unincorporated area of Riverside County into the City of Corona.

Precise Plans for project residential development in conformance with the General Plan and Specific Plan in terms of location, density and development standards.

Responsible Agency Actions

Riverside County Local Agency Formation Commission (LAFCO):

- Annexation (110) – Annexation of 25.5 acres (currently within the City's Sphere of Influence of the unincorporated area of Riverside County) into the City.

Potentially Affected Agency Actions

Regional Water Quality Control Board:

- National Pollution Discharge Elimination System (NPDES) – to grade more than 1 acre of land; approval of the Stormwater Pollution Prevention Plan.

California Department of Fish and Game:

- California Fish and Game Code Section 1600 Streambed Alteration Agreement.

South Coast Air Quality Management District:

- Permit for construction and operation of equipment and grading.

Southern California Edison:

- Easement to allow extension of service to site

Southern California Gas Company:

- Easement to allow extension of service to site

AT&T:

- Easement to allow extension of service to site

1.10 REFERENCES

14 CCR 15000–15387 and Appendix A–L. Guidelines for Implementation of the California Environmental Quality Act, as amended.

California Public Resources Code. Section 21000 et seq., as amended. California Environmental Quality Act of 1970.

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SECTION 2.0
EXECUTIVE SUMMARY

This section provides a summary of the proposed project, areas of known controversy and issues to be resolved, a summary of project alternatives, and a summary of all project impacts, associated mitigation measures, and ultimate level of significance after mitigation is applied.

2.1 SUMMARY OF PROPOSED PROJECT

The proposed project would result in the subdivision of 64.3 acres into 34 single-family detached residential lots. As 39.9 acres is located in the City of Corona, 25.5 acres (which includes 1.1 acres that are not a part of the subdivision proposed project site) would require annexation from the unincorporated area of Riverside County in the City's Sphere of Influence. Project approvals include a Tentative Tract Map to subdivide the site into 34 single family residential lots, an amendment to the Mountain Gate Specific Plan to include the annexed 25.5 acres into the specific plan and zone it for residential purposes, and an annexation to incorporate the adjacent 25.5 acres into the City of Corona making the overall size of the project 65.4 acres within the City. The project will also include certification of an EIR by the City Council.

2.2 AREAS OF CONTROVERSY/ISSUES TO BE RESOLVED

The areas of controversy and/or issues noted below were expressed at the Project's EIR scoping meeting on April 16, 2009 or conveyed to City staff in subsequent written correspondence.

Land Use and Planning

Some neighbors have expressed concern with the fact that the existing orchard would be replaced with additional homes. Intensification of land use is discussed in Section 5.1.

Biological Resources

Some neighbors have expressed concern over destruction of existing wildlife habitat and are concerned with displacement of such wildlife potentially into adjacent neighborhoods. Biological resources and wildlife movement are discussed in Section 5.4.

Cultural Resources

Some neighbors have suggested that the site is considered sacred by Native American groups. Further, the City was contacted by local Native American groups and requested that specific avoidance and minimization measures (i.e., construction monitoring) be implemented during construction. Cultural resources and the probability of the project site being sacred by Native American groups are discussed in Section 5.5.

Geotechnical Hazards

Some neighbors have expressed concern with the scale of grading that is proposed, given on-site fault and liquefaction hazards. Geotechnical hazards are discussed in Section 5.6.

Noise

Some neighbors have expressed concern regarding the noise that will be produced during construction. Further, concerns regarding a new noise source so close to an existing residential neighborhood have also been raised. Construction and operational noise impacts are discussed in Section 5.10.

Traffic

Some neighbors have expressed concern with additional traffic on Malaga Street. Further, safety issues such as likely speeds of cars leaving the proposed development due to the pitch of the entryway driveway were also raised. Increased traffic and roadway design issues are discussed in Section 5.12.

2.3 SUMMARY OF ALTERNATIVES

Four alternatives were fully evaluated in the EIR. These alternatives include a "No Project" alternative, a "Reduced Density" alternative, a "Cluster" alternative and a "County Land Development" alternative. Two additional alternatives consisting of off-site locations and alternative construction access routes were considered but initially rejected and are, therefore, not fully evaluated in the EIR.

Table 2-1
Alternatives Comparison

Environmental Issue	Proposed Project	No Project/No Development	Reduced Density	Cluster	County Land Development
Land Use and Planning	None	No change in land use; however, existing land use designations could result in future residential development. Not considered superior to the project.	Similar to the proposed project.	Slightly superior to proposed project.	Similar to the proposed project.
Agricultural Resources	None	No change to existing agriculture resources. Slightly superior to proposed alternative.	Similar impacts as proposed project.	Similar impacts as proposed project.	Most of the existing agriculture resources would be left intact; however, some disturbance would occur to provide

Table 2-1 (Continued)

Environmental Issue	Proposed Project	No Project/No Development	Reduced Density	Cluster	County Land Development
					access to project site. Slightly superior to proposed project.
Air Quality	Less than Significant Impacts with Mitigation Incorporated	No construction impacts and reduced operational impacts related air quality impacts. Similar to proposed alternative.	Similar impacts as proposed project during construction. Likely less impacts once operational due to less residences. Slightly superior than the proposed project.	Similar impacts as proposed project.	Similar impacts as the proposed project.
Biological Resources	Less than Significant Impacts with Mitigation Incorporated	No removal of on-site vegetation or other biological resources would occur. Superior to proposed alternative.	Slightly fewer impacts compared to the proposed project. Slightly superior than proposed project.	Dwellings could potentially be sited further from the project boundary with natural open space areas. Less site disturbance and vegetation removal would be necessary. Slightly superior than proposed project.	Greater disturbance to open space areas and potentially reduced buffers between development and natural areas. Slightly inferior than proposed project.
Cultural Resources	Less than Significant Impacts with Mitigation Incorporated	No potential disruption to unknown historic, archaeological, or paleontological remains. Superior to proposed project.	Similar potential impacts as proposed project.	Similar potential impacts as proposed project.	Similar potential impacts as proposed project.
Geology and Soils	Less than Significant Impacts with Mitigation Incorporated	On-site hazards would remain unmitigated. Alternative may pose a greater risk than the proposed project.	Similar impacts as proposed project.	Similar impacts as proposed project.	Potentially greater impacts than proposed project due to siting development on steeper hillsides. Slightly inferior than proposed project.
Hazards and Hazardous Materials	Less than Significant Impacts with Mitigation Incorporated	No soil movement; therefore, potential release of unknown contaminants would not occur. Less wildfire risks. Superior to proposed project.	Similar impacts as a result of discovery of buried hazards as proposed project.	Similar impacts as a result of discovery of buried hazards as proposed project.	Similar impacts as a result of discovery of buried hazards as proposed project.
Hydrology and Water Quality	Less than Significant Impacts with Mitigation Incorporated	No potential water quality or hydrology modification impacts compared to the proposed project.	Similar impacts to water quality and hydrology as proposed project.	Similar to proposed project; however, less impervious surfaces would have fewer water	Mostly similar to proposed project; however, greater impacts to areas planned as open

Table 2-1 (Continued)

Environmental Issue	Proposed Project	No Project/No Development	Reduced Density	Cluster	County Land Development
		Superior to proposed project.		quality impacts. Substantially similar to proposed project.	space in proposed project. Slightly inferior to proposed project.
Aesthetics	Significant Unavoidable Impact	No change to existing aesthetics and no potential for impacts resulting from additional light sources. Superior to proposed project.	Slightly superior to the proposed project.	Less grading and less visible from surrounding areas. Superior to proposed project.	Similar impacts as proposed project.
Noise	Significant Unavoidable Impact	Existing orchard operation noise would continue. No increase in traffic noise would occur. Superior to the proposed project.	Similar to the proposed project; however, fewer residences may result in less noise once occupied. Slightly superior to the proposed project.	Set back further from existing residential or open space uses. Slightly superior to proposed project.	Potentially set back further from existing residential uses; however, sited closer to open space areas. Similar impacts as proposed project.
Public Services and Utilities	Less than Significant Impacts with Mitigation Incorporated	No new demands to City infrastructure. Superior to proposed project.	Similar to the proposed project.	Similar impacts as proposed project.	Similar impacts as proposed project.
Transportation and Circulation	Less than Significant Impacts with Mitigation Incorporated	No new traffic during construction or once occupied. Superior to proposed project.	Similar to the proposed project.	Similar impacts as proposed project.	Similar impacts as proposed project.
Greenhouse Gas Emissions	Less than Significant Impacts with Mitigation Incorporated	No change to existing emissions resulting from agricultural operations. Superior to proposed project.	Less construction related impacts. Fewer residences would result in fewer automobile trips and less energy demand. Slightly superior to proposed project.	Mostly similar to proposed project. Less grading activity could potentially reduce emissions depending on site layout. Substantially similar to proposed project.	Potentially fewer construction related impacts and less energy demand and automobile trips resulting from fewer residences. Slightly superior to proposed project.

2.4 SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Table 2-2
Summary of Project Impacts

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance After Mitigation
Land Use			
a. Divide an established community	Less than Significant	N/A	N/A
b. Conflicts with other plans, policies, or regulations	Less than Significant	N/A	N/A
c. Conflicts with conservation plans	Potentially Significant	**BIO-4 through BIO-11** (Refer to below)	Less than Significant
Agricultural Resources			
a. Prime or unique farmland, farmland of statewide importance conversion	Less than Significant	N/A	Less than Significant
b. Agricultural zoning or Williamson Act contract conflicts	Less than Significant	N/A	N/A
c. Conversion of farmland or forest resources to non-agricultural use	Less than Significant	N/A	N/A
d. Conflicts with existing zoned forest land or timberland	No Impact	N/A	N/A
e. Loss of forest land or conversion of forest land to non-forest use	No Impact	N/A	N/A

Table 2-2 (Continued)

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance After Mitigation
Air Quality			
a. Applicable Air Quality Plan	Less than Significant	N/A	N/A
b. Projected Air Quality Violation	Potentially Significant	**AQ-1** Consistent with South Coast Air Quality Management District's Rule 403, this measure requires that fugitive dust generated by grading and construction activities be kept to a minimum with a goal of retaining dust on the site. During construction, fugitive dust will be controlled by the following measures: a. During clearing, grading, earth moving, excavation, or transportation of cut or fill materials, water trucks or sprinkler systems shall be used to prevent dust from leaving the site and to create a crust after each day's activities cease. b. During construction, water truck or sprinkler systems shall be used to keep all areas of vehicle movement damp enough to prevent dust from leaving the site. At a minimum, this would include wetting down such areas later in the morning and after work is completed for the day and whenever winds exceed 15 mph. c. Soil stockpiled for more than 2 days shall be covered, kept moist, or treated with soil binders to prevent dust generation. d. All vehicles traveling on unpaved roads shall not travel more than 15 mph. e. All grading and excavation operations shall cease when wind speeds exceed 25 mph. f. Dirt and debris spilled onto paved surfaces at the project site and on the adjacent roadways shall be swept, vacuumed, and/ or washed at the end of each workday. g. Although import and export of soil materials is not required, all trucks hauling any dirt, sand, soil, or other loose material to and from the construction site shall be tarped and maintain a minimum 2 feet of freeboard. h. A pad consisting of washed gravel (minimum size: 1 inch) shall be installed at the junction of the project site and adjacent paved roadways. The pad shall be maintained in a clean condition to a depth of at least 6 inches and extending at least 30 feet wide and at least 50 feet long (or as otherwise directed by South Coast Air Quality Management District). **AQ-2** The applicant shall use architectural coatings with zero VOC content during project construction/application of paints and other architectural coatings to reduce O_3 precursors. If zero-VOC paint cannot be utilized, the applicant shall avoid application of architectural coatings during the peak smog season: July, August, and September. The applicant shall procure architectural coatings from a supplier in compliance with the requirements of South Coast Air Quality Management District's Rule 1113 (Architectural Coatings).	Less than Significant

Table 2-2 (Continued)

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance After Mitigation
c. Cumulatively Considerable Net Increase	Less than Significant	N/A	N/A
d. Pollutant Concentrations	Less than Significant	N/A	N/A
e. Objectionable Odors	Less than Significant	N/A	N/A
Biological Resources			
a. Substantial Adverse Effect on Candidate, Sensitive, or Special-Status Species	Potentially Significant Impact	**BIO-1** If grading or site disturbance is to occur between February and August, within no more than 72 hours of grading (or site disturbance), a nesting bird survey shall be conducted by a qualified biologist (per the City of Corona) to determine the presence of nests or nesting birds. All work within 300 feet of an active nest will be halted until that nesting effort is finished. The on-site biologist will review and verify compliance with these nesting boundaries and will verify the nesting effort has finished. Work can resume when no other active nests are found. Upon completion of the survey and any follow-up construction avoidance management, a report shall be prepared and submitted to the City for mitigation monitoring compliance record keeping. **BIO-2** Prior to issuance of a grading permit, the applicant shall provide a set of grading plans which will include the following contractor requirements: • A 10-foot high noise attenuation wall shall be erected (see Figure 5.4-4: Noise Attenuation Wall Locations). • Daily noise monitoring by a qualified acoustician would be required during all earth moving activity. The noise levels must remain at or below 60 dBA Leq-h at nearby sensitive habitat areas. If noise measurements exceed 60 dBA Leq-h, the acoustician must notify the construction manager and the City Mitigation Monitor and Reporting Manager. The monitoring acoustician and contractor shall formally dictate additional methods for attenuation below 60 dBA Leq-h. Should noise attenuation below 60 dBA Leq-h prove infeasible near sensitive habitat areas, all work generating noise levels above 60 dBA Leq-h within 300 feet of an active nest will be halted until that nesting effort is finished as set forth in Mitigation Measure BIO-1. The on-site biologist will review and verify compliance with these nesting boundaries and will verify the nesting effort has finished. Work can resume when no other active nests are found.	Less than Significant

Table 2-2 (Continued)

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance After Mitigation
b. Substantial Adverse Effect on Riparian or Other Sensitive Natural Community	Potentially Significant Impact	**BIO-3** In order to mitigate impacts to wetland resources on site, one of the following options shall be implemented in order to mitigate for the permanent loss of 0.075 acre of riparian habitat: 1) Conserve 0.225 acre of riparian habitat (3:1 ratio). This habitat must be of similar or greater quality than the existing riparian habitat associated with Drainage A. Further, this conservation must occur on-site and in perpetuity. 2) Conserve 0.375 acre of riparian habitat (5:1 ratio) through participation in a CDFG-approved habitat conservation program or bank. Participation in the bank or regional conservation program shall ensure that conservation is in perpetuity. Prior to issuance of a grading permit, the applicant must provide the City with written documentation from CDFG indicating that this mitigation requirement has been fulfilled to their satisfaction.	Less than Significant
c. Substantial Adverse Effect on Federally Protected Waters	Less than Significant	N/A	N/A
d. Interfere Substantially With Movement of Native Resident or Migratory Fish or Wildlife	Less than Significant	N/A	N/A
e. Conflict With Local Policies or Ordinances Protecting Biological Resources	Less than Significant	N/A	N/A
f. Conflict With Provisions of Adopted Local, Regional, or State Habitat Conservation Plan	Potentially Significant	**BIO-4** Prior to issuance of a grading permit, the applicant shall provide the City with a drainage management plan (which may be combined with the Storm Water Pollution Prevention Plan required by the National Pollutant Discharge Elimination System) that describes the measures that will be taken throughout construction and operation of the project to ensure that water flow is maintained to off-site drainages. Measures may include, but are no limited to a rerouted subterranean drainage system to convey water around the project site or a new water source input at the downstream edge of the proposed project	Less than Significant

Table 2-2 (Continued)

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance After Mitigation
		footprint. Further, this plan shall also include parameters for ensuring that drainage water quality is maintained at predevelopment levels. Moreover, compliance with the National Pollutant Discharge Elimination System and implementation of a Storm Water Pollution Prevention Plan would ensure that no significant impacts to water quality that could affect biological resources would occur, as all water quality standards would be maintained pursuant to the Clean Water Act. **BIO-5** Prior to grading permit issuance, adequate and appropriate measures to control chemicals or bioproducts that are potentially toxic or may adversely affect wildlife species, habitat, or water quality shall be developed and included in the Storm Water Pollution Prevention Plan. Specific measures shall include the following: • Avoidance of aerial application on days with winds exceeding 2 miles per hour. • Containment of all pollutants on the project site. • All pollutants and runoff will be conveyed off-site and disposed off according to standard procedures. • Any spillage into conserved areas shall be immediately cleaned up. • Permanent adequate control measures for manure and similar pollutants resulting from human use of the site will be incorporated into the requirements for the development of such facilities as horse stables, pesticide and insecticide storage facilities, and landscaping sheds. **BIO-6** Prior to issuance of a grading permit, a construction lighting plan shall be submitted to the City to indicate the potential location and management of all construction lighting. Lighting shall be directed downward and specifically toward work areas so as to avoid stray lighting to sensitive off-site habitats. If construction is not planned during evening hours, a plan would not be required. **BIO-7** The street improvement plan shall indicate the type, intensity, and notes regarding direction of all street, entry way, tennis court, and other common area lighting. Night lighting shall be directed away from sensitive habitat areas and toward the ground. Shielding shall be incorporated in project designs to ensure ambient lighting in the adjacent sensitive habitat areas is not increased. **BIO-8** The final landscape plan shall avoid the use of all invasive, non-native species listed in Table 6-2 of the MSHCP. No plants producing windblown seeds will be used in the landscape palette. The covenants, conditions, and restrictions (CC&Rs) associated with all lots that abut exterior project boundaries shall be specifically prohibited from using species listed on Table 6-2 of the MSHCP in any planned front yard or backyard landscaping. **BIO-9** Lots 20, 21, and 22 shall be required to maintain 6-foot high masonry walls or wrought iron fencing at the rear	

Table 2-2 (Continued)

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance After Mitigation
		of their property lines to establish a distinct separation from developed and undeveloped areas. **BIO-10** Prior to issuance of a grading permit, the City shall ensure that all grading is maintained within the proposed project footprint. No temporary grading shall be allowed in land outside of the proposed project boundary. Further, no manufactured slopes shall extend beyond the project boundary unless properly assessed for biological resources and authorized by the City Planning Department. **BIO-11** Prior to issuance of a grading permit, the project applicant shall be required to pay a MSHCP mitigation fee in order to offset impacts to MSHCP-related biological resources.	
Cultural Resources			
a. Adverse change in the significance of a historical resources	Potentially Significant	**CUL-1** The applicant shall retain a qualified archaeological monitor, who shall prepare an Archaeological Resources Mitigation and Monitoring Plan. The archaeologist shall attend all pre-grading meetings to inform the grading and excavation contractors of the archaeological resource mitigation program and shall consult with them with respect to its implementation. The archaeological monitor shall be on site at all times during the initial phases of clearing and rough grading to inspect cuts for contained archaeological resources. If such resources are discovered, the archaeological monitor shall recover them. In instances where recovery requires an extended salvage time, the archaeologist or monitor shall be allowed to temporarily direct, divert, or halt grading to allow recovery of resource remains in a timely manner. Recovered archaeological resources, along with copies of pertinent field notes, photographs, and maps, shall be deposited in a scientific institution with archaeological collections and the resources shall be recorded in the California Archaeological Inventory Database. A final monitoring report shall be submitted to the City within 30 days of the end of monitoring activities.	Less than Significant
b. Adverse change in significance of an archaeological resource	Potentially Significant	**CUL-2** All grading, excavation, and ground-breaking activities shall be monitored by a tribal monitor. The project applicant shall pay all fees associated with such tribal monitors. The tribal monitors will have the authority to temporarily stop and redirect grading activities, in conjunction with the archaeological monitor and the City. **CUL-3** Prior to issuance of grading permits, the applicant shall be required to enter into a Treatment Agreement with the Pechanga Band of Luiseño Indians. This agreement will address the treatment and disposition of cultural resources and human remains, including those that may be inadvertently uncovered during construction as well as the provisions for the tribal monitors. **CUL-4** The applicant shall relinquish ownership of all cultural resources discovered on site. This may include sacred items, burial goods, and all archaeological artifacts that are found on the project site. All items shall be turned over to the appropriate Indian tribe for proper treatment and disposition.	Less than Significant

Table 2-2 (Continued)

Environmental Topic	Impact?	Mitigation Measure(s)		Level of Significance After Mitigation
c. Destroy a unique paleontological resource or site or geologic feature	Potentially Significant	**CUL-5**	The applicant shall retain a qualified paleontological monitor who shall prepare a Paleontological Resources Mitigation and Monitoring Plan. The paleontologist shall attend all pre-grading meetings to inform the grading and excavation contractors of the paleontological resource mitigation program and shall consult with them with respect to its implementation. The paleontological monitor shall be on site at all times during mass grading and excavation and shall observe all utility trenching activities. Paleontological monitoring is not required within coarse grained alluvial fan materials as depicted by Figure 5.6-1 (see Section 5.6). If any fossils are discovered, the paleontological monitor shall recover them. In instances where recovery requires an extended salvage time, the paleontologist or monitor shall be allowed to temporarily direct, divert, or halt grading to allow recovery of resource remains in a timely manner. Recovered fossils, along with copies of pertinent field notes, photographs, and maps, shall be deposited in a scientific institution with paleontological collections or in accordance with the Society of Vertebrate Technology recommendations. A final monitoring report shall be submitted to the City within 30 days of the end of monitoring activities.	Less than Significant
d. Disturbance of human remains	Potentially Significant	**CUL-6**	If human remains are encountered during site preparation or construction, the provisions of California Health and Safety Code Section 7050.5 shall be followed. If remains are uncovered, the Riverside County Coroner shall be immediately notified. Code Section 7050.5 states that no further disturbance shall occur until the Riverside County Coroner has made the necessary findings as to the origin of such remains. Further, pursuant to California Public Resources Code Section 5097.98(b), remains shall be left in place and free from disturbance until a final decision as to the treatment and disposition has been made. If the Riverside County Coroner determines that the remains are Native American, the Native American Heritage Commission shall be contacted within a reasonable timeframe. Subsequently, the Native American Heritage Commission shall identify the “most likely descendant.” The “most likely descendant” shall then make recommendations and engage in consultations concerning the treatment of the remains as provided for in Public Resources Code Section 5097.98.	Less than Significant
Geology and Soils				
a. Structures exposed to adverse effects	—	—		—
i. Faulting	Potentially Significant	**GEO-1**	Geotechnical recommendations regarding necessary testing, monitoring and inspecting at various stages throughout project design and implementation are made in the following documents, attached as Appendix E of this EIR, and shall be consulted and implemented to the satisfaction of the City of Corona Engineer during project design and construction:	Less than Significant

Table 2-2 (Continued)

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance After Mitigation
		• Updated Preliminary Geotechnical Investigation, and Updated Fault Rupture Hazard Evaluation, Tentative Tract 34760, Corona, Riverside County, California 92882, dated October 9, 2006, by GeoSoils, Inc. • Memorandum "Slope Stability and Value Engineering, Existing Slope-Non-Grading Option, Tentative Tract No. 34760, City of Corona, Riverside County, California," dated November 20, 2007, by GeoSoils, Inc. • Memorandum "Tentative Tract Map Review, Tentative Tract No. 34760, Corona, Riverside County, California," dated June 12, 2008, by GeoSoils, Inc. • Memorandum "Geotechnical Review of Fire Protection/Fuel Modification Plan, Tentative Tract No. 34760, Corona, Riverside County, California," dated November 6, 2008, by GeoSoils, Inc. The recommended observations and/or testing shall be performed by GSI at each of the following construction stages: • During grading/recertification. • During excavation. • During placement of subdrains, toe drains, or other subdrainage devices, prior to placing fill and/or backfill. • After excavation of building footings, retaining wall footings, and free standing walls footings, prior to the placement of reinforcing steel or concrete. • Prior to pouring any slabs or flatwork, after presoaking/presaturation of building pads and other flatwork subgrade, before the placement of concrete, reinforcing steel, capillary break (i.e., sand, pea-gravel, etc.), or vapor retarders (i.e., visqueen, etc.). • During retaining wall subdrain installation, prior to backfill placement. • During placement of backfill for area drain, interior plumbing, utility line trenches, and retaining wall backfill. • During slope construction/repair. • When any unusual soil conditions are encountered during any construction operations, subsequent to the issuance of this report. • When any developer or homeowner improvements, such as flatwork, spas, pools, walls, etc., are constructed, prior to construction. GSI should review and approve such plans prior to construction. • A report of geotechnical observation and testing should be provided at the conclusion of each of the	

Table 2-2 (Continued)

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance After Mitigation
		above stages, in order to provide concise and clear documentation of site work, and/or to comply with code requirements. • GSI should review project sales documents to homeowners/homeowners associations for geotechnical aspects, including irrigation practices, the conditions outlined above, etc., prior to any sales. At that stage, GSI will provide homeowners maintenance guidelines which should be incorporated into such documents. The following mitigation measures are contained within the geotechnical reports titled "Geotechnical Review of Fire Protection/Fuel Modification Plan, Tentative Tract No. 34760, Corona, Riverside County, California," "Slope Stability and Value Engineering, Existing Slope-Non-Grading Option, Tentative Tract No. 34760, City of Corona, Riverside County, California," and "Updated Preliminary Geotechnical Investigation, and Updated Fault Rupture Hazard Evaluation, Tentative Tract 34760, Corona, Riverside County, California 92882." All mitigation measures shall be implemented to the satisfaction of the City of Corona Engineer during project design, construction and operation. **GEO-30** The proposed foundation systems should be designed and constructed in accordance with the guidelines contained in the UBC (ICBO, 1997) and the differential settlement and angular distortion discussed previously and herein. Conventional foundations may be utilized for soils with an E.I. of less than 90 (i.e., very low to medium classification) and fill depths under 25 feet in thickness. Where expansive soils are exposed at finish grade and/or compacted fills in excess of 25 feet in thickness exist, post-tensioned slabs will likely be required. **GEO-31** Mitigation of foundation design includes: 1. Conventional spread and continuous footings may be used to support the proposed residential structures provided they are founded entirely in properly compacted fill or other suitable bearing material (excluding the highly expansive Tertiary Silverado Formation). 2. Analyses indicate that an allowable bearing value of 1,500 pounds per square foot (psf) may be used for design of footings which maintain a minimum width of 12 inches (continuous) and 24 inches square (isolated), and a minimum depth of at least 12 inches into the properly compacted fill or competent fan deposits, or the Tertiary Silverado Formation bedrock unit. The bearing value may be increased by one-third for seismic or other temporary loads. This value may be increased by 200 psf for each additional 12 inches in depth, to a maximum of 2,500 psf. 3. For lateral sliding resistance, a 0.35 coefficient of friction may be utilized for a concrete to soil contact when multiplied by the dead load.	

Table 2-2 (Continued)

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance After Mitigation
		4. Passive earth pressure may be computed as an equivalent fluid having a density of 250 pcf with a maximum earth pressure of 2,500 psf. 5. When combining passive pressure and frictional resistance, the passive pressure component should be reduced by one-third. 6. All footings should maintain a minimum 7-foot horizontal distance between the base of the footing and any adjacent descending slope, and minimally comply with the guidelines depicted on Figure No. 18-I-1 of the UBC (ICBO, 1997). Lateral Pressure **GEO-32** Mitigation of lateral pressure includes: 1. For lateral sliding resistance, a 0.35 coefficient of friction may be utilized for a concrete to soil contact when multiplied by the dead load. 2. Passive earth pressure may be computed as an equivalent fluid having a density of 225 pcf with a maximum earth pressure of 2,500 psf. 3. When combining passive pressure and frictional resistance, the passive pressure component should be reduced by one-third. **GEO-33** The following preliminary conventional foundation construction recommendations are for soils in the top 7 feet of finish grade, which will have a very low to medium expansion potential, for planning and design considerations. 1. Conventional continuous footings should be founded at a minimum depth of 12 inches below the lowest adjacent ground surface for one-story floor loads and 18 inches below the lowest adjacent ground surface for two-story floor loads. Interior footings may be founded at a depth of 12 inches below the lowest adjacent ground surface. Footings for one-story floor loads should have a minimum width of 12 inches, and footings for two-story floor loads should have a minimum width of 15 inches. All footings should have one No. 4 reinforcing bar placed at the top and one No. 4 reinforcing bar placed at the bottom of the footing. Isolated interior or exterior footings should be founded at a minimum depth of 24 inches below the lowest adjacent ground surface. 2. A grade beam, reinforced as above, and at least 12 inches square, should be provided across the garage entrances. The base of the reinforced grade beam should be at the same elevation as the adjoining footings. 3. Concrete slabs in residential and garage areas should be a minimum of 5 inches thick, and underlain	

Table 2-2 (Continued)

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance After Mitigation
		with a vapor retarder consisting of a minimum of 10-mil, polyvinyl-chloride membrane with all laps sealed. This membrane should be covered, above and below with a minimum of 2 inches of sand (total of 4 inches) to aid in uniform curing of the concrete and to prevent puncture of the vapor retarder. 4. Concrete slabs, including garage slabs, should be reinforced with No. 3 reinforcement bars placed on 18-inch centers, in two horizontally perpendicular directions (i.e., long axis and short axis). All slab reinforcement should be supported to ensure proper mid-slab height positioning during placement of the concrete. "Hooking" of reinforcement is not an acceptable method of positioning. 5. Garage slabs should be poured separately from the residence footings and be quartered with expansion joints or saw cuts. A positive separation from the footings should be maintained with expansion joint material to permit relative movement. 6. The residential and garage slabs should have a minimum thickness of 5 inches, and the slab subgrade should be free of loose and uncompacted material prior to placing concrete. 7. Presaturation is not necessary for these soil conditions; however, the moisture content of the subgrade soils should be equal to or greater than optimum moisture to a depth of 12 inches below the adjacent ground grade in the slab areas, and verified by this office within 72 hours of the vapor retarder placement. 8. Soils generated from footing excavations to be used on site should be compacted to a minimum relative compaction 90 percent of the laboratory standard, whether it is to be placed inside the foundation perimeter or in the yard/right-of-way areas. This material must not alter positive drainage patterns that direct drainage away from the structural areas and toward the street. 9. Foundations near the top of slope should be deepened to conform to the latest edition of the UBC (ICBO, 1997) and provide a minimum 7-foot horizontal distance from the slope face. Rigid block wall designs located along the top of slope should be reviewed by a soils engineer. 10. Based on post-construction settlement analyses, areas where compacted fill materials in excess of 25 feet exist, an engineered post-tension foundation system will likely be required. 11. Post-tension foundations will likely be required if medium to highly expansive soils are exposed at finish grade, minimum to maximum fill thickness variation does not comply with recommendations herein, or if fills exceed about 25 feet in thickness. 12. As an alternative to conventional foundation systems, an engineered post-tension foundation system may be used. Recommendations for post-tensioned slab design are provided in following sections.	
		GEO-36 Concrete slabs should be a minimum of 5 inches thick for very low expansive soil conditions, and be	

Table 2-2 (Continued)

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance After Mitigation
		minimally reinforced as previously discussed. All slab reinforcement should be supported to provide proper mid-slab height positioning during placement of the concrete. "Hooking" of reinforcement is not an acceptable method of positioning. Increase of concrete slab thickness would tend to reduce moisture vapor transmission though slabs. **GEO-37** Concrete slab underlayment should consist of a 10-mil to 15-mil vapor retarder, or equivalent, with all laps sealed per the UBC/CBC (ICBO, 1997 and 2001) and the manufacturer's recommendation. The vapor retarder should comply with the ASTM E-1745 Class A or B criteria and be installed per the recommendations of the manufacturer, including all penetrations (i.e., pipe, ducting, rebar, etc.). The manufacturer shall provide instructions for lap sealing, including minimum width of lap, method of sealing, and either supply or specify suitable products for lap sealing (ASTM E-1745). In order to break the capillary rise of soil moisture, the vapor retarder should be underlain by 2 inches of fine or coarse, washed, clean gravel (80 to 100 percent greater than #4 sieve) and be overlain by at least 2 inches of clean, washed sand (SE >30) to aid in concrete curing. **GEO-38** Concrete should have a maximum water/cement ratio of 0.50. **GEO-39** Where slab concrete compressive strength is increased, add mixtures used, and water/cement ratios are adjusted herein, the structural consultant should also make changes to the concrete in the grade beams and footings in kind so that the concrete used in the foundation and slabs are designed and/or treated for more uniform moisture protection. **GEO-40** The use of a penetrating slab surface sealer may be considered in rooms where permeable floor tile or wood will be used. In all planned floorings, the waterproofing specialist should review the manufacturer's recommendations and adjust installation as needed. Homeowner(s) should be advised which areas are suitable for tile or wood floors.	
ii. Strong seismic ground shaking	Less than Significant	N/A	N/A
iii. Seismic related ground failure including liquefaction	Potentially Significant	**GEO-1** Refer to above **GEO-30** Refer to above **GEO-31** Refer to above **GEO-32** Refer to above **GEO-33** Refer to above **GEO-36** Refer to above	Less than Significant

Table 2-2 (Continued)

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance After Mitigation
		GEO-37 Refer to above **GEO-38** Refer to above **GEO-39** Refer to above **GEO-40** Refer to above	
iv. Landslides	Potentially Significant	**GEO-1** Refer to above **GEO-51** A potential for mudflow and possible rock fall exists for lots located below significant proposed cut slopes or below re-entrant canyons. Consequently, these lots should be protected with reinforced concrete-deflector walls designed to intercept and contain mudflow debris and rock fall. The deflector walls should be constructed along the tops of uphill-graded slopes bordering the lots located below these cut slopes. Locations of walls will vary depending on as-graded conditions upon completion of rough grading. GSI has depicted the proposed locations on Plate 1. Design parameters for walls should also be based on as-graded site conditions and on a determination of probable quantities of mudflow debris that may accumulate behind the walls, as evaluated by the design engineer. In lieu of concrete-deflector walls, suitable alternates may possibly consist of debris basins, or raising pad grades, so that there is an ascending minimum ±5-foot slope at the toe of the descending proposed significant cut slopes. However, locations, capacities, and other design considerations should be based on as-graded site conditions. Figure 5 (Debris Device Control Methods) may be used for alternative methods to contain potential debris or mud. For design purposes, the active earth pressures should utilize an EPF of 125 pcf. Impact and debris walls should be designed in a similar manner. The debris walls and impact walls should be supported by footings with a minimum embedment of 18 inches into competent bedrock. Consideration should be given to supporting debris and impact walls on 12-inch diameter drilled piers embedded a minimum 6 feet into engineered fill or competent bedrock. The actual design for the piers or footings should be performed by the structural consultant using the foundation parameters in this report.	Less than Significant
b. Soil erosion or loss of topsoil	Potentially Significant	**HYD-2** During construction, the project will incorporate all City of Corona construction best management practices (BMPs) in order to control the discharge of pollutants and to avoid the tracking of sediments into streets and storm water conveyance channels. This measure shall be implemented to the satisfaction of the City Community Development and Public Works Directors. These BMPs may include, but are not limited to, the following: • Where necessary, temporary and/or permanent erosion control devices, as approved by the Public Works Department, shall be employed to control erosion and provide safety during the rainy season	Less than Significant

Table 2-2 (Continued)

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance After Mitigation
		from October 15 to April 15. The erosion control devices shall include hillside stabilization structures (i.e., fiber matrix on slopes and construction access stabilization mechanisms, etc.) and runoff control devices (i.e., drainage swales, gravel bag barriers/chevrons, velocity check dams, etc.). • All removable erosion protective devices shall be in place at the end of each working day when the 5-day rain probability forecast exceeds 40%. • After a rainstorm, all silt and debris shall be removed from streets, check berms, and basins. • Graded areas on the permitted area perimeter must drain away from the face of the slopes at the conclusion of each working day. Drainage is to be directed toward desilting facilities. • Silt fences shall be installed along limits of work, the project construction site, or both. Other sediment controls could include surface roughening, tree or natural vegetation preservation and protection, temporary gravel construction entrance/exit, temporary diversions, permanent diversions, outlet stabilization, inlet protection, temporary sediment basins, and gravel bay barriers • All construction vehicles shall be adequately maintained and equipped to minimize/eliminate fuel spillage. All equipment maintenance work shall occur off site or within the designated construction staging area. • Water shall be applied to the site as needed during grading operations to minimize dust and wind erosion. Prior to issuance of a grading permit, the applicant shall submit a Storm Water Pollution Prevention Plan that describes the specific measures that will be employed during construction to ensure that applicable and appropriate City-approved BMPs are implemented. **GEO-1** Refer to above. **GEO-59** Cut and fill slopes will be subject to surficial erosion during and after grading. On-site earth materials have a moderate to high erosion potential. Consideration should be given to providing hay bales and silt fences for the temporary control of surface water, from a geotechnical viewpoint.	
c. Located on or would cause unstable soil	Potentially Significant	**GEO-1** Refer to above. **GEO-2** Prior to the start of the grading operation, the site should be cleaned of all vegetation (including roots), trash, construction and other deleterious materials. **GEO-3** Only the amount of irrigation necessary to sustain plant life should be provided. Over-watering the landscape areas will adversely affect proposed site improvements. Graded slope areas should be planted with drought resistant vegetation. Consideration should be given to the type of vegetation	Less than Significant

Table 2-2 (Continued)

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance After Mitigation
		chosen and their potential effect upon surface improvements (i.e., some trees will have an effect on concrete flatwork with their extensive root systems). Trees planted in close proximity to improvements have been known to adversely or negatively impact the long-term performance of the improvement. The location of tree planting should be considered in light of this geotechnical concern. Consideration should be given to providing retaining devices, up-hill and down-hill, for significant plantings that are "benched" into slope faces to mitigate the potential for slope creep. From a geotechnical standpoint leaching is not recommended for establishing landscaping. If the surface soils are processed for the purpose of adding any amendments, they should be recompacted to 90 percent minimum relative compaction.	
		GEO-4 Water has been shown to weaken the inherent strength of all earth materials over time. Slope stability is significantly reduced by overly wet soil conditions. Positive surface drainage away from slopes should be maintained and only the amount of irrigation necessary to sustain plant life should be provided for planted slopes. Over-watering should be avoided as it adversely affects site improvements, and causes perched groundwater conditions. Graded slopes constructed utilizing on-site materials would be erosive. Eroded debris may be minimized and surficial slope stability enhanced by establishing and maintaining a suitable vegetation cover soon after construction. Compaction to the face of fill slopes would tend to minimize short-term erosion until vegetation is established. Plants selected for landscaping should be light weight, deep rooted types that require little water and are capable of surviving the prevailing climate. Jute-type matting or other fibrous covers may aid in allowing the establishment of a sparse plant cover. Utilizing plants other than those recommended above will increase the potential for perched water, staining, mold, etc., to develop. A rodent control program to prevent burrowing should be implemented. Irrigation of natural (ungraded) slope areas is generally not recommended. These recommendations regarding plant type, irrigation practices, and rodent control should be provided to each homeowner. Over-steepening of slopes should be avoided during building construction activities and landscaping.	
		GEO-5 Based on our analyses, an adequate factor of safety (FS>1.5) for the natural slope can be achieved if the groundwater level is kept below an elevation of ±1445 mean sea level (MSL). Therefore, to facilitate proper slope drainage, we recommend the placement of either hydro-auger drains to be drilled into the slope to an appropriate depth, or construction of a french drain system along the existing access trails located at the bottom and middle of the slope.	
		GEO-6 The proposed pad grades of the lots below the subject slope be raised ±5 feet, to approximate elevations of 1398 and 1410 MSL, respectively, in order to accommodate the potential total volume of landslide material on the slope. In addition, we recommend the construction of a debris wall along the	

Table 2-2 (Continued)

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance After Mitigation
		southeast property boundaries for the upper most lots on the street cul-de-sac. **GEO-7** Considering the noncohesive nature of some of the on-site material, some caving and sloughing may be expected to be a factor in subsurface excavations and trenching. This would be primarily associated with trenches excavated for utilities and foundation systems. Additional shoring or laying back excavations may be necessary to mitigate caving or sloughing. All trench excavations should conform to OSHA and local safety ordinances. **GEO-8** On-site materials may be reused as compacted fill provided that major concentrations of vegetation and debris are removed prior to fill placement. **GEO-9** In fill areas where cavities or loose soils remain after surficial processing, the loose areas should be cleaned out, observed by the soil engineer, processed, and replaced with fill which has been moisture conditioned to at least optimum moisture content. The soils should be compacted to at least 90 percent of the laboratory standard. **GEO-10** Any existing surficial/subsurface structures, major vegetation, and any miscellaneous debris should be removed from the areas of proposed grading. **GEO-11** Cavities or loose soils (including all previous exploratory test pits) remaining after demolition and site clearance should be cleaned out, inspected by the soils engineer, processed, and replaced with fill that has been moisture conditioned to at least optimum moisture content and compacted to at least 90 percent of the laboratory standard (ASTM D-1557). **GEO-12** Removal of all undocumented artificial fill, colluvium, alluvium, surficial landslide deposits, and generally near surface weathered Tertiary Silverado Formation materials will be necessary prior to fill placement, in areas proposed for development. GSI believe that most of the alluvium, and all of the colluvium and undocumented fill will be removed during remedial grading. However, for preliminary planning purposes, removal depths are estimated to be on the order of ±1 to ±12 feet, with locally deeper removals, in areas proposed for development. Generally, removals should extend to non-porous, competent materials (dry density of 105 pcf and/or 85 percent saturation [which has been previously demonstrated as acceptable mitigation]), be moisture conditioned, and recompacted if not removed by proposed excavation within areas proposed for settlement-sensitive improvements. **GEO-13** Where planned cuts are equal to or greater than the recommended removal depth, the area should be cut to grade, subgrade observed and tested by the geotechnical consultant, then the upper 12 inches below finish grade should be scarified, brought to at least optimum moisture content, and recompacted to a minimum relative compaction of 90 percent of the laboratory standard.	

Table 2-2 (Continued)

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance After Mitigation
		GEO-14 Where the planned cuts are less than the recommended removal depth, the additional removals to attain the recommended removal should be accomplished. The exposed removal surface should be scarified to a depth of 12 inches, moisture conditioned (if necessary), and then compacted prior to fill placement to finish pad grade. **GEO-15** Removed colluvium, alluvium, landslide deposits, and Tertiary Silverado Formation materials, may be reused as compacted fill provided that major concentrations of organic material (roots and tree remains), and miscellaneous trash and debris are removed prior to fill placement. Rock or earth particles of greater than 12 inches may be cleared from these soils. Due to the expansive nature of some of the Tertiary Silverado Formation materials, fill soils derived from this unit should not be placed closer than 7 feet from finish grade, on a preliminary basis. **GEO-16** Fill materials should be brought to at least optimum moisture, placed in thin 6- to 8-inch lifts and mechanically compacted to obtain a minimum relative compaction of 90 percent of the laboratory standard. **GEO-17** Fill materials should be cleansed of major vegetation and debris prior to placement. **GEO-18** Any oversized rock materials greater than 8 inches in diameter should be stockpiled and placed under the observation of the soils engineer. As per UBC (ICBO, 1997) requirements, no rock materials greater than 12 inches in diameter should be placed within 10 feet of finish grade, unless prior approval has been granted by the governing agency and geotechnical engineer. **GEO-19** Basal fill materials below a fill depth of 50 feet should be compacted to 95 percent of the laboratory standard. **GEO-20** Note that some of the claystone layers in the Silverado Formation have high plasticity and could result in high expansion (E.I. >90) if used as fill. Highly expansive soils should be placed deeper than 7 feet from finish grade. Non-plastic, very low expansive granular soils, such as poorly graded sands, should be blended with silts, clays, and gravels, prior to use in the outer portions of slopes. **GEO-23** All slopes should be designed and constructed in accordance with the minimum requirements of the UBC (ICBO, 1997) and/or the County and the following: 1. Fill or stabilized fill over cut slopes should be designed and constructed at a 2:1 (h:v) gradient, or flatter, and should not exceed about 135 feet in height, otherwise, further evaluation will be necessary. Fill slopes should be properly built and compacted to a minimum relative compaction of 90 percent throughout, including the slope surfaces. Fill slopes may be properly overbuilt by ±3 to ±5 feet and trimmed/cut back to proposed finish grades. Guidelines for slope construction are presented in Appendix G.	

Table 2-2 (Continued)

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance After Mitigation
		2. Cut slopes with favorable geology should be designed at gradients of 2:1 (h:v), or flatter, and should not exceed about 30 feet in height at a 2:1 inclination. Otherwise, further evaluation will be necessary. Stabilization of most cut slopes is anticipated, as in the southern and middle portions of the tentative tract. Locally adverse geologic conditions (i.e., daylighted joints/fractures, severely weathered fan deposits, or sandy lenses) may be encountered which may require remedial grading, stabilization, or laying back of the slope to an angle flatter than the adverse geologic condition. 3. Daylight cut lots will have some potentially compressible/erodible colluvium/topsoil exposed at the cut/natural interface adjoining slopes. This area will be more subject to erosion, and down-slope movement. Accordingly, improvements and/or foot traffic should not be allowed in this area, and proper drainage is imperative to the stability of this zone. This potential will be mitigated by the recommended setbacks, from a geotechnical viewpoint. These conditions will need to be disclosed to all homeowners and any homeowners association as well as all interested/affected parties. The actual location of this zone should be evaluated during grading. 4. Local areas of highly to severely weathered Tertiary Silverado Formation materials may be present. Should these materials be exposed in cut slopes, the potential for long term maintenance or possible slope failure exists. Evaluation of cut slopes during grading would be necessary in order to identify any areas of severely weathered materials or cohesionless sands. Should any of these materials be exposed during construction, the soils engineer/geologist, would assess the magnitude and extent of the materials and their potential effect on long-term maintenance or possible slope failures. Recommendations would then be made at the time of the field inspection. 5. Landslides have been mapped on site. Surficial localized earth failures (i.e., slumps, slopewash, etc.) were noted on some existing natural slopes/cliffs associated with the incised canyon drainage courses on site. In general, these surficial slumps will be completely removed by the proposed grading, and as such, should not pose a major constraint to development, providing our recommendations are properly implemented. This discussion does not include the existing slopes boundary at the residence that may remain as depicted in Cross-Section D-D'. The potential for mass wasting, mudflow debris and rock fall, should be properly mitigated in site locations as indicated on plans (Plate 1). Additional walls or mitigation may be recommended elsewhere. It is recommended that debris impact walls or other comparable mitigative devices (GSI, 1995a) be incorporated into the project design, in accordance with the recommendations of the design civil engineer. Should other mass wasting features be encountered in natural or cut slopes above the proposed residential development, and not be removed by the proposed grading, then appropriate	

Table 2-2 (Continued)

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance After Mitigation
		mitigation should be considered by the design engineer, where these features intercept the proposed development and/or cut slopes. 6. Loose rock debris and fines remaining on the face of the cut slopes should be removed during grading. This can be accomplished by high pressure water washing or by hand scaling, as warranted. 7. Where loose materials are exposed on the cut slopes, the project's engineering geologist would require that the slope be cleaned as described above prior to making their final inspection. Final approval of the cut slope can only be made subsequent to the slope being fully cut and cleaned. **GEO-26** "Slot cuts" will need to be excavated for Cross-Section A-A' buttress backcut as previously discussed. The possible instability of temporary cut slopes during stabilization and shear key excavation, or canyon clean-out, cannot be precluded, and should be emphasized to the grading contractor. The temporary stability depends on many factors, including the slope angle, structural features in the bedrock, shearing strength along planes of weakness, height of the slope, groundwater conditions, and the length of time the cut remains unsupported and exposed to equipment vibrations and rainfall. The possibility of temporary cut slopes failing during canyon clean-outs, stabilization key excavations, etc., may be reduced by: 1. Minimizing the operations extent, in both duration and physical dimensions. 2. Limiting the length of a cut exposed to destabilizing forces at any one time. 3. Cutting no steeper than those backcut inclinations specified by the geotechnical consultant. 4. Avoiding operation of heavy equipment or stockpiling materials on or near the top of the backcut or trench. All OSHA requirements with regard to excavation safety should be implemented by the grading contractor and subcontractors, especially concrete pump trucks. 5. Provide temporary drainage and diversion retarders for the grading work to reduce the potential for ponding and erosion. **GEO-27** The volume change of excavated on-site materials upon recompaction is expected to vary with materials, density, insitu moisture content, location, and compaction effort. The in-place and compacted densities of soil materials vary and accurate overall determination of shrinkage and bulking cannot be made. Therefore, we recommend site grading include, if possible, a balance area or ability to adjust grades, slightly to accommodate some variation. Based on our experience with similar materials, the following values are provided as guidelines:	

Table 2-2 (Continued)

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<tr><th>Environmental Topic</th><th>Impact?</th><th>Mitigation Measure(s)</th><th>Level of Significance After Mitigation</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><th colspan="2">EARTHWORK SHRINKAGE AND BULKING ESTIMATES</th></tr>
<tr><th>GEOLOGIC UNIT</th><th>ESTIMATED SHRINKAGE/BULKING</th></tr>
<tr><td>Colluvium/Slopewash/Topsoil/ Younger Alluvium/Landslide Deposits</td><td>10 to 25 percent shrinkage</td></tr>
<tr><td>Silverado Formation</td><td>-5 percent shrinkage to 15 percent bulking</td></tr>
</table>
These values should be considered estimates only and will be dependent upon the average relative compaction obtained during grading, which id determined by the grading contractor. If possible, we suggest that provisions be made to allow for final adjustment of grades to balance the earthwork operations. Contractors should review available insitu densities, relative compaction curves, and evaluate shrinkage and bulking based on local experience. If deemed necessary, contractors may wish to provide independent boring programs to evaluate shrinkage and bulking. Subsidence in bedrock areas is estimated to be nil.
GEO-32 Refer to above
GEO-46 The following mitigation measures are intended to mitigate any potential impacts resulting from slope design:
1. Prior to excavation for the wall base, the alignment and grade for the wall should be established in the field by the project civil engineer or project surveyor.
2. The contractor should have a qualified grade checker on site to continually verify the gradient (or batter) and alignment of the base excavation and wall during construction.
3. The project surveyor should spot-check wall gradient (face of wall slope) and alignment at least every 10 feet vertically and 50 feet horizontally.
4. When locating the base of the wall, structural setbacks established by the governing agency, and/or geotechnical engineer should be followed.
5. Walls should be founded on compacted fill, bedrock, or other suitable materials, as described in our referenced reports.
6. The recommended equivalent fluid pressure for design of the segmented walls should be 45 pcf for
</td><td></td></tr>
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Table 2-2 (Continued)

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance After Mitigation
		level backfill and 65 pcf for 2:1 backfill, assuming a select very low to low expansive granular backfill material (E.I. <30, P.I. <10, φ = 28 degrees, c = 200). These equivalent fluid pressures are based solely on static soil conditions and do not include seismic, footing surcharge, earthwork surcharge, or traffic loading which will need to be included, as necessary. 7. Utilize a seismic increment of 10 to 15H when evaluating internal gridwall stability in accordance with the Retaining Wall section of this report. For global stability of gridwalls, a seismic factor (pseudo-static) of 0.15 *i*, should be used. 8. A bearing value of 1,500 psf may be utilized for a 1 foot deep footing. A friction coefficient of 0.35 may be used for a concrete to soil contact. A friction angle of 25 degrees and a soil unit weight of 115 to 130 pcf may be utilized for the compacted fill, dense competent Silverado Formation, as verified by observation and/or testing. In addition, a cohesion value of 0 psf, for reinforced fill, 100 psf for retained fill, and 100 psf for foundation fill may be utilized. 9. Prior to placement of the segmented members, the base excavation should be observed by representatives of this firm. 10. A concrete/crushed stone leveling pad may be used to provide a uniform surface for the wall base. It is recommended that a concrete slab base be provided. 11. If it is necessary to locally deepen the wall base to obtain suitable bearing materials, the contractor should consult the project design engineer to determine if the wall location or design of the wall is affected. 12. Segmented wall height at the terminal ends of the wall should not exceed 4 feet unless lateral support is provided.	
		GEO-56. Water has been shown to weaken the inherent strength of all earth materials. Slope stability is significantly reduced by overly wet conditions. Positive surface drainage away from slopes should be maintained and only the amount of irrigation necessary to sustain plant life should be provided for planted slopes. Over-watering should be avoided as it adversely affects site improvements, and causes perched groundwater conditions. Graded slopes constructed utilizing on-site materials would be erosive. Eroded debris may be minimized and surficial slope stability enhanced by establishing and maintaining a suitable vegetation cover soon after construction. Compaction to the face of fill slopes would tend to minimize short-term erosion until vegetation is established. Plants selected for landscaping should be light weight, deep rooted types that require little water and are capable of surviving the prevailing climate. Jute-type matting or other fibrous covers may aid in allowing the establishment of a sparse plant	

Table 2-2 (Continued)

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance After Mitigation
		cover. Utilizing plants other than those recommended above will increase the potential for perched water, staining, mold, etc., to develop. A rodent control program to prevent burrowing should be implemented. Irrigation of natural (ungraded) slope areas is generally not recommended. These recommendations regarding plant type, irrigation practices, and rodent control should be provided to each homeowner. Over-steepening of slopes should be avoided during building construction activities and landscaping. **GEO-57** Adequate lot surface drainage is a very important factor in reducing the likelihood of adverse performance of foundations, hardscape, and slopes. Surface drainage should be sufficient to prevent ponding of water anywhere on a lot, and especially near structures and tops of slopes. Lot surface drainage should be carefully taken into consideration during fine grading, landscaping, and building construction. Therefore, care should be taken that future landscaping or construction activities do not create adverse drainage conditions. Positive site drainage within lots and common areas should be provided and maintained at all times. Drainage should not flow uncontrolled down any descending slope. Water should be directed away from foundations and not allowed to pond and/or seep into the ground. In general, the area within 5 feet around a structure should slope away from the structure. We recommend that unpaved lawn and landscape areas have a minimum gradient of 1 percent sloping away from structures, and whenever possible, should be above adjacent paved areas. Consideration should be given to avoiding construction of planters adjacent to structures (buildings, pools, spas, etc.). Pad drainage should be directed toward the street or other approved area(s). Although not a geotechnical requirement, roof gutters, down spouts, or other appropriate means may be utilized to control roof drainage. Down spouts, or drainage devices should outlet a minimum of 5 feet from structures or into a subsurface drainage system. Areas of seepage may develop due to irrigation or heavy rainfall, and should be anticipated. Minimizing irrigation will lessen this potential. If areas of seepage develop, recommendations for minimizing this effect could be provided upon request. **GEO-58** Where significant slopes intersect pad areas, surface drainage down the slope allows for some seepage into the subsurface materials, sometimes creating conditions causing or contributing to perched and/or ponded water. Toe of slope/toe drains may be beneficial in the mitigation of this condition due to surface drainage.	
d. Located on expansive soil	Potentially Significant	**GEO-1** refer to above **GEO-24** To reduce the potential for differential settlements between cut and fill materials, and/or materials of differing expansion potentials, the entire cut portion of cut/fill transitions should be overexcavated to a	Less than Significant

Table 2-2 (Continued)

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance After Mitigation
		minimum depth of 3 feet below finish grade, or to a maximum ratio of fill thickness of 3:1 (maximum to minimum), and replaced with compacted fill. A maximum/minimum fill thickness ratio should be constructed such that 25 feet maximum fill differential is maintained within a lot, in order to keep differential settlements within tolerance. Overexcavation may also be necessary in deep cuts for heave mitigation. In these deep cut areas (more than 50 feet of Silverado Formation is removed), a 10-foot overexcavation and replacement with compacted fill is recommended. **GEO-25** Based on our rock hardness evaluation, trenching for foundations and underground utility improvements will likely encounter difficulty and/or refusal at depths generally greater than ±25 feet below the existing grade. Therefore, overexcavation, during grading, of cut lots to provide a 3-foot compacted fill blanket and street right-of-ways to 1 foot below the lowest utility invert elevation in areas where finish grade/finish surface is generally greater than ±25 feet below the existing grade may be considered to better facilitate trenching. A minimum of 2 feet of fill is recommended below all shallow foundation elements. Drilled pier supported improvements may penetrate cut fill transitions with adequate design/capacity. **GEO-33** Refer to above **GEO-34** From a soil expansion/shrinkage standpoint, a fairly common contributing factor to distress of structures using post-tensioned slabs is a significant fluctuation in the moisture content of soils underlying the perimeter of the slab, compared to the center, causing a “dishing” or “arching” of the slabs. To mitigate this possible phenomenon, a combination of soil presaturation and construction of a perimeter “cut-off” wall grade beam should be employed. Perimeter foundations should be a minimum of 12, 18, and 24 inches deep for very low to low, medium, and highly expansive soils, respectively. Slab thickness should be a minimum of 5 inches and may need to be creased by the slab design based on steel reinforcement/cable requirements. The walls should be a minimum of 12 inches in thickness. In moisture sensitive slab areas, a vapor retarder should be utilized and be of sufficient thickness to provide a durable separation of foundation from soils (10-miles thick). The vapor retarder should be sealed to provide a continuous water-proof retarder under the entire slab. The vapor retarder should be sandwiched by two 2-inch thick layers of sand (SE>30). Specific soil presaturation is not required for very low to low expansive soils; however, the moisture content of the subgrade soils should be at or above the soils' optimum moisture content to a depth of 12 inches below grade. On a preliminary basis, specific soil presaturation is required for medium to highly expansive soils. For medium expansive soils, the slab subgrade moisture content should be at or slightly above 120 percent of the soil’s optimum moisture content to a depth of 18 inches below grade. For highly	

Table 2-2 (Continued)

<table>
<tr><th>Environmental Topic</th><th>Impact?</th><th>Mitigation Measure(s)</th><th>Level of Significance After Mitigation</th></tr>
<tr><td></td><td></td><td>expansive soils, the slab subgrade moisture content should be at or slightly above 130 percent of the soil's optimum moisture content to a depth of 24 inches below grade.
Post-tensioned slabs should be designed. Based on review of laboratory data for the on-site materials, the average soil modulus subgrade reaction K, to be used for design, is 100 pounds per cubic inch (pci). This is equivalent to a surface bearing value of 1,000 psf.
Post-tensioned slabs should be designed using sound engineering practice and be in accordance with the recommendations of the Post-Tensioning Institute Method, as well as local and/or national code requirements. Soil related parameters for post-tensioned slab design are presented below:
Allowable surface bearing value 1,000 psf
Modulus of subgrade reaction 75 psi per inch
Coefficient of friction 0.35
Passive pressure 250 pcf
Post-Tensioning Institute Method: Post-tensioned slabs should have sufficient stiffness to resist excessive bending due to non-uniform swell and shrinkage of subgrade soils. The differential movement can occur at the corner, edge, or center of slab. The potential for differential uplift can be evaluated using the 1997 UBC Section 1816, based on design specifications of the Post-Tensioning Institute. The following table presents suggested minimum coefficients to be used in the Post-Tensioning Institute design method.
<table>
<tr><td>Thornthwaite Moisture Index</td><td>-20 inches/year</td></tr>
<tr><td>Correction Factor for Irrigation</td><td>20 inches/year</td></tr>
<tr><td>Depth to Constant Soil Suction</td><td>7 feet</td></tr>
<tr><td>Constant soil Suction (pf)</td><td>3.6</td></tr>
<tr><td>Modulus of Subgrade Reaction (pci)</td><td>75</td></tr>
<tr><td>Moisture Velocity</td><td>0.7 inches/month</td></tr>
</table>
Deepened footings/edges around the slab perimeter must be used to minimize non-uniform surface moisture migration (from an outside source) beneath the slab. An edge depth of 12 inches should be considered a minimum. The bottom of the deepened footing/edge should be designed to resist tension, using cable or reinforcement ("passive" steel reinforcement bars) per the structural engineer.</td><td></td></tr>
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Table 2-2 (Continued)

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance After Mitigation
		GEO-41 The design parameters provided below assume that either very low expansive soils (Class 2 permeable filter material or Class 3 aggregate base) or native materials are used to backfill any retaining walls. The type of backfill (i.e., select or native), should be specified by the wall designer, and clearly shown on the plans. Building walls, below grade, should be water-proofed. Footings should be embedded a minimum of 18 inches below adjacent grade (excluding landscape layer, 6 inches) and should be 24 inches in width. There should be no increase in bearing for footing width. Preliminary recommendations for specialty walls (i.e., crib, earthstone, geogrid, etc.) are provided below. **GEO-42** Any retaining walls that will be restrained prior to placing and compacting backfill material or that have re-entrant or male corners, should be designed for an at-rest equivalent fluid pressure (EFP) of 65 pcf, plus any applicable surcharge loading. For areas of male or re-entrant corners, the restrained wall design should extend a minimum distance of twice the height of the wall (2H) laterally from the corner. **GEO-43** The recommendations presented below are for cantilevered retaining walls up to 10 feet high. Design parameters for walls less than 3 feet in height may be superceded by City and/or County standard design. Active earth pressure (Equivalent Fluid Pressure or Weight, EFW) may be used for retaining wall design, provided the top of the wall is not restrained from minor deflections. An equivalent fluid pressure approach may be used to compute the horizontal pressure against the wall. Appropriate fluid unit weights are given below for specific slope gradients of the retained material. These do not include other superimposed loading conditions due to traffic, structures, seismic events or adverse geologic conditions. These EFWs do not include the effects of expansive soils. When wall configurations are finalized, the appropriate loading conditions for superimposed loads can be provided upon request. Considering the level of PHSA (10 percent probability of exceedance in 50 years), GSI recommends that, for walls over 6 feet in height and in close proximity to residences or main access roads, the designer consider using a seismic increment of 15H be used for a surcharge, to model seismic loadings. The pressure should be added as a uniform pressure where H is the height of the wall from footing bottom (excluding keys) to top of backfill. **GEO-44** Positive drainage must be provided behind all retaining walls in the form of gravel wrapped in geofabric and outlets. A backdrain system is considered necessary for retaining walls that are 2 feet or greater in height. Backdrains should consist of a 4-inch diameter perforated PVC or ABS pipe encased in either Class 2 permeable filter material or ½-inch to ¾-inch gravel wrapped in approved filter fabric (Mirafi 140 or equivalent). For low expansive backfill, the filter material should extend a minimum of 1 horizontal foot behind the base of the walls and upward at least 1 foot. For native backfill that has up to medium expansion potential, continuous Class 2 permeable drain materials should be used behind the wall. This	

Table 2-2 (Continued)

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance After Mitigation
		material should be continuous (i.e., full height) behind the wall, and it should be constructed in accordance with the enclosed Detail 1 (Typical Retaining Wall Backfill and Drainage Detail). For limited access and confined areas, (panel) drainage behind the wall may be constructed in accordance with Detail 2 (Retaining Wall Backfill and Subdrain Detail Geotextile Drain). Materials with an E.I. potential of greater than 90 should not be used as backfill for retaining walls. For more onerous expansive situations, backfill and drainage behind the retaining wall should conform with Detail 3 (Retaining Wall and Subdrain Detail Clean Sand Backfill). Outlets should consist of a 4-inch diameter solid PVC or ABS pipe spaced no greater than ±100 feet apart, with a minimum of two outlets, one on each end. The use of weep holes in walls higher than 2 feet should not be considered. The surface of the backfill should be sealed by pavement or the top 18 inches compacted with native soil (E.I. 90). Proper surface drainage should also be provided. For additional mitigation, consideration should be given to applying a water-proof membrane to the back of all retaining structures. The use of a waterstop should be considered for all concrete and masonry joints. **GEO-45** The geotechnical design parameters provided below are for the proposed ±17-foot high segmental retaining wall to be located along approximately 870 feet of the eastern site boundary. These design parameters assume that either non-expansive soils (typically Class 2 permeable filter material or Class 3 aggregate base) or native on-site materials (up to and including an E.I. of 30, P.I. <10) are used to backfill any segmental retaining walls. The type of backfill (i.e., select or native), should be specified by the wall designer, and clearly shown on the plans. Building walls, below grade, should be water-proofed or damp-proofed, depending on the degree of moisture protection desired. **GEO-52** The developer shall provide information regarding the possibility for expansive soils to affect structures and property to any homeowners and homeowners association. **GEO-53** Due to the potential for slope creep for slopes higher than about 10 feet, some settlement and tilting of the walls/fence with the corresponding distresses should be expected. To mitigate the tilting of top of slope walls/fences, we recommend that the walls/fences be constructed on a combination of grade beam and caisson foundations, for slopes comprised of expansive soils with an E.I. greater than 50. The grade beam should be at a minimum of 12 inches by 12 inches in cross section, supported by drilled caissons, 12 inches minimum in diameter, placed at a maximum spacing of 6 feet on center, and with a minimum embedment length of 7 feet below the bottom of the grade beam. The strength of the concrete and grout should be evaluated by the structural engineer of record. The proper ASTM tests for the concrete and mortar should be provided along with the slump quantities. The concrete used should be appropriate to mitigate sulfate corrosion, as warranted. The design of the grade beam and caissons should be in	

Table 2-2 (Continued)

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance After Mitigation
		accordance with the recommendations of the project structural engineer, and include the utilization of the following geotechnical parameters: **Creep Zone:** 5-foot vertical zone below the slope face and projected upward parallel to the slope face. **Creep Load:** The creep load projected on the area of the grade beam should be taken as an equivalent fluid approach, having a density of 60 pcf. For the caisson, it should be taken as a uniform 900 pounds per linear foot of caisson's depth, located above the creep zone. **Point of Fixity:** Located a distance of 1.5 times the caisson's diameter, below the creep zone. **Passive Resistance**: Passive earth pressure of 300 psf per foot of depth per foot of caisson diameter, to a maximum value of 4,500 psf may be used to determine caisson depth and spacing, provided that they meet or exceed the minimum requirements stated above. To determine the total lateral resistance, the contribution of the creep prone zone above the point of fixity, to passive resistance, should be disregarded. **Allowable Axial Capacity**: Shaft capacity: 350 psf applied below the point of fixity over the surface area of the shaft. Tip capacity: 4,500 psf **GEO-54** To reduce the likelihood of distress related to expansive soils, the following recommendations are presented for all exterior flatwork: 1. The subgrade area for concrete slabs should be compacted to achieve a minimum 90 percent relative compaction, and then be presoaked to 2 to 3 percentage points above (or 125 percent of) the soils' optimum moisture content, to a depth of 18 inches below subgrade elevation. The moisture content of the subgrade should be verified within 72 hours prior to pouring concrete. 2. Concrete slabs should be cast over a relatively non-yielding surface, consisting of a 4-inch layer of crushed rock, gravel, or clean sand, that should be compacted and level prior to pouring concrete. The layer should wet-down completely prior to pouring concrete, to minimize loss of concrete moisture to the surrounding earth materials. 3. Exterior slabs should be a minimum of 4 inches thick. Driveway slabs and approaches should additionally have a thickened edge (12 inches) adjacent to all landscape areas, to help impede infiltration of landscape water under the slab. 4. The use of transverse and longitudinal control joints are recommended to help control slab cracking due to concrete shrinkage or expansion. Two ways to mitigate such cracking are: a) add a sufficient amount of reinforcing steel, increasing tensile strength of the slab; and, b) provide an adequate amount	

Table 2-2 (Continued)

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance After Mitigation
		of control and/or expansion joints to accommodate anticipated concrete shrinkage and expansion. In order to reduce the potential for unsightly cracks, slabs should be reinforced at mid-height with a minimum of No. 3 bars placed at 18 inches on center, in each direction. The exterior slabs should be scored or saw cut, ½ to d inches deep, often enough so that no section is greater than 10 feet by 10 feet. For sidewalks or narrow slabs, control joints should be provided at intervals of every 6 feet. The slabs should be separated from the foundations and sidewalks with expansion joint filler material. 5. No traffic should be allowed upon the newly poured concrete slabs until they have been properly cured to within 75 percent of design strength. Concrete compression strength should be a minimum of 2,500 psi. 6. Driveways, sidewalks, and patio slabs adjacent to the house should be separated from the house with thick expansion joint filler material. In areas directly adjacent to a continuous source of moisture (i.e., irrigation, planters, etc.), all joints should be additionally sealed with flexible mastic. 7. Planters and walls should not be tied to the house. 8. Overhang structures should be supported on the slabs, or structurally designed with continuous footings tied in at least two directions.	
e. Soils incapable of supporting septic tanks	Less than Significant	N/A	N/A
Hazards and Hazardous Materials			
a. Transport, use, disposal of hazardous materials	Less than Significant	N/A	N/A
b. Release of hazardous materials into environment	Potentially Significant	**HAZ-1** If during the course of grading or other construction activity, any previously undiscovered tanks or other potentially hazardous materials are detected (as indicated by odor, discolored soil, etc.), all work shall cease until the City is notified. The City will notify the appropriate state, federal, or local regulatory agency (Department of Environmental Health, Regional Water Quality Control Board, etc.) as appropriate to ensure that proper investigation plan is conducted. The applicant shall be responsible for conducting all contaminant remediation and removal activities in accordance with pertinent local, state, and federal regulatory guidelines. A remediation report shall be prepared documenting the contaminant discovered and remediation activity completed. This report shall be forwarded to the relevant federal, state, and/or local regulatory agency to ensure that remediation has occurred in accordance with all guidelines and to the satisfaction of said agency. Once the agency has determined that the remediation	Less than Significant

Table 2-2 (Continued)

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance After Mitigation
		activity is completed in a satisfactory manner, project construction work can resume.	
c. Exposing school to hazardous materials	No Impact	N/A	N/A
d. Located on a hazardous materials site	Potentially Significant	**HAZ-1** Refer to above	Less than Significant
e. Near an airport or within an airport land use plan	No Impact	N/A	N/A
f. Within vicinity of private airstrip	No Impact	N/A	N/A
g. Impair emergency response	Less than Significant	N/A	N/A
h. Wildland fires	Potentially Significant	**HAZ-2** Prior to issuance of a grading permit, the applicant shall submit a final tract map that depicts the natural slope Fuel Modification treatment recommended in the Fire Protection Plan (FIREWISE 2000, Inc. 2008). **HAZ-3** Prior to approval of the final tract map, the applicant shall submit a draft of the Rancho de Paseo Valencia Community Covenants, Conditions, and Restrictions (CC&Rs) for review by City staff. The CC&Rs shall require the Home Owner's Association (HOA) to keep the fuel modification treatment area cleared in accordance with its original design. All manufactured slopes shall be vegetated and irrigated as directed by the Fire Protection Plan (FIREWISE 2000, Inc. 2008). Further, for all lots that abut the fuel modification treatment area, the individual lot CC&Rs shall specifically state that all private land owners must engage in upkeep of the fuel modification zone consistent with all City and/or County directives. **HAZ-4** Prior to approval of any single lot architectural plan, the City shall ensure that all structures will be designed to have a Class A roof. For roof coverings where the profile allows a space between the roof covering and roof decking, the space at the eave ends shall be “fire stopped” to preclude entry of flames or embers. **HAZ-5** Prior to approval of any single lot architectural plan, the City shall ensure that all structures that contain exterior walls facing the urban/wildland interface comply with the following requirements: • The exterior wall surface materials shall be non-combustible or an approved alternate. In all	Less than Significant

Table 2-2 (Continued)

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance After Mitigation
		construction, exterior walls are required to be protected with 2-inch nominal solid blocking between rafters at all roof overhangs. Wood shingle and shake wall covering shall be prohibited. • Wood siding of 0.375-inch plywood or 0.75-inch drop siding is permitted but must have an underlayment of 0.5-inch fire rated gypsum sheathing that is tightly butted or taped and mudded. **HAZ-6** Prior to approval of any single lot architectural plan, the City shall ensure that all structures' attic ventilation openings or ventilation louvers shall not be permitted in soffits, rakes, in eave overhangs, between rafters at eaves, or in other similar exterior overhanging areas in the urban/wildland interface area. In the urban/wildland interface area, paper-faced insulation shall be prohibited in attics or ventilated spaces. **HAZ-7** Prior to approval of any single lot architectural plan, the City shall ensure that all roof vents, dormer vents, gable vents, foundation ventilation openings, ventilation openings in vertical walls, or other similar ventilation openings shall be louvered and covered with 0.25-inch, noncombustible, corrosion-resistant metal mesh or other approved material that offers equivalent protection. Turbine attic vents shall be equipped to allow one-way direction rotation only; they shall not spin freely in both directions. **HAZ-8** Prior to approval of any single lot architectural plan, the City shall ensure that all combustible eaves, fascias, and soffits shall be enclosed. Eaves of heavy timber construction are not required to be enclosed as long as attic venting is not installed in the eaves. Heavy timber construction shall consist of a minimum of 4×6 rafter ties and 2× decking. **HAZ-9** Prior to approval of any single lot architectural plan, the City shall ensure that all homes with skylights shall be tempered glass except when the structure is protected with an automatic fire sprinkler system. No skylights are allowed on the roof assembly facing hazardous vegetation. **HAZ-10** Prior to approval of any single lot architectural plan, the City shall ensure that all glass or other transparent, translucent, or opaque glazing shall be tempered glass, multilayered glass panels, glass block, have a fire-protection rating of not less than 20 minutes, or other assemblies approved by the City Fire Department. Glazing frames made of vinyl materials shall have welded corners, metal reinforcement in the interlock area, and be certified to ANSI/AAMA/NWWDA 101/I.S.2-97 structural requirements. **HAZ-11** Prior to approval of any single lot architectural plan, the City shall ensure that all chimneys, flues, or stovepipes have an approved spark arrester. An approved spark arrester is defined as a device constructed of nonflammable materials, 12-gauge minimum thickness or other material found	

Table 2-2 (Continued)

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance After Mitigation
		satisfactory by the City of Corona Fire Department. It must have 0.5-inch perforations for arresting burning carbon or sparks and be installed to be visible for the purposes of inspection and maintenance. **HAZ-12** Prior to approval of any single lot architectural plan, the City shall ensure that all rain gutters and downspouts shall be constructed of noncombustible material. Gutters shall be designed to reduce the accumulation of leaf litter and debris that contributes to roof edge ignition. **HAZ-13** Prior to approval of any single lot architectural plan, the City shall ensure that all exterior doors shall be constructed of approved non-combustible construction, solid core wood not less than 1.75 inches thick or have a fire protection rating of not less than 20 minutes. Windows within doors and glazed doors shall comply. **HAZ-14** Prior to approval of any single lot architectural plan, the City shall ensure that the first 5 feet of fences and other items attached to a structure shall be constructed of non-combustible material or meet the same fire-resistive standards as the exterior walls of the structure. **HAZ-15** Prior to approval of any single lot architectural plan, the City shall ensure that all enhanced homes are sprinklered. The interior sprinkler system shall meet National Fire Protection Standard 13D (Installation of Sprinkler Systems in Residential Occupancies). **HAZ-16** Prior to approval of any single-lot architectural plan, the City shall ensure that all side yard fence and gate assemblies (fences, gate, and gate posts) when attached to the home, shall be of non-combustible material. The first five feet of fences and other items attached to a structure shall be of non-combustible material. **HAZ-17** Prior to approval of any single-lot architectural plan, the City shall ensure that all windows shall be provided with 0.125-inch mesh metal or similar noncombustible screens to prevent embers from entering the structure during high wind conditions. **HAZ-18** Prior to approval of the final tract map, the City shall ensure that hydrants, mains, and water pressure systems have been designed to comply with all City Municipal Code requirements to maintain adequate fire flow. **HAZ-19** Prior to final tract map approval, the applicant shall provide the City with a draft of the CC&Rs. The CC&Rs must contain the following: • The lot/home owner is personally responsible for all required fuel treatment measures within his or her lot. • The HOA Board has the authority for enforcing required fuel treatment measures on all lots and restrictions on combustible structures on all restricted lots.	

Table 2-2 (Continued)

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance After Mitigation
		• The Fuel Treatment Zones must be shown on the CC&Rs and recorded against all lots. The HOA Board will be responsible for enforcing all required fuel modification treatments on all lots. • All property owners are members of the HOA and will financially support the annual maintenance of all required designated open space areas. • The HOA Board is responsible to the Fire Marshal for the completion of all required fuel modification treatments prior to the annual fire season. • All individual lot landscaping plans, including construction of primary residence and additional structures, must be approved by the HOA Board and shall comply with the Fire Protection Plan (FIREWISE 2000, Inc. 2008). • Any disputes relating to the HOA Board approval of individual lot landscaping with regard to interpretation of the Fire Protection Plan shall be decided by the Fire Marshal or his/her designee within the City of Corona Fire Department. The Fire Marshal's decision shall be final and binding on the lot owner. **HAZ-20** Prior to issuance of a grading permit, the City shall ensure that the Fuel Treatment Location Map, included in the Fire Protection Plan (FIREWISE 2000, Inc. 2008) prepared for the project, is accurately depicted on project plans.	
		Hydrology and Water Quality	
a. Violate water quality standards	Potentially Significant	**HYD-1** Prior to issuance of a grading permit, the project applicant will demonstrate compliance with all applicable regulations established by the United States Environmental Protection Agency (EPA) as set forth in the National Pollutant Discharge Elimination System (NPDES) permit requirements for urban runoff and stormwater discharge, and any regulations adopted by the City of Corona pursuant to the NPDES regulations or requirements. Applicable guidelines and measures and the applicant's approach to meeting each shall be spelled out in the Storm Water Pollution Prevention Plan. Further, the applicant shall file a Notice of Intent with the State Water Resources Control Board to obtain coverage under the NPDES General Permit for Storm Water Discharges Associated with Construction Activity and shall implement a Storm Water Pollution Prevention Plan concurrent with the commencement of grading activities. The Storm Water Pollution Prevention Plan shall include both construction and post-construction pollution prevention and pollution control measures. An example of a construction control measure would be that prior to any severe weather event the project applicant shall ensure that any exposed slopes are stabilized using a bonded fiber matrix coupled with placement of straw waddles spaced appropriately on the slope based on slope gradient and silt fences at the toe of the slope. An	Less than Significant

Table 2-2 (Continued)

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance After Mitigation
		example of a post-construction control measure includes ensuring that sediment accumulation near culverts and channels does not exceed 3 inches at any spot or cover vegetation. This plan shall also identify funding mechanisms for post-construction control measures. **HYD-2** During construction, the project will incorporate all City of Corona construction best management practices (BMPs) in order to control the discharge of pollutants and to avoid the tracking of sediments into streets and storm water conveyance channels. This measure shall be implemented to the satisfaction of the City Community Development and Public Works Directors. These BMPs may include, but are not limited to, the following: • Where necessary, temporary and/or permanent erosion control devices, as approved by the Public Works Department, shall be employed to control erosion and provide safety during the rainy season from October 15 to April 15. The erosion control devices shall include hillside stabilization structures (i.e., fiber matrix on slopes and construction access stabilization mechanisms, etc.) and runoff control devices (i.e., drainage swales, gravel bag barriers/chevrons, velocity check dams, etc.). • All removable erosion protective devices shall be in place at the end of each working day when the 5-day rain probability forecast exceeds 40%. • After a rainstorm, all silt and debris shall be removed from streets, check berms, and basins. • Graded areas on the permitted area perimeter must drain away from the face of the slopes at the conclusion of each working day. Drainage is to be directed toward desilting facilities. • Silt fences shall be installed along limits of work, the project construction site, or both. Other sediment controls could include surface roughening, tree or natural vegetation preservation and protection, temporary gravel construction entrance/exit, temporary diversions, permanent diversions, outlet stabilization, inlet protection, temporary sediment basins, and gravel bay barriers • All construction vehicles shall be adequately maintained and equipped to minimize/eliminate fuel spillage. All equipment maintenance work shall occur off site or within the designated construction staging area. • Water shall be applied to the site as needed during grading operations to minimize dust and wind erosion. Prior to issuance of a grading permit, the applicant shall submit a Storm Water Pollution Prevention Plan that describes the specific measures that will be employed during construction to ensure that applicable and appropriate City-approved BMPs are implemented **HYD-3** The project applicant shall ensure that all Site Design, Source Control, and Treatment Control BMPs	

Table 2-2 (Continued)

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance After Mitigation
		outlined in the proposed project's Water Quality Management Plan (May 27, 2009) be implemented in order to control potential discharge and runoff from the residential use of the site once constructed. These BMPs may include, but are not limited to, the following: • Permanent seeding shall be applied to all exposed slopes to minimize erosion. • Streets and driveways shall be swept to maintain cleanliness of the pavement. At a minimum, all impervious surfaces would be thoroughly swept four (4) times per year, or more often as necessary, with particular emphasis for thorough cleaning prior to the rainy season. • Sediment traps, forebays, inlet/outlet structures, overflow spillways and trenches shall be cleaned out if necessary and the first layer of aggregate and filter fabric replaced if clogging appears on the surface. • Visual inspections of the project site shall be performed annually to ensure that proper litter/debris controls are maintained and that proper landscaping, fertilizer, and pesticide practices are upheld. The final Water Quality Management Plan will be subject to review and approval by the Directors of the City of Corona Community Development and Engineering Departments.	
b. Deplete groundwater supplies	Less than Significant	N/A	N/A
c. Alter drainage pattern causing erosion	Less than Significant	N/A	N/A
d. Alter drainage pattern causing flooding	Less than Significant	N/A	N/A
e. Excess runoff water	Less than Significant	N/A	N/A
f. Degrade water quality	Less than Significant	N/A	N/A
g. Introduction of housing within flood hazard area	No Impact	N/A	N/A
h. Introduction of structures to redirect flood flows	No Impact	N/A	N/A

Table 2-2 (Continued)

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance After Mitigation
i. Loss, injury, or death due to dam innundation	Less than Significant	N/A	N/A
j. Seiche, tsunami, mudflow	Less than Significant	N/A	N/A
Aesthetics			
k. Scenic vista effects	Less than significant	N/A	N/A
l. Scenic resource damage	Less than significant	N/A	N/A
m. Visual quality/character degradation	Potentially significant	**AES-1** All graded slopes would be replanted with native and drought tolerant plant species. The landscape plan shall adhere to the City's landscape design guidelines as they pertain to water friendly plant materials (it should be noted that the City's landscape design guidelines are consistent with the University of California Cooperative Extension Service's Water Use Classification of Landscape Plants guidelines).	Significant and Unavoidable
n. New source of light or glare	Potentially significant	**AES-2** All project streetlights shall be designed in accordance with the City's Municipal Code and shall be pointed downward. The Municipal Code provides for several streetlight specifications that help ensure that sufficient lighting is available as a public health and safety measure but at the same time avoid substantial new light sources that might be considered a nuisance to adjacent land uses or open space areas such as exist on adjacent hillsides. **AES-3** Prior to issuance of a grading permit, the applicant shall submit a lighting plan to City Community Development Staff for the tennis courts showing how proposed lights would not result in nuisance spill-over to adjacent properties or open space. Further, any lighting proposed for the tennis courts shall be pointed downward and be affixed to a timer, which will ensure that lights remain off when the courts are not in use. **AES-4** Prior to issuance of a grading permit, the applicant shall provide the specifications for any entryway or entryway monument lighting. These specifications shall be consistent with the City's Municipal Code, which mandates that all light sources be retained on site so as to avoid nuisance spill-over to adjacent properties.	Less than Significant
Noise			
a. Noise in excess of established standards	Potentially Significant	**NOI-1** Equipment staging and material stockpiling areas shall be located at the furthest feasible distance from identified sensitive receptors to ensure construction-related noise sources are reduced to the greatest	Significant and Unavoidable

Table 2-2 (Continued)

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance After Mitigation
		extent possible. Staging areas should be located at least 500 feet from the nearest occupied residential structure to the project site. Construction operations, including equipment maintenance, shall not occur outside permitted construction hours as delineated in the City and County noise ordinances. **NOI-2** Prior to grading permit issuance, the developer shall ensure that all construction equipment, fixed or mobile, is equipped with properly operating and maintained mufflers. Additionally, the use of electric air compressors and similar power tools, rather than diesel equipment, shall be used where feasible. **NOI-3** If traffic control and construction signs that require power for lighting or flashing are located near existing residents, the source of power should be batteries, solar cells or another quiet source. Gas or diesel fueled internal combustion engines shall not be allowed.	
b. Excessive groundborne vibration or groundborne noise levels	Less than Significant	N/A	N/A
c. Permanent increase in ambient noise levels	Less than Significant	N/A	N/A
d. Temporary or periodic increase in ambient noise levels	Potentially Significant	**NOI-1 through NOI-3** Refer to above	Significant and Unavoidable
e. Exposing people residing or working in airport land to excessive noise	Less than Significant	N/A	N/A
f. Exposing people residing or working in private airstrip to excessive noise	Less than Significant	N/A	N/A
Public Services and Utilities			
a. Alteration of government facilities including:	—	—	—

Table 2-2 (Continued)

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance After Mitigation
i. Fire	Potentially Significant	**HAZ-2 through HAZ-20** Refer to above **PUB-1** Prior to issuance of a grading permit, a cross-staffed brush engine will be required to be available at all times to assist with a fire during construction. If said equipment is not available from the Corona Fire Department, the applicant shall be required to secure such equipment/staffing. **PUB-2** Prior to the issuance of a grading permit, the applicant shall make a fair share contribution to fund any needed improvements to the City's communications equipment as identified by the City Fire Department. Any required improvements to the City's communications equipment shall be installed prior to project occupancy. This measure shall be implemented to the satisfaction of the City Fire Chief or his/her designee.	Less than Significant
ii. Police	Less than Significant	N/A	N/A
iii. Schools	Potentially Significant	**PUB-3** Prior to final tract map approval, in order to offset any potential impacts to the Corona-Norco Unified School District, the applicant would be required to pay state-mandated single family residential school facilities fees. The fee amount shall be determined based on the school fee schedule in place at the time of final tract map approval. These fees may be used to enhance, expand or develop new school facilities per the District's master facilities plan.	Less than Significant
iv. Parks	Potentially Significant	**PUB-4** Prior to issuance of occupancy permits, the applicant shall pay an in-lieu fee for dedication of parkland as set by resolution of the City Council, or a combination of the respective amounts to be determined in the sole discretion of City, so long as the aggregate fair market value of the land and recreational facilities plus in-lieu fees does not exceed the limits established in Chapter 16.35 of the City's Municipal Code. The department of Parks and Community Services has determined that the payment of in lieu fees rather than parkland dedication will be adequate to mitigate any potential impacts. According to Chapter 16.35, Section 16.060 (E) of the Corona Municipal Code, a subdivision with fifty or less dwelling units shall pay fees because the amount of land dedicated would be less than 3 acres, which is the minimum the City would accept. Additionally, sufficient neighborhood and community parks exist within the immediate project area and funds would be more useful augmenting the Capital Improvement Program (C.I.P) Budget to be used for new park improvement costs (Garcia 2010b).	Less than Significant
v. other facilities	Less than Significant	N/A	N/A

Table 2-2 (Continued)

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance After Mitigation
b. Exceed wastewater treatment requirements	Less than Significant	N/A	N/A
c. Require construction of new water or wastewater facilities	Less than Significant	N/A	N/A
d. Require construction of new drainage facilities	Less than Significant	N/A	N/A
e. Sufficient water supplies	Less than Significant	N/A	N/A
f. Adequate wastewater treatment capacity	Less than Significant	N/A	N/A
g. Sufficient landfill capacity	Less than Significant	N/A	N/A
h. Conflict with solid waste regulations	Less than Significant	N/A	N/A
Traffic			
a. Conflict with measures of effectiveness for circulation system	Less than Significant	N/A	N/A
b. Exceed standard level of congestion	Less than Significant	N/A	N/A
c. Change in air traffic patterns	Less than Significant	N/A	N/A
d. Design feature hazards	Potentially Significant	**TRF-1** Prior to final tract approval, the applicant shall install an all-way stop at the intersection of Malaga Street and Shepard Crest Drive to facilitate circulation. Further, this traffic stop will slow northbound traffic coming off the proposed project's entrance incline.	Less than Significant
e. Inadequate emergency access	Less than Significant	N/A	N/A

Table 2-2 (Continued)

Environmental Topic	Impact?	Mitigation Measure(s)	Level of Significance After Mitigation
f. Inadequate parking capacity	Less than Significant	N/A	N/A
g. Conflict with alternative transportation	Less than Significant	N/A	N/A
Greenhouse Gas Emissions			
a. Greenhouse Gas Emissions	Potentially Significant	**GHG-1** In the year 2020, emission factors will be less than or equal to requirements such as that which will require automakers to boost fleet wide gas mileage averages to 35 mpg. This increase in average gas mileage will reduce energy needs for project vehicles by up to 40% (Brain F. Smith and Associates 2010). This reduction would be expected to reduce project related CO2e by 264.14 tons or 29.4% per year. The EPA and the US Department of Energy recommend building homes and habitable areas to achieve energy star compliance, as they are at least 15% more efficient than homes built to the 2004 International Residential Code (IRC), and include additional energy-saving features that typically make them 20%—30% more efficient than standard homes (Brian F. Smith and Associates 2010). Each residential unit shall achieve energy star compliance, as they would consume only 85% of the business as usual energy requirements. Once building permits are requested, the City of Corona shall verify that design will meet the EPA's energy star compliance guidelines. Achievement of energy star compliance is expected to reduce CO2e for both natural gas and electricity levels by 31.16 tons.	Less than Significant
b. Applicable Plan	Less than Significant	N/A	N/A

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SECTION 3.0
PROJECT DESCRIPTION

This section provides a description of the proposed project, the environmental effects of which are evaluated in Sections 5.0 through 8.0 of this EIR. The project objectives and project location are described in this section, followed by a description of project characteristics and a summary of the discretionary actions that would be required. Section 15124 of the State CEQA Guidelines set forth specific technical requirements for the project description, and includes items such as the precise location of the project; a statement of the project's objectives; a general description of the project's technical, economic, and environmental characteristics; and a statement briefly describing the intended uses of the EIR.

3.1 PROJECT LOCATION

The proposed project is located within the City of Corona which is in western Riverside County, California. The City is south of the City of Norco and southwest of the City of Riverside. Unincorporated Riverside County borders the City along the southern and eastern areas. The Cleveland National Forest also borders a portion of the City in the south. The regional location of the proposed project is illustrated in Figure 3-1 and the local vicinity is shown on Figure 3-2.

The 64.3-acre project site consists of 39.9 acres which are located in the City of Corona, and 24.4 acres located in the unincorporated area of Riverside County (Figure 3-3). An additional 1.1 acres to the east of the boundary for the Cleveland National Forest are located entirely within the unincorporated area of Riverside County and will be annexed to the City along with the 24.4 acres of County land. The 1.1 acres will be included in the SPA, which will establish a pre-zone which is consistent with the existing underlying General Plan designation. However, this 1.1 acre parcel is not owned by the applicant, and therefore is excluded from the proposed subdivision. . The portion of the project within the City is located in the Mountain Gate Community in the southwestern portion of the City of Corona. Specifically, the project site is located at the southerly terminus of Malaga Street, generally to the south of Upper Drive and Foothill Parkway. Existing access to the project site is from Malaga Street, south of Shepard Crest Drive. Existing secondary access is provided by an unimproved roadway which generally follows the western edge of the property and connects with the western extent of Shepard Crest Drive.

3.2 SITE DESCRIPTION AND BACKGROUND

The portion of the site within the City consists primarily of citrus and avocado groves while the remaining area within the County consists of densely vegetated undeveloped land. On-site elevations range from approximately 1,200 feet amsl in the northwest corner to about 1,600 amsl in the southeast corner. The site can be characterized by moderate to steep slopes. The main drainage crossing the site runs along the western property border but does not lie within the project

footprint. Three other drainages also cross the site. All drainages crossing the site are intermittent but also carry excess irrigation water when present. Approximately 35 acres of the site is an active orchard being used to grow avocados and lemons. The rest of the site consists primarily of undeveloped chaparral/coastal sage scrub vegetation of the type typically found on the eastern slopes of the Santa Ana Mountains. As discussed in Section 5.2, a review of aerial photographs of the project site indicates that portions of the property (i.e., that part of the site currently within City limits) have been utilized for fruit orchards since at least 1938 to the present.

The diamond shaped parcel located within the southwest quadrant of the project site totaling 1.1 acres is not a part of the proposed subdivision and is developed with a single family home. Access to the existing dwelling is provided via an existing access easement from Shepard Crest Drive. The said easement is located within the westerly portion of the project site and also provides access to two parcels located beyond the project site to the southwest.

The property is bordered to the north by a narrow strip of planted trees and shrubs separating the site from a tract of single-family residences (Tract 28153) to the north with large estate residential homes to the northeast. Properties to the south, east, and west are largely undeveloped chaparral covered hills. A portion of the project site borders the Cleveland National Forest to the south. The land to the northeast and north is relatively level although it gently slopes from south to north.

3.3 PROJECT OBJECTIVES

Section 15124(b) of the State CEQA Guidelines states that the Project Description shall contain "a statement of the objectives sought by the proposed project." The proposed project has been designed to achieve the following objectives:

1. The underlying purpose of the project is to provide high quality residential development consistent with adjacent neighborhoods.
2. Build residential housing which is in compliance with current zoning and Corona General Plan land use designations.
3. Create a large lot development that would provide an appropriate transition between single family residential development within the City of Corona and the natural areas of the Cleveland National Forest.
4. Ensure that all public facilities and services are available to serve the project and meet or exceed applicable City standards and requirements prior to, or concurrent with development.
5. Implement a comprehensive landscape program which provides visual continuity throughout the project area and provides a compatible transition from the existing

neighborhood north of the project.

6. To help meet the high market demand for high quality housing in western Riverside County and to meet the City's housing needs to support forecasted population growth as discussed in the City's General Plan (2004).

3.4 PROJECT CHARACTERISTICS

The proposed project would result in the subdivision of 64.3 acres into 34 single-family detached residential lots. This subdivision would require the processing of a companion Tentative Tract Map with an Amendment to the Mountain Gate Specific Plan (further discussion of the project's relationship with the Mountain Gate Specific Plan and other land use issues are included in Section 5.9). The analysis included in this EIR addresses the proposed subdivision of land, as well as the annexation of land, construction and long term use of 34 new homes proposed to be built on the site.

3.4.1 Site Plan/Tentative Tract Map

The proposed Site Plan would include subdivision of the property into 34 single-family lots (Figure 3-4). The project would also include development of streets, an entry gate and turn-around area, a tennis court complex at the eastern edge of the project site, and manufactured landscaped slopes in between residential lot blocks. Proposed Tentative Tract Map (TTM) 34760 would be the vehicle to subdivide the property into single-family lots, Home Owners' Association landscaped slope lots, natural and manufactured open space, and private residential streets. The proposed TTM shows the project's density, lot coverages, lot sizes, and street profiles. The project is located in an "Estate Residential (ER) Cluster" Zone, which allows one to three dwelling units per acre, depending on slope characteristics. The maximum allowable number of residential units would be 56, adjusted for slope analysis. Therefore, the proposed 34 residential lots is less than the allowable density under the ER Cluster Zone. Lot sizes would range between 20,073 square feet up to 25,549 square feet with an average lot size of 21,464 square feet. The "Not a Part" piece shown on TTM 34760 is not part of the subdivision proposal but is part of the project's annexation and Specific Plan Amendment applications.

3.4.2 Landscaping

The project landscape plan calls for a variety of plant types and schemes which provide both slope stabilization and buffering from the existing community to the north (Figure 3-5). The planted slope which separates the project from the residential neighborhood to the north will remain in place. The landscape plan would include a variety of trees, groundcover, and shrubs along project slopes, common areas, parkways, and internal project roadways, natural open space along the western project boundary and the southeast corner, and preservation of an existing

lemon orchard at the southeast project boundary. Front and backyards of the proposed single-family homes would be the responsibility of the future homeowners.

3.4.3 Drainage Systems

The project site is divided into five watershed areas. In order to maintain the existing drainage pattern of the site, a series of high points within the project, which coincide with the existing ridgelines separating existing watersheds, would be maintained. The proposed private, on-site storm drain would convey flow to a water quality detention basin which would consist of a single 24-inch reinforced concrete pipe (RCP) (or similar design) in accordance with Riverside County Flood Control District standards. Drainage would be captured and passed through the site via a proposed system of Homeowners' Association (HOA) maintained interceptor drains, down drains, and storm drains. Riprap and/or energy dissipaters would be utilized at the storm drain outlet to reduce the flow velocities to non-erosive levels.

Each proposed storm drain line has been designed to ensure the upstream 100-year water surface at the pipe inlet does not exceed the elevation of the drainage course at the site boundary. The 100-year water surface elevation shall be contained on site. Based on existing topography and accompanying drainage patterns, two separate water quality basins for treatment of on-site flows prior to release downstream have been incorporated into project design. Water quality basins are shown on Figure 3-4.

3.4.5 Site Access and Internal Circulation

Access to the project will be provided via Malaga Street to the three private cul-de-sacs streets within the project site. Malaga Street is a Residential Street adjacent to the project site and is currently a two-lane undivided roadway. An all-way stop would be installed at the intersection of Malaga Street and Shepard Crest Drive to facilitate access to Malaga Street from Shepard Crest Drive and to calm northbound traffic traveling downhill from the project site. Figure 3-4 shows the internal circulation infrastructure proposed on and off site.

3.4.6 Utilities

The project would connect to existing wet utilities within Malaga Street. Water and sewer services would be provided by the City of Corona Department of Water and Power, electrical service by Southern California Edison, and solid waste collection by Waste Management of the Inland Empire. All proposed utilities connections and extensions would be underground.

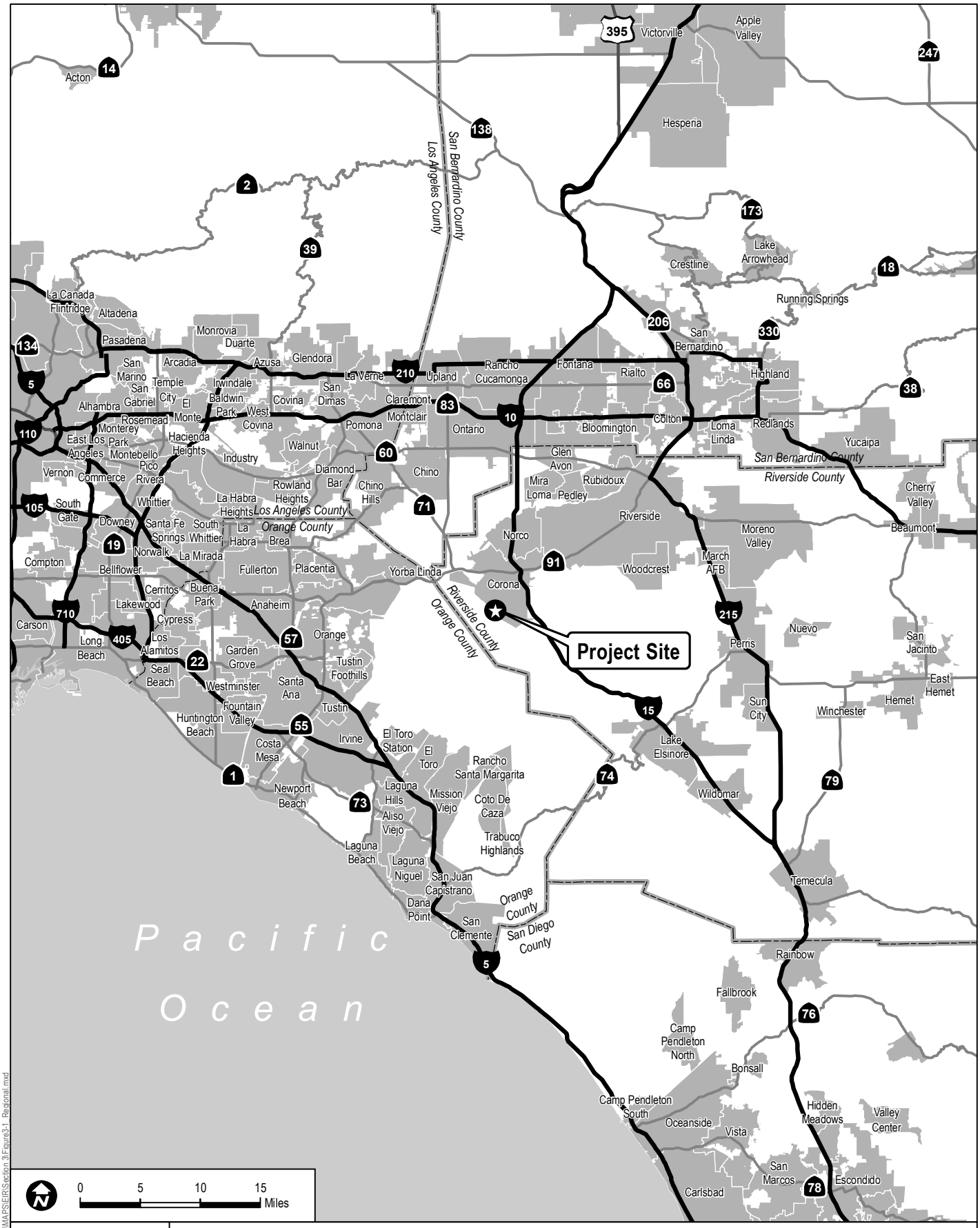

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FIGURE 3-1

Regional Map

Rancho de Paseo Valencia EIR

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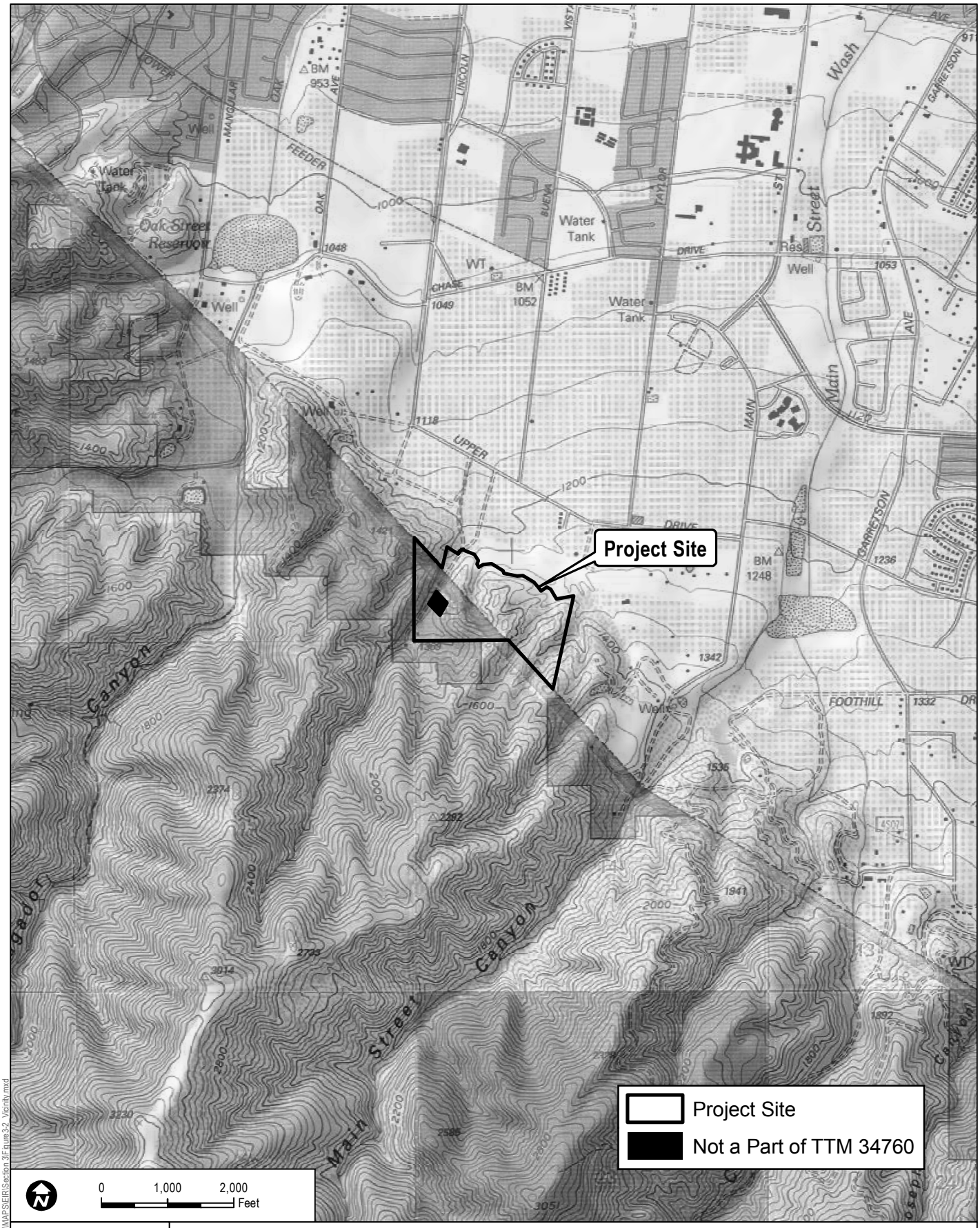

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SOURCES: Topography Map: USGS 7.5 Minute Map Series Corona South Quadrangle.
Project Site Boundary: County of Riverside 2009.

FIGURE 3-2
Vicinity Map

Rancho de Paseo Valencia EIR

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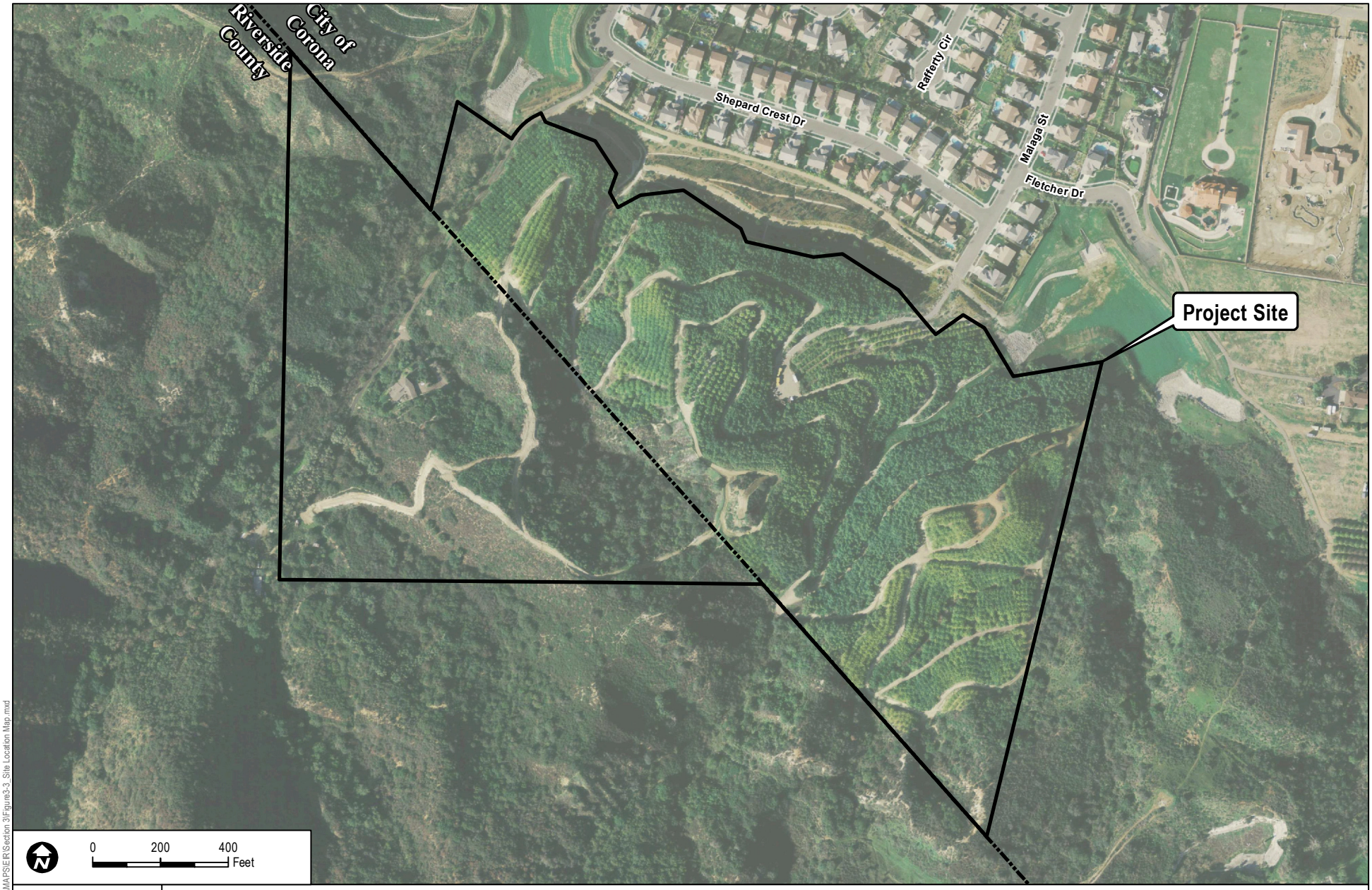

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SOURCES: Aerial Imagery: DigitalGlobe 2008.
Project Site Boundary: County of Riverside 2008.
City/County Boundary: County of Riverside 2005.

Rancho de Paseo Valencia EIR

FIGURE 3-3

Site Location Map

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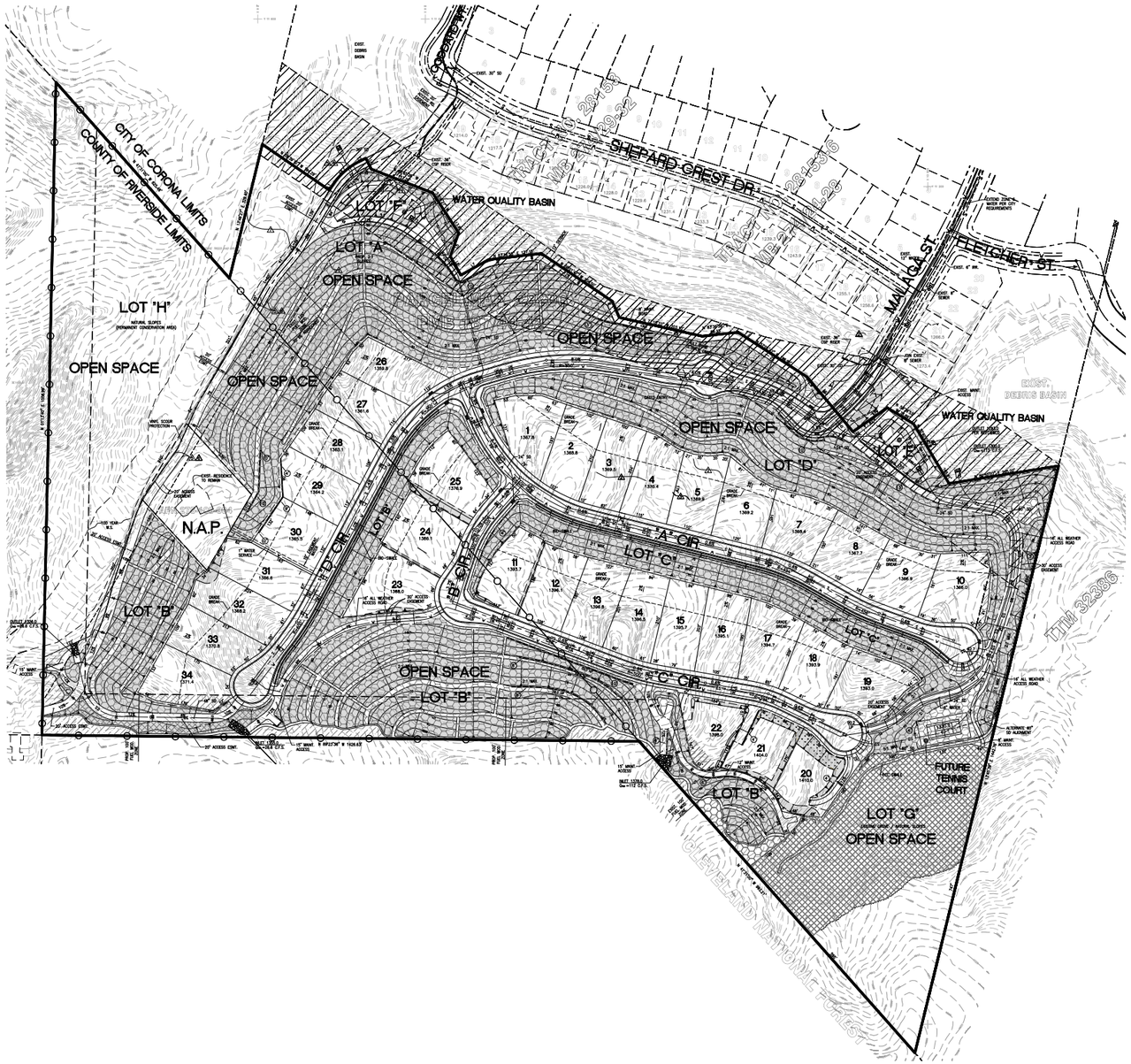

LEGEND

- PROP. BOUNDARY
- RETAINING WALL (WALL HEIGHT PER PLAN) — 4'
- COUNTY OF RIVERSIDE AND CITY OF CORONA LIMITS
- AMEND AREA TO CITY OF CORONA MOUNTAIN GATE SPECIFIC PLAN
- FAULT ZONE SETBACK LIMITS
- HOA EASEMENT FOR LANDSCAPE MAINTENANCE PURPOSES
- ZONE 1 – HOMEOWNER MAINTAINED NON-COMBUSTIBLE CONSTRUCTION FUEL MODICATION EASEMENT
- ZONE 2 – WET ZONE – HOA MAINTAINED (100% REMOVAL NATIVE SHRUBS) FUEL MODICATION EASEMENT
- ZONE 3 – DRY ZONE – HOA MAINTAINED (50% THINNING NATIVE SHRUBS) FUEL MODICATION EASEMENT
- AGR. USE AREA – HOA MAINTAINED (OLD GROVE LEMON TREES) FUEL MODICATION EASEMENT
- PROPOSED WATER LINE
- PROPOSED SEWER LINE
- PROPOSED STORM DRAIN LINE

NORTH

0' 80' 160' 320'

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SOURCE: Armstrong & Brooks Consulting Engineers, April 13, 2009

FIGURE 3-4
Site Plan/Tentative Map

Rancho de Paseo Valencia EIR

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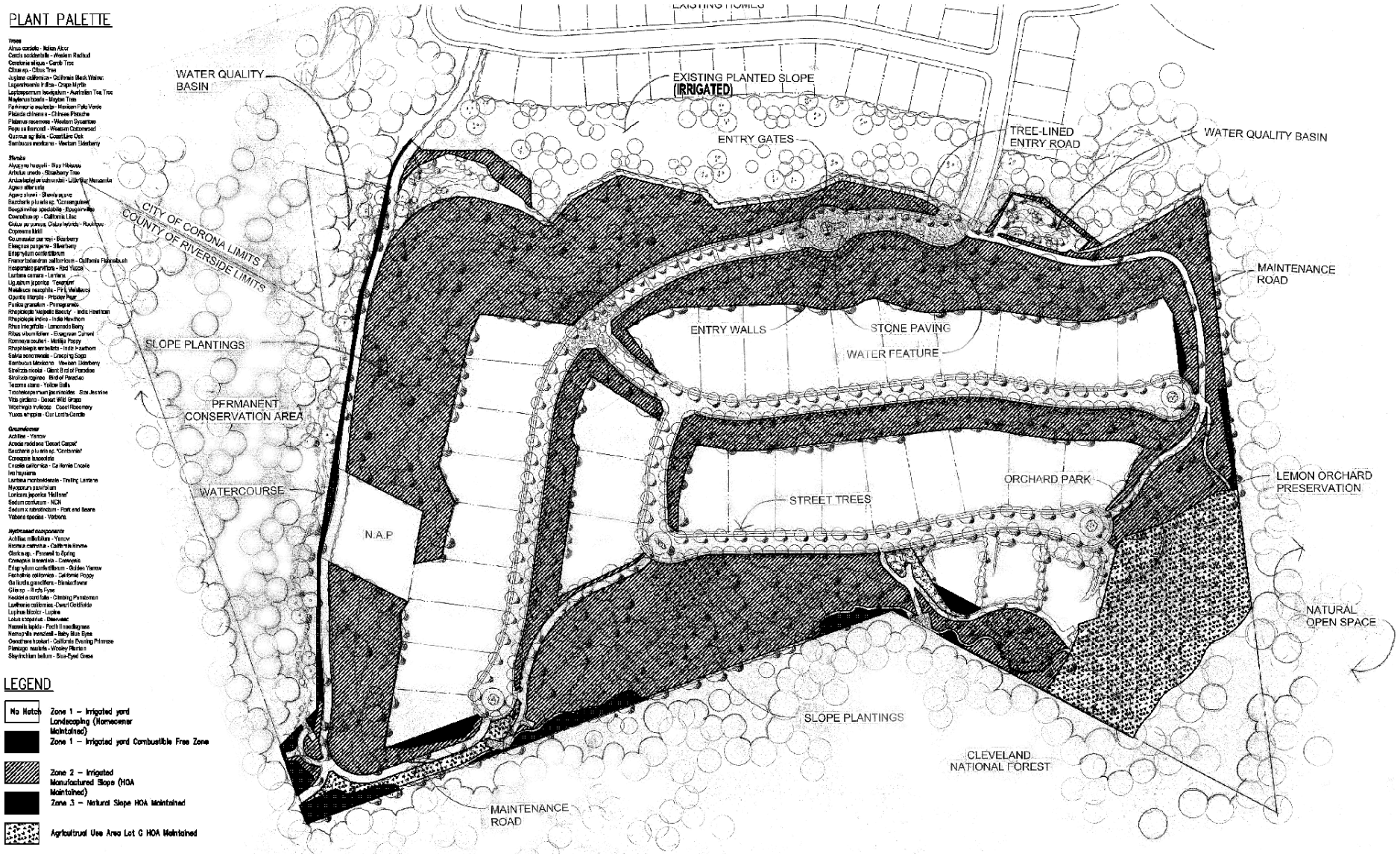

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SOURCES: SITE Design Studio Inc. 2009

FIGURE 3-5

Landscape Plan

Rancho de Paseo Valencia EIR

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3.4.7 Construction

As outlined above, the project site is moderate to steep sloping. In order to provide level building pads and acceptable street geometry, initial mass grading followed by finish grading would be required. Grading for the project would result in the movement of approximately 1,200,000 cubic yards of soil. The soil needed for the project site would balance, meaning that there would not be excess soil that needed to be transported or the need to import additional soil in order to create the proposed building pads and associated infrastructure.

The development of the project would consist of site preparation, site development, and construction. The project is proposed to be constructed in three phases. The first phase of the site's preparation would include site clearing and grading. This phase would extend approximately 4–6 months. This initial phase of development would necessitate approximately 25 workers and would include the use of 4–6 scrapers, 4–6 dozers, 2–4 loaders, and 3 water trucks.

Following initial site clearing and grading, site development would begin and consist of the installation of underground utilities and surface improvements and would extend approximately 4 months. It is estimated that approximately six workers would be on site daily to complete this phase of construction. Materials would be delivered in bulk and stored on site. Street improvements would begin after infrastructure is installed and would take approximately 2 months to complete. This phase would take approximately four to eight workers. Due to the time/cure nature of street materials, all materials would be brought onto the proposed project site and installed instantly.

All common area (i.e., manufactured slopes, front yards, etc.), would be revegetated per the proposed landscape plan prior to the construction of any residences. Because the project will consist of homes, construction of the proposed residences is anticipated to extend for several years. Each home would likely entail a construction crew of four to five workers throughout the duration of each home's construction process.

All construction staging areas would be located on site. All construction vehicles would enter the project site from Malaga Street. Acceptable construction haul routes determined to cause the least amount of disturbance to be used during construction would be approved by the City.

3.5 DISCRETIONARY ACTIONS

The EIR serves as an informational document for use by public agencies, the general public, and decision makers. This EIR discusses the impacts of development pursuant to the proposed project and related components and analyzes project alternatives. This EIR will be used by the City of Corona in assessing impacts of the proposed project.

The following is a list of discretionary actions required for project approval. These include environmental review requirements and design review processes that are required prior to construction of the proposed project. All of these approvals require preliminary recommendation from the Corona Planning Commission with final approval by the Corona City Council.

Permit/Approval	Agency
Final EIR Certification	Corona City Council
Tentative Tract Map Approval	Corona City Council
Specific Plan Amendment Approval	Corona City Council
Precise Plan Approval	Corona City Council
Annexation Approval	Corona City Council and LAFCO

In addition, the Santa Ana Regional Water Quality Control Board will consider the EIR in issuing a Storm Water Discharge Requirements (WDR) Permit and approval of the Storm Water Pollution Prevention Plan (SWPPP). Additionally, the project may require notification of the California Department of Fish & Game for streambed alteration under Section 1602 of the Fish and Game Code and/or U.S. Army Corps of Engineers permit under Section 404 of the Clean Water Act (CWA) and Regional Water Quality Control Board permits under Sections 401 and 402 of the CWA.

For purposes of visual analysis, a maximum height has been assumed along with similar architectural characteristics as the neighborhood to the north. Once detailed plans are made available to the City, the design of the homes would undergo design review with the City to ensure that community character is maintained.

3.6 REFERENCES

14 CCR 15000–15387 and Appendix A–L. Guidelines for Implementation of the California Environmental Quality Act, as amended.

SECTION 4.0
ENVIRONMENTAL SETTING

This section provides a description of the surrounding land uses, existing site characteristics, and land use planning context relevant to the proposed project. This section also provides an overview of the environmental sensitivities present on and around the project site. Finally, this section includes a description and map of related projects within the project area. The related projects are referenced for the purpose of the cumulative impacts analysis provided in each of the environmental impact analyses in Section 5.

4.1 SURROUNDING LAND USES

Adjacent property to the north consists of single-family residential urban development. The land to east, south, and west remains undeveloped due to the presence of the Cleveland National Forest. The land to the east, south, and west is part of the foothills of the Santa Ana Mountains and is therefore steep and undulating, much like on the proposed project site. The land to the northeast and north is relatively level, although it gently slopes downward from south to north.

4.2 EXISTING SITE CHARACTERISTICS

The portion of the project site within the City consists primarily of citrus and avocado groves, while the remaining area within the County consists of densely vegetated undeveloped land. According to a review of aerial photos, portions of the site have been used for agricultural uses since at least 1938 (GSI 2006). On-site elevations range from approximately 1,230 feet amsl to about 1,590 amsl. The site can be characterized by moderate to steep slopes. Several drainages (which flow south to north toward the Santa Ana River system) traverse the project site given its presence at the base of the foothills of the Santa Ana Mountains. The project site supports several unnamed roadways that have traditionally been used for orchard operations. The project site also contains several stockpiles of irrigation and fencing equipment scattered throughout the site.

4.3 LAND USE AND ZONING

The project site consists of 64.3 acres. Approximately 39.9 acres are presently within City limits, with the zoning designation identified “ER Cluster” of the Mountain Gate Specific Plan. The ER Cluster designation requires a minimum lot size of 7,200 square feet. The City's General Plan (2004) designates the 39.9 acres of the site currently within City limits as Estate Residential (ER) with a maximum allowed density of 3 dwelling units per acre. This portion of the project site is also governed by the South Corona Community Facilities Plan, which designates the site as Estate and allows 1.47 dwelling units per acre.

The remaining 24.4 acres of the project site is located within unincorporated Riverside County but is within the City's Sphere of Influence. This land is designated as Rural Mountainous (RM) in the *Riverside County General Plan* (2003), with a maximum allowed density of 1 dwelling unit per 10 acres. This portion of the property is designated as Rural Residential in the Riverside County Zoning Ordinance with a minimum lot size of 0.5 acre. This 24.4-acre area is also located within the City's Sphere of Influence and is designated Rural Residential 1 (RR1) in the City's General Plan (2004). RR1 allows 0.5 dwelling units per acre. Figure 4-1 depicts the land use context described above.

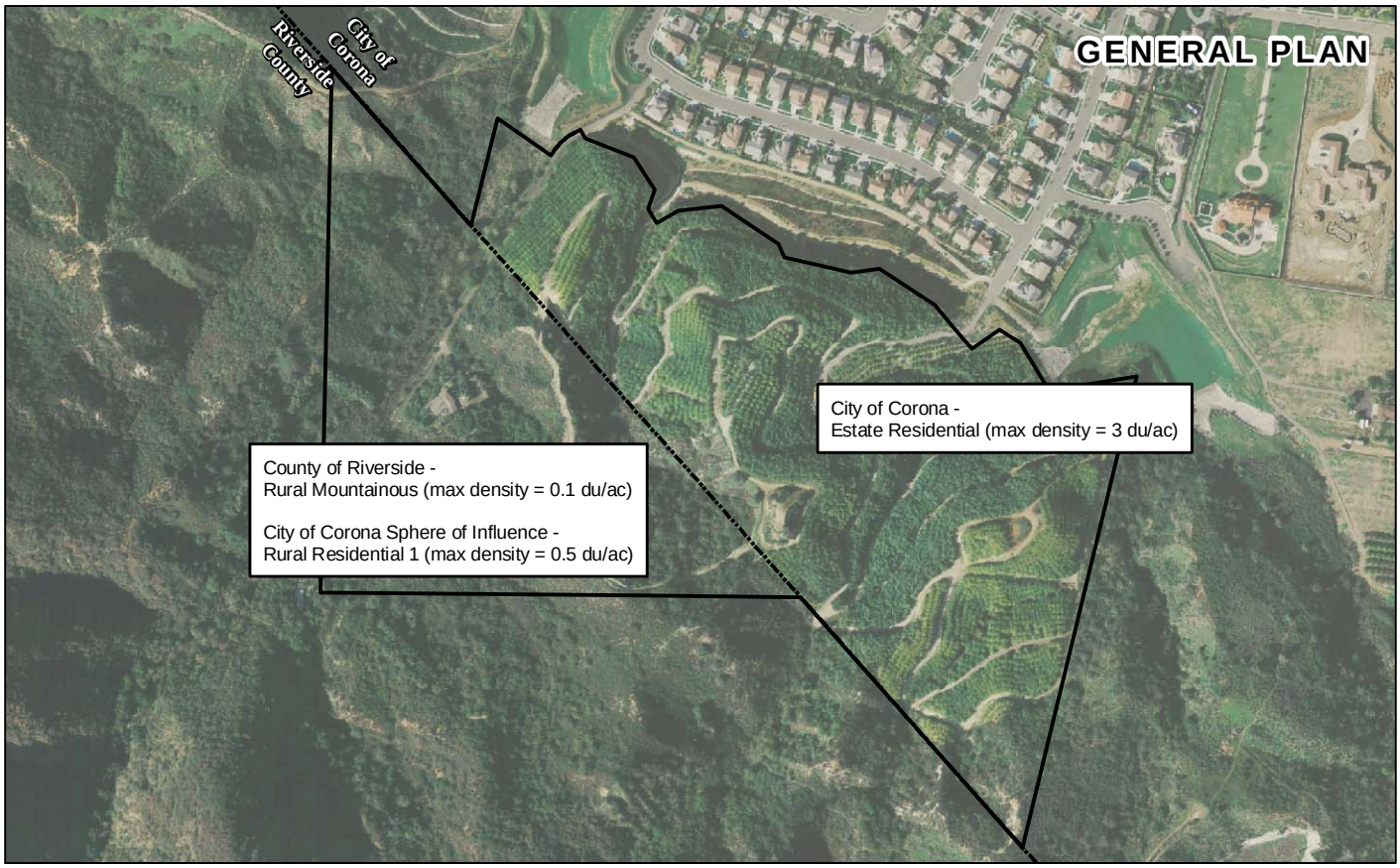
A detailed discussion of the project's relationship to relevant planning documents and policies, as well as to other land use–related issues, is contained in Section 5.9.

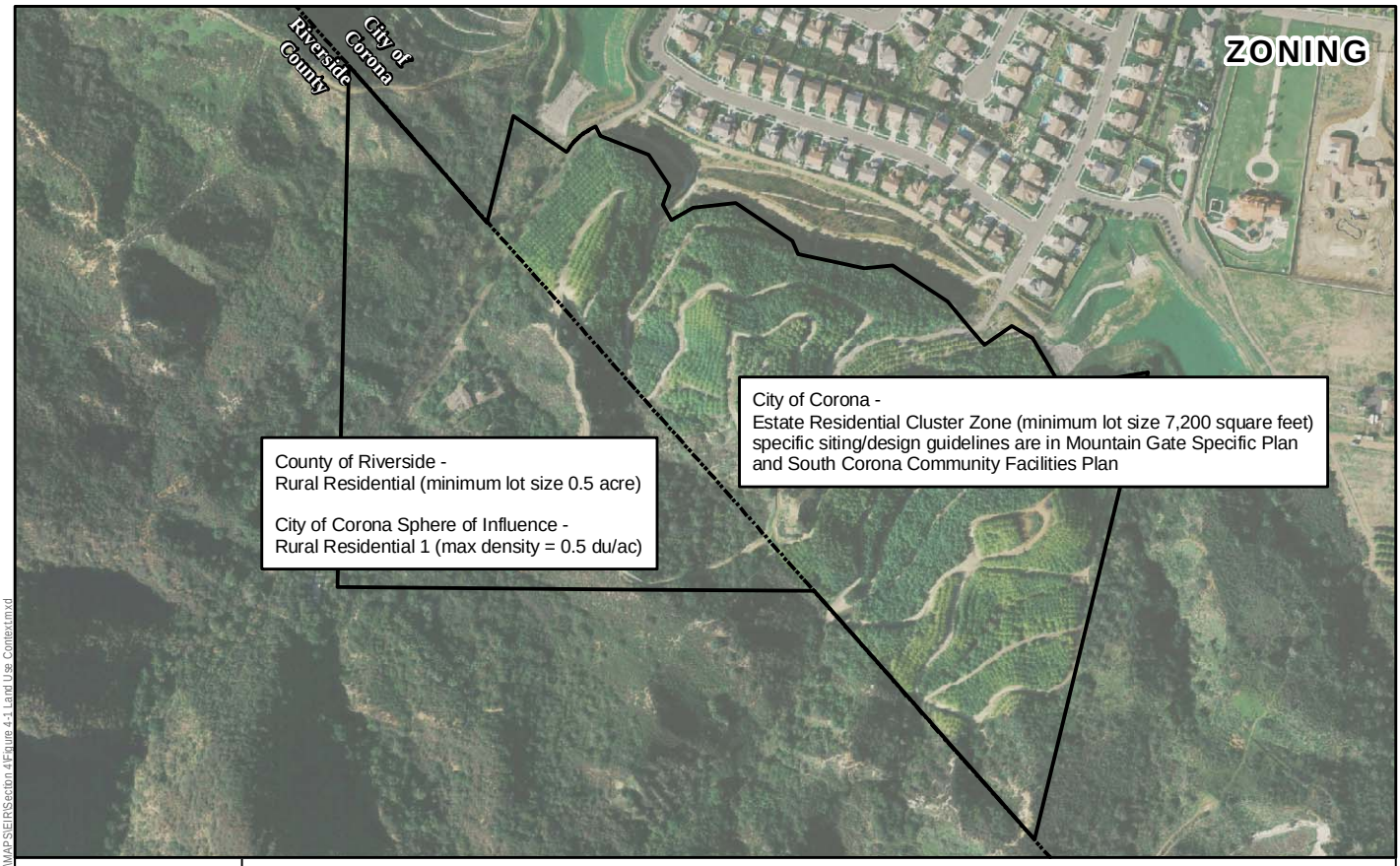
4.4 LAND USE HISTORY

As described above, portions of the property have been used for agricultural production since the late 1930s (GSI 2006). The 39.9 acres that is located in the City is contained within the 1,127-acre Mountain Gate Specific Plan, which was approved by the City in June 1989. Development of the Mountain Gate Specific Plan community has occurred in phases over the last 20 years. Agriculture within this portion of Corona has been an important element of the City's growth and development history. Early economic development of Corona was based on citrus ranching. Mountain Gate, also known as the Corona Foothill Ranch, was part of the Corona Foothill Lemon Company, founded in 1911 by S.B. Hampton. For many years, the company had a controlling interest in the Temescal Water Company, which was organized in 1887 by the founders of Corona. This water district was set up to provide Corona-area farmers with water supplies for their crops.

The historic Corona Foothills Ranch experienced years of growth and decline related to the rise and fall of the world citrus market. Although portions of the original ranch are still farmed today, in 1981 the ranch was subdivided into one hundred sixty-five 5-acre parcels (Tract 14792) consistent with the City of Corona's agricultural general plan and zoning.

In the early 1980s, the City of Corona began to look closely at the 5,000 acres located south of Ontario Avenue. These deliberations resulted in a shift in City policy away from the preservation of agriculture. A General Plan Amendment (GPA 85-6) was ultimately approved in 1986 that would allow an urban-planned community of approximately 12,500 dwelling units to be developed on this site over time. After the adoption of the General Plan Amendment, the City adopted a master specific plan, the Community Facilities Plan, in July 1988. The Community Facilities Plan updated the master plan of land use and traffic circulation for South Corona. The Community Facilities Plan includes master plans for public facilities and services to provide future south Corona residents with a full complement of City services. The Community Facilities Plan also establishes design guidelines and development standards with which individual specific plans must conform.





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SOURCE: Aerial Imagery: DigitalGlobe 2008.
Project Site Boundary: County of Riverside 2008.
City/County Boundary: County of Riverside 2005.

FIGURE 4-1

Land Use Context

Rancho de Paseo Valencia EIR

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4.5 ENVIRONMENTAL SENSITIVITIES

Environmental issues related to the project site and vicinity include aesthetics and visual resources, particularly the effect on the character and views of the site from adjacent areas, including the existing Mountain Gate community located immediately north of the subject property.

A significant portion of the site has been historically used for agriculture, primarily citrus and avocado groves, which will be removed upon project implementation. The project site is in the north–central portion of the South Coast Air Basin. Air quality is generally good, and most criteria pollutants are in attainment of state and federal standards, with the exception of ozone (O_3) and suspended particulate matter (PM_{10}).

The project is surrounded on the east, south, and west by the foothills of the Santa Ana Mountains in the Cleveland National Forest. The surrounding foothill areas are characterized by a mixture of coastal sage scrub and chaparral vegetation incised by drainages flowing northwest off of the mountains toward the Santa Ana River. The western portion of the property contains a U.S. Geological Survey-designated blueline stream. The main project area (planned for development) contains several smaller drainages that are fed by existing agricultural runoff. The surrounding hillsides and drainages contain habitat for special-status plant and wildlife species. Several special-status plant and wildlife species are also found on site. The project is located within the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) Area; the surrounding Cleveland National Forest land is a component of the ultimate 510,000-acre MSHCP preserve.

Potentially hazardous geotechnical conditions may exist due to the presence of steep slopes and earthquake faults. An active earthquake fault zone is located in the northern portion of the property and appears on maps prepared by the California Geological Survey.

The main noise sources in the project vicinity are roadways, including Upper Drive to the north. Traffic congestion in the surrounding area is minimal, with short delays at intersections. Other environmental sensitivities include hazards associated with wildland fires in the project vicinity and potential for agricultural-based pesticide residue on site. The adequate provision of infrastructure as well as public services and utilities is also an environmental concern.

4.6 RELATED PROJECTS

CEQA Guidelines Section 15130 requires identification of related projects, both public and private, that together with the proposed project could have cumulative impacts on the environment. CEQA Guidelines Section 15355 defines cumulative impacts as “two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. “In many cases, the impact of a single project may not be

significant, but when combined with other projects, the cumulative impact may be significant. CEQA Guidelines Section 15130(b) states that "the discussion [of cumulative impacts] need not provide as great detail as is provided for the effects attributable to the project alone." Section 15130(b) further states that a cumulative impact discussion should be guided by the standards of practicality and reasonableness. A discussion of cumulative impacts associated with the project combined with the related projects is included within the project impact section for each environmental topic contained in Section 5.

The geographic scope of the project and the level of the potential cumulative projects are greatly limited due to the unique characteristics of the project site. The site is part of an existing specific plan that has already evaluated and anticipated the full development and build-out of the specific plan and the proposed project. At this time, the bulk of the specific plan and the surrounding residential area have already been developed for such uses. Additionally, the project site is bordered by steep hillsides and forested land associated with the Santa Ana Mountains, greatly curtailing options for further project development in the area that may result in potential cumulative impacts. Given the site's constraints from the mountains and existing residential development in the general project area, coupled with the project's limited size and environmental impacts, the project's scope relative to potential cumulative projects is limited.

Based upon the characteristics of the project site and the unique features of the surrounding environment, there are two other reasonably foreseeable projects that could contribute to cumulative impacts in the project area. The other reasonably foreseeable projects are described below, and the location of each project is depicted on Figure 6-1.

Tentative Tract Map 32386

This project involves annexing 75 acres into the Mountain Gate Specific Plan and establishing residential zoning. The site is located at the southerly terminus of Main Street south of Fletcher Drive. The project would create 52 single-family residential lots under the SFD 14.4 zoning designation of the Specific Plan.

Tentative Tract Map 32241

This project is a proposal to subdivide 13.8 acres into 14 single-family residential lots located east of the southerly terminus of Fletcher Drive and south of Orange Heights Lane. This map has been subdivided, however not recorded.

4.7 REFERENCES

City of Corona. 2004. *City of Corona General Plan*. Resolution No. 2004-034. Prepared by EIP Associates for the City of Corona. Los Angeles, California: EIP Associates. March 17.

County of Riverside. 2003. *Riverside County General Plan*. Prepared by County of Riverside Transportation and Land Management Agency Planning Department. October 7.

GSI (GeoSoils, Inc.) 2006. *Phase I Environmental Site Assessment, Valencia Estates, South End of Malaga Street, Corona, Riverside County, California 92882*. Prepared by GSI for Manuel Valencia. Murrieta, California: GSI. May 15.

Lyon Communities, Inc. 1989. *Mountain Gate Specific Plan*. SP-89-01. Prepared for Lyon Communities, Inc. by EDAW, Inc. Irvine, California: EDAW, Inc. June 7, 2009.

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SECTION 5.0
ENVIRONMENTAL ANALYSIS

5.1 LAND USE AND PLANNING

5.1.1 Introduction

The following discussion focuses on the project-specific impacts to land use and planning that would result from the proposed project. This section outlines existing plans and policies that are aimed at reducing environmental impacts and provides a consistency analysis to determine the project's relationship to said regulations.

5.1.2 Methodology

The existing land uses were analyzed based on a review of aerial photographs and site visits. In order to analyze potential compatibility impacts to planning documents and policies, research into each applicable plan and policy was conducted.

5.1.3 Existing Conditions

Existing On-Site and Surrounding Land Uses

As discussed in previous sections, the 64.3-acre project site consists of 39.9 acres located in the City of Corona and 24.4 acres located in unincorporated Riverside County. An additional 1.1 acre parcel exists entirely within the 24.4 acres located in unincorporated Riverside County and would be included in the project's annexation and Specific Plan Amendment application, but is not part of the subdivision proposal. The portion of the project within the City is located in the Mountain Gate Specific Plan. The portion of the project site within the County is located within the City of Corona's Sphere of Influence.

The portion of the site within the City consists primarily of citrus and avocado groves while the remaining area within the County consists of densely vegetated undeveloped land. On-site elevations range from approximately 1,200 feet amsl to about 1,600 amsl. The site can be characterized by moderate to steep slopes. Several drainages (which flow south to north toward the Santa Ana River system) traverse the project site, given its presence at the base of the foothills of the Santa Ana Mountains. The project site supports several unnamed roadways that have traditionally supported the orchard operations. The project site also contains stock piles of irrigation and fencing equipment and other related agricultural supply materials.

Adjacent property to the north consists of single-family residential urban development. The land to the east, south, and west remains largely undeveloped chaparral covered hills due to the presence of the Cleveland National Forest. The land to the south, west, and east is part of the

foothills of the Santa Ana Mountains and is therefore steep and undulating, much like the proposed project site. The land to the north east and north is relatively level although it gently slopes from south to north.

Land Use Plans and Policies

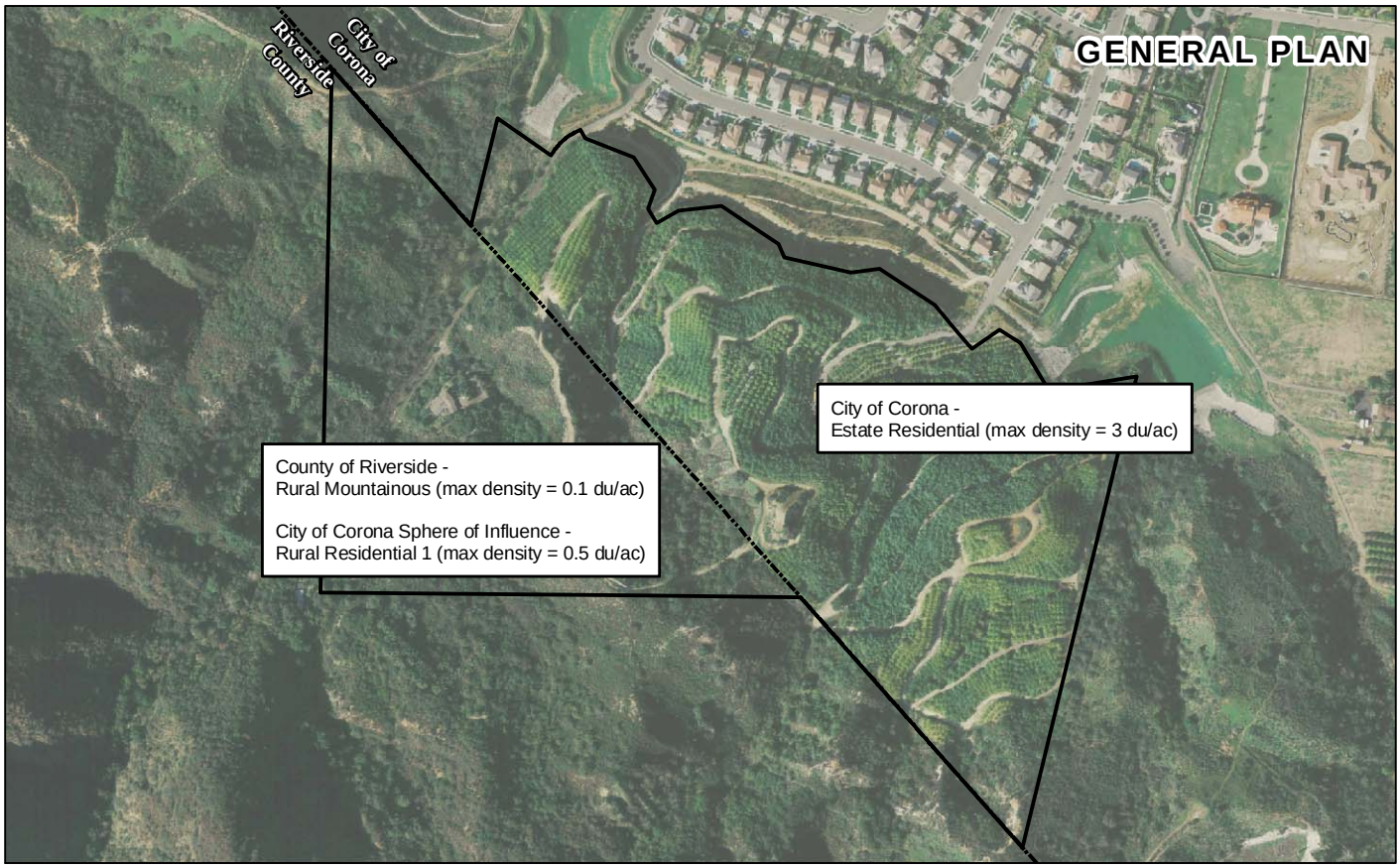
California Government Code, Section 65300 et seq. mandates that each California city and county have a "general plan," which entails a comprehensive, long-range plan for its future urban form. The general plan is required to address seven topics or elements: land use, circulation, housing, open space, conservation, safety, and noise. In addition to these required elements, the City's General Plan also addresses economic development, community design, historic preservation, and parks and recreation. The City is currently in the process of updating their General Plan, so the existing General Plan, adopted March 17, 2004 (City of Corona 2004), will be used as the basis for analysis in this section.

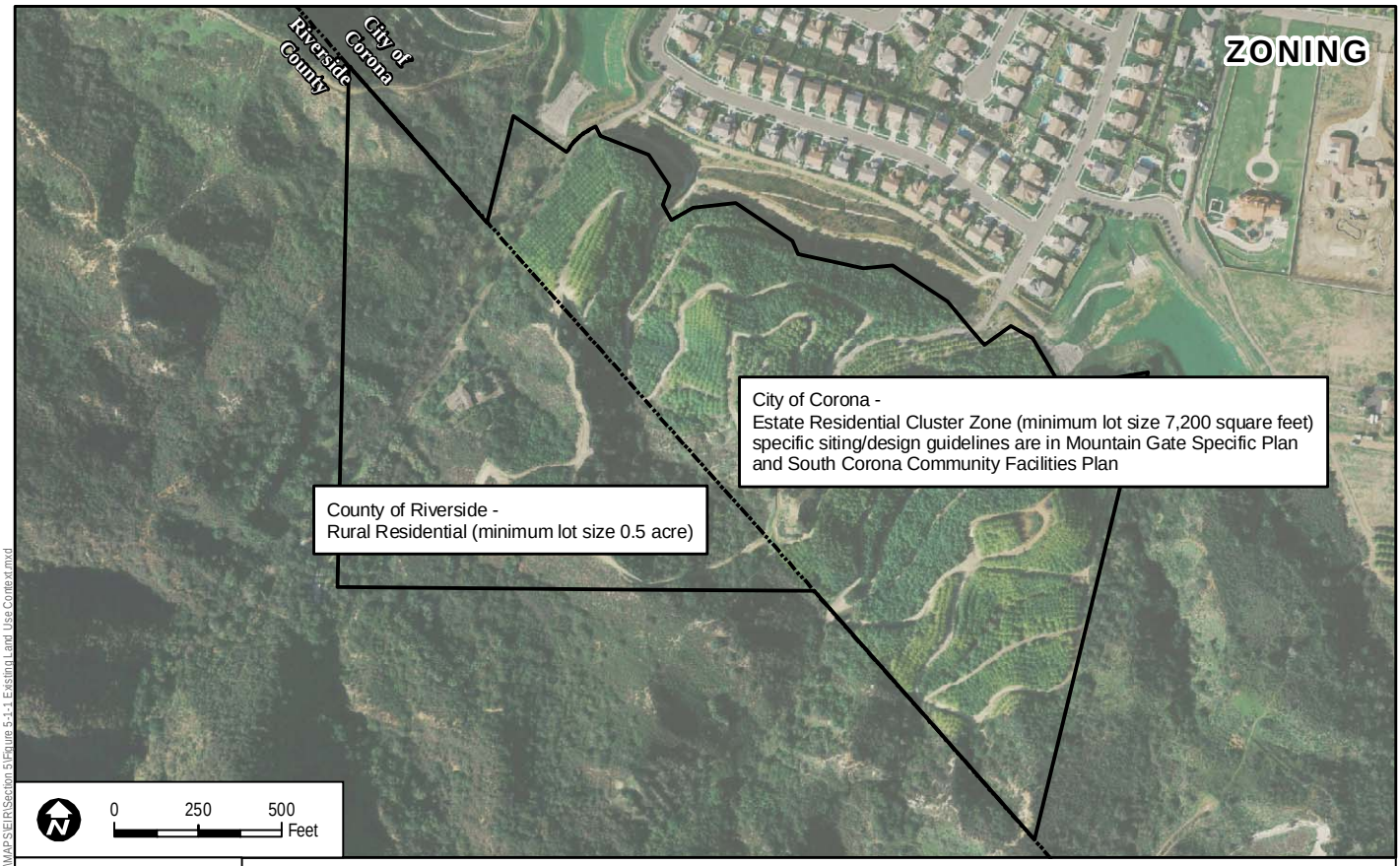
The Riverside County Integrated Plan serves the same function as the City's General Plan for unincorporated areas within the County and currently establishes land use policy for the 24.4-acre portion of the project site. The County Zoning Ordinance establishes development standards for each of the zoning districts within its jurisdiction. These planning documents and their relationship to the project site are discussed below. Also discussed is the project's association with the Mountain Gate Specific Plan and the Western Riverside Multiple Species Habitat Conservation Plan. Current land use designations are presented in Figure 5.1-1.

Corona General Plan

The City's General Plan designates the 39.9 acres of the site currently within City limits as Estate Residential (ER) with a maximum allowed density of 3 dwelling units per acre (du/ac). This designation accommodates moderate to large size lots for single family detached housing units. It also designates the portion within the Sphere of Influence as Rural Residential 1 (RR1), and is being annexed into the city under that designation. RR1 accommodates large lot residential development with a maximum density of 0.5 du/ac to maintain the area's low density, rural, and natural character. (City of Corona Municipal Code.)

The 39.9 acres of the site currently within City limits are designated as ER Cluster under the *Mountain Gate Specific Plan* (Lyon Communities, Inc. 1989) originally approved by the Corona City Council in June 1989. Subsequent amendments have been approved through January 2008. Development and design guidelines are established in the *Mountain Gate Specific Plan* and are described below.





Z:\Projects\6327001\MAP\DOC\MAPS\EIR\Section 5\Figure 5-1-1 Existing Land Use Context.mxd

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SOURCE: Aerial Imagery: DigitalGlobe 2008.
Project Site Boundary: County of Riverside 2008.
City/County Boundary: County of Riverside 2005.

FIGURE 5.1-1

Existing Land Use Context

Rancho de Paseo Valencia EIR

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Chapter 17.59 Hillside District (Hillside Development Ordinance)

Since the property is located in a hillside area, it is also governed by the provisions of the Hillside Development Ordinance. This portion of the zoning code was established to provide regulations for the development of those areas in the city which, due to their topography, require special consideration to assure that they are developed in a way that will substantially maintain their natural character and environmental and aesthetic values. Specific policies outlined in this ordinance include:

- Encourage development clustering which contributes to the provision of view corridors;
- Encourage development design that reflects the distinct environmental and topographical characteristics of the land;
- Encourage the clustering of development on the most gently sloping portions of the site;
- Encourage innovative architectural, landscaping, circulation and site design;
- Discourage mass grading of large pads and excessive terracing except where soils stability dictates grading and compaction for public safety;
- Provide for safe circulation of vehicular and pedestrian traffic to and within hillside areas and to provide adequate access for emergency vehicles necessary to serve hillside areas; and
- Encourage design and building practices to assure maximum safety from wildfire hazard. Riverside County General Plan.

Under the Riverside County General Plan, the 24.4 acres located in the unincorporated County area is designated as RM, which allows single-family residential uses with a minimum lot size of 10 acres and limited animal keeping and agriculture.

Riverside County Zoning Ordinance

Under the Riverside County Zoning Ordinance (County of Riverside 2008), the 24.4 acres located in the unincorporated County area is designated as RR. Development standards within the RR zone are contained in Riverside County Ordinance 348, Article V, Section 5.2 and consist of the following:

> SECTION 5.2. DEVELOPMENT STANDARDS. Where a structure is erected or a use is made in the R-R Zone that is first specifically permitted in another zone classification, such structure or use shall meet the development standards and regulations of the zone in which such structure or use is first specifically permitted, unless such requirements are hereafter modified.

a. One-family residences shall not exceed forty (40) feet in height. No other building shall exceed fifty (50) feet in height, unless a greater height is approved pursuant to Section 18.34 of this ordinance. In no event however, shall a building exceed seventy-five (75) feet in height or any other structure exceed one hundred five (105) feet in height, unless a variance is approved pursuant to Section 18.27 of this ordinance.

b. Lot Area. One-half acre, with a minimum average width of 80 feet, including the area to the center shall be the minimum size of any lot except as follows:

   (1). Public Utilities, 20,000 square feet with a minimum width and depth of 100 feet.

South Corona Community Facilities Plan

The South Corona Community Facilities Plan (1989) establishes target densities for each land use that serve as the maximum number of dwelling units that can be constructed per residential subdivision. Per the Estate Designation of the South Corona Community Facilities Plan (1989), a maximum density of 1.47 du/ac is permitted across the 39.9-acre portion of the project site.

Mountain Gate Specific Plan

The following is excerpted from Section 9.12 of the Mountain Gate Specific Plan for the ER Cluster District:

> **Purpose –** The ER Cluster residential district is intended for single-family detached and attached homes not to exceed three (3) dwelling units per gross acre developed consistent with the provisions of the South Corona Community Facilities Plan. Town homes may also be permitted subject to a conditional use permit. Development in the ER Cluster shall be within a well designed planned residential development which combines open space, greenbelts, and/or trails with a range of single family detached and attached units including estates, conventional single family detached and/or single family attached.
>
> The ER Cluster district shall be used for or occupied and every building shall be erected, constructed, established, altered, enlarged, maintained, moved into or within said ER Cluster district exclusively and only in accordance with the following standards set forth.
>
> In the event that portions of this district are located adjacent to existing residential neighborhoods existing and identified as such at the time of adoption of the South Corona Community Facilities Plan (July 1988), the requirements of Section 9.02

of this document shall take precedence, over other requirements herein. The ER Cluster district shall be used for or occupied and every building shall be erected, constructed, established, altered, enlarged, maintained, moved into or within said ER Cluster district exclusively and only in accordance with the following standards set forth.

In the event that portions of this district are located adjacent to existing residential neighborhoods existing and identified as such at the time of adoption of the South Corona Community Facilities Plan (July 1988), the requirements of Section 9.02 of this document shall take precedence, over other requirements herein.

Permitted Uses – The following uses shall be permitted in the ER Cluster district:

One-family detached or cluster unit of a permanent character placed in a permanent location.

A cluster unit is defined as a single family detached, single family attached or multiple family dwelling that is assembled with similar units, either on separate lots or on a single lot, to preserve open space features within the planning area, and having a combined unit density no greater than that permitted by the CFP.

A secondary residential unit pursuant to Corona Municipal Code Section 17.85.

Parks and playgrounds (public and private).

Small family day care.

Development Standards – The standards for residential development in the ER Cluster designation shall be as follows:

a. single family detached residential at a maximum density of 2 dwelling unit or less per gross acre the development standards of Sections 9.1.1.5.-I inclusive;

b. single family detached residential with a minimum lot size of 7,200 square feet – the development standards of Sections 9.13.5.- 12., inclusive;

c. single family attached residential – the development standards of Sections 9.1.4.5.- 13., inclusive;

d. town homes – the development standards of Sections 9.1.5.S.-17., inclusive.

The number of dwelling units permitted shall be subject to density allocation found on Table 5.2, Allocation of Dwelling Units among Planning Areas.

Open Space Area Requirement

a. Within each separate planning area which is designated for development within the ER Cluster district, qualifying open space areas shall be provided in a total amount equal to a minimum of 1,500 square feet per dwelling unit within said planning area.

b. As used in this section 9.1.2.6, "qualifying open space areas" shall include park lands, greenbelts, recreation areas and open space areas which are dedicated or offered for dedication to the City or other public agency, or which are owned in common by an association of homeowners or property owners, and for which provisions have been made to ensure the ongoing maintenance of the open space lands. An improvement plan for the open space areas shall be submitted in conjunction with the tentative tract map for the Estate Cluster District. The open space areas shall preserve mature trees and natural landforms and vegetation wherever feasible. Existing stands of Oak Woodland shall be preserved per the requirements of the Mountain Gate EIR.

Western Riverside County Multiple Species Habitat Conservation Plan

The Western Riverside County MSHCP is a comprehensive, multijurisdictional HCP focusing on conservation of species and their associated habitats in western Riverside County. This plan is one of several large, multijurisdictional habitat-planning efforts in Southern California with the overall goal of maintaining biological and ecological diversity within a rapidly urbanizing region. The MSHCP will allow Riverside County and its cities to better control local land-use decisions and maintain a strong economic climate in the region while addressing the requirements of the state and federal Endangered Species Acts.

The MSHCP serves as an HCP pursuant to Section 10(a)(1)(B) of the federal Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.), as well as an NCCP under the Natural Community Conservation Planning Act of 2001 (Fish and Game Code, Section 2800 et seq.). The MSHCP allows the participating jurisdictions to authorize "take" of plant and wildlife species identified within the plan area. The USFWS and CDFG have authority to regulate the take of threatened, endangered, and rare species. Under the MSHCP, the wildlife agencies have granted "take authorization" for otherwise lawful actions such as public and private development that may incidentally take or harm individual species or their habitat outside of the MSHCP conservation area in exchange for the assembly and management of a coordinated MSHCP conservation area.

The MSHCP is a "criteria-based plan" and does not rely on a hard-line preserve map. Instead, within the MSHCP Plan Area, the MSHCP reserve will be assembled over time from a smaller subset of the Plan Area referred to as the "Criteria Area." The Criteria Area consists of Criteria Cells (Cells) or Cell Groupings, and flexible guidelines (Criteria) for the assembly of conservation within the Cells or Cell Groupings have been developed for each Cell/Cell

Grouping. Cells and Cell Groupings also may be included within larger units known as Cores, Linkages, or Habitat Blocks.

The project site is in the Temescal Canyon Area Plan of the MSHCP. The project site is not within an MSHCP Criteria Area/Cell. However, it is within a required survey area for burrowing owl, but not within survey areas for other "criteria" or "narrow endemic" plant species. All projects must be evaluated by a qualified biologist to determine whether they support suitable habitat for listed riparian/riverine bird species (least Bell's vireo, southwestern willow flycatcher, and western yellow-billed cuckoo) and listed fairy shrimp (Riverside fairy shrimp, Santa Rosa fairy shrimp, and vernal pool fairy shrimp).

5.1.4 Thresholds of Significance

The following significance criteria, included in Appendix G of the CEQA guidelines, will determine the significance of a land use impact. Impacts to land use would be significant if the proposed project would:

a. Physically divide an established community

b. Conflicts with any applicable plan, policy or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, zoning ordinance, etc.) adopted for the purpose of avoiding or mitigating an environmental effect

c. Conflict with any applicable habitat conservation plan or natural community conservation plan.

5.1.5 Impacts

Will the project physically divide an established community?

The portion of the site within the City consists primarily of citrus and avocado groves while the remaining area within the County consists of densely vegetated undeveloped land. The property is bordered to the north by a narrow strip of planted trees and shrubs separating the site from a tract of single-family residences (Tract 28153) to the north with large estate residential homes to the northeast. Properties to the south, east, and west are largely undeveloped chaparral covered hills. A portion of the project site borders the Cleveland National Forest to the south. Development of the site would result in a continuation of the Mountain Gate community to the south and would not physically divide or prevent access to that established community or any others in the project vicinity. Therefore, no significant impacts related to division of an established community would occur.

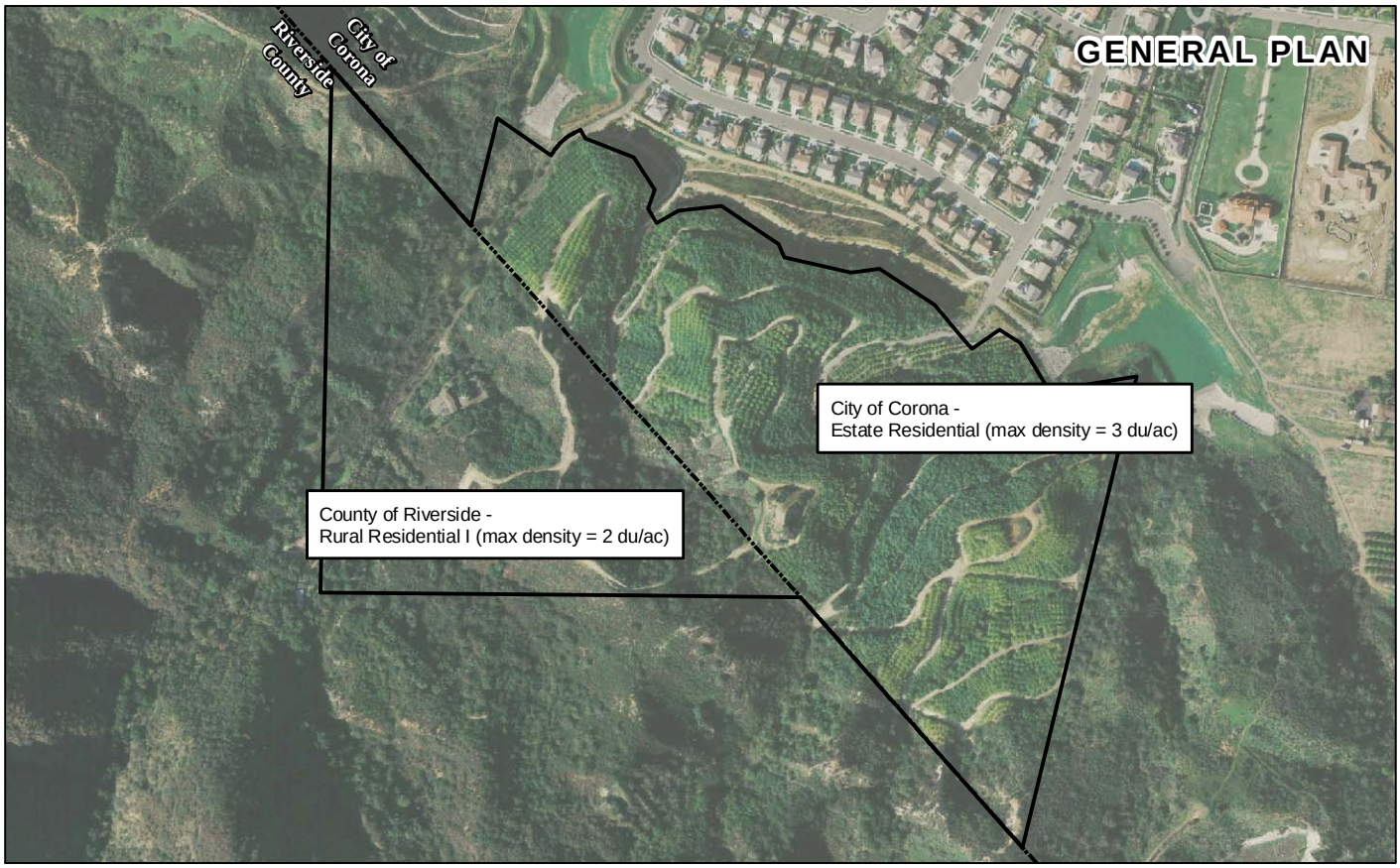
Will the project conflict with any applicable plan, policy or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect?

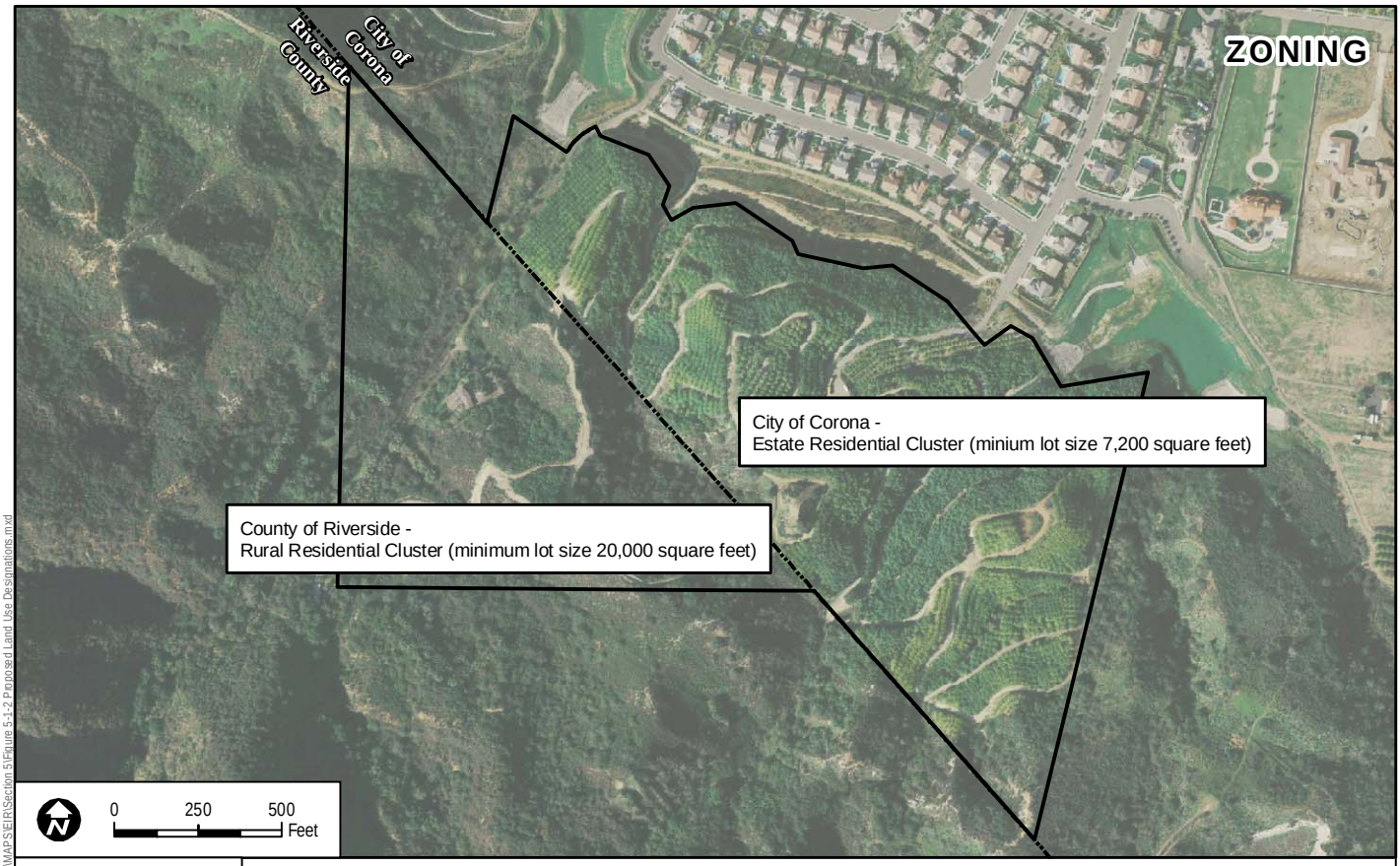
General Plan and Zoning Classifications

The City's General Plan designates the 39.9 acres of the site currently within City limits as ER with a maximum allowed density of 3 du/ac. The *Riverside County General Plan* (2003) designates the portion within the County as RM with 1 dwelling unit per 10 acres. Once all project entitlements are approved, the 25.5 acres of the project within the County, including the 1.1 acres which are not a part of the subdivision proposal, would have a new General Plan designation: RR1, which would increase density to 0.5 du/acre.

The portion of the project site within the City is zoned for ER Cluster under the Mountain Gate Specific Plan with a lot size minimum of 7,200 square feet. The Riverside County Zoning Code designates the portion of the project within the unincorporated County area as RR. The 25.5 acres (including the 1.1 acres not included in the subdivision proposal) within the County would be annexed into the City as a condition of approval. The project also proposes an amendment to the Mountain Gate Specific Plan to include the annexation area to establish consistent development standards and design guidelines throughout the project site. Therefore, the entire property would have a City zoning designation of ER Cluster under the Mountain Gate Specific Plan, which would require a minimum 7,200-square-foot lot. Proposed General Plan and zoning modifications are depicted on Figure 5.1-2.

As depicted on the Tentative Tract Map (Figure 3-4), the average lot size will be 21,464 square feet, and will therefore be consistent with the City's zoning code designation under the Mountain Gate Specific Plan. Figure 5.1-2 shows the proposed land use designations for the project site. Combined with the maximum density of the RR1 designation of 0.50 du/ac that applies to the area to be annexed, the average maximum density allowed across the 64.3-acre project site is 0.98 du/ac, or 66 total units (see discussion below for limitations on allowed density per compliance with the General Plan hillside development policies). The applicant is proposing a total of 34 dwelling units, therefore staying well within the allowable 66-unit limit.





Z:\Projects\6327\00\MAP\DOC\MAPS\EIR\Section 5\Figure 5-1-2 Proposed Land Use Designations.mxd

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SOURCE: Aerial Imagery: DigitalGlobe 2008.
Project Site Boundary: County of Riverside 2008.
City/County Boundary: County of Riverside 2005.

FIGURE 5.1-2

Proposed Land Use Designations

Rancho de Paseo Valencia EIR

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A summary of the policies and goals of the Land Use Element of the City's General Plan (2004) that may be applicable to the proposed project is provided in Table 5.1-1. The second column discusses the project's relationship to the goal or policy, and the third column states whether the project is consistent with that goal or policy.

Table 5.1-1
Project Consistency with the Corona General Plan Land Use Element

Goal/Policy	Summary of Policy	Proposed Project	Consistent/Inconsistent
Land Use Element			
Goal 1.1	A community that contains a diversity of land uses that supports the needs of and provides a high quality of life for its residents, sustains and enhances the City's economy and fiscal balance, is supported by adequate community infrastructure and services, and is compatible with environmental setting and resources.	The proposed project is consistent with the designation shown on the land use plan, and the analysis contained in this EIR indicates adequate community infrastructure and services, as well as compatibility with environmental setting and resources.	Consistent
Policy 1.1.4	Accommodate the types, densities, and mix for land uses that can be adequately supported by transportation, utility infrastructure and public services.	The analysis contained in this EIR indicates adequate support for transportation, utility infrastructure, and public services.	Consistent
Policy 1.1.5	Accommodate land use development in balance with the preservation and conservation of open spaces for recreation, aesthetic relief, natural resource value, and public safety (such as floodways, seismic fault zones, and other).	As shown on Figure 3-4, the project has adequate setbacks for seismic safety and open space along the project perimeter, as well as drainage improvements to ensure flood control.	Consistent
Goal 1.2	A cohesive and integrated City comprised of distinct and vital commercial and business districts and livable residential neighborhoods, which are correlated with supporting transportation and utility infrastructure and sustain natural open spaces, hillsides, and canyons.	The analysis contained in this EIR indicates adequate support for transportation and utility infrastructure. Natural open space and portions of existing agriculture will be preserved along the project perimeter.	Consistent
Policy 1.2.1	Locate and design development to reflect Corona's unique physical setting considering its natural topography, environmental resources, natural hazards, and opportunities for views.	The project is located in an area designated for ER within the existing Mountain Gate Specific Plan. The project is consistent with allowable density and slope percentage for that designation. The site is also in an area that allows for extensive views.	Consistent
Goal 1.3	A development pattern that retains and complements the City's important residential neighborhoods, commercial and industrial districts, and open spaces.	The proposed project will be an extension of and complement the existing Mountain Gate community.	Consistent
Policy 1.3.1	Permit land use development consistent with the Land Use Plan, as depicted in Figure 3 of the General Plan.	The project is consistent with the ER land use designation shown on Figure 3 of the General Plan.	Consistent

Table 5.1-1 (Continued)

Goal/Policy	Summary of Policy	Proposed Project	Consistent/Inconsistent
Goal 1.4	Strategic growth that preserves existing viable residential neighborhoods and commercial and industrial districts and targets new development to remaining vacant parcels that are environmentally suitable and can be supported by infrastructure and services and reuses appropriate properties to enhance their economic vitality and community livability.	The project is consistent with the land use designation and is therefore an appropriate use of a vacant parcel within the City.	Consistent
Policy 1.4.2	Distribute and phase the timing of growth to protect the viability, character, and quality of existing residential neighborhoods, commercial districts, and industrial/business areas.	Development of the Mountain Gate Specific Plan has been phased in gradually since its approval in 1989. The project will be consistent with the Specific Plan and existing residential neighborhoods within the plan area.	Consistent
Policy 1.4.3	Allow for the development of vacant lands within the City on the periphery of existing development that complements the scale and pattern of existing uses, protects significant plant, animal, and other natural environmental resources, protects development and population from natural hazards, and where it is logical and feasible to extend infrastructure improvements.	The proposed project is on the southern perimeter of the approved Mountain Gate Specific Plan and will be consistent with and complement the existing neighborhoods in that plan.	Consistent
Policy 1.4.8	Require that development occur only when the public infrastructure and services needed to support that development are available, will be provided concurrently, or are committed to be provided within a reasonable time frame where this would not incur adverse impacts on current infrastructure and services, to the extent permitted by State law.	The analysis contained in this EIR indicates adequate support for public infrastructure and services and will be provided concurrently with project development.	Consistent
Goal 1.5	Distinct neighborhoods and districts that contribute to the identity, character, and image of Corona as a vital, livable, diverse, innovative, and environmentally sustainable community	Project design is consistent with the ER Cluster designation in the Mountain Gate Specific Plan, which allows for a variety of architectural and design elements that ensure a quality project that enhances the character and image of Corona.	Consistent
Policy 1.5.3	Distinguish the City's neighborhoods and districts in their character and physical appearance by considering their physical and visual separation, edge and entry treatment, architecture, landscape, streetscape, and comparable elements during their design and development.	The project will have distinctive design and architectural elements including entry treatments, appropriate landscaping, and other visual elements that will be reviewed and approved by the City's Design Review process to ensure consistency at each step of the entitlement process.	Consistent

Table 5.1-1 (Continued)

Goal/Policy	Summary of Policy	Proposed Project	Consistent/Inconsistent
Policy 1.5.5	Require adherence to the design and development guidelines as subsequently stipulated by this Plan's policies for each land use district, as well as implementing ordinances and Specific Plans.	The project will be consistent with design and development guidelines contained within the ER Cluster designation in the Mountain Gate Specific Plan.	Consistent
Policy 1.5.6	Require the preparation of Specific Plans that foster cohesive and well-designed residential neighborhoods and commercial and industrial districts. This requirement should be applied to large vacant lands planned for residential, commercial, industrial, or mixed-use purposes.	The project is part of the approved Mountain Gate Specific Plan and is consistent with the design requirements of the ER Cluster designation.	Consistent
Policy 1.5.11	Require the submittal and approval of landscape plans for all development projects.	The proposed landscape plan will be submitted for review and approval prior to issuance of grading permits for the project.	Consistent
Goal 1.7	Residential neighborhoods that contain a diversity of housing and supporting uses to meet the needs of Corona's residents that are designed to enhance livability and a high quality of life.	The project is part of the approved Mountain Gate Specific Plan and is consistent with the design requirements of the ER Cluster designation thereby helping to provide a diversity of housing types to existing and future City residents.	Consistent
Policy 1.7.1	Accommodate the development of a diversity of residential housing types that meets the needs of and is affordable for Corona's population in accordance with the Land Use Plan's designations, applicable density standards and design and development policies, and the adopted Housing Element.	The project is part of the approved Mountain Gate Specific Plan and is consistent with the design requirements, density standards, and development policies of the ER Cluster designation, thereby helping the City meet the need for a diverse array of housing types.	Consistent
Policy 1.7.7	Require that single-family detached and attached housing be well designed to assure a high level of neighborhood quality.	Project design is consistent with the ER Cluster designation in the Mountain Gate Specific Plan, which allows for a variety of architectural and design elements that ensure a high level of neighborhood quality. Further, the project would need to be reviewed and approved through the City's Design Review process further ensuring that a high quality housing design would be realized.	Consistent
Policy 1.7.9	Encourage the attractive treatment of front yards and other areas in residential neighborhoods that are visible from the street, including limits on the area that may be paved for parking or other purposes	Front yards and common neighborhood areas must be consistent with the design elements of the ER Cluster designation and requirements of the homeowners association.	Consistent

Table 5.1-1 (Continued)

Goal/Policy	Summary of Policy	Proposed Project	Consistent/Inconsistent
Goal 1.8	Assure the integrity, quality, and livability of Corona's existing residential neighborhoods preserving those elements that give them character, cohesion, and quality of life.	The proposed project is on the southern perimeter of the approved Mountain Gate Specific Plan and will be consistent with and complement the existing neighborhoods in that plan.	Consistent
Policy 1.8.1	Promote the conservation of existing residential neighborhoods permitting the infill of housing that is compatible in density and scale with existing uses, except where densities may be increased as depicted on the Land Use Plan.	The project will allow infill development of one of the final undeveloped planning areas in the approved Mountain Gate Specific Plan and is compatible with the density and scale of adjacent residential uses as outlined in the master Mountain Gate Specific Plan.	Consistent
Policy 1.8.7	Require that new single-family residential units constructed in existing neighborhoods be designed to complement existing structures in their property setbacks, scale, building materials, and color palette, and exhibit a high quality of architectural design.	Project design is consistent with the ER Cluster designation in the Mountain Gate Specific Plan, which allows for a variety of architectural and design elements that ensure a high level of neighborhood quality.	Consistent
Goal 1.9	Development of new residential neighborhoods that complement existing neighborhoods and assure a high level of livability for their residents.	The project would allow infill development of one of the final undeveloped planning areas in the approved Mountain Gate Specific Plan and is compatible with the density and scale of adjacent residential uses as outlined in the master Mountain Gate Specific Plan.	Consistent
Policy 1.9.2	Promote the development of master planned communities that integrate a diversity of housing, parks, schools, trails, open spaces, and other elements into a distinct place. Establish a development pattern that ties together individual parcels into a cohesive whole addressing the location and massing of buildings, architecture, landscape, connective pedestrian trails, use of key landmarks, and similar elements.	As part of the approved Mountain Gate Specific Plan, the project will allow development of one of the final elements of a master planned community that integrates a wide variety of housing, parks, open space, and other distinctive elements.	Consistent
Goal 1.10	Development of low-density residential neighborhoods in areas on the City's southern periphery that preserve the rural and open space character of their setting.	The project is consistent with the ER Cluster designation in the Mountain Gate Specific Plan that allows low-density development in the southern portion of the City. This lower density development will help the transition to the more dense neighborhoods of the existing Mountain Gate Specific Plan to the north to the undeveloped foothill areas immediately south of the project site.	Consistent

Table 5.1-1 (Continued)

Goal/Policy	Summary of Policy	Proposed Project	Consistent/Inconsistent
Policy 1.10.1	Accommodate the development of low-density single-family housing that reflects and maintains the rural character of Corona's foothills and canyons, in accordance with the Land Use Plan's designations and applicable density standards and design and development policies.	The project is part of the approved Mountain Gate Specific Plan and consistent with the design requirements, density standards, and development policies of the ER Cluster designation.	Consistent
Policy 1.10.3	Minimize the removal of native landscape and integrate with new residential development, to the extent feasible and practical for fire control.	The project provides open space along the project perimeter that utilizes some elements of native vegetation while allowing for fuel modification zones for fire safety.	Consistent
Policy 1.23.7	Promote the use of Specific Plans within hillside areas of the SOI to address unique topographic and natural resource constraints and allow flexibility to develop a plan to ensure visual, infrastructure, and land use compatibility with the surrounding area.	The project is part of the approved Mountain Gate Specific Plan and is consistent with the ER Cluster designation which aims to permit the use of sensitive hillside development standards and clustering to provide additional open space.	Consistent
Policy 1.23.8	Require that existing and future land uses in the proposed annexation area complement with adjoining City uses and character.	The project is a low density development that will provide an appropriate transition between the higher density development within the City of Corona and the open space in the County of Riverside.	Consistent
Environmental Resources Element			
Goal 10.22	Develop and implement land use controls that preserve significant visual resources from potential loss or disruption.	See discussion of Goal 10.22 and associated policies below.	See below.

In addition to the goals and policies listed above, the following policies outlined in the Environmental Resources Element of the General Plan (2004) are applicable to the protection of visual resources by development within the City's hillside areas:

Policy 10.22.2: Require that project applicants identify and map all slopes greater than 15 percent on parcels within the City's hillside areas, referred to as the "Hillside Management District," in increments of 5 percent (e.g., 15 percent, 20 percent, 25 percent, and so on). Lands within this District shall be subject to administrative review to assure that development is located and designed to reflect its distinct environmental and topographic characteristics consistent with the policies of this Plan, under the provisions of a Hillside Development Ordinance.

A registered professional engineering firm (Armstrong & Brooks Consulting Engineers) prepared a slope analysis for the project as shown in Figure 5.1-3 Slope Analysis. As shown in Figure 5.1-3 Slope Analysis, 67.8% of the total project site contains slopes greater than 25%.

Policy 10.22.3: Require that development in hillside areas with greater than 25 percent slope be clustered on the most gently sloping portions of the site, to the extent feasible, according to the following density limitations of the underlying Land Use Plan designations.

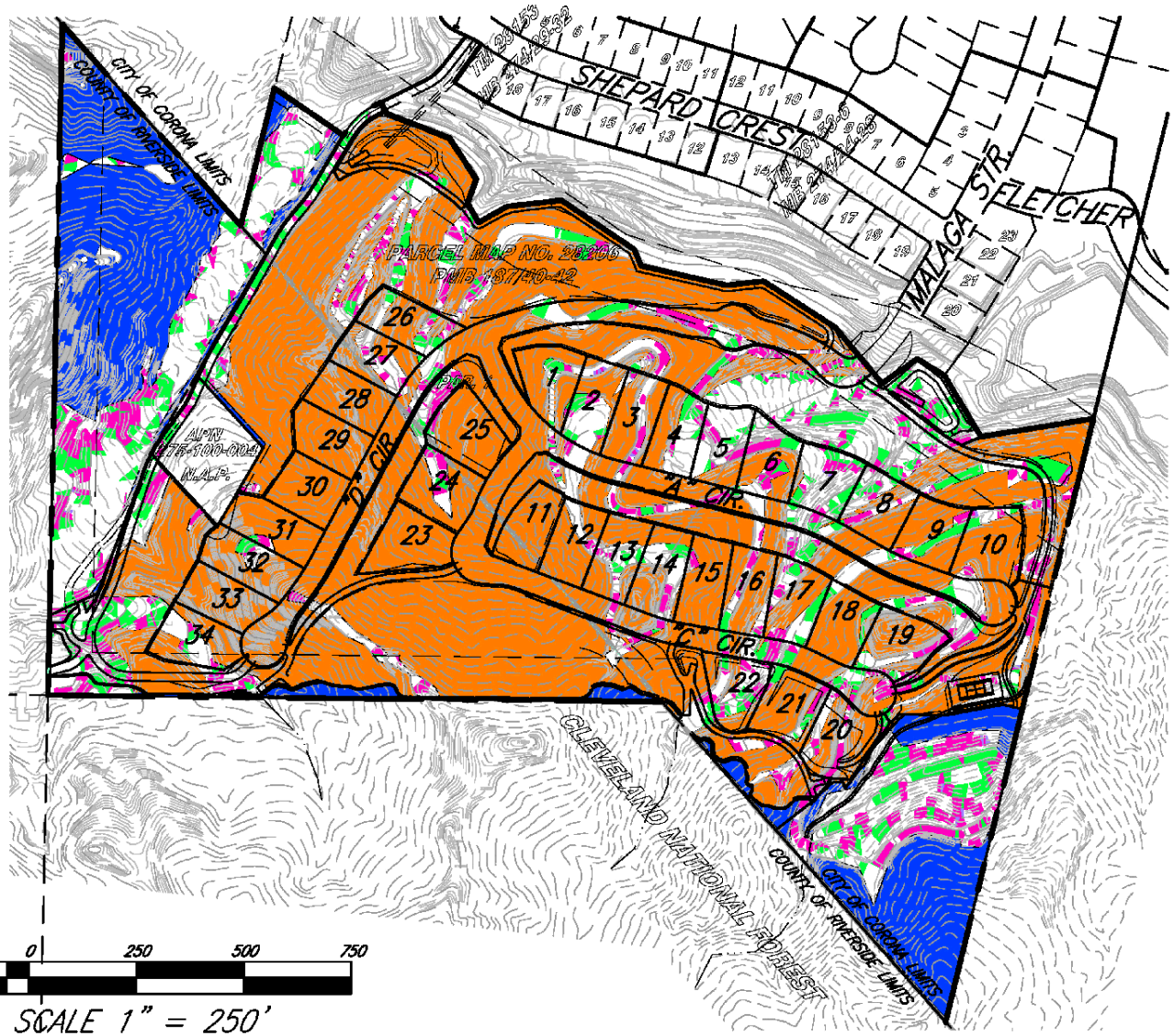
Table 5.1-2 Corona General Plan Density Limitations

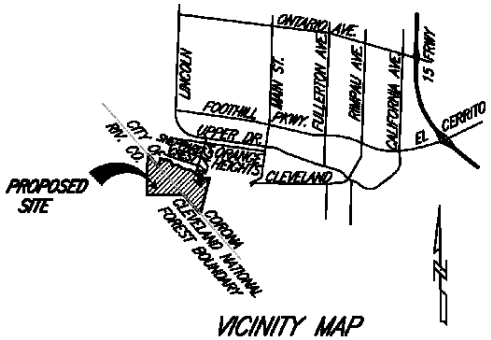
Maximum Percentage of Site to be Graded	Maximum Percent of Allowable Density
40-44.9%	100%
45-49.9%	90%
50-54.9%	80%
55-59.9%	70%
60-64.9%	60%
65-69.9%	50%
70-74.9%	40%
75-79.9%	30%
80-84.9%	20%
85+%	10%

City of Corona General Plan (2004)

The project site encompasses hillsides with 25% and greater slopes. According to the City's Environmental Resources Element of the General Plan, sites having 25% or greater slope areas can have up to 44.9% of the area graded or disturbed in order for the project to utilize 100% of its allowable density under the General Plan. The project site is 64.3 acres; 34.6 acres (53.8%) of the portion of the site which exceeds a 25% slope will be graded. This grading exceeds the 44.9% allowed by the Environmental Resources Element of the General Plan; therefore, only 80% of the maximum density is allowed as shown in Table 5.1-2 Corona General Plan Density Limitations.

As mentioned above, the City's General Plan designates the 39.9 acres of the site currently within City limits as ER with a maximum allowed density of 3 du/ac and the Riverside County General Plan (2003) designates the portion within the County as RM with 1 dwelling unit per 10 acres. However, once all project entitlements are approved, the portion of the project within the County, including the 1.1 acres which are not a part of the subdivision proposal, would have a new designation: RR1, which would increase density to 0.5 du/acre. Combined, the entire project site would allow an average maximum density of 0.98 du/ac.





VICINITY MAP

N.T.S.

LEGEND

- PROP. BOUNDARY
- SLOPE AREA 25.1% OR GREATER
- SLOPE AREA 25.1% OR GREATER DISTURBED
- SLOPE AREA 25%
- SLOPE AREA 20%
- SLOPE AREA 15%

SLOPE ANALYSIS

	0–25% SLOPE	25.1%–100% SLOPE	TOTAL
DISTURBED	628,135 SF	1,506,741 SF	2,134,876 SF
UNDISTURBED	275,039 SF	390,993 SF	666,032 SF
TOTAL	903,174 SF	1,897,734 SF	2,800,908 SF

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MARCH 2010

SOURCE: Armstrong & Brooks Consulting Engineers

FIGURE 5.1-3

Slope Analysis

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For the 34.6 acres of the site that will be graded and contains slopes greater than 25%, the maximum density (corrected for grading) would be 0.78 du/acre, or a total of 27 dwelling units. The remaining 29.7 acres of the site would be allowed 100% of the maximum density, for a total of 29 dwelling units. Therefore, in accordance with the City's Environmental Resources Element of the General Plan, the project would be allowed a total of 56 dwelling units (10 dwelling units less than would be allowed if the project site contained no slopes greater than 25 percent). The project only proposes 34 dwelling units, and therefore, does not conflict with Policy 10.22.3 of the General Plan Environmental Resource Element.

As demonstrated in Table 5.1-1, the proposed project is generally consistent with applicable goals and policies in the City's General Plan. Furthermore, once all entitlements are approved, the entire site would have a zoning designation of ER Cluster (lot size minimum of 7,200 square feet) under the Mountain Gate Specific Plan. The 34 total dwellings would be well under the maximum allowable number of 66 units under that designation, as well as below the 56 units allowed under the restricted densities for hillside areas. Therefore, impacts would be less than significant.

Would the project conflict with any applicable habitat conservation plan or natural community conservation plan?

The project would be consistent with the Western Riverside County MSHCP. A complete evaluation of consistency with the MSHCP is contained in Section 5.4.

5.1.6 Mitigation Measures

As analyzed in Section 5.1.5, no significant impacts related to land use and planning have been identified; therefore, no mitigation measures are proposed.

5.1.7 Level of Significance after Mitigation

No significant impacts related to land use and planning were identified.

5.1.8 References

16 U.S.C. 1531–1544. Endangered Species Act of 1973, as amended.

California Fish and Game Code, Section 2800–2835. Natural Community Conservation Planning Act of 2001.

California Government Code, Section 65300–65303.4. Authority for and Scope of General Plans.

City of Corona. 1989. South Corona Community Facilities Plan.

City of Corona. 2004. *City of Corona General Plan*. Resolution No. 2004-034. Prepared by EIP Associates for the City of Corona. Los Angeles, California: EIP Associates. March 17.

County of Riverside. 2003. *Riverside County General Plan*. Prepared by County of Riverside Transportation and Land Management Agency Planning Department. October 7.

County of Riverside. 2008. "An Ordinance of the County of Riverside Providing for Land Use Planning and Zoning Regulations and Related Functions." Ordinance No. 248. Amended through 348.4573, May 8.

Lyon Communities, Inc. 1989. *Mountain Gate Specific Plan*. SP-89-01. Prepared for Lyon Communities, Inc. by EDAW, Inc. Irvine, California: EDAW, Inc. June 7, 2009.

5.2 AGRICULTURAL AND FORESTRY RESOURCES

5.2.1 Introduction

This section describes the project's relationship to existing and historic agricultural operations and special farmland designations present on and around the project site.

5.2.2 Methodology

The following analysis is based upon the Land Evaluation and Site Assessment (LESA) Model, which was prepared by Dudek and is included in Appendix B. The LESA Model is a point-based approach for rating the relative importance of agricultural land resources based upon specific measurable features. The LESA Model evaluates measures of soil resource quality, a given project's size, water resource availability, surrounding agricultural lands, and surrounding protected resource lands. For a given project, the factors are rated, weighted, and combined, resulting in a single numeric score. The project score becomes the basis for making a determination of a project's potential significance (LESA Model 2007).

The values and ratings used in the LESA Model were derived from the Web Soil Survey, U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) (formerly the Soil Conservation Service). The information provided by the Web Soil Survey includes soil mapping units, land capability classifications, and Storie Index Rating Scores. Determinations on agricultural and protected land coverage were made using Department of Conservation Farmland Mapping and Monitoring maps and Western Riverside MHSCP maps, in addition to consultation with the City of Corona. Worksheets and soil maps used to complete the LESA Model are contained in Appendix B, Land Evaluation and Site Assessment Model.

The information and analysis in this section have been compiled based on a review of the *City of Corona General Plan* (2004a), *City of Corona General Plan Technical Background Report* (2004b), *City of Corona General Plan, FEIR (2004c), Mountain Gate Specific Plan* (Lyon Communities, Inc. 1989), *Riverside County General Plan* (2003), *County of Riverside General Plan Update* (2008), and LESA Technical Report (2010).

5.2.3 Existing Conditions

Regulatory Framework

City of Corona

The *City of Corona General Plan Technical Background Report* (2004b) describes four main categories of farmland within the City as recognized by the California Department of Conservation, Farmland Mapping and Monitoring Program (FMMP). These categories include

the following: Prime Farmland, Unique Farmland, Farmland of Statewide Importance, and Farmland of Local Importance. The majority of the City is comprised of urban and built land, which includes residential, commercial, industrial, and parks/open space. Most of the designated farmland is located in the southern portion of the City, with scattered Farmlands of Local Importance in the central portion of the City and a grouping of Prime and Unique farmland adjacent to the City's eastern boundary. Another farmland category includes grazing land on which the existing vegetation is suited for livestock grazing. This farmland resource category is the most prevalent in the City. Most of the parcels designated by the FMMP are small, not contiguous, and not currently in production. Additionally, many of these parcels are either adjacent to, or completely surrounded by, urban development. Designated farmland in the City continues to be converted to nonagricultural uses as urban development takes place. Overall, buildout of the General Plan could result in the conversion of up to 534 acres of Prime Farmland, 397 acres of Unique Farmland, and 30 acres of Farmland of Statewide Importance to urban uses, and this conversion was identified as a potentially significant impact in the General Plan FEIR (2004c).

County of Riverside

The County General Plan Update includes four “foundation” components: rural, open space, community development, and agriculture. These four foundation components form the basis for the County's future land use form. Agriculture is given special recognition as a foundation component because of its high socioeconomic value to Riverside County. The two major conservation rationales are to maintain the viability of the agricultural industry, which is a key component to the regional economy, and to preserve farmland resources, such as soils, and a secondary role of open space amenities. The County General Plan outlines Prime Farmlands, Statewide Important Farmlands, Unique Farmlands, and Farmlands of Local Importance (County of Riverside 2008, Multipurpose Open Space Element).

Agricultural land includes row crops, groves, nurseries, dairies, poultry farms, processing plants, and other related uses. All lands designated as agricultural in the County can not support more than one dwelling unit per 10 acres (County of Riverside 2008, Table LU-4, *Land Use Designation Summary*). While agriculture is a significant component of the County's General Plan, the project site within the County is not designated for agriculture but instead as “rural mountainous.”

Existing Conditions

The 39.9-acre portion of the project site within the City consists primarily of citrus and avocado groves, while the remaining area within the County consists primarily of densely vegetated undeveloped land.

According to the Phase I Environmental Site Assessment, Valencia Estates, South End of Malaga Street, Corona, Riverside County, California 92882 (GSI 2006), a review of aerial photographs of the project site indicate that portions of the property have been utilized for fruit orchards since at least 1938. As shown on Figure 5.2-1, a segment of the property is listed by the Farmland Mapping and Monitoring Program as being Unique Farmland. Unique Farmland is land of lesser quality soils currently and specifically used for the production of the State's leading agricultural crops including oranges, olives, avocados, rice, grapes, and cut flowers. Approximately 37.1 acres of the project site are included in the Unique Farmland category.

5.2.4 Thresholds of Significance

The following significance criteria, included in Appendix G of the CEQA guidelines, will determine the significance of an agricultural impact. Impacts to agriculture would be significant if the proposed project would:

a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use.

b. Conflict with existing zoning for agricultural use, or a Williamson Act contract.

c. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland, to non-agricultural use or conversion of forest land to non-forest use.

d. Conflict with existing zoning for, or cause rezoning of forest land (as defined by Public Resources Code section 12220(g)), timberland as defined by Public Resources Code section 4526 or timberland zoned Timberland Production (as defined by Government Code section 51104(g)).

e. Result in the loss of forest land or conversion of forest land to non-forest use.

5.2.5 Impacts

Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

According to the Farmland Mapping and Monitoring Program, and as shown on Figure 5.2-1, part of the project site contains Unique Farmland. This is primarily the portion of the project site within existing City limits and consists of approximately 37 acres. The City's General Plan Final EIR (2004c) acknowledged that existing soils designated as Prime Farmland, Unique Farmland, and Farmland of Statewide Importance within the City would be subject to infill and urban

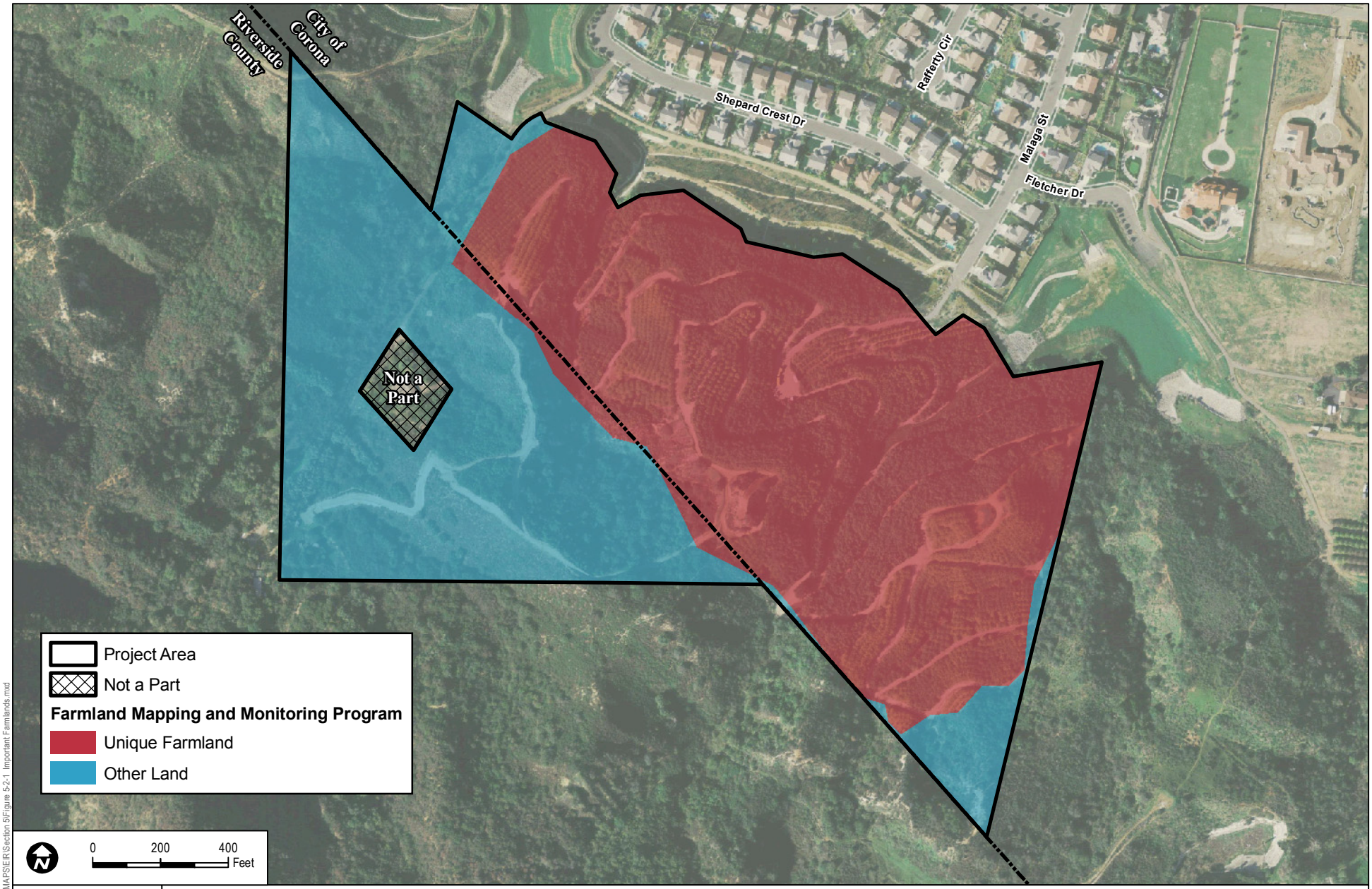
expansion under the proposed General Plan. The conversion of these lands to urban uses is identified as a potentially significant impact (City of Corona 2004c).

Due to the potential for significant agricultural impacts to result from the conversion of Unique Farmland to residential uses as part of the proposed project, a LESA analysis was conducted to determine the level of significance for the specific parcels under consideration as part of the proposed project. The proposed project area primarily consists of soil classified to be severely limited for cultivation (97% of the site is covered with soils of a LCC Class 7e and a Storie Index Rating of Grade Five-Very Poor). Only a portion of the project is serviced by the City's water supply, a supply which is subject to economic restrictions. The project site is not adjacent to any other agricultural lands, and when analyzing a zone of influence covering 1,586 of the surrounding acreage, only 4.6% of this area was found to contain agricultural lands. Further, 78% of this zone of influence area is considered Protected Resources, or land which could not in the foreseeable future be converted to agricultural land.

Through the combination of these project site and surrounding land factors, and the weighting of the respective scores for each factor, the project site was determined to have an overall LESA score of 21.83. The LESA Model determines that all projects scoring less than 39 points are considered Not Significant. Therefore, the conversion of agricultural land to residential uses as part of the proposed project would have a less than significant impact on agricultural resources.

Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

There are no Williamson Act contract lands located within or adjacent to the project boundary (City of Corona 2004b, Figure 4.5-4). The project site is zoned for Rural Residential uses (Estate Residential Cluster, Rural Residential I in the City, and Rural Mountainous in the County) and will result in the construction of residential units. Therefore, the project would not conflict with agricultural zoning, thereby rendering impacts to agricultural uses and/or land uses designations less than significant.



DUDEK

6327-01

MARCH 2010

SOURCES: Farmland Data: California Department of Conservation 2006.
Aerial Imagery: DigitalGlobe 2008.
Project Site Boundary: County of Riverside 2008.
City/County Boundary: County of Riverside 2005.

Rancho de Paseo Valencia EIR

FIGURE 5.2-1

Important Farmlands Map

Z:\Projects\6327001\MAPDOC\MAPS\EIR\Section 5\Figure 5.2-1 Important Farmlands.mxd

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Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland, to non-agricultural use or conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

The project would not result in any other changes to the environment that would result in agricultural conversion, other than the direct conversion of Unique Farmland as discussed above. This change in land use will not impact any other ongoing farming operations or farmland in the area. Therefore, no significant impact would occur.

Would the project conflict with existing zoning for, or cause rezoning of forest land (as defined by Public Resources Code section 12220(g)), timberland as defined by Public Resources Code section 4526 or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

The project would not result in alteration of lands that are designated or zoned for forest uses or timberland production. Therefore, no impact would result to forest resources.

Would the project result in the loss of forest land or conversion of forest land to non-forest use?

The project would result in the conversion of land currently utilized as a citrus orchard and in some cases, undeveloped native chaparral vegetation, to that of a suburban housing tract. These existing land uses are not considered forest land or forest land resources, therefore a less than significant impact would occur. It should be noted that the Cleveland National Forest is located adjacent to the project site. However, no impacts to adjacent Cleveland National Forest lands would result from the proposed project.

5.2.6 Mitigation Measures

As analyzed in Section 5.2.5, and shown by the results of the LESA Model, no significant impacts to agricultural or forestry resources have been identified. Conversion of existing agricultural land to urban uses is not considered significant for this project; therefore, no mitigation measures are proposed.

5.2.7 Level of Significance after Mitigation

No significant impacts to agriculture or forestry resources were identified.

5.2.8 References

City of Corona. 2004a. *City of Corona General Plan*. Resolution No. 2004-034. Prepared by EIP Associates for the City of Corona. Los Angeles, California: EIP Associates. March 17.

City of Corona. 2004b. *City of Corona General Plan Technical Background Report*. Prepared by EIP Associates for the City of Corona. Los Angeles, California: EIP Associates. March.

City of Corona. 2004c. *City of Corona General Plan, Final Environmental Impact Report*. Prepared for by EIP Associates for the City of Corona. Los Angeles, California: EIP Associates. March.

County of Riverside. 2003. *Riverside County General Plan*. Prepared by County of Riverside Transportation and Land Management Agency Planning Department. October 7.

County of Riverside. 2008. *County of Riverside General Plan Update*. Prepared by County of Riverside Transportation and Land Management Agency Planning Department. December 23, 2008, as amended.

Dudek. 2010. Land Evaluation and Site Assessment Model Technical Report. Prepared by Megan Stone for Dudek. Encinitas, California: Dudek. August 16.

GSI (GeoSoils, Inc.) 2006. *Phase I Environmental Site Assessment, Valencia Estates, South End of Malaga Street, Corona, Riverside County, California 92882*. Prepared by GSI for Manuel Valencia. Murrieta, California: GSI. May 15.

Lyon Communities, Inc. 1989. *Mountain Gate Specific Plan*. SP-89-01. Prepared for Lyon Communities, Inc. by EDAW, Inc. Irvine, California: EDAW, Inc. June 7, 2009.

5.3 AIR QUALITY

5.3.1 Introduction

The analysis includes a discussion of existing air quality, identification of significance thresholds, and a determination of whether air quality impacts are considered significant from a CEQA perspective or applicable state and federal air quality standards.

5.3.2 Methodology

The impact analysis evaluates both short-term (construction) and long-term (operational) impacts to air quality that would potentially occur as a result of implementation of the proposed project. The project's contribution to the cumulative increase in pollutants was also evaluated by accounting for planned or reasonably foreseeable future projects. Preparation of this section is based primarily on information contained in the May 22, 2008, *Air Quality Conformity Assessment* by Investigative Science and Engineering, which is included in Appendix C. In addition, a *Localized Significance Thresholds Analysis* was prepared by Brian F. Smith and Associates, Inc., on November 30, 2009, and serves as an addendum to the *Air Quality Conformity Assessment*. This report is also contained in Appendix C. Appendix C

5.3.3 Existing Conditions

Climate Setting

The project is located in the north central portion of the South Coast Air Basin (Basin), a subregion of the South Coast Air Quality Management District (discussed in more detail below, under “Applicable Air Quality Plan”). The Corona-area climate is characterized by relatively low rainfall, with warm summers and mild winters. Annual precipitation averages about 12 inches, with 90% of that falling between November and April. Average monthly temperatures range from a high of 93°F in August to a low of 42°F in December (City–Data.com 2010).

During spring and early summer, pollution produced during any one day is typically blown out of the Basin through mountain passes or lifted by warm, vertical currents adjacent to mountain slopes. The vertical dispersion of air pollutants in the Basin is limited by temperature inversions in the atmosphere close to the earth's surface. The combination of stagnant wind conditions and low inversions produces the greatest pollutant concentrations. On days of no inversion or high wind speeds, ambient air pollutant concentrations are lowest. During periods of low inversions and low wind speeds, air pollutants generated in urbanized areas are transported predominantly onshore into Riverside and San Bernardino counties. In the winter, the greatest pollution problems are carbon monoxide (CO) and oxides of nitrogen (NO_x) because of extremely low inversions and air stagnation during the night and early morning hours. In the summer, the longer

daylight hours and the brighter sunshine combine to cause a reaction between hydrocarbons and NO_x to form photochemical smog.

Air quality in the planning area is not only affected by various emission sources (mobile, industry, etc.), but it is also affected by atmospheric conditions such as wind speed, wind direction, temperature, and rainfall. The Basin's combination of topography, low mean mixing height, abundant sunshine, and emissions from one of the largest urban areas in the United States have historically resulted in some of the worst air pollution in the nation.

Although the Basin has a semi-arid climate, air near the surface is generally moist because of the presence of a shallow marine layer. With very low average wind speeds, there is a limited capacity to disperse air contaminants horizontally. The dominant daily wind pattern is an onshore daytime breeze of 8 to 12 miles per hour (mph) and an offshore nighttime breeze of 3 to 5 mph. The typical wind flow pattern fluctuates only with occasional winter storms or strong northeasterly Santa Ana winds from the mountains and deserts northeast of the Basin. Summer wind flow patterns represent worst case conditions, as this is the period of higher temperatures and more sunlight, which results in ozone (O_3) formation.

Regulatory Framework

Air quality standards are set by the state and federal governments to provide an adequate margin of safety in protecting public health. An area (or air basin) is designated in attainment when it is in compliance with the National and/or California Ambient Air Quality Standards. These standards are set by the U.S. Environmental Protection Agency (EPA) or the California Air Resources Board for the maximum level of a given air pollutant that can exist in the outdoor air without unacceptable effects on human health or the public welfare. Table 5.3-1 shows federal and state Ambient Air Quality Standards.

Table 5.3-1
Ambient Air Quality Standards

Pollutant	Average Time	California Standards[1]	National Standards[2]	
		Concentration[3]	Primary[3, 4]	Secondary[3, 5]
O_3	1 hour	0.09 ppm (180 μg/m³)	—	Same as Primary Standard
	8 hour	0.070 ppm (137 μg/m³)	0.075 ppm (147 μg/m³)	
CO	8 hours	9.0 ppm (10 mg/m³)	9 ppm (10 mg/m³)	None
	1 hour	20 ppm (23 mg/m³)	35 ppm (40 mg/m³)	
NO_2	Annual Arithmetic Mean	0.030 ppm (57 μg/m³)	0.053 ppm (100 μg/m³)	Same as Primary Standard
	1 hour	0.18 ppm (339 μg/m³)	0.100 ppm (188 μg/m³)	

Table 5.3-1 (Continued)

Pollutant	Average Time	California Standards[1]	National Standards[2]	
		Concentration[3]	Primary[3, 4]	Secondary[3, 5]
SO_2	Annual Arithmetic Mean	—	0.030 ppm (80 μg/m³)	—
	24 hours	0.04 ppm (105 μg/m³)	0.14 ppm (365 μg/m³)	—
	3 hours	—	—	0.5 ppm (1300 μg/m³)
	1 hour	0.25 ppm (655 μg/m³)	—	—
PM_{10}	24 hours	50 μg/m³	150 μg/m³	Same as Primary Standard
	Annual Arithmetic Mean	20 μg/m³	—	
$PM_{2.5}$	24 hours	No Separate State Standard	35 μg/m³	Same as Primary Standard
	Annual Arithmetic Mean	12 μg/m³	15.0 μg/m³	
Lead[6]	30-day Average	1.5 μg/m³	—	—
	Calendar Quarter	—	1.5 μg/m³	Same as Primary Standard
	Rolling 3-Month Average[7]	—	0.15 μg/m³	

ppm = parts per million by volume
μg/m³ = micrograms per cubic meter
mg/m³ = milligrams per cubic meter

1 California standards for O_3, CO, sulfur dioxide (1- and 24-hour), NO_2, suspended particulate matter—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 exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2 National standards (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/m³ is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

3 Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr.
Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

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

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

6 California Air Resources Board 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 implementation of control measures at levels below the ambient concentrations specified for these pollutants.

7 National lead standard, rolling 3-month average: final rule signed October 15, 2008.

Source: California Air Resources Board 2010a.

Attainment Status

An area is designated in attainment when it is in compliance with the National Ambient Air Quality Standards or California Ambient Air Quality Standards. These standards are set by the

EPA or the California Air Resources Board for the maximum level of a given air pollutant that can exist in the outdoor air without unacceptable effects on human health or the public welfare.

The criteria pollutants of primary concern that are considered in this air quality assessment include O_3, nitrogen dioxide (NO_2), CO, particulate matter less than 10 microns in diameter (PM_{10}), and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$). Although there are no ambient standards for volatile organic compounds (VOCs) or NO_x, they are important as precursors to O_3.

The entire Basin is designated as a nonattainment area for both federal and state O_3 standards. The EPA has classified the Basin as an "extreme" nonattainment area for the 1-hour O_3 standard and as a "severe" nonattainment area for the 8-hour O_3 standard. The EPA has mandated that the Basin achieve attainment by no later than 2021.

The Basin is designated as an attainment area for federal CO standards. Although western portions of the Basin are considered "unclassifiable" under state CO standards, Riverside County has been designated by the California Air Resources Board to be an attainment area.

The entire Basin has not exceeded either federal or state standards for NO_2 in the past 5 years based on published monitoring data. It is designated as an attainment area under the federal and state standards. The state NO_2 standard was revised in 2008, but new designations have not been adopted.

The entire Basin is in attainment with both federal and state SO_2 and lead standards.

The Basin is designated as a "serious" nonattainment area for federal PM_{10} standards and as a nonattainment area for state PM_{10} standards. In regards to $PM_{2.5}$ attainment status, the Basin is designated as a nonattainment area by the California Air Resources Board and the EPA.

The attainment classifications for these criteria pollutants are outlined in Table 5.3-2.

Table 5.3-2
South Coast Air Basin Attainment Classification

Pollutant	Averaging Time	Designation/Classification
*National**		
O3	1 hour	Nonattainment/extreme
O3	8 hour	Nonattainment/severe
NO2	Annual arithmetic mean	Attainment
CO	1 hour, 8 hour	Attainment
Sulfur dioxide (SO2)	24 hour, annual arithmetic mean	Unclassifiable
Respirable particulate matter (PM10)	24 hour	Nonattainment/serious
Fine particulate matter (PM2.5)	24 hour, annual arithmetic mean	Nonattainment

Table 5.3-2 (Continued)

Pollutant	Averaging Time	Designation/Classification
*National**		
Lead (Pb)	Calendar quarter	Attainment
*State***		
O_3	1 hour, 8 hour	Nonattainment[1]
NO_2	1 hour, annual arithmetic mean	Attainment[2]
CO	1 hour, 8 hour	Attainment
Sulfur dioxide (SO_2)	1 hour, 24 hour	Attainment
Respirable particulate matter (PM_{10})	24 hour, annual arithmetic mean	Nonattainment
Fine particulate matter ($PM_{2.5}$)	Annual arithmetic mean	Nonattainment
Lead (Pb)[3]	30 day average	Attainment
Sulfates (SO_4)	24 hour	Attainment
Hydrogen sulfide (H_2S)	1 hour	Unclassified
Vinyl chloride[3]	24 hour	Unclassified
Visibility-reducing particles	8 hour (10:00 a.m.–6:00 p.m.)	Unclassified

1 California Air Resources Board has not issued area classification based on the new state 8-hour standard. The previous classification for the 1-hour O_3 standard was "extreme."
2 California Air Resources Board has not issued area classification based on the new state 1-hour and annual standards.
3 California Air Resources Board has identified Pb and vinyl chloride as Toxic Air Contaminants with no threshold level of exposure for adverse health effects determined.

Source: *EPA 2010a, **California Air Resources Board 2010b.

Applicable Air Quality Plan

As discussed above, the project site is located within the South Coast Air Basin, a 6,745-square-mile subregion of the South Coast Air Quality Management District, which includes portions of Los Angeles, Riverside, and San Bernardino Counties, and all of Orange County. In the Basin, the agencies designated by the governor to develop regional air quality plans are the South Coast Air Quality Management District and the Southern California Association of Governments. The two agencies adopted an Air Quality Management Plan in 1979 and revised it in several increments as attainment schedule estimates were demonstrated to be overly optimistic.

The 1990 federal Clean Air Act (42 U.S.C. 7401 et seq.) amendments required that all states with airsheds with "serious" or worse O_3 problems submit a revision to the State Implementation Plan. A series of air quality management plans have been developed and updated in response to the Clean Air Act amendment requirements. Air quality management plans were adopted in 1997 (revised in 1999), 2003, and 2007. The plans prior to 2007 focused on meeting the federal 1-hour O_3 standard. With the revocation of the 1-hour standard, the attainment planning emphasis has now shifted to meeting the federal 8-hour standard in the next several years.

Ambient Air Quality

The California Air Resources Board monitors ambient air quality at 19 air quality monitoring stations within the jurisdiction of the South Coast Air Quality Management District. Monitoring stations in the project area include the Norco Station approximately 6.2 miles from the project site and the Rubidoux (Riverside) Station approximately 15 miles from the project site. The Norco Station currently records only PM_{10}, while the Rubidoux Station collects a larger data set. Therefore, the Rubidoux Station, while further from the site than the Norco Station, was used to obtain ambient air quality data. The ambient data is presented in Table 5.3-3.

Table 5.3-3
Ambient Air Quality Data

	Units	Ambient Air Quality Standard	2004	2005	2006	2007	2008
Ozone (O_3)							
Maximum 1-hour concentration	ppm	—	0.141	0.144	0.151	0.131	0.146
Days over state standard	—	0.09 ppm	59	46	45	31	54
Maximum 8-hour concentration	ppm	—	0.115	0.129	0.117	0.111	0.116
Days over state standard	—	0.070 ppm	87	83	75	69	89
Days over federal standard	—	0.075 ppm	70	56	57	46	64
Nitrogen Dioxide (NO_2)							
Maximum 1-hour concentration	ppm	—	0.092	0.077	0.076	0.072	0.092
Days over state standard	—	0.18 ppm	0	0	0	0	0
Annual concentration	ppm	0.030 ppm (state) 0.053 ppm (federal)	0.017	0.022	0.020	0.020	0.019
Carbon Monoxide (CO)							
Maximum 1-hour concentration	ppm	—	4.3	3.4	2.7	3.8	2.7
Days over state standard	—	20 ppm	0	0	0	0	0
Days over federal standard	—	35 ppm	0	0	0	0	0
Maximum 8-hour concentration	ppm	—	2.97	2.50	2.29	2.93	1.86
Days over state standard	—	9.0 ppm	0	0	0	0	0
Days over federal standard	—	9 ppm	0	0	0	0	0
Respirable Particulate Matter (PM_{10})							
Maximum 24-hour conc. (state method)	$\mu g/m^3$	—	133.0	119.0	106.0	540.0	108.0
Samples over state standard	—	50 $\mu g/m^3$	70	67	69	65	46
Maximum 24-hour conc. (federal method)	$\mu g/m^3$	—	137.0	123.0	109.0	559.0	115.0
Samples over federal standard	—	150 $\mu g/m^3$	0	0	0	1	0
Annual concentration (state method)	$\mu g/m^3$	20 $\mu g/m^3$	53.4	50.3	52.7	57.0	44.8
Annual concentration (federal method)	$\mu g/m^3$	none	54.8	51.8	55.1	59.5	46.5

Table 5.3-3 (Continued)

	Units	Ambient Air Quality Standard	2004	2005	2006	2007	2008
Fine Particulate Matter ($PM_{2.5}$)							
Maximum 24-hour conc. (state method)	μg/m³	—	91.7	98.7	68.4	75.6	57.6
Maximum 24-hour conc. (federal method)	—	—	91.7	98.7	68.4	75.6	57.6
Samples over federal standard	—	35 μg/m³	53	36	32	33	14
Annual concentration (state method)	μg/m³	12 μg/m³	ND	21.0	ND	19.8	ND
Sulfur Dioxide (SO_2)							
Maximum 24-hour concentration	ppm	—	0.015	0.011	0.003	0.004	0.003
Days exceeding state standard	—	0.04 ppm	0	0	0	0	0
Annual concentration	ppm	0.030 ppm	ND	0.003	0.001	ND	0.000

ND = insufficient data available to determine.
ppm = parts per million
μg/m³ = micrograms per cubic meter

Note: Data taken from the Rubidoux monitoring station located at 5888 Mission Boulevard in Riverside County.
Sources: California Air Resources Board 2010b; EPA 2010b.

As the table above demonstrates, air quality within the project region is in compliance with both state and federal standards for NO_2, CO, and SO_2. Federal and state 1-hour and 8-hour O_3 standards were, however, exceeded during each of the last 5 years. The PM_{10} level monitored at the air monitoring stations exceeded the standard every year of the past 5 years, as did the $PM_{2.5}$ level.

5.3.4 Thresholds of Significance

The following significance criteria, included in Appendix G of the CEQA guidelines, will determine the significance of an impact on air quality. Impacts to air quality would be significant if the proposed project would:

a. Conflict with or obstruct the implementation of the applicable air quality plan

b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation

c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for O_3 precursors)

d. Expose sensitive receptors to substantial pollutant concentrations

e. Create objectionable odors affecting a substantial number of people.

The South Coast Air Quality Management District's *CEQA Air Quality Handbook* (1993) sets forth quantitative emission significance thresholds below which a project would not have a significant impact on ambient air quality. Project-related air quality impacts estimated in this environmental analysis would be considered significant if any of the applicable significance thresholds presented in Table 5.3-4 are exceeded.

Table 5.3-4
South Coast Air Quality Management District Air Quality Significance Thresholds

Pollutant	Construction	Operation
Criteria Pollutants Mass Daily Thresholds		
VOC	75 lbs/day	55 lbs/day
NO_x	100 lbs/day	55 lbs/day
CO	550 lbs/day	550 lbs/day
SO_x	150 lbs/day	150 lbs/day
PM_{10}	150 lbs/day	150 lbs/day
$PM_{2.5}$	55 lbs/day	55 lbs/day
Lead [a*]	3 lbs/day	3 lbs/day
Toxic Air Contaminants and Odor Thresholds		
(including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Hazard Index ≥ 1.0 (project increment)	
Odor	Project creates an odor nuisance pursuant to South Coast Air Quality Management District Rule 402	
Ambient Air Quality for Criteria Pollutants **		
NO_2 1-hour average	South Coast Air Quality Management District is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (state)	
NO_2 annual average	0.030 ppm (state)	
CO 1-hour average	South Coast Air Quality Management District is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state)	
CO 8-hour average	9.0 ppm (state/federal)	
PM_{10} 24-hour average	10.4 $\mu g/m^3$ (construction)† ; 2.5 $\mu g/m^3$ (operation)	
PM_{10} annual arithmetic mean	20 $\mu g/m^3$	
$PM_{2.5}$ 24-hour average	10.4 $\mu g/m^3$ (construction) † ;2.5 $\mu g/m^3$ (operation)	

lbs/day = pounds per day
ppm = parts per million
$\mu g/m^3$ = microgram per cubic meter
≥ = greater than or equal to

* The phasing-out of leaded gasoline started in 1976. As gasoline no longer contains lead, the proposed project is not anticipated to result in impacts related to lead; therefore, it is not discussed in this analysis.
** Ambient air quality thresholds for criteria pollutants based on South Coast Air Quality Management District Rule 1303, Table A-2 unless otherwise stated.
† Ambient air quality threshold based on South Coast Air Quality Management District Rule 403

Source: South Coast Air Quality Management District 1993

Thresholds listed in Table 5.3-4 represent screening-level thresholds that can be used to evaluate whether project-related emissions could cause a significant impact on air quality. Emissions below the screening-level thresholds would not cause a significant impact. For nonattainment pollutants, if emissions exceed the thresholds shown in the table, the project could have the potential to result in a cumulatively considerable net increase in these pollutants and thus could have a significant impact on the ambient air quality.

In addition to the emission-based thresholds listed above, the South Coast Air Quality Management District also recommends the evaluation of localized air quality impacts to sensitive receptors in the immediate vicinity of the project as a result of construction activities. The significance thresholds for NO_2 and CO represent the allowable increase in concentrations above background levels in the vicinity of a project that would not cause or contribute to an exceedance of the relevant ambient air quality standards, while the threshold for PM_{10} represents compliance with Rule 403 (Fugitive Dust). The significance threshold for $PM_{2.5}$ is intended to ensure that construction emissions do not contribute substantially to existing exceedances of the $PM_{2.5}$ ambient air quality standards. For project sites of 5 acres or less, the South Coast Air Quality Management District's Localized Significance Threshold Methodology (South Coast Air Quality Management District 2008) includes “lookup tables” that can be used to determine the maximum allowable daily emissions that would satisfy the localized significance criteria (i.e., the emissions would not cause an exceedance of the applicable concentration limits for NO_2, CO, PM_{10}, and $PM_{2.5}$) without performing project-specific dispersion modeling. Localized Significance Threshold guidelines recommend project specific air quality dispersion modeling for projects greater than 5 acres. Air dispersion modeling utilizing the EPA's Industrial Source Complex Short Term Version 3 is the preferred dispersion modeling software.

5.3.5 Impacts

Would the project conflict with or obstruct implementation of the applicable air quality plan?

As discussed above, the project site is within the South Coast Air Basin, a subregion of the South Coast Air Quality Management District, which includes that portion of Riverside County where the project is located. The South Coast Air Quality Management District and the Southern California Association of Governments adopted an Air Quality Management Plan in 1979 and revised it in several increments as attainment schedule estimates were demonstrated to be overly optimistic.

The 1990 federal Clean Air Act amendments required that all states with airsheds with “serious” or worse O_3 problems submit a revision to the State Implementation Plan. A series of air quality management plans have been developed and updated in response to the Clean Air Act amendment requirements. Air quality management plans were adopted in 1997 (revised in 1999), 2003, and 2007. The plans prior to 2007 focused on meeting the federal 1-hour O_3 standard.

With the revocation of the 1-hour standard, the attainment planning emphasis has now shifted to the federal 8-hour standard in the next several years.

The proposed project relates to the State Implementation Plan through the land use and growth assumptions that are incorporated into the air quality planning document. These growth assumptions are based on each City's and County's General Plans. If a proposed project is consistent with its applicable General Plan, then the project presumably has been anticipated with the regional air quality planning process. Such consistency would ensure that the project would not have an adverse regional air quality impact. Given that the project is consistent with current General Plan designations and is below the allowable number of units for those designations (see Section 5.9), it is consistent with the planned land use and is therefore consistent with the applicable air quality plan. The project would therefore have a less-than-significant impact with regard to air quality planning.

Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Construction Impacts

Vehicle Emissions

Construction vehicle pollutant emission generators would consist primarily of haul truck activities such as earthwork hauling, concrete delivery and other suppliers, graders, pavers, contractor vehicles, and miscellaneous equipment such as diesel–electric generators and lifts. Construction equipment utilized in this analysis is identified in Table 5.3-5. Construction emission analysis is based upon South Coast Air Quality Management District's CEQA Handbook guidelines for construction operations (see Appendix C for details). Emissions factors for various construction equipment were based on the EPA AP-42 report identified by South Coast Air Quality Management District for the various classes of diesel construction equipment. Table 5.3-6 provides a summary of the emission estimates for each individual construction phase of the proposed project. Refer to Appendix C for detailed emission calculations. As shown, maximum daily emissions and annual emissions of criteria pollutants during construction would be below the screening-level thresholds for air quality for all pollutants. In addition, project criteria pollutant emissions during construction would be temporary and would therefore not cause a permanent significant impact on ambient air quality.

Table 5.3-5
Construction Equipment

Equipment Type	Quantity	Horsepower	Hrs/Day
Grading			
Dozer – D8 Cat	2	400	6
Loader	2	150	6
Water Truck	1	200	6
Scraper	1	300	6
Utility Construction			
Track Backhoe	3	150	8
Loader	2	150	8
Concrete Truck	6	250	0.5
Dump/Haul Trucks	5	300	0.5
Paving			
Skid Steer Cat	1	150	8
Dump/Haul Trucks	25	300	0.5
Paver	1	150	8
Roller	2	150	8

Source: ISE 2008. Refer to Appendix C.

Fugitive Dust Emissions

Construction activities may also generate fugitive dust emissions, in addition to the vehicle emissions discussed above. Fugitive dust generation was based on methodology from the South Coast Air Quality Management District's CEQA Handbook for PM_{10} and the methodology contained in the South Coast Air Quality Management District's report *Methodology to Calculate Particulate Matter (PM) 2.5 and $PM_{2.5}$ Significance Thresholds*. A 60% control efficiency was applied to particulate matter emissions, consistent with implementation of the SCAQMD's Rule 403. Dust suppression techniques required to meet this control efficiency are outlined in Mitigation Measure AQ-1. With implementation of this mitigation measure, impacts related to particulate matter emissions during construction would be less than significant. Values indicated in Table 5.3-6 represent mitigated particulate matter emissions. For more information, please refer to Appendix C.

VOC Emissions from Architectural Coatings

For the purpose of estimating emissions from the application of architectural coatings, it was assumed that approximately 5,000 square feet of surface area would be covered each day. The unmitigated level VOC generated would be approximately 142.4 pounds per day, which exceeds the construction threshold of 75 pounds per day during construction. This would result in a

significant impact; therefore, mitigation is provided (see Section 5.3.6, *Mitigation Measures*, Mitigation Measure AQ-2).

Table 5.3-6
Maximum Daily Estimated Construction Emissions

Equipment Type	Construction Emissions (pounds per day)					
	VOC	NO_x	CO	SO_x	PM_{10}[1]	$PM_{2.5}$
Construction – Grading						
Construction Grading Vehicle Operations	11.4	97.6	46.3	8.9	6.2	5.6
Surface Grading Dust Generation	0.0	0.0	0.0	0.0	89.0	18.5
Powered Haulage Dust Generation	0.0	0.0	0.0	0.0	23.4	5.0
Subtotal	*11.4*	*97.6*	*46.3*	*8.9*	*118.6*	*29.1*
Significance Criteria	75	100	550	150	150	55
Significant?	**No**	**No**	**No**	**No**	**No**	**No**
Construction – Building						
Architectural Coating Application	142.4	0.0	0.0	0.0	0.0	0.0
Mitigated with Low VOC Paint Application	*51.3*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Significance Criteria	75	100	550	150	150	55
Significant?	**No**	**No**	**No**	**No**	**No**	**No**

Source: ISE 2008, Table 8. Refer to Appendix C.
1. These values represent mitigated fugitive dust emissions, which utilize a 60% control efficiency.

Operational Impacts

The main operational impacts associated with the project would include impacts associated with traffic and area sources such as energy use (hot water heaters and stoves), landscaping (lawnmower and weed trimmer use), and periodic use of architectural coatings.

Based on the *Updated Focused Site Traffic Impact Analysis* (LLG 2008; see Appendix I), at full build-out, the project would generate an additional 325 average daily weekday trips (ADT) with 6 inbound/19 outbound trips during the a.m. peak hour and 22 inbound/13 outbound trips during the p.m. peak hour. For purposes of analysis, the *Air Quality Conformity Assessment* (ISE 2008) used a maximum of 340 ADT associated with operation of the project in 2010, thus representing a "worst-case" scenario.

Emissions associated with project operations were estimated using the EMFAC 2007 model provided by the California Air Resources Board for a build-out year of 2010. The results of the emission calculations, in pounds per day, are summarized in Table 5.3-7, along with emissions associated with area sources and a comparison with the significance criteria.

Table 5.3-7
Total Operational Emissions

	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Vehicular Emissions	1.4	13.4	35.3	0.1	0.4	0.4
Landscaping (small engine combustion)	0.0	0.0	0.2	0.0	0.0	—
Energy Use (natural gas)	0.1	0.7	0.3	—	0.0	—
Total	**1.5**	**14.2**	**35.8**	**0.1**	**0.4**	**0.4**
Significance Criteria	75	100	550	150	150	55
Significant?	**No**	**No**	**No**	**No**	**No**	**No**

Source: ISE 2008. Refer to Appendix C.

Based on estimates of operational emissions associated with the project, emissions of all criteria pollutants would be below the screening-level thresholds. Therefore, impacts associated with operational emissions would be less than significant.

Would the project expose sensitive receptors to substantial pollutant concentrations?

Local Significance Thresholds

In June 2003 South Coast Air Quality Management District proposed a methodology for calculating "Localized Significance Thresholds" for NO_2, CO, and fugitive $PM_{2.5}$ and PM_{10}. The Localized Significance Threshold methodology was developed to be used as a tool to assist lead agencies to analyze localized impacts associated with project-specific level proposed projects and would not be applicable to regional projects such as general plans. In July 2008, the Localized Significance Threshold methodology was updated to incorporate the most recent ambient air quality standards (South Coast Air Quality Management District 2008). The Localized Significance Threshold methodology is often utilized by the City for projects requiring CEQA review.

South Coast Air Quality Management District developed mass rate look-up tables for projects less than 5 acres to assist agencies with development of Localized Significance Thresholds; however, Localized Significance Threshold guidelines recommend project-specific air quality dispersion modeling for projects greater than 5 acres (South Coast Air Quality Management District 2008). Air dispersion modeling utilizing the EPA's Industrial Source Complex Short Term Version 3 is the preferred dispersion modeling software because of its ability to incorporate meteorological inputs as well as multiple source and receptor locations. Per the requirements of South Coast Air Quality Management District's Localized Significance Thresholds methodology, emissions for gases in attainment, such as NO_2 and CO, are calculated by adding emission impacts from the project development to the peak background ambient NO_2 and CO concentrations and comparing the total concentration to the most stringent ambient air quality standards. Per South Coast Air Quality Management District Rule 403, emissions for

nonattainment particulate matter such as PM_{10} and $PM_{2.5}$ can produce no more than 10.4 micrograms per cubic meter (µg/m^3) (South Coast Air Quality Management District 2008).

Utilizing the Industrial Source Complex Short Term Version 3 dispersion model, project-level air quality emissions for NO_x, CO, $PM_{2.5}$, and PM_{10} emissions were calculated utilizing a single volume source over the project site and was assumed to occur over the entire site. Emission rates were taken from the project *Air Quality Conformity Assessment* (ISE 2008).

Table 5.3-8 shows the maximum NO_2, CO, PM_{10}, and $PM_{2.5}$ concentrations associated with the proposed project at sensitive receptors in the vicinity of the project site. The values shown in these tables are the maximum results associated with the construction phase and activity producing the highest impacts.

Table 5.3-8
Localized Significance Thresholds Modeling Results

Pollutant	Averaging Time	Threshold	Worst Case Background Ambient Air Quality Data		LST (µg/m^3)	Project Contribution (µg/m^3)						Significant?
			Data	(µg/m^3)		100 (m)	200 (m)	300 (m)	400 (m)	800 (m)	1,000 (m)	
CO	8-hour	9 ppm (10000 µg/m^3)	2.93 ppm	3,255	6,745	0	0	21	14	5	4	No
PM_{10}	24-hour	10.4 µg/m^3	86 µg/m^3	86	10.4	0	0	1	0	0	0	No
$PM_{2.5}$	24-hour	10.4 µg/m^3	75.6 µg/m^3	75.6	10.4	0	0	1	0	0	0	No
NO_2*	1-hour	0.18 ppm (339 µg/m^3)	0.092 ppm	173.2	165.8	0	0	76	55	23	18	No

* Corrected utilizing NO_2/NO_x Ratio
ppm = parts per million by volume
µg/m3 = micrograms per cubic meter

As shown above in Table 5.3-8, the proposed project would not exceed the Localized Significance Thresholds. Impacts would therefore be less than significant.

Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under applicable federal or state ambient air quality standards (including releasing emissions that exceed quantitative thresholds for ozone precursors).

For nonattainment pollutants, if emissions exceed the thresholds established by the South Coast Air Quality Management District, the project could have the potential to result in a cumulatively considerable net increase in these pollutants and thus could have a significant impact on the ambient air quality. If the proposed project does not exceed thresholds and is determined to have less-than-significant project-specific impacts, it may still have a cumulatively considerable

impact on air quality if the emissions from the project, in combination with the emissions from other proposed or reasonably foreseeable future projects, are in excess of established thresholds. However, the project would only be considered to have a cumulative impact if the project's contribution accounts for a significant proportion of the cumulative total emissions.

As discussed in the response to significance criterion (a), as well as in the *Air Quality Conformity Assessment* (ISE 2008) prepared for the project, the emissions of all criteria pollutants, including PM_{10} and $PM_{2.5}$, would be well below the significance levels for both construction and operations of the proposed project. Construction would be short-term and consistent with the size and scale of the proposed project. Construction activities required for the implementation of the proposed project would be considered minor and not intensive. It is unlikely that construction would be conducted for the proposed project at the same time and in the same general vicinity as other major construction projects; therefore, project construction is not anticipated to result in a cumulatively considerable impact on air quality. Further, project operations would not generate significant levels of any criteria pollutants. Operational emissions resulting from the project would not exceed South Coast Air Quality Management District's thresholds for criteria pollutants and would therefore not result in a cumulatively considerable impact on air quality.

With regard to cumulative impacts associated with O_3 precursors, in general, if a project is consistent with the community and general plans, it has been accounted for in the O_3 attainment demonstration contained within the State Implementation Plan. As such, it would not cause a cumulatively considerable impact on the ambient air quality for O_3. The proposed project does not represent a significant increase in projected traffic over the current conditions. The project would result in an additional 325 ADT, and emissions of O_3 precursors (VOCs and NO_x) would be well below the screening-level thresholds during both construction and operation. Thus, the proposed project would not result in a cumulatively considerable impact on O_3 concentrations.

Project-generated emissions would therefore not result in a cumulatively considerable net increase of criteria pollutant for which the Basin is within nonattainment under an applicable state or federal air quality standard. As a result, impacts are considered less than significant.

Would the project create objectionable odors affecting a substantial number of people?

Project construction could result in minor amounts of odor compounds and respiratory air contaminants associated with diesel heavy equipment exhaust and application of architectural coatings. However, such odor generation would be intermittent and would cease upon completion of construction. Therefore, impacts associated with odors and respiratory air contaminants during construction would be less than significant.

Would the project result in any other cumulative air quality impact?

Estimates of operational emissions associated with the project indicate emissions of all criteria pollutants would be well below the screening-level thresholds for significant pollutant emissions once the project is completed. Given the minor level of increases of such emissions, coupled with the nature of the two other small residential projects proposed in the project area (see Section 6.0 for a further description of cumulative projects) with similar low emission increases, the project would not contribute to a cumulatively considerable increase in any criteria pollutant. Furthermore, the two cumulatively considerable for the cumulative analysis were found to be individually and cumulatively less than significant.

With regard to past and present projects, the background ambient air quality, as measured at the monitoring stations maintained and operated by the South Coast Air Quality Management District, measures the concentrations of pollutants from existing sources. Past and present project impacts are therefore included in the background ambient air quality data from which the original baseline and potential air quality impacts are derived.

Regarding cumulative impacts during construction, pollutant emissions were not found to be significant. Further, the proposed project is not anticipated to be developed at the same time as the other two projects, given their respective status in the development process. Regardless, given the low emissions levels analyzed as part of the air quality evaluation that evaluated the construction of the project on a worst-case scenario, even if all three of the projects were developed simultaneously, the construction emissions for the proposed project would not represent a cumulatively significant impact.

5.3.6 Mitigation Measures

AQ-1 Consistent with South Coast Air Quality Management District's Rule 403, this measure requires that fugitive dust generated by grading and construction activities be kept to a minimum with a goal of retaining dust on the site. During construction, fugitive dust will be controlled by the following measures:

a. During clearing, grading, earth moving, excavation, or transportation of cut or fill materials, water trucks or sprinkler systems shall be used to prevent dust from leaving the site and to create a crust after each day's activities cease.

b. During construction, water truck or sprinkler systems shall be used to keep all areas of vehicle movement damp enough to prevent dust from leaving the site. At a minimum, this would include wetting down such areas later

in the morning and after work is completed for the day and whenever winds exceed 15 mph.

c. Soil stockpiled for more than 2 days shall be covered, kept moist, or treated with soil binders to prevent dust generation.

d. All vehicles traveling on unpaved roads shall not travel more than 15 mph.

e. All grading and excavation operations shall cease when wind speeds exceed 25 mph.

f. Dirt and debris spilled onto paved surfaces at the project site and on the adjacent roadways shall be swept, vacuumed, and/ or washed at the end of each workday.

g. Although import and export of soil materials is not required, all trucks hauling any dirt, sand, soil, or other loose material to and from the construction site shall be tarped and maintain a minimum 2 feet of freeboard.

h. A pad consisting of washed gravel (minimum size: 1 inch) shall be installed at the junction of the project site and adjacent paved roadways. The pad shall be maintained in a clean condition to a depth of at least 6 inches and extending at least 30 feet wide and at least 50 feet long (or as otherwise directed by South Coast Air Quality Management District).

AQ-2 The applicant shall use architectural coatings with zero VOC content during project construction/application of paints and other architectural coatings to reduce O_3 precursors. If zero-VOC paint cannot be utilized, the applicant shall avoid application of architectural coatings during the peak smog season: July, August, and September. The applicant shall procure architectural coatings from a supplier in compliance with the requirements of South Coast Air Quality Management District's Rule 1113 (Architectural Coatings).

5.3.7 Level of Significance after Mitigation

The *Air Quality Conformity Assessment* (ISE 2008) assumes that up to a 60% reduction in fugitive dust could be achieved with the dust control measures outlined in Mitigation Measure AQ-1 and would result in a total of approximately 89 pounds per day of PM_{10}. The corresponding level of $PM_{2.5}$ would be approximately 18.5 pounds per day. Both of these values are well below the daily threshold of 150 pounds; therefore, after mitigation, these emissions would be less than significant. These calculations are summarized in Table 5.3-6.

Assuming application of zero-VOC paints (such as required by Mitigation Measure AQ-2), the daily emission would be approximately 51 pounds per day, which is well below the 75-pound

daily threshold. Therefore, VOC emissions associated with architectural coatings would be less than significant after mitigation.

The mitigation measures listed above in Section 5.3.6 would reduce potential air quality impacts to a level that is less than significant by ensuring that zero-VOC architectural coatings are used and that fugitive dust is kept to a minimum. No significant air quality impacts associated with long-term project operation were identified.

5.3.8 References

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5.4 BIOLOGICAL RESOURCES

5.4.1 Introduction

This section presents a discussion of biological resources that would be affected by the proposed project. This section also outlines relevant plans and policies that are aimed at protecting sensitive biological resources, such as the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP), and the project's relationship to such planning documents.

5.4.2 Methodology

This analysis is based on several biological resource technical studies prepared for the project. These studies include the following: July 21, 2009 "MSHCP Biological Assessment for the Rancho Paseo de Valencia Project" (Misenhelter 2009a); July 19, 2009, "Jurisdictional Determination for the Rancho de Paseo Valencia Project, Corona" (Natural Resources Assessment, Inc. 2009); July 31, 2009, *Jurisdictional Delineation for TTM 34760 in the City of Corona* (Misenhelter 2009b); July 27, 2009, *2009 Focused Least Bell's Vireo (*Vireo bellii pusillus*) Survey of the Rancho de Valencia Project, TTM 34760* (Misenhelter 2009c); and a May 20, 2009, soil map supplement of the project site (Misenhelter 2009d). The methods used to survey the on-site biological resources and make the enclosed resource significance determinations are contained therein. These reports are contained in their entirety as Appendix D of this document.

5.4.3 Existing Conditions

Regulatory Setting

Western Riverside County MSHCP

The Western Riverside County MSHCP is a comprehensive, multijurisdictional habitat conservation plan (HCP) focusing on conservation of species and their associated habitats in western Riverside County. This plan is one of several large, multijurisdictional habitat-planning efforts in Southern California with the overall goal of maintaining biological and ecological diversity within a rapidly urbanizing region. The MSHCP will allow the County and its cities to better control local land-use decisions and maintain a strong economic climate in the region while addressing the requirements of the state and federal Endangered Species Acts.

The MSHCP serves as an HCP pursuant to Section 10(a)(1)(B) of the federal Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.), as well as a Natural Communities Conservation Plan (NCCP) under the Natural Community Conservation Planning Act of 2001 (Fish and Game Code, Section 2800 et seq.). The MSHCP allows the participating jurisdictions to authorize

"take" of plant and wildlife species identified within the plan area. The U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG) have authority to regulate the take of threatened, endangered, and rare species. Under the MSHCP, the wildlife agencies have granted "take authorization" for otherwise lawful actions—such as public and private development that may incidentally take or harm individual species or their habitat outside of the MSHCP conservation area—in exchange for the assembly and management of a coordinated MSHCP conservation area.

The MSHCP is a "criteria-based plan" and does not rely on a hard-line preserve map. Instead, within the MSHCP Plan Area, the MSHCP reserve will be assembled over time from a smaller subset of the Plan Area referred to as the "Criteria Area." The Criteria Area consists of Criteria Cells (Cells) or Cell Groupings, and flexible guidelines (Criteria) for the assembly of conservation within the Cells or Cell Groupings have been developed for each Cell/Cell Grouping. Cells and Cell Groupings also may be included within larger units known as Cores, Linkages, or Habitat Blocks.

The Rancho de Paseo Valencia project is located within the Temescal Canyon Area Plan of the MSHCP. A geographic information system (GIS) overlay of MSHCP Temescal Canyon Area Plan Criteria Cells with the Rancho de Paseo Valencia project boundary shows that the project lies outside of the Criteria Area. Figure 5.4-1 provides a graphical depiction of the project's relationship to MSHCP reserve assembly elements. In addition to consistency with reserve assembly requirements (Criteria Cells), several other plan-wide policies and directives of the MSHCP are applicable to the proposed project. These plan-wide requirements include habitat assessments/survey requirements for narrow endemic plant species and burrowing owl (*Athene cunicularia*). The project has also been analyzed for consistency with MSHCP Section 6.1.2, *Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools*, which outlines the definition and treatment of riparian/riverine resources.

Federal Clean Water Act Section 404

Section 404 of the Clean Water Act (33.U.S.C. 1251 et seq.) established a permitting program to regulate the discharge of dredged or filled material into waters of the United States. The definition of waters of the United States includes wetlands adjacent to national waters. This permitting program is administered by the U.S. Army Corps of Engineers and enforced by the EPA.

Z:\Projects\6327001\MAPDOC\MAPS\EIR\Section 5\Figure 5-4-1 MSHCP Context.mxd

DUDEK

6327-01

MARCH 2010

SOURCES: MSHCP: County of Riverside 2003
Aerial: DigitalGlogbe 2008

FIGURE 5.4-1

Multiple Species Habitat Conservation Plan Context

Rancho de Paseo Valencia EIR

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Physical Setting

The portion of the site within the City consists primarily of citrus and avocado groves while the remaining area within the County consists of densely vegetated undeveloped land. The property is located in the foothills of the Santa Ana Mountains, and the topography of the site is hilly with drainages crossing the site generally in a southwest to northeast direction. On-site elevations range from approximately 1,200 feet amsl at the northwest portion of the property to about 1,600 amsl at the southeast portion of the property. The site can be characterized by moderate to steep slopes. Several drainages (which flow south to north toward the Santa Ana River system) traverse the project site given its presence at the base of the foothills of the Santa Ana Mountains. All of these drainages appear to be intermittent (seasonal drainages that convey water only after precipitation events) but also convey orchard irrigation runoff. The property is bordered to the north by a narrow strip of ornamental vegetation separating the site from the existing single-family neighborhood to the north. Properties to the south, east, and west are largely undeveloped, chaparral-covered hillsides.

The southwestern corner of the property overlaps an old olive grove and several small abandoned outbuildings exist there among the olive trees (*Olea europea*) and scrub. No sign of recent agricultural activity was observed in the olive tree area. Apart from the olive trees, vegetation in this portion of the site is a mix of chaparral and coastal scrub with annual grassland species dominating a disturbed area at the southern end of a dirt access road running along the western side of the project site. Generalized areas of on-site vegetation and drainages are shown on Figure 5.4-2.

The project site consists of several soil categories. A majority of the project site consists of Cieneba sandy loam with a 30%–75% slope. Garretson gravelly very fine sandy loam exists in the project's northwest corner and is characteristic of 2%–8% sloping areas. The slope that forms the project's northern edge is characterized by Perkins gravelly loam, which is typically found on 8% to 15% slope areas (Misenhelter 2009d).

Vegetation Communities

Vegetation on site is dominated by two main vegetative types (Figure 5.4-1). The orchard portion of the site is planted with a dense layer of avocado and lemon trees with an understory covered by a thick layer of leaves. Annual grasses (*Bromus madritensis rubens*, *Bromus hordaceus*, *Festuca myuros*, and *Hordeum murale*) and forbs (*Sonchus asper*, *S. oleraceous*, *Malva parviflora*, *Chenopodium* sp., *Conyza canadensis*, *Galium aparine*, *Melilotus indica*, and *Hirschfeldia incana*) grow along the edges of the orchard access roads. Remnants of an old olive orchard exist in the southwestern portion of the site. The undeveloped scrub portion of the property is vegetated with a mix of mostly dense chaparral and coastal sage scrub species

including toyon (*Heteromeles arbutifolia*), laurel sumac (*Malosma laurina*), bush monkeyflower (*Mimulus aurantiacus*), bush penstemon (*Keckiella antirrhinoides*), black sage (*Salvia mellifera*), California sagebrush (*Artemisia californica*), scrub oak (*Quercus berberidifolia*), and a few coast live oak trees (*Q. agrifolia*). Residual areas of riparian vegetation (approximately 0.1 acre), consisting of mulefat (*Baccharis salicifolia*) and willows (*Salix gooddingii* and *S. lasiolepis*) were observed in three of the on-site drainages. Table 5.4-1 shows the estimated acreage for each habitat type within the project site.

Table 5.4-1
Existing Vegetation Communities

Habitat Type	Acres
Native Plant Communities/Land Cover Types	
Chaparral	26.7
Annual grassland	0.3
Riparian vegetation	0.1
Non-Native Plant Communities/Land Cover Types	
Orchard/grove	35.0
Old olive orchard	1.3
Pre-basin	1.0
Landscaped entry	0.4
Total	**64.8**

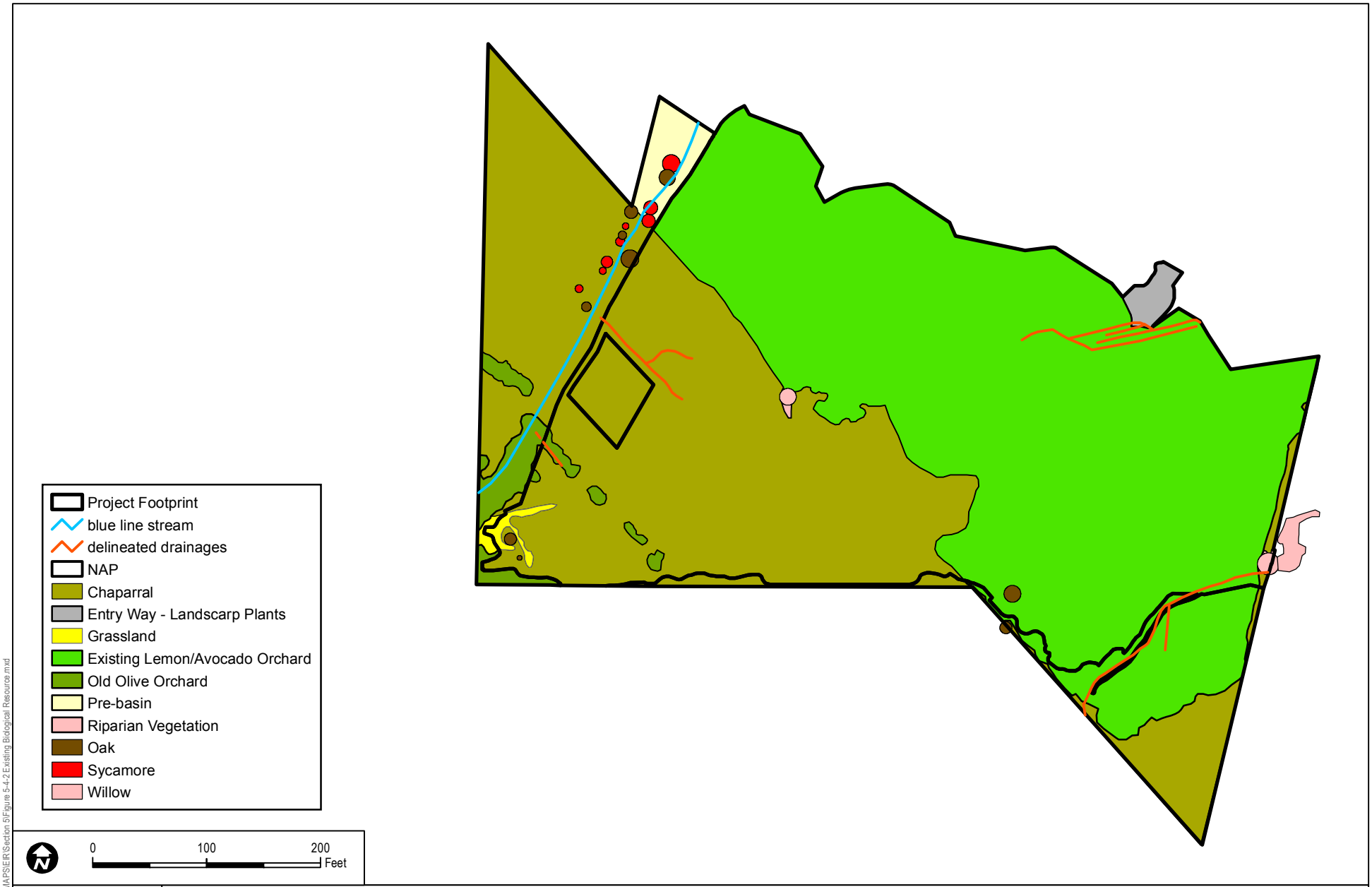
Each native habitat type present on site is described further below.

Chaparral

On site, this habitat type consists mostly of dense chaparral and coastal sage scrub species including toyon, laurel sumac, bush monkeyflower, bush penstemon, black sage, California sagebush, scrub oak, and a few coast live oak trees (Misenhelter 2009a).

Annual Grassland

Grassland species observed on site are annual non-native grasses including Brome grasses (*Bromus* spp.) and short-pod mustard (*Hirschfeldia incana*). Other species include annual grasses (*Bromus madritensis rebens*, *Bromus hordaceus*, *Festuca myuros*, and *Hordeum murale*) and forbs (*Sonchus asper*, *Sonchus oleraceous*, *Conyza Canadensis*, *Galium aparine*, and *Melilotus indica*) (Misenhelter 2010).



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MARCH 2010

SOURCE: Biological Resources: Misenhelter 2009a

FIGURE 5.4-2

Existing Biological Resources

Rancho de Paseo Valencia EIR

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Riparian Vegetation

Riparian vegetation associated with all seven drainages is primarily either chaparral or orchard dominated vegetation. Riparian vegetation, consisting of mulefat and willows (*Salix gooddingii* and *Salix lasiolepis*) was observed in three of the drainages. Drainages also contain rabbit's foot grass (*Polypogon monspeliensis*) and Mexican sprangletop (*Leptochloa uninervia*). A single large black willow exists in the central drainage. Scattered coast live oak (*Quercus agrifolia*) and sycamore (*Platanus racemosa*) trees occur within the drainage to the immediate west of the project site. An arroyo willow (*Salix lasiolepis*) is located in the drainage along the eastern property line (Misenhelter 2009a).

Wildlife Resources

Bird species observed on site included red-tailed hawk (*Buteo jamaicensis*), Cooper's Hawk (*Accipiter cooperi*), California Quail (*Callipepla californica*), Mourning dove (*Zenaida macroura*), Anna's hummingbird (*Calypte anna*), black phoebe (*Sayornis nigricans*), bushtit (*Psaltriparus minimus*), Nuttall's woodpecker (*Picoides nuttallii*), northern mockingbird (*Mymus polyglottos*), song sparrow (*Melospiza melodia*), house finch (*Carpodacus mexicana*), California towhee (*Pipilo crisalis*), spotted towhee (*Pipilo maculates*), lesser goldfinch (*Carduelis psaltria*), and wrentit (*Chamaea fasciata*) (Misenhelter 2009a).

Mammals observed included Audubon's cottontail (*Sylvilagus audubonii*) and California ground squirrel (*Spermophilus beecheyi*), and reptile species observed included western fence lizard (*Sceloporus occidentalis*) and gophersnake (*Pituophis catenifer*) (Misenhelter 2009a).

Sensitive Biological Resources

Sensitive Wildlife Resources

Animal species are considered sensitive if they have been listed as such by federal or state resource agencies. The CDFG publishes the California Natural Diversity Database (CNDDB) RareFind, a computerized inventory of information on the location and condition of California's rare, threatened, endangered, and sensitive plants, animals, and natural communities. The CNDDB reported the potential occurrence on site for the following sensitive wildlife species: federally threatened and state species of special concern coastal California gnatcatcher (*Polioptila californica californica*); state species of special concern Belding's orange-throated whiptail (*Aspidoscelis hyperythra*); state-listed endangered Belding's savannah sparrow (*Passerculus sandwichensis beldingi*); state- and federally listed endangered California least tern (*Sterna antillarum browni*), least Bell's vireo (*Vireo bellii pusillus*), and light-footed clapper rail (*Rallus longirostris levipes*); federally listed threatened western snowy plover (*Charadrius alexandrinus nivosus*); state threatened California black rail (*Laterallus jamaicensis*

coturniculus); and federally listed endangered Pacific pocket mouse (*Perognathus longimembris pacificus*) and Riverside fairy shrimp (*Streptocephalus woottoni*). With the exception of least Bell's vireo, suitable habitats for the above special-status species do not exist on site, so while the CNDDB suggests that these species could exist on site, the on-site conditions are not appropriate to support such species. Further, none of these species were observed on site during project surveys (Misenhelter 2009a and 2009c).

Due to the location of riparian habitat within three areas of the project site (along the western and eastern edges and in an isolated patch in the middle of the proposed development area), a focused, protocol-level survey for the federally listed endangered least Bell's vireo was conducted. No vireos were observed or otherwise detected during the survey effort. It should be noted that riparian habitat was not suitable for the federally listed endangered southwestern willow flycatcher (*Empidonax traillii extimus*), therefore focused, protocol-level surveys were not conducted (Misenhelter 2009c).

Sensitive Plant Species

Plant species are considered sensitive if they have been listed as such by federal or state resource agencies or by special interest groups such as the California Native Plant Society (CNPS). The CNDDB RareFind inventory was used to determine the potential occurrence of sensitive plant species within or near the project site. The CNDDB reported the potential occurrence on site for the following sensitive plant species: federal and state endangered Orcutt's spineflower (*Chorizanthe orcuttiana*), San Diego button-celery (*Eryngium aristulatum* var. *parishii*), California Orcutt grass (*Orcuttia californica*); federally threatened and state-endangered San Diego thorn-mint (*Acanthomintha ilicifolia*), Encinitas baccharis (*Baccharis vanessae*), thread-leaf brodiaea (*Brodiaea filifolia*); federally endangered Del Mar Manzanita (*Arctostaphylos glandulosa* ssp. *Crassifolia*); and federally threatened spreading navarretia (*Navarretia fossalis*) and Orcutt's hazardia (*Hazardia orcuttii*). However, the project site does not support appropriate habitat for any of these plant species, and none were observed during the course of the biological survey of the site (Misenhelter 2009a).

The project does support several coast live oak individuals. This species is not considered sensitive by the federal or state government nor by the City of Corona.

Sensitive Habitats

Sensitive habitats are those that are considered rare within the region, support sensitive plant and/or wildlife species, function as corridors for wildlife movement, or are regulated by local, state, or federal agencies. The 0.1 acre of riparian vegetation found on site is considered sensitive.

MSHCP Riparian/Riverine Areas, Vernal Pools, and Fairy Shrimp Habitat

The riparian vegetation located along the western and eastern project boundaries was determined to potentially meet the definition of riparian/riverine per the MSHCP. Other on-site drainages were determined to be man-made and therefore do not meet the definition of riparian/riverine per the MSHCP (Misenhelter 2009a).

Fairy shrimp habitat was not located on site (Misenhelter 2009a).

Wildlife Corridors and Habitat Linkages

Wildlife corridors are linear features that connect large patches of natural open space and provide avenues for the immigration and emigration of animals. Habitat linkages may function as wildlife corridors for some species and permanent habitat for others. Wildlife corridors and habitat linkages contribute to population viability in several ways: (1) they assure the continual exchange of genes between populations, which helps maintain genetic diversity; (2) they provide access to adjacent habitat areas representing additional territory for foraging and mating; (3) they allow for a greater carrying capacity of species populations; and (4) they provide routes for colonization of habitat lands following local population extinctions or habitat recovery from ecological catastrophes (e.g., fires).

The project site is located on the edge of an existing developed area. Evidence of a movement corridor was not found on site (Misenhelter 2010). Furthermore, the site is not included as a MSHCP Linkage or Constrained Linkage, which has been identified with the intention of maintaining regional habitat linkages.

5.4.4 Thresholds of Significance

The following significance criteria, included in Appendix G of the CEQA guidelines, will determine the significance of a biological resource impact. Impacts to biological resources would be significant if the proposed project would:

a. 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 the California Department of Fish and Game or U.S. Fish and Wildlife Service.
b. 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 US Fish and Wildlife Services.

c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filing, hydrological interruption or other means.
d. Interfere substantially with the movement 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.
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan or other approved local, regional, or state habitat conservation plan.

5.4.5 Impacts

Would the project 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 the California Department of Fish and Game or U.S. Fish and Wildlife Service?

No candidate, sensitive, or special-status species, as identified in the Western Riverside County MSHCP or through policies/regulations by the CDFG or USFWS, were observed on site. Suitable habitat for the least Bell's vireo exists onsite and immediately adjacent to the project boundary. Suitable habitat includes thicker patches of mule fat scrub located along the blue line stream to the west of the project site, within mule fat scrub and willows in the central portion of the site, and willow woodland along the eastern boundary of the project site (Misenhelter 2009a; Misenhelter 2009c). Focused surveys were conducted and least Bell's vireo was not detected, therefore direct impacts would not occur.

Should least Bell's vireo utilize the habitat along the western or eastern edges of the project site in the future, potential indirect impacts may occur during construction. Operation of heavy equipment in close proximity to suitable habitat along the eastern and western edges of the project site may result in exposure of vireo to noise levels during construction. 60 dBA Leq is generally accepted as the limit at which special status bird species, such as least Bell's vireo, can breed, uninterrupted. Potential noise levels at each sensitive habitat area were calculated and are summarized in Table 5.4-2.

Table 5.4-2
Noise Levels for Areas of Sensitive Habitat

Receiver	Distance to Nearest Construction Zone	Predicted Sound Level	Significant (>60 dBA Leq-h)
Sensitive Habitat Area 1	230	71.6	Yes
Sensitive Habitat Area 2	145	75.8	Yes

Source: Smith, p.15, 2008
Note: See Figure 5.4-4, Noise Attenuation Wall Locations, in Section 5.4.5 for locations of sensitive habitat areas.

As described in Table 5.4-2, construction noise may exceed the allowable 60 dBA Leq threshold along the western and eastern edges of the project site, therefore, a significant indirect impact to the least Bell's vireo would occur. In order to reduce this potential impact, mitigation is provided (also see Section 5.4.6, *Mitigation Measures*, Mitigation Measures BIO-1 and BIO-2 and Figure 5.4-4).

Would the project 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 US Fish and Wildlife Services?

Table 5.4-3 provides a summary of impacts to on-site habitats. Figure 5.4-3 provides a graphical image of existing biological resources overlain by the proposed project impact area. With the exception of the riparian vegetation, none of these habitats are identified as sensitive in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Services.

Table 5.4-3
Existing Vegetation Communities and Proposed Impacts

Vegetation Community/Land Cover Type	On-site Acreage	Impact Acreage
Native Plant Communities/Land Cover Types		
Chaparral	26.7	16.8
Annual grassland	0.3	0.2
Riparian vegetation	0.1	0.08
Non-Native Plant Communities/Land Cover Types		
Orchard/grove	35.0	31.8
Old olive orchard	1.3	0.3
Pre basin	1.0	0.0
Landscaped Entry	0.4	0.4
Total	**64.8**	**49.6**

Impacts to the on-site upland habitat types are not considered significant from a biological resources perspective. The project's consistency with the MSHCP allows for impacts to upland habitat such as annual grassland and chaparral to occur without requiring mitigation (see also discussion below regarding the project's consistency with the MSHCP).

Additionally, on-site project impacts would affect riparian vegetation associated with Drainage A and Drainage C (Figure 5.4-3). A total of 0.08 acre of the 0.1 acre of riparian vegetation on site would be impacted as a result of the proposed project as indicated in Table 5.4-3 above.

On-site Drainages A, B, C, D, E, and F support individuals of riparian species, such as mulefat and cattails (*Typha* sp.). It is clear that the riparian species present in these channels have grown solely in response to the presence of water from orchard irrigation and would disappear if the orchard operation ceased. This point is illustrated by comparing drainage areas that receive irrigation runoff with those on site or nearby that do not receive such runoff. Vegetation in the lower portions of the drainages appears much more dense where runoff irrigation water has inundated the soil. These conditions were not observed in drainages in the naturally vegetated portions of the property or in natural drainages off site.

On-site riparian resources were not found to meet the definition of "riparian/riverine" resources per the MSHCP, therefore a Determination of Biologically Equivalent or Superior Preservation (DBESP) is not required. Conflicts with this MSHCP policy would therefore not occur (see also discussion regarding consistency with the MSHCP below).

On-site riparian vegetation would be potentially regulated by the CDFG. The riparian vegetation does not support special-status wildlife species that would trigger regulation by the USFWS. The removal of the 0.08 acre of riparian habitat would result in an impact to riparian vegetation potentially regulated by the CDFG resulting in a potentially significant impact. Therefore, mitigation is provided (see Section 5.4.6, *Mitigation Measures*, Mitigation Measure BIO-1).

Additionally, the project's consistency with the MSHCP allows for impacts to upland habitat such as annual grassland and chaparral to occur. Mitigation for such impacts is provided through the MSHCP mitigation fee (see also discussion below regarding the project's consistency with the MSHCP).

Impacts to riparian vegetation is generally considered significant (see below for a discussion of impacts in the context of Section 404 of the Clean Water Act and the MSHCP).

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MARCH 2010

SOURCE: Biological Resources: Misenhelter 2009a
Site Plan: Armstrong & Brooks Consulting Engineers, April 13, 2009

FIGURE 5.4-3

Biological Resource Impacts

Rancho de Paseo Valencia EIR

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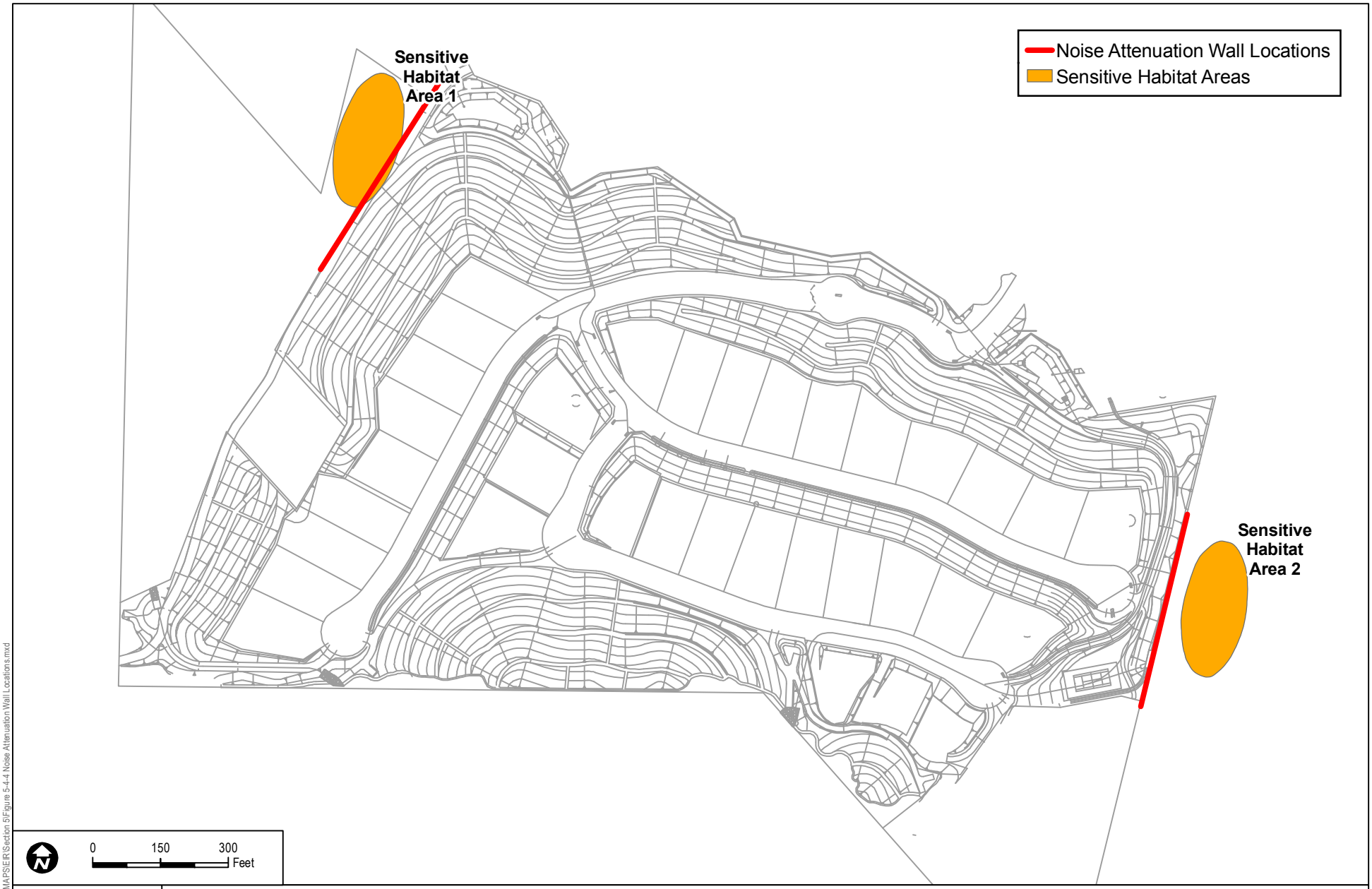

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6327-01

MARCH 2010

SOURCE: Water Quality Features/Site Plan: Armstrong & Brooks Consulting Engineers 2009b

FIGURE 5.4-4

Noise Attenuation Wall Locations

Rancho de Paseo Valencia EIR

Z:\Projects\6327001\MAPDOC\MAPS\EIR\Section 5\Figure 5-4-4 Noise Attenuation Wall Locations.mxd

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Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption or other means?

The U.S. Army Corps of Engineers is tasked with maintaining and protecting navigable water resources, also referred to as waters of the United States per Section 404 of the federal Clean Water Act (33.U.S.C. 1251 et seq.). Under current regulations, drainages showing an ordinary high water mark (evidence of regular flow) that are tributary (connected) to jurisdictional waters downstream are considered to also fall under the jurisdiction of the U.S. Army Corps of Engineers. The connection to jurisdictional drainages must be clear and significant.

Six drainages (Drainages A-F) traverse the proposed project site. All exit the site in a northerly direction and drain into debris basins adjacent to the site (see Figure 5.4-3). All of the channels found onsite, both within the orchard and in the chaparral habitat area, lack true "bed and bank" features. The bed and banks observed are artificial and are clearly intended to convey excess runoff from the citrus orchard. Inspections of the uphill portions of these artificial channels show the dry folds representative of this topography, and clearly definable bed and banks are not present. All of the channels drain into a debris basin that was constructed in the past to hold runoff. The debris basin has an outlet structure to allow for the draining of floodwaters that exceed the basin's capacity, but it otherwise retains local flows. There is no significant nexus to the Santa Ana River. Because all flows are stopped by the debris basin, any material in the flows is also stopped by the basin and would only reach the Santa Ana River during extreme flood events that overwhelmed the basin and all subsequent catchments downstream (Misenhelter 2009b and Natural Resources Assessment, Inc. 2009).

Based on the above observations made during the course of on-site field surveys, none of the channels located on site would be regulated by the U.S. Army Corps of Engineers per Section 404 of the federal Clean Water Act (Misenhelter 2009b and Natural Resources Assessment, Inc. 2009). Therefore, these drainages are not considered to be federally protected waters of the United States, including wetlands, as defined by Section 404 of the Clean Water Act; therefore, impacts to the on-site drainages and riparian vegetation would be considered less than significant. No mitigation is required.

The offsite drainage located immediately west of the proposed project site lies in a well-defined wash. This channel supports individual western sycamore (*Platanus racemosa*) and California walnut (*Juglans californica*) trees that appear to have persisted over time. The presence of these trees might indicate a high water table and therefore may represent a native stand of riparian habitat. However, even the finding of "native stand" is questionable given the past history of the site and the lack of riparian habitat upstream and on adjacent properties (Misenhelter 2009b). Therefore, even though this off-site drainage may meet that definition of a riparian resource

potentially regulated by Section 404 of the Clean Water Act, this resource would not be impacted by the proposed project considering the persistence of these tree species over time as well as the isolated position of the habitat area. Because the wash persists in isolation and thus makes no connection to other riparian habitat areas or corridors, it does not support a substantial number of sensitive species nor is it comprised of a larger system that would be significantly affected by a reduction in flows. Therefore, impacts would be less than significant.

Would the project interfere substantially with the movement 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?

Under the Migratory Bird Treaty Act (16 U.S.C. et seq.), nearly all birds are protected from harassment and take. Specifically, the Migratory Bird Treaty Act makes it illegal to "pursue, hunt, take, capture, or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product, manufactured or not." CDFG regulations provide state protection for native birds of prey (Fish and Game Code, Section 3503.5) and all nongame birds (Fish and Game Code, Section 3800). For development projects, these rules are typically focused on avoiding the disturbance of nesting birds in order to avoid the loss of eggs or young in the nest.

Abundant nesting habitat for passerine birds exists in the trees of the orchard and in the chaparral scrub. Potential raptor nesting habitat exists in the taller olive, oak, willow, and sycamore trees. In order to avoid a potentially significant impact associated with disruption of nesting or breeding activity, mitigation is provided (see Section 5.4.6, Mitigation Measures, Mitigation Measure BIO-2).

As indicated in the "MSHCP Biological Assessment for the Rancho Paseo de Valencia Project" report (Misenhelter 2009a), the project site is not considered to be a regional wildlife corridor or habitat linkage, and it does not connect larger habitat areas or provide for regional wildlife movement. Further, the project site is not located within an area described for a movement corridor or linkage in the MSHCP (see also discussion below regarding the project's relationship with the MSHCP).

Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

The project site is located within the Temescal Canyon MSHCP Area Plan. Consistency with this plan is discussed below. The City does not have an oak tree protection ordinance of policy; however, the City encourages applicants to avoid impacts to oak specimens as much as possible. There are no other local policies or ordinances protecting biological resources that would affect the proposed project.

Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan or other approved local, regional, or state habitat conservation plan?

The proposed project site is located within the Western Riverside County MSHCP, specifically the Temescal Canyon Area Plan. The site is not located in or adjacent to a MSHCP criteria area/cell. Therefore, the project would not conflict with the MSHCP from a reserve design perspective, and no mitigation is required.

The property is located within the MSHCP survey area for the burrowing owl but not within a prescribed survey area for other criteria or narrow endemic plant species. All projects must be evaluated for the presence of riparian/riverine habitat and riparian/riverine species, including least Bell's vireo, southwestern willow flycatcher (*Empidonax traillii extimus*), western yellow-billed cuckoo (*Coccyzus americanus*), Riverside fairy shrimp, Santa Rosa fairy shrimp, and vernal pool fairy shrimp.

Suitable habitat for the burrowing owl does not exist on the project site. Therefore, due to the lack of suitable habitat, focused burrowing owl surveys are not necessary. The proposed project would not impact the burrowing owl. No mitigation is required.

The on-site riparian habitats do not meet the definition of riparian/riverine due to their man-made nature. Off-site drainages along the west and east of the project site may meet the definition of riparian/riverine; however, the proposed project would continue to direct drainage water to these drainages and hydrologic function would be maintained (Misenhelter 2010b). While suitable habitat for the least Bell's vireo existed in one on-site drainage and within two drainages along the western and eastern edges of the project site, focused surveys for this species were negative; therefore, no impacts to least Bell's vireo would occur. The project site did not contain suitable habitat for southwestern willow flycatcher and western yellow-billed cuckoo. Sign of vernal pools were not observed on site during the site visits and are not expected to occur. Fairy shrimp habitat was also not present on site. The lack of on-site resources and the fact that the project would maintain water leaving the project site to mirror current quantities would ensure consistency with MSHCP riparian/riverine guidelines.

Finally, the Cleveland National Forest is considered part of the overall MSHCP Preserve (a component of the “public/quasi-public” lands of the MSHCP Preserve). Because the project is located adjacent to the Cleveland National Forest, in order to avoid potential indirect impacts related to noise/disruption to sensitive wildlife species, alteration of drainage systems, introduction of hazards chemicals and bioproducts and spill-over lighting, mitigation in the form of urban/wildland avoidance/minimization and best management practices, is provided (see Section 5.4.6, Mitigation Measures, Mitigation Measures BIO-4 through BIO-10).

While the project is consistent with the MSHCP, the project applicant would be required to pay a MSHCP mitigation fee in order to offset impacts to the ultimate MSHCP Preserve (Mitigation Measure BIO-11). Payment of this mitigation fee, along with consistency with the MSHCP, as demonstrated above, ensures that the project's impacts to MSHCP-covered biological resources would be less than significant.

5.4.6 Mitigation Measures

The following mitigation measures would reduce identified impacts to biological resources to less than significant.

BIO-1 If grading or site disturbance is to occur between February and August, within no more than 72 hours of grading (or site disturbance), a nesting bird survey shall be conducted by a qualified biologist (per the City of Corona) to determine the presence of nests or nesting birds. All work within 300 feet of an active nest will be halted until that nesting effort is finished. The on-site biologist will review and verify compliance with these nesting boundaries and will verify the nesting effort has finished. Work can resume when no other active nests are found. Upon completion of the survey and any follow-up construction avoidance management, a report shall be prepared and submitted to the City for mitigation monitoring compliance record keeping.

BIO-2 Prior to issuance of a grading permit, the applicant shall provide a set of grading plans which will include the following contractor requirements:

- A 10-foot high noise attenuation wall shall be erected (Figure 5.4-4: Noise Attenuation Wall Locations).
- Daily noise monitoring by a qualified acoustician would be required during all earth moving activity. The noise levels must remain at or below 60 dBA Leq-h at nearby sensitive habitat areas. If noise measurements exceed 60 dBA Leq-h, the acoustician must notify the construction manager and the City Mitigation Monitor and Reporting Manager. The monitoring acoustician and contractor shall formally dictate additional methods for attenuation below 60 dBA Leq-h. Should noise attenuation below 60 dBA Leq-h prove infeasible near sensitive habitat areas, all work generating noise levels above 60 dBA Leq-h within 300 feet of an active nest will be halted until that nesting effort is finished as set forth in Mitigation Measure BIO-1. The on-site biologist will review and verify compliance with these nesting boundaries and will verify the nesting effort

has finished. Work can resume once nesting activity has been completed, as determined by the biological monitor.

BIO-3 In order to mitigate impacts to wetland resources onsite, one of the following options shall be implemented in order to mitigate for the permanent loss of 0.075 acre of riparian habitat:

1) Conserve 0.225 acre of riparian habitat (3:1 ratio). This habitat must be of similar or greater quality than the existing riparian habitat associated with Drainage A. Further, this conservation must occur on-site and in perpetuity.

2) Conserve 0.375 acre of riparian habitat (5:1 ratio) through participation in a CDFG-approved habitat conservation program or bank. Participation in the bank or regional conservation program shall ensure that conservation is in perpetuity.

Prior to issuance of a grading permit, the applicant must provide the City with written documentation from CDFG indicating that this mitigation requirement has been fulfilled to their satisfaction.

BIO-4 Prior to issuance of a grading permit, the applicant shall provide the City with a drainage management plan (which may be combined with the Storm Water Pollution Prevention Plan required by the National Pollutant Discharge Elimination System) that describes the measures that will be taken throughout construction and operation of the project to ensure that water flow is maintained to off-site drainages. Measures may include, but are no limited to, a rerouted subterranean drainage system to convey water around the project site or a new water source input at the downstream edge of the proposed project footprint. Further, this plan shall also include parameters for ensuring that drainage water quality is maintained at predevelopment levels.

Moreover, compliance with the National Pollutant Discharge Elimination System and implementation of a Storm Water Pollution Prevention Plan would ensure that no significant impacts to water quality that could affect biological resources would occur, as all water quality standards would be maintained pursuant to the Clean Water Act.

BIO-5 Prior to grading permit issuance, adequate and appropriate measures to control chemicals or bioproducts that are potentially toxic or may adversely affect wildlife

species, habitat, or water quality shall be developed and included in the Storm Water Pollution Prevention Plan. Specific measures shall include the following:

- Avoidance of aerial application on days with winds exceeding 2 miles per hour.
- Containment of all pollutants on the project site.
- All pollutants and runoff will be conveyed off-site and disposed off according to standard procedures.
- Any spillage into conserved areas shall be immediately cleaned up.
- Permanent adequate control measures for manure and similar pollutants resulting from human use of the site will be incorporated into the requirements for the development of such facilities as horse stables, pesticide and insecticide storage facilities, and landscaping sheds.

BIO-6 Prior to issuance of a grading permit, a construction lighting plan shall be submitted to the City to indicate the potential location and management of all construction lighting. Lighting shall be directed downward and specifically toward work areas so as to avoid stray lighting to off-site habitats. If construction is not planned during evening hours, a plan would not be required.

BIO-7 The street improvement plan shall indicate the type, intensity, and notes regarding direction of all street, entry way, tennis court, and other common area lighting. Night lighting shall be directed away from sensitive habitat areas and toward the ground. Shielding shall be incorporated in project designs to ensure ambient lighting in the adjacent sensitive habitat areas is not increased.

BIO-8 The final landscape plan shall avoid the use of all invasive, non-native species listed in Table 6-2 of the MSHCP. No plants producing windblown seeds will be used in the landscape palette. The covenants, conditions, and restrictions (CC&Rs) associated with all lots that abut exterior project boundaries shall be specifically prohibited from using species listed on Table 6-2 of the MSHCP in any planned front yard or backyard landscaping.

BIO-9 Lots 20, 21, and 22 shall be required to maintain 6-foot high masonry walls or wrought iron fencing at the rear of their property lines to establish a distinct separation from developed and undeveloped areas.

BIO-10 Prior to issuance of a grading permit, the City shall ensure that all grading is maintained within the proposed project footprint. No temporary grading shall be

allowed on land outside of the proposed project boundary unless properly assessed for biological resources and authorized by the City Planning Department.

BIO-11 Prior to issuance of a grading permit, the project applicant shall be required to pay a MSHCP mitigation fee in order to offset impacts to MSHCP-related biological resources.

5.4.7 Level of Significance after Mitigation

The mitigation measures listed in Section 5.4.5 would reduce potential biological resource impacts to a level that is less than significant by ensuring no nesting birds are disturbed and urban/wildland conflicts do not occur. Impacts would therefore be mitigated to a level below significant.

5.4.8 References

16 U.S.C. 703–712. Migratory Bird Treat Act, as amended.

16 U.S.C. 1531–1544. Endangered Species Act of 1973, as amended.

33 U.S.C. 1251–1387. Federal Water Pollution Control Act, as amended (commonly referred to as the Clean Water Act).

BFSA (Brian F. Smith and Associates, Inc.). 2009. Construction Noise Assessment, TTM 34760, City of Corona, Ca. Prepared by Brian F. Smith and Associates, Inc. Prepared for Armstrong and Brooks Consulting Engineers, Corona, Ca: November 16, 2009.

California Fish and Game Code, Section 2800–2835. Natural Community Conservation Planning Act of 2001.

California Fish and Game Code, Section 3503.5. General Provisions.

California Fish and Game Code, Section 3800. Nongame Birds.

Misenhelter, M. 2009a. "MSHCP Biological Assessment for the Rancho Paseo de Valencia Project; TTM 34760 – Approximately 65 Acres in the City of Corona, Riverside County." Letter report from M. Misenhelter to M. Valencia, July 21, 2009.

Misenhelter, M. 2009b. *Jurisdictional Delineation for TTM 34760 in the City of Corona, Riverside County, California*. Prepared by M. Misenhelter for M. Valencia (Rancho de Paseo Valencia). Norco, California: M. Misenhelter. July 31, 2009.

Misenhelter, M. 2009c. *2009 Focused Least Bell's Vireo (*Vireo bellii pusillus*) Survey of the Rancho de Valencia Project, TTM 34760 in the City of Corona Riverside County,*

California. Prepared by M. Misenhelter for Rancho de Paseo de Valencia. Norco, California: M. Misenhelter. June 27, 2009.

Misenhelter, M. 2009d. "Soil Map—Orange County and Part of Riverside County, California, and Western Riverside Area, California (Rancho Paseo de Valencia)." Assembled by M. Misenhelter with data generated by the U.S. Department of Agriculture, Natural Resources Conservation Service, National Cooperative Soil Survey. May 20, 2009.

Misenhelter, M. 2010a. "2 Bio Questions." Email from M. Misenhelter to J. Moquin (City of Corona) and S. Lozano (Dudek), March 15, 2010.

Misenhelter, M. 2010b. "Question about Biology for Rancho de Paseo Valencia EIR" from M. Misenhelter to J. Moquin (City of Corona) and S. Lozano (Dudek), June 29, 2010.

National Resources Assessment, Inc. 2009. "Jurisdictional Determination for the Rancho de Paseo Valencia Project, Corona." Letter report from K. Kirtland (National Resources Assessment, Inc.) to M. Misenhelter, July 19, 2009.

5.5 CULTURAL RESOURCES

5.5.1 Introduction

This section presents a discussion of cultural resources that could potentially be affected by the proposed project.

5.5.2 Methodology

This section is based on the *Phase I Archaeological Assessment for the Rancho Paseo de Valencia Project City of Corona, Riverside County, California* (BFSA 2007a) and the *Paleontological Resource Assessment, Rancho Paseo de Valencia* (BFSA 2007b). The complete reports are contained in Appendix E of this EIR. BFSA conducted an intensive archaeological survey of the project site, as well as archaeological and historical research, including a records search, literature review, and examination of historic maps. A paleontological collections and records search was also conducted for the project site.

5.5.3 Existing Conditions

Natural Setting

The project area is located in the northeastern foothills of the Santa Ana Mountains, west of the Temescal Wash, and south of the Santa Ana River. The project area consists of gentle to steep foothill slopes, seasonal drainages, and terraced agricultural fruit groves. The project site contains alluvial fan deposits that rest on the Paleocene Silverado Formation. Soils are within the Arlington-Exeter Soil Association, which are considered well drained, level to moderately steep soils that have a surface layer of sandy loam to loam and can be shallow, deep, or hardpan. Specific soil on the site is mostly Rough Broken Land (RuF) with smaller areas of Perkins Gravelly Loam (PgD2), and Garretson Gravelly Very Fine Sandy Loam (GdC) (BFSA 2007b). Approximately 35 acres of the property has been disturbed through the cultivation of fruit orchards. The remainder of the site consists primarily of undeveloped chaparral/coastal sage scrub vegetation.

Cultural Setting

Prehistory

The prehistoric chronology is represented by three general cultural periods, each characterized by differing patterns of socio-political organization, technology, resource focus, and land use. These cultural periods include the PaleoIndian, Archaic, and Late Prehistoric.

PaleoIndian Period (Late Pleistocene: 11,500 years before present (Y.B.P))

The PaleoIndian period is associated with the terminus of the late Pleistocene (12,000–10,000 Y.B.P.) when the climate became warmer. PaleoIndians were likely attracted to multiple habitat types, including mountains, marshlands, estuaries, and lakeshores. These people likely subsisted using a more generalized hunting, gathering, and collecting adaptation, utilizing a variety of resources such as birds, mollusks, and both large and small mammals (BFSA 2007a).

Archaic Period (8000–1500 Y.B.P.)

Over the long duration of the Archaic period, there was a gradual shift from small, highly mobile hunters and gatherers practicing a forager pattern to larger groups with a diversity of settlement types involving residential bases, temporary camps, strategically located cache sites and specialized resource collecting localities. This pattern reflects increasing intensification and a shift from foragers to collectors who practiced logistical patterns of mobility to accommodate seasonally available resources. Coinciding with these changes were the diversification of food resources and new specialized technologies with which to exploit them. Projectile points reflect the shift to the use of atlatl and dart (essentially a spear-throwing device). Milling tools become ubiquitous and reflect increased exploitation of seeds and nuts. Larger residential base sites tend to occur at reliable water sources such as springs or tanks, with temporary camps near seasonal stream channels, extinct rivers, playas, high terraces above sinks and rockshelters (BFSA 2007a).

Late Prehistoric Period (1300–1790 A.D.)

The major archaeologically visible technological and cultural innovations of this period are the introduction of pottery making by the paddle-and-anvil technique, bow-and-arrow technology around 1200 YB.P., a shift from inhumation to cremation burial, and the introduction of floodplain agriculture on the Colorado River about the same time, although exact dating of early domesticates is lacking. This was also the period when obsidian trade relations shifted from the Coso sources in the Mohave Desert to the Obsidian Butte source in the Salton Trough (when it was not submerged beneath Lake Cahuilla). Ceramics and cultigens were introduced from either Mexico or through the Hohokam culture of the Gila River (BFSA 2007a).

The ancestral Cahuilla were certainly exposed to domesticates at an early time, although opinions differ on when they adopted horticulture as a substantial part of their economy. It may have been a secondary pursuit for the production of specialty foods and fibers or gourds in the prehistoric period, although that has yet to be established archaeologically. Agricultural intensification and ditch irrigation techniques may not have occurred until after exposure to the mission system in historic times (BFSA 2007a).

Bow-and-arrow technology, seed-beaters, and other sophisticated hunting and gathering technology may also be related to the spread of Numic and Takic peoples from the southern Great Basin. Late Holocene flooding of Lake Cahuilla may have accelerated contacts between people of the ancestral Yumans of the Colorado River and the ancestors of the Cahuilla in the Coachella Valley and Peninsular Ranges. Such contacts through ceremonial and economic exchange may have resulted in a cultural dynamic that formed the Patayan Pattern and the resulting cultures of the ethnohistoric period. Long-range travel to special resource collecting zones and ceremonial locales, trading expeditions, and possibly some warfare are reflected by the numerous trail systems throughout the Colorado Desert. Pot drops, trailside shrines, and other evidence of transitory activities are associated with these trails. Many of the pictographic, petroglyphs, and bedrock grinding surfaces in the Colorado Desert have also been associated with the Patayan Pattern, although direct dating and cultural affiliation of such features is often difficult (BFSA 2007a).

History

Protohistoric Period (Late Holocene: 1790 to present)

Evidence indicates three Shoshonean speaking groups occupied portions of Riverside County during the Protohistoric period, including the Cahuilla, Gabrielino, and the Luiseño. The geographic boundaries between these groups are difficult to place; however, the project vicinity is within known Gabrielino ancestral land near their boundary with the Luiseño. At the time of Spanish contact in the sixteenth century, the Cahuilla occupied territory including the San Bernardino Mountains, Orocopia Mountains, the Salton Sea and Borrego Springs to the south, Palomar Mountain and Lake Mathews to the west, and the Santa Ana River to the north. The territory of the Gabrielino in this time period was located in much of current Los Angeles and Orange Counties. They were known to extend to Aliso Creek to the south, just east of present day San Bernardino to the east, the San Fernando Valley to the north, and to the Santa Monica Mountains to the west. They also occupied several of the Channel Islands off the coast of present day Santa Barbara. The Luiseño were a seasonal hunting and gathering people with cultural elements that were distinct from the Archaic period peoples, including cremation, the use of the bow and arrow, and the use of the acorn as a main food staple (BFSA 2007a).

Historic Period

Cultural activities within Riverside County between the late 1700s and the present provide a record of Native American, Spanish, Mexican, and American control, occupation, and land use. Native American control of the Southern California region ended in the political views of western nations with Spanish colonization of the area beginning in 1769. De facto Native

American control of the majority of the population of California did not end until several decades later (BFSA 2007a).

In Southern California, Euroamerican control was firmly established by the end of the Garra uprising in the early 1850s. The Spanish Period (1769–1821) represents a period of Euroamerican exploration and settlement. Dual military and religious contingents established the San Diego Presidio and the San Diego and San Luis Rey Missions (BFSA 2007a).

The Mexican Period (1821–1848) includes the retention of many Spanish institutions and laws. The Mission system was secularized in 1834, which dispossessed many Native Americans and increased Mexican settlement. After secularization, large tracts of land were granted to individuals and families and the rancho system was established. The Mexican Period ended when Mexico ceded California to the United States after the Mexican–American War of 1846–48. Soon after American control was established (1848–present), gold was discovered in California. The tremendous influx of American and Europeans that resulted quickly drowned out much of the Spanish and Mexican cultural influences and eliminated the last vestiges of de facto Native American control. (BFSA 2007a)

Land speculators, developers, and colonists began to invest in Southern California following completion of the transcontinental railroad in 1869. One of these colonies would be located in the area that ultimately became the City of Riverside. Navel oranges were soon planted in the area and found to be so successful that it became the agricultural staple of the region. The residents of Riverside and San Bernardino began to have major differences of opinion on cultural and social issues by the late 1880s into the early 1890s. In May 1893, voters living within portions of San Bernardino County and San Diego County approved the formation of Riverside County. By the time Riverside County was formed, the City of Riverside had become the wealthiest city in the country per capita due to the success of the navel orange (BFSA 2007a).

Record Search Results

Archaeological Records Search

A records search of the project area was conducted by BFSA at the Eastern Information Center. This records search is summarized in the *Phase I Archaeological Assessment for the Rancho Paseo de Valencia Project* (BFSA 2007a; see Appendix E). The Eastern Information Center, located at the University of California, Riverside, is part of the State of California's official cultural resource records repository system established and maintained under the auspices of the California Office of Historic Preservation.

The records search included a review of all available cultural resources survey and excavation reports and site records showing previously identified cultural resources within one mile of the

project site. Previously identified cultural resources include properties designated as California Historical Landmarks, Points of Historical Interest, or Riverside County Landmarks, as well as those listed in the National Register of Historic Places, the California Register of Historical Resources, or the California Historical Resource Information System.

The Eastern Information Center records search revealed that no previously recorded sites are located within the project boundaries. However, seven cultural sites have been recorded within a 1-mile radius of the project, including one prehistoric isolate, two prehistoric sites, and four historic cultural resources. The records search also noted that there have been a total of 26 cultural resource studies conducted within a 1-mile radius of the project site. One of these studies, *Report on Prehistoric and Historic Investigations at Main Ranch Riverside County, California* (Hatheway et al. 1986, cited in BFSA 2007a) included a portion of the project area.

Native American Consultation

State Senate Bill (SB) 18 requires formal consultation between a local government and Native American representatives as identified by the Native American Heritage Commission when the local government is considering General or Specific Plan adoption or amendment. Since this project involves a Specific Plan amendment, BFSA contacted the Native American Heritage Commission to request a records search in the commission's sacred lands file. Their search of the sacred lands file failed to indicate the presence of Native American cultural resources within the project area and its 1-mile radius.

The City conducted a formal consultation with the Temecula Band of Luiseño Mission Indians during project planning. This Native American group provided a comment letter in response to the NOP (see Appendix A). This letter outlined the history of the project area in the context of their ancestral history and traditions. In response, the City contacted this Native American group in the Spring of 2009 to discuss the project. This Native American group indicated that they would like to be notified of all future approvals and discretionary actions regarding the project site and requested that mitigation measures outlined in their NOP comment letter be incorporated in the project's MMRP.

Paleontological Records Search

The records search service was provided by the Geology Museum in the Department of Earth Sciences at the University of California, Riverside (UCR). This institution maintains files of regional paleontological localities, as well as supporting maps and documents. The records search results did not identify any known paleontological localities within the project area or in the general vicinity. However, the museum's locality records do contain data on several old but poorly located UCR fossil localities on the northeast side of the Santa Ana Mountains.

Site Survey Results

A field survey of the project site was conducted by Brian F. Smith & Associates paleontologists in April 2007. Ground visibility ranged from very good on graded roads, to moderate within fruit groves, to poor along steep slopes and drainages with intense plant growth. The field survey team utilized an intuitive survey approach based on the amount of ground disturbance and lack of previously reported cultural resources. This approach resulted in the survey focusing on areas and resources most likely to have been used by past historic or prehistoric populations. These areas include bedrock outcroppings, clusters of plant resources, ridge tops, and naturally level ground surfaces.

Based on the areas of focus, the survey did not result in the identification of any cultural materials. The property does not contain bedrock outcroppings, organic midden-like soils, or rock shelters, which can indicate prehistoric land use. Some vegetative resources that may have been utilized by prehistoric populations were evident within site drainages, but due to steepness of slopes, narrow ridges and drainages, dense vegetation, and lack of desirable lithic extraction areas, the project area would be less attractive to prehistoric populations and not likely to have been exploited. As a result of the field survey, no historic or prehistoric resources were identified within project boundaries.

5.5.4 Criteria for Determining Significance

The following significance criteria, included in Appendix G of the CEQA Guidelines, will determine the significance of a cultural resource impact. Impacts to cultural resources would be significant if the proposed project would:

a. Cause a substantial adverse change in the significance of a historical resource as defined in the State CEQA Guidelines, §15064.5

b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5

c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature

d. Disturb any human remains, including those interred outside of formal cemeteries.

5.5.5 Impacts

Would the project cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5 of the State CEQA Guidelines?

The Eastern Information Center records search found that no previously recorded sites are located within the project boundaries. However, seven cultural sites have been recorded within a 1-mile radius of the project, including one prehistoric isolate, two prehistoric sites, and four historic cultural resources. A pedestrian survey of the site resulted in no additional findings of historic resources. However, due to poor surface visibility in portions of the project site as a result of dense vegetation and orchards, the possibility remains that the project may result in a direct or indirect impact to undiscovered historical resources. Therefore, in order to mitigate for this potential impact, mitigation is provided (see Section 5.5.6, *Mitigation Measures*, Mitigation Measure CUL-1).

Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5 of the State CEQA Guidelines?

No significant archaeological resources including Native American resources were identified within the project boundaries by either a records search or field survey. However, potential previously unidentified resources may be discovered during project grading. In order to mitigate for potential impacts to unidentified archaeological resources, mitigation is provided (see Section 5.5.6, *Mitigation Measures*, Mitigation Measure CUL-1).

The Temecula Band of Luiseño Mission Indians submitted a comment letter in response to the project NOP and discussed the project with City Community Development Department staff during the Spring of 2009. Their letter and subsequent consultation with City staff indicated that they view the project site as culturally significant and therefore view potential disruption of the site, during project development, to be a potentially significant impact on their sacred/ancestral heritage. In order to reduce this potential impact to a level below significant, mitigation, in the form of measures that the City and Temecula Band of Luiseño Mission Indians have agreed to, is provided (see Section 5.5.6, *Mitigation Measures*, Mitigation Measures CUL-2 through CUL-4).

Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Although no paleontological resources or unique geologic features have been recorded within the project boundaries or observed during the pedestrian survey of the site, there are records of several old but poorly located fossil localities on the northeast slopes of the Santa Ana Mountains. The fossil record of the Paleocene Silverado Formation, within in the project vicinity, lacks sufficient data. Therefore, while potentially significant impacts are unlikely, an

impact to unidentified resources would be significant, and mitigation is provided (see Section 5.5.6, *Mitigation Measures*, Mitigation Measure CUL-2).

Would the project disturb any human remains, including those interred outside of formal cemeteries?

There are no known human remains within the site or vicinity. However, there is a potential that during grading, previously unidentified human remains may be uncovered. In order to avoid a potentially significant impact to previously unidentified human remains, mitigation is provided (see Section 5.5.6, *Mitigation Measures*, Mitigation Measure CUL-6).

5.5.6 Mitigation Measures

The following mitigation measures would reduce identified impacts to cultural resources to less than significant.

CUL-1 The applicant shall retain a qualified archaeological monitor who shall prepare an Archaeological Resources Mitigation and Monitoring Plan. The archaeologist shall attend all pre-grading meetings to inform the grading and excavation contractors of the archaeological resource mitigation program and shall consult with them with respect to its implementation. The archaeological monitor shall be on site at all times during the initial phases of clearing and rough grading to inspect cuts for contained archaeological resources. If such resources are discovered, the archaeological monitor shall recover them. In instances where recovery requires an extended salvage time, the archaeologist or monitor shall be allowed to temporarily direct, divert, or halt grading to allow recovery of resource remains in a timely manner. Recovered archaeological resources, along with copies of pertinent field notes, photographs, and maps, shall be deposited in a scientific institution with archaeological collections and the resources shall be recorded in the California Archaeological Inventory Database. A final monitoring report shall be submitted to the City within 30 days of the end of monitoring activities.

CUL-2 All grading, excavation, and ground-breaking activities shall be monitored by a tribal monitor. The project applicant shall pay all fees associated with such tribal monitors. The tribal monitors will have the authority to temporarily stop and redirect grading activities, in conjunction with the archaeological monitor and the City.

CUL-3 Prior to issuance of grading permits, the applicant shall be required to enter into a Treatment Agreement with the Pechanga Band of Luiseño Indians. This agreement will address the treatment and disposition of cultural resources and

human remains, including those that may be inadvertently uncovered during construction as well as the provisions for the tribal monitors.

CUL-4 The applicant shall relinquish ownership of all cultural resources discovered on site. This may include sacred items, burial goods, and all archaeological artifacts that are found on the project site. All items shall be turned over to the appropriate Indian tribe for proper treatment and disposition.

CUL-5 The applicant shall retain a qualified paleontological monitor who shall prepare a Paleontological Resources Mitigation and Monitoring Plan. The paleontologist shall attend all pre-grading meetings to inform the grading and excavation contractors of the paleontological resource mitigation program and shall consult with them with respect to its implementation. The paleontological monitor shall be on site at all times during mass grading and excavation and shall observe all utility trenching activities. Paleontological monitoring is not required within coarse grained alluvial fan materials as depicted by Figure 5.6-1 (see Section 5.6). If any fossils are discovered, the paleontological monitor shall recover them. In instances where recovery requires an extended salvage time, the paleontologist or monitor shall be allowed to temporarily direct, divert, or halt grading to allow recovery of resource remains in a timely manner. Recovered fossils, along with copies of pertinent field notes, photographs, and maps, shall be deposited in a scientific institution with paleontological collections or in accordance with the Society of Vertebrate Technology recommendations. A final monitoring report shall be submitted to the City within 30 days of the end of monitoring activities.

CUL-6 If human remains are encountered during site preparation or construction, the provisions of California Health and Safety Code Section 7050.5 shall be followed. If remains are uncovered, the Riverside County Coroner shall be immediately notified. Code Section 7050.5 states that no further disturbance shall occur until the Riverside County Coroner has made the necessary findings as to the origin of such remains. Further, pursuant to California Public Resources Code Section 5097.98(b), remains shall be left in place and free from disturbance until a final decision as to the treatment and disposition has been made. If the Riverside County Coroner determines that the remains are Native American, the Native American Heritage Commission shall be contacted within a reasonable timeframe. Subsequently, the Native American Heritage Commission shall identify the “most likely descendant.” The “most likely descendant” shall then make recommendations and engage in consultations concerning the treatment of the remains as provided for in Public Resources Code Section 5097.98.

5.5.7 Level of Significance after Mitigation

Based upon the completion of appropriate research methods, including archaeological and paleontological record reviews, consultation with the Native American Heritage Commission, Temecula Band of Luiseño Mission Indians, and a pedestrian survey completed by qualified experts, it was determined that the proposed project is unlikely to have any potentially significant impacts to cultural resources. However, because of poor surface visibility in portions of the project site due to dense vegetation and orchards, the possibility remains that the project may result in a direct or indirect impact to undiscovered archaeological resources or human remains. Additionally, although there are recorded fossil remains within the vicinity of the site, no paleontological resources or unique geologic features have been recorded within the project boundaries or observed during the pedestrian survey of the site. Mitigation measures have been incorporated into the EIR, including the use of archaeological and paleontological monitors, to further ensure that any potential impacts can be mitigated. The mitigation measures listed above in Section 5.5.6 would reduce potential cultural resource impacts to less than significant.

5.5.8 References

BFSA (Brian F. Smith & Associates). 2007a. *A Phase I Archaeological Assessment for the Rancho Paseo de Valencia Project City of Corona, Riverside County, California.* Prepared by BFSA for Manuel Valencia. Poway, California: BFSA. May 14.

BFSA. 2007b. *Paleontological Resource Assessment, Rancho Paseo de Valencia*. Prepared by BFSA for Manuel Valencia. Poway, California: BFSA. May 8.

California Health and Safety Code, Section 7075.5.

California Public Resources Code, Section 5097.98(b). Notification of Discovery of Native American Human Remains, Descendants; Disposition of Human Remains and Associated Grave Goods.

5.6 GEOLOGY AND SOILS

5.6.1 Introduction

This section outlines the potential seismic and geologic impacts of the proposed project. The analysis summarizes available geologic and geotechnical background data and several geologic reconnaissance efforts of the project site.

5.6.2 Methodology

GeoSoils, Inc. (GSI) reviewed the geologic conditions at the project site, evaluated the potential geotechnical impacts to the site associated with the proposed project, and provided geotechnical recommendations for grading and earthwork at the site. GSI's complete findings can be found in the *Updated Preliminary Geotechnical Investigation, and Updated Fault Rupture Hazard Evaluation, Tentative Tract 34760, Corona, Riverside County, California 92882* (GSI 2006). This report is supplemented by the following documents: November 20, 2007, letter update evaluation of slope stability in the southeast corner of the site (GSI 2007); the June 12, 2008, letter update evaluating revisions to the Tentative Tract Map (GSI 2008a); and the November 6, 2008, letter evaluation and review of the Fire Protection and Fuel Modification Plan (GSI 2008b). The following section is based in part on these reports and memoranda, which are all included in Appendix F to this EIR.

5.6.2 Existing Conditions

Regional Geologic Setting

The proposed project site is located on the western margin of the Perris Block, a portion of a prominent geomorphic province in southwestern California known as the Peninsular Range. The Peninsular Range is characterized by steep elongated ranges and valleys that trend northwesterly. The Santa Ana Mountains lie along the western side of the Elsinore fault zone, and the Perris Block is located on the eastern side of the fault zone. This province is characterized by bedrock type materials, which comprise the majority of the mountain masses with relatively thin volcanic and sedimentary deposits overlaying portions of the bedrock and alluvial fan deposits filling in the valleys with younger alluvium in the incised drainage areas (GSI 2006)

The Corona-Santa Ana Narrows region is comprised of three major structural blocks consisting of the Santa Ana Mountains block, bound by the Elsinore and Whittier faults on the northeast; the Puente Hills block, bounded on the northeast by the Chino fault and on the southwest by the Elsinore and Whittier faults; and the Perris block, located on the northeast side of the Chino fault. The present landforms of the Santa Ana Mountains and Corona area are a result of late Quaternary

faulting and uplift associated with the Elsinore fault zone. The bedrock has been eroded, with the resulting debris being deposited as a series of Quaternary age alluvial fans (GSI 2006).

Site-Specific Subsurface Conditions

The on-site bedrock units are predominantly the Paleocene-age Silverado Formation. The surficial units consist of minor amount of undocumented fill associated with agriculture, topsoil, young active alluvium, and landslide deposits. On-site earth materials are described below from youngest to oldest. Existing geologic conditions and hazards are depicted on Figure 5.6-1.

Undocumented Fill

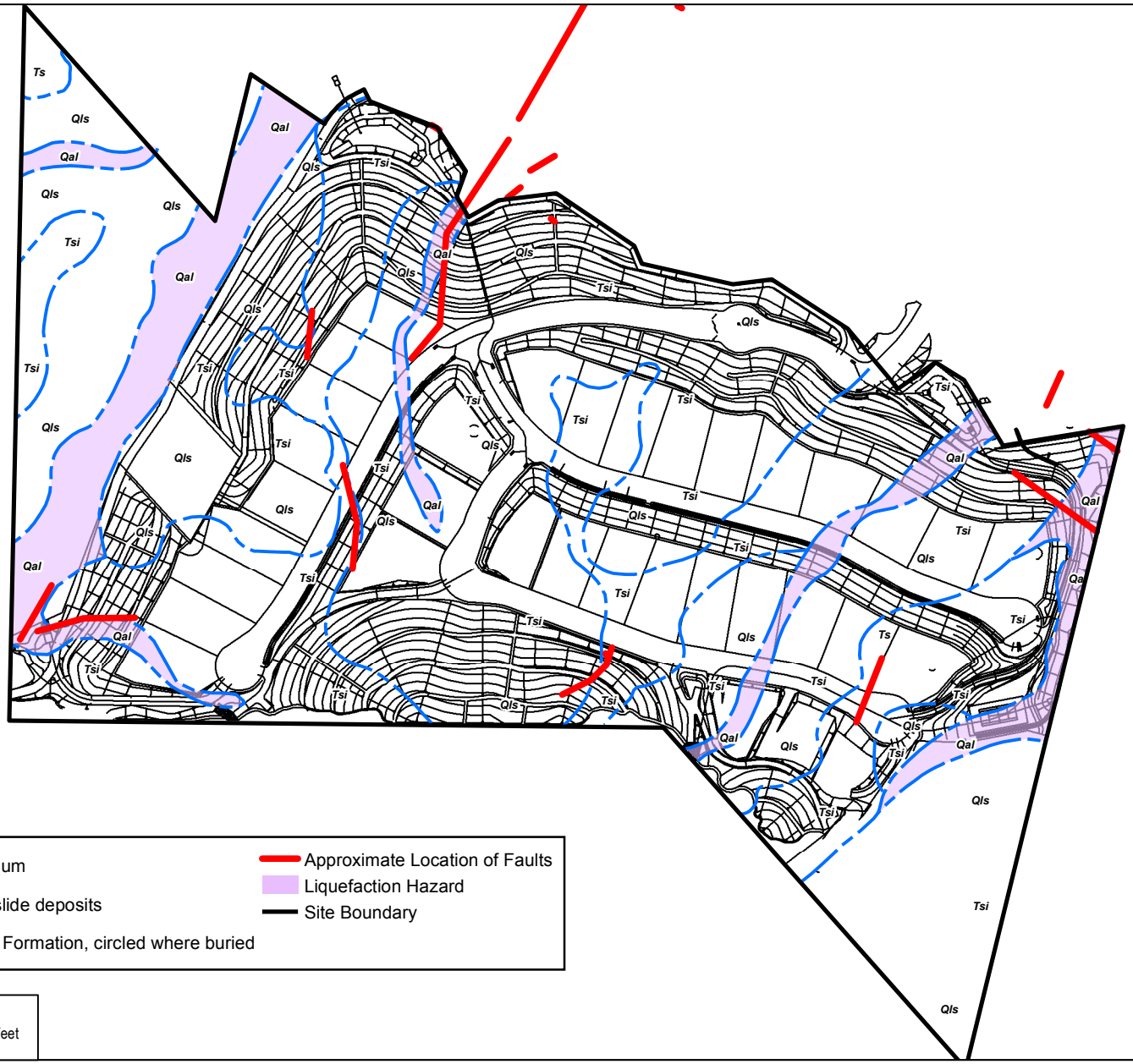
Undocumented fill soils are scattered throughout the site. As observed, the undocumented fill soils are generally associated with the agriculture development at the site, supporting orchard terraces, utilities, and access roads. Fill thickness is estimated to range from 5 to 10 feet. In general, the fill soils consist of clayey sand with abundant branches and tree trunks, scattered cobbles, and concrete debris. These materials are considered potentially compressible in their existing state and may settle appreciably under additional fill or foundation and improvement loadings.

Quaternary Colluvium and/or Slope Wash Deposits

The site contains a relatively thin layer of colluvium (topsoil/slope wash/talus soils). As encountered, these materials typically consist of light to dark brown to reddish brown, damp to moist, loose to medium dense, silty to clayey sand, and sandy clays having locally abundant cobbles. These materials are considered potentially compressible and unsuitable in their present state for structural support. Thickness of these deposits is estimated to range from 1 to 10 feet deep.

Quaternary Alluvium

These deposits are present in the active drainage channels throughout the site. These materials typically consist of reddish brown, damp to moist, medium dense to dense, silty to gravelly sand. Thickness of these deposits is estimated to be between 4 and 15 feet deep. Due to the potentially liquefiable, densifiable, compressible, and/or collapsible nature of these soils, they are considered unsuitable for support of structures in their present state.



Qal - Quaternary alluvium

Qls - Quaternary landslide deposits

Tsi - Tertiary Silverado Formation, circled where buried

Approximate Location of Faults

Liquefaction Hazard

Site Boundary

0 175 350 Feet

DUDEK

6327-01

MARCH 2010

SOURCE: Geotechnical Data/Stie Plan: GSI 2006

FIGURE 5.6-1

Existing Geological Resources

Rancho de Paseo Valencia EIR

Z:\Projects\6327001\MAPDOC\MAPS\EIR\Section 5\Figure 5-6-1 Existing Geological Resources.mxd

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Quaternary Landslide Deposits

These deposits are present throughout the site. These materials are derived from parental rocks that include colluvium and the underlying bedrock, likely a result bedding plane failures and/or rotational failures and slumps. These deposits are expected to be relatively thin, approximately 5–10 feet in thickness. These materials are considered potentially compressible and subject to lateral movement.

Tertiary Silverado Formation

The bedrock on the site is made up of the Silverado Formation. This formation varies in composition from yellow to gray to brown to reddish brown to olive green siltstone and minor claystone, and fine to coarse-grained, sildy sandstone to a conglomerate with a sandstone matrix. The upper 1–2 feet of bedrock are highly weathered. The unweathered bedrock is considered suitable for the support of settlement-sensitive improvements and/or engineered fill in its present condition. Site bedrock generally strikes to the northwest and dips in a southwesterly direction.

Geologic Hazards

Faulting and Ground Rupture

Based on the commonly accepted definition provided by the California Geological Survey, an "active fault" is a fault that has had surface displacement within Holocene time (about the last 11,000 years), and a "potentially active fault" is a fault considered to have had surface displacement during Quaternary time (about the last 1,600,000 years). These definitions are used in delineating earthquake fault zones as mandated by the Alquist-Priolo Geologic Hazards Zones Act (California Public Resources Code, Sections 2621–2630). The intent of this act is to prohibit the location of structures on the traces of active faults, thereby mitigating potential damage due to fault surface rupture (GSI 2006).

The project site is located within seismically active Southern California. The subject site contains an Alquist-Priolo Earthquake Fault Zone as mapped by the California Geological Survey (2003). The portion of the site that lies within the Alquist-Priolo Earthquake Fault Zone was investigated in 1987 by Highland Soils Engineering, Inc. and in 1995 by GSI. The active fault was located during the course of these investigations, and it was determined that the presence of active faults within the project site is not likely outside of the previously delineated fault setback zone (GSI 2006).

The mapped Alquist-Priolo Earthquake Fault Zone, located on the northern portion of the property, is part of the Elsinore fault zone. At its northern end, near the City of Corona, the Elsinore fault zone splays into two segments, the Chino-Central Avenue Fault and the Whittier

Fault. Along the southwestern portion of the City, the Elsinore fault zone is referred to as the Glen Ivy Fault. Other major faults in the region include the San Jacinto Fault, approximately 23 miles east of the site, the Newport-Inglewood Fault, approximately 25 miles west of the site, and the San Andreas Fault, about 32 miles to the northeast.

Liquefaction

Liquefaction occurs when strong seismic activity creates excess pore pressures in cohensionless soils. Research and historical data indicate that loose granular soils or soils of low plasticity below a near surface groundwater table are most susceptible to liquefaction. Liquefaction is characterized by a loss of shear strength in the affected soil layers, thereby causing the soil to flow as a viscous liquid. This effect may be manifested at the ground surface by settlement and/or sand boils. In order for the potential effects of liquefaction to be manifested at the ground surface, the soils generally have to be granular or of low plasticity, loose to medium density, saturated relatively near the ground surface, and must be subjected to a sufficient magnitude and duration of ground shaking. Increased soil mobility can lead to lateral spreading, consolidation and settlement of loose sediments, ground oscillation, flow failure, loss of bearing strength, ground fissuring, and other damaging formations (California Geological Survey 2009).

The Quaternary Alluvium materials within the site are considered potentially liquefiable (GSI 2006).

Landslides

Landslides may occur when severe weather events weaken certain soils, generally where the majority of the soil materials are fine-grained (silt and clay) and cohesive. Earth flows typically are initiated by periods of prolonged rainfall and sometimes do not initiate until well after a storm or the rainy season has passed. They are characteristically slow moving, in the millimeters or centimeters per day, and may continue to move for a period of days to weeks after initiating (California Geological Survey 2009). As indicated above, several on-site soil types may be susceptible to collapse or lateral movement and will need to be removed and recompacted.

Soil Erosion/Loss of Topsoil

Erosion hazards are generally associated with hillside areas that have become exposed to ecological forces such as water or wind. When sloped areas are exposed to too much water or wind, erosion or loss of topsoil may occur. Due to the relatively dense nature of vegetation on site, including fruit orchards, no excessive loss of topsoil or erosion has been identified.

Expansive Soils

Soils at the site are likely to be expansive and therefore, become desiccated when allowed to dry. Such soils are susceptible to surficial slope creep, especially with seasonal changes in moisture content. Typically in southern California, during the hot and dry summer period, these soils become desiccated and shrink, thereby developing surface cracks. The extent and depth of these shrinkage cracks depend on many factors such as the nature and expansivity of the soils, temperature and humidity, and extraction of moisture from surface soils by plants and roots.

When seasonal rains occur, water percolates into the cracks and fissures, causing slope surfaces to expand, with a corresponding loss in soil density and shear strength near the slope surface. With the passage of time and several moisture cycles, the outer 3 to 5 feet of slope materials experience a very slow, but progressive, outward and downward movement, known as slope creep. For slope heights greater than 10 feet, this creep related soil movement will typically impact all rear yard flatwork and other secondary improvements that are located within about 15 feet from the top of slopes, such as swimming pools, concrete flatwork, etc., and in particular top of slope fences/walls. This influence is normally in the form of detrimental settlement, and tilting of the proposed improvements. The desiccation/swelling and creep discussed above continues over the life of the improvements, and generally becomes progressively worse.

5.6.3 Thresholds of Significance

The following significance criteria, included in Appendix G of the CEQA guidelines, will determine the significance of a geotechnical impact. Impacts related to geotechnical hazards would be significant if the proposed project would:

a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
    i. Rupture of a known earthquake fault, as delineated in the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault;
    ii. Strong seismic ground shaking;
    iii. Seismic-related ground failure, including liquefaction;
    iv. Landslides.
b. Result in substantial soil erosion or the loss of topsoil.
c. 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 on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.

d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.

e. Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.

5.6.4 Impacts

Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?

As discussed above, the active Elsinore Fault zone is located in the northern portion of the project site. Consequently, the property is included in an Alquist-Priolo Earthquake Fault Zone, as mapped by the California Geological Survey. Previous studies have identified an active fault alignment within the project site with recommended setbacks for structures. In order to evaluate the on-site fault rupture hazard outside the Alquist-Priolo Earthquake Fault Zone, GSI (2006) performed a photo-lineament analysis and evaluated the structure, nature, location, occurrence, and recent level of activity of the previously mapped faults on the site based on exposures in excavated exploratory trenches. The results of these analyses are presented below.

Literature Research and Photolineament Analysis

An analysis of aerial photographs was conducted in order to confirm the mapped fault configuration or "lineament" and to identify any possible unmapped faults. Lineaments observed were generally classified as strong, moderate, or weak. A strong lineament is a well-defined feature that can be continuously traced several hundred feet to a few thousand feet. A moderate lineament is less well defined, somewhat discontinuous, and can be traced only a few hundred feet. A weak lineament is discontinuous, poorly defined, and can be traced only a few hundred feet or less. The analysis of aerial photographs concluded that there are six moderately aligned linear valleys traversing the site, which generally coincide with the mapped faults/lineaments. In order to verify the aerial lineament findings, fault-locating trenches were excavated along these features.

Analysis of Fault Trenching

Fault-locating trenches were prepared along the six identified moderate fault lineaments using a trackhoe and a dozer cut. The location of the trenches is shown on Figure 5.6-1. The trenches and dozer cut were examined to obtain evidence of faults or fault related features. None of the

features associated with evidence of active strike slip faults were noted as a result of trenching with the exception of older bedrock faults in three of the trenches (FT-1, FT-5, and FT-6), which were concluded to be caused by the ancient deformation and folding of the Silverado Formation and therefore not associated with active Holocene faulting. Therefore, it was determined that the presence of active faults within the project site is not likely outside of the previously delineated fault setback zone. The setback zone is shown on Figure 5.6-1 and Figure 3-4.

Ground lurching or shallow ground rupture due to shaking could occur during the life of the project, as is the case with most of the Corona area, due to an earthquake on or along the Elsinore or Chino Faults or other faults in the region. Such lurching may result in cracking of paved areas, with limited damage to proposed residential foundations. These impacts would be significant; therefore, mitigation is provided (see Section 5.6.6, *Mitigation Measures* Mitigation Measures GEO-1, GEO-30 through GEO-33, and GEO-36 through GEO-40) to reduce impacts to a less than significant level.

ii. Strong seismic ground shaking?

It is likely that within 50 years, on-site structures would be exposed to an earthquake of at least Richter magnitude 6.0. Horizontal acceleration induced by an earthquake may affect earth structures and/or embankments. Earthquake effects may include lurching and/or localized ground cracking. Such effects may be encountered at most locations throughout southern California. The proposed wood frame structures would be designed and engineered in accordance with California Building Code standards which are intended to minimize potential effects due to a strong seismic event. The modern and structurally engineered design of future residential structures are intended to withstand and to a large degree remain intact during peak ground acceleration of a large magnitude earthquake. Therefore, this is considered a less than significant impact.

iii. Seismic-related ground failure, including liquefaction?

As discussed previously and below, some of the on-site soils (Quaternary Alluvium) are considered liquefiable, which would result in a potentially significant impact. In order to reduce this potential impact, mitigation is provided (see Section 5.6.6, *Mitigation Measures*, Mitigation Measures GEO-1, GEO-30 through GEO-33, and GEO-36 through GEO-40).

iv. Landslides?

Several on-site soil types may be subject to lateral movement, including undocumented fill, Quaternary alluvium, and Quaternary landslide deposits. Landslides were mapped on site in association with some existing natural slopes/cliffs associated with the incised canyon drainage courses on site. These surficial slopes will be completely removed by project grading and as

such should not result in any constraints to site development. Based on the slope stability analyses conducted for the project site, proposed cut and fill slopes constructed using on-site materials should be grossly and surficially stable, provided all recommendations in the geotechnical reports and supplements for soil and cut and fill slope stabilization are implemented during site development (see Section 5.6.6, *Mitigation Measures*, Mitigation Measures GEO-1 and GEO-51). Geotechnical recommendations also include debris impact walls/catchment basins or similar devices that provide appropriate mitigation for potential mudflow and rock fall from areas above the project site to the south. Therefore, potential impacts to the proposed project due to landslides are considered less than significant.

Would the project result in substantial soil erosion or the loss of topsoil?

Given the sloping nature of the project site, short-term erosion may occur when vegetation is removed to prepare for initial mass-grading of the project site. In order to reduce the significance of this potential short-term impact, mitigation is provided (see Section 5.8.6, Mitigation Measure HYD-2).

Similar to the short-term scenario described above, the sloping nature of the site may result in long-term soil erosion or loss of topsoil, which would result in a significant impact. In order to avoid this potential impact, mitigation, which consists of the recommendations contained in the project geotechnical reports, is provided (see Section 5.6.6, *Mitigation Measures*, Mitigation Measures GEO-1 and GEO-59).

Would the project 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 on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

Undocumented Fill

Undocumented fill soils are scattered throughout the site and are generally associated with old roads and past agricultural operations. These materials are considered potentially compressible in their existing state and may settle appreciably under additional fill or foundation and improvement loadings. Therefore, they are considered unsuitable for support of structures in their existing state and will need to be removed and recompacted in areas where improvements are planned. In order to ensure that removal and recompaction occurs in a safe manner, mitigation is provided (see Section 5.6.6, *Mitigation Measures*, Mitigation Measures GEO-1 and GEO-16 through GEO-20).

Quaternary Colluvium and/or Slope Wash Deposits

The site contains a relatively thin layer of colluvium (topsoil/slope wash/talus soils). These materials typically have a medium to high expansion potential. Due to the potentially compressible nature of these surficial soils, they are considered unsuitable for support of structures in their existing state. In order to avoid potentially significant impacts, mitigation is provided (see Section 5.6.6, *Mitigation Measures*, Mitigation Measures GEO-1, GEO-12 through GEO-15, and GEO-27).

Quaternary Alluvium

These deposits are present in the active drainage channels throughout the site. Due to the potentially liquefiable, densifiable, compressible, and/or collapsible nature of these soils, they are considered unsuitable for support of structures in their existing state. In order to avoid potentially significant impacts, mitigation is provided (see Section 5.6.6, *Mitigation Measures*, Mitigation Measures GEO-1, GEO-12 through GEO-15, and GEO-27).

Quaternary Landslide Deposit

These deposits are present throughout the site. These materials are considered potentially compressible and subject to lateral movement. Such deposits will be completely removed by the planned excavation associated with site clearing and grading. Therefore, no potential impacts associated with these soils are anticipated.

Tertiary Silverado Formation

This is the geologic formation that makes up the bedrock at the project site. The upper 1-2 feet of the bedrock is highly weathered. The unweathered bedrock is considered suitable for settlement-sensitive improvements and/or engineered fill in its present condition.

Slope Creep and Lateral Movement

Compacted fill slopes would be expected to undergo some differential vertical heave or settlement in combination with differential lateral movement in the out-of-slope direction, after grading. This post-construction movement occurs in two forms: slope creep, and lateral fill extension (LFE). Slope creep is caused by alternate wetting and drying of the fill soils which results in slow downslope movement. This type of movement is expected to occur throughout the life of the slope, and is anticipated to potentially affect improvements or structures (e.g., separations and/or cracking), placed near the top-of-slope, up to a maximum distance of approximately 15 feet from the top-of-slope, depending on the slope height. This movement generally results in rotation and differential settlement of improvements located within the creep

zone. LFE occurs due to deep wetting from irrigation and rainfall on slopes comprised of expansive materials. Although some movement should be expected, long-term movement from this source may be minimized, but not eliminated, by placing the fill throughout the slope region, wet of the fill's optimum moisture content. Additional mitigation can reduce the potential of lateral deformation and reduce impacts to less than significant (see Section 5.6.6, Mitigation Measures, Mitigation Measures GEO-32 and GEO-56).

Slope Stability

Under normal rainfall conditions, the geotechnical investigation concluded that all proposed slopes should be grossly and surficially stable to heights proposed, provided all recommendations contained in the *Updated Preliminary Geotechnical Investigation* (GSI 2006) and supplements to that report (and summarized as Mitigation Measure GEO-1) are implemented during site preparation. Due to the naturally steep inclination of the existing canyon walls, the out-of-slope bedding in the folder Silverado Formation, and the relatively cohesionless nature of some surficial materials mantling existing slopes, along with their susceptibility to erosion, some slopes would require stabilization. Four representative geologic cross sections were analyzed for slope stability. Recommendations which if incorporated would mitigate all potential impacts resulting from slope instability to less than significant are outline in Mitigation Measures GEO-2 through GEO-11, GEO-23, GEO-26, GEO-46, and GEO-56 through GEO-58 (see Section 5.6.6 below).

Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

Expansive soils can cause adverse effects on residential structures when certain clays swell or shrink during changes in moisture content. The soil materials on site are likely to be expansive. The effects of expansive soils are cumulative, and typically occur over the lifetime of any improvements. On relatively level areas, when the soils are allowed to dry, the desiccation and swelling process tends to cause heaving and distress to flatwork and other improvements. Expansion Index testing was performed in accordance with the guidelines in the Uniform Building Code on a representative sample of site earth materials. The resulting expansive characteristics of soil and bedrock materials encountered throughout the site are expected to range from low to high, which could result in the potential for distress from soil expansion. Therefore, recommendations in the geotechnical report shall be complied with and the following mitigation measures shall be incorporated to reduce impacts to a less than significant level (see Section 5.6.6, *Mitigation Measures*, Mitigation Measure GEO-1, GEO-24, GEO-25, GEO-33, GEO-34, GEO-41 through GEO-45 and GEO-52 through GEO-54).

Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

No septic tanks or alternative wastewater disposal systems are proposed as part of the project. As a result, no impact would result.

5.6.6 Mitigation Measures

The following mitigation measures would reduce identified impacts to geotechnicals resources to less than significant.

GEO-1 Geotechnical recommendations regarding necessary testing, monitoring and inspecting at various stages throughout project design and implementation are made in the following documents, attached as Appendix F of this EIR, and shall be consulted and implemented to the satisfaction of the City of Corona Engineer during project design and construction:

- Updated Preliminary Geotechnical Investigation, and Updated Fault Rupture Hazard Evaluation, Tentative Tract 34760, Corona, Riverside County, California 92882, dated October 9, 2006, by GeoSoils, Inc.
- Memorandum "Slope Stability and Value Engineering, Existing Slope-Non-Grading Option, Tentative Tract No. 34760, City of Corona, Riverside County, California," dated November 20, 2007, by GeoSoils, Inc.
- Memorandum "Tentative Tract Map Review, Tentative Tract No. 34760, Corona, Riverside County, California," dated June 12, 2008, by GeoSoils, Inc.
- Memorandum "Geotechnical Review of Fire Protection/Fuel Modification Plan, Tentative Tract No. 34760, Corona, Riverside County, California," dated November 6, 2008, by GeoSoils, Inc.

The recommended observations and/or testing shall be performed by GSI at each of the following construction stages:

- During grading/recertification.
- During excavation.
- During placement of subdrains, toe drains, or other subdrainage devices, prior to placing fill and/or backfill.

- After excavation of building footings, retaining wall footings, and free standing walls footings, prior to the placement of reinforcing steel or concrete.
- Prior to pouring any slabs or flatwork, after presoaking/presaturation of building pads and other flatwork subgrade, before the placement of concrete, reinforcing steel, capillary break (i.e., sand, pea-gravel, etc.), or vapor retarders (i.e., visqueen, etc.).
- During retaining wall subdrain installation, prior to backfill placement.
- During placement of backfill for area drain, interior plumbing, utility line trenches, and retaining wall backfill.
- During slope construction/repair.
- When any unusual soil conditions are encountered during any construction operations, subsequent to the issuance of this report.
- When any developer or homeowner improvements, such as flatwork, spas, pools, walls, etc., are constructed, prior to construction. GSI should review and approve such plans prior to construction.

A report of geotechnical observation and testing should be provided at the conclusion of each of the above stages, in order to provide concise and clear documentation of site work, and/or to comply with code requirements.

GSI should review project sales documents to homeowners/homeowners associations for geotechnical aspects, including irrigation practices, the conditions outlined above, etc., prior to any sales. At that stage, GSI will provide homeowners maintenance guidelines which should be incorporated into such documents.

The following mitigation measures are contained within the geotechnical reports titled "Geotechnical Review of Fire Protection/Fuel Modification Plan, Tentative Tract No. 34760, Corona, Riverside County, California," "Slope Stability and Value Engineering, Existing Slope-Non-Grading Option, Tentative Tract No. 34760, City of Corona, Riverside County, California," and "*Updated Preliminary Geotechnical Investigation, and Updated Fault Rupture Hazard Evaluation, Tentative Tract 34760, Corona, Riverside County, California 92882."* All mitigation measures shall be implemented to the satisfaction of the City of Corona Engineer during project design, construction and operation.

Earthwork Construction

General

GEO-2 Prior to the start of the grading operation, the site should be cleaned of all vegetation (including roots), trash, construction and other deleterious materials.

Slope Stability

GEO-3 Only the amount of irrigation necessary to sustain plant life should be provided. Over-watering the landscape areas will adversely affect proposed site improvements. Graded slope areas should be planted with drought resistant vegetation. Consideration should be given to the type of vegetation chosen and their potential effect upon surface improvements (i.e., some trees will have an effect on concrete flatwork with their extensive root systems). Trees planted in close proximity to improvements have been known to adversely or negatively impact the long-term performance of the improvement. The location of tree planting should be considered in light of this geotechnical concern. Consideration should be given to providing retaining devices, up-hill and down-hill, for significant plantings that are "benched" into slope faces to mitigate the potential for slope creep. From a geotechnical standpoint leaching is not recommended for establishing landscaping. If the surface soils are processed for the purpose of adding any amendments, they should be recompacted to 90 percent minimum relative compaction.

GEO-4 Water has been shown to weaken the inherent strength of all earth materials over time. Slope stability is significantly reduced by overly wet soil conditions. Positive surface drainage away from slopes should be maintained and only the amount of irrigation necessary to sustain plant life should be provided for planted slopes. Over-watering should be avoided as it adversely affects site improvements, and causes perched groundwater conditions. Graded slopes constructed utilizing on-site materials would be erosive. Eroded debris may be minimized and surficial slope stability enhanced by establishing and maintaining a suitable vegetation cover soon after construction. Compaction to the face of fill slopes would tend to minimize short-term erosion until vegetation is established. Plants selected for landscaping should be light weight, deep rooted types that require little water and are capable of surviving the prevailing climate. Jute-type matting or other fibrous covers may aid in allowing the establishment of a sparse plant cover. Utilizing plants other than those recommended above will increase the potential for perched water, staining, mold, etc., to develop. A rodent control

program to prevent burrowing should be implemented. Irrigation of natural (ungraded) slope areas is generally not recommended. These recommendations regarding plant type, irrigation practices, and rodent control should be provided to each homeowner. Over-steepening of slopes should be avoided during building construction activities and landscaping.

GEO-5 Based on our analyses, an adequate factor of safety (FS>1.5) for the natural slope can be achieved if the groundwater level is kept below an elevation of ±1445 mean sea level (MSL). Therefore, to facilitate proper slope drainage, we recommend the placement of either hydro-auger drains to be drilled into the slope to an appropriate depth, or construction of a french drain system along the existing access trails located at the bottom and middle of the slope.

GEO-6 The proposed pad grades of the lots below the subject slope be raised ±5 feet, to approximate elevations of 1398 and 1410 MSL, respectively, in order to accommodate the potential total volume of landslide material on the slope. In addition, we recommend the construction of a debris wall along the southeast property boundaries for the upper most lots on the street cul-de-sac.

GEO-7 Considering the noncohesive nature of some of the on-site material, some caving and sloughing may be expected to be a factor in subsurface excavations and trenching. This would be primarily associated with trenches excavated for utilities and foundation systems. Additional shoring or laying back excavations may be necessary to mitigate caving or sloughing. All trench excavations should conform to OSHA and local safety ordinances.

GEO-8 On-site materials may be reused as compacted fill provided that major concentrations of vegetation and debris are removed prior to fill placement.

GEO-9 In fill areas where cavities or loose soils remain after surficial processing, the loose areas should be cleaned out, observed by the soil engineer, processed, and replaced with fill which has been moisture conditioned to at least optimum moisture content. The soils should be compacted to at least 90 percent of the laboratory standard.

Demolition/Grubbing

GEO-10 Any existing surficial/subsurface structures, major vegetation, and any miscellaneous debris should be removed from the areas of proposed grading.

GEO-11 Cavities or loose soils (including all previous exploratory test pits) remaining after demolition and site clearance should be cleaned out, inspected by the soils engineer, processed, and replaced with fill that has been moisture conditioned to at least optimum moisture content and compacted to at least 90 percent of the laboratory standard (ASTM D-1557).

Treatment of Existing Ground

GEO-12 Removal of all undocumented artificial fill, colluvium, alluvium, surficial landslide deposits, and generally near surface weathered Tertiary Silverado Formation materials will be necessary prior to fill placement, in areas proposed for development. GSI believe that most of the alluvium, and all of the colluvium and undocumented fill will be removed during remedial grading. However, for preliminary planning purposes, removal depths are estimated to be on the order of ±1 to ±12 feet, with locally deeper removals, in areas proposed for development. Generally, removals should extend to non-porous, competent materials (dry density of 105 pcf and/or 85 percent saturation [which has been previously demonstrated as acceptable mitigation]), be moisture conditioned, and recompacted if not removed by proposed excavation within areas proposed for settlement-sensitive improvements.

GEO-13 Where planned cuts are equal to or greater than the recommended removal depth, the area should be cut to grade, subgrade observed and tested by the geotechnical consultant, then the upper 12 inches below finish grade should be scarified, brought to at least optimum moisture content, and recompacted to a minimum relative compaction of 90 percent of the laboratory standard.

GEO-14 Where the planned cuts are less than the recommended removal depth, the additional removals to attain the recommended removal should be accomplished. The exposed removal surface should be scarified to a depth of 12 inches, moisture conditioned (if necessary), and then compacted prior to fill placement to finish pad grade.

GEO-15 Removed colluvium, alluvium, landslide deposits, and Tertiary Silverado Formation materials, may be reused as compacted fill provided that major concentrations of organic material (roots and tree remains), and miscellaneous trash and debris are removed prior to fill placement. Rock or earth particles of greater than 12 inches may be cleared from these soils. Due to the expansive nature of some of the Tertiary Silverado Formation materials, fill soils derived

from this unit should not be placed closer than 7 feet from finish grade, on a preliminary basis.

Fill Placement

GEO-16 Fill materials should be brought to at least optimum moisture, placed in thin 6- to 8-inch lifts and mechanically compacted to obtain a minimum relative compaction of 90 percent of the laboratory standard.

GEO-17 Fill materials should be cleansed of major vegetation and debris prior to placement.

GEO-18 Any oversized rock materials greater than 8 inches in diameter should be stockpiled and placed under the observation of the soils engineer. As per UBC (ICBO, 1997) requirements, no rock materials greater than 12 inches in diameter should be placed within 10 feet of finish grade, unless prior approval has been granted by the governing agency and geotechnical engineer.

GEO-19 Basal fill materials below a fill depth of 50 feet should be compacted to 95 percent of the laboratory standard.

GEO-20 Note that some of the claystone layers in the Silverado Formation have high plasticity and could result in high expansion (E.I. >90) if used as fill. Highly expansive soils should be placed deeper than 7 feet from finish grade. Non-plastic, very low expansive granular soils, such as poorly graded sands, should be blended with silts, clays, and gravels, prior to use in the outer portions of slopes.

Subdrains

GEO-21 Subdrains are recommended within drainage/canyon areas where proposed fills exceed 10 feet in height, as well as in some abutting areas where the as-built fill thickness exceeds 10 feet. Additionally, subdrainage systems for the control of localized groundwater seepage should be anticipated following grading due to excess irrigation or precipitation. Subdrains in stabilization fills are also recommended.

GEO-22 Subdrains should be constructed of a minimum 6-inch perforated pipe (SDR 35, or equivalent, with perforations oriented downward) encased in clean, crushed gravel, and wrapped in filter fabric (Mirafi 140 or equivalent). Subdrains greater than 500 feet in linear feet should be constructed per the recommendations stated above. However, the diameter of the perforated pipe should be increased to 8

inches. Subdrains should be constructed to flow at a 1 percent gradient to a suitable outlet, in accordance with the recommendations of the design civil engineer. For subdrain details in keyways/buttress designs, refer to Appendix G.

Slope Considerations and Slope Design

GEO-23 All slopes should be designed and constructed in accordance with the minimum requirements of the UBC (ICBO, 1997) and/or the County and the following:

1. Fill or stabilized fill over cut slopes should be designed and constructed at a 2:1 (h:v) gradient, or flatter, and should not exceed about 135 feet in height, otherwise, further evaluation will be necessary. Fill slopes should be properly built and compacted to a minimum relative compaction of 90 percent throughout, including the slope surfaces. Fill slopes may be properly overbuilt by ±3 to ±5 feet and trimmed/cut back to proposed finish grades. Guidelines for slope construction are presented in Appendix G.

2. Cut slopes with favorable geology should be designed at gradients of 2:1 (h:v), or flatter, and should not exceed about 30 feet in height at a 2:1 inclination. Otherwise, further evaluation will be necessary. Stabilization of most cut slopes is anticipated, as in the southern and middle portions of the tentative tract. Locally adverse geologic conditions (i.e., daylighted joints/fractures, severely weathered fan deposits, or sandy lenses) may be encountered which may require remedial grading, stabilization, or laying back of the slope to an angle flatter than the adverse geologic condition.

3. Daylight cut lots will have some potentially compressible/erodible colluvium/topsoil exposed at the cut/natural interface adjoining slopes. This area will be more subject to erosion, and down-slope movement. Accordingly, improvements and/or foot traffic should not be allowed in this area, and proper drainage is imperative to the stability of this zone. This potential will be mitigated by the recommended setbacks, from a geotechnical viewpoint. These conditions will need to be disclosed to all homeowners and any homeowners association as well as all interested/affected parties. The actual location of this zone should be evaluated during grading.

4. Local areas of highly to severely weathered Tertiary Silverado Formation materials may be present. Should these materials be exposed in cut slopes, the potential for long term maintenance or possible slope failure exists. Evaluation of cut slopes during grading would be necessary in order to identify any areas of severely weathered materials or cohesionless sands. Should any of these materials

be exposed during construction, the soils engineer/geologist, would assess the magnitude and extent of the materials and their potential affect on long-term maintenance or possible slope failures. Recommendations would then be made at the time of the field inspection.

5. Landslides have been mapped on site. Surficial localized earth failures (i.e., slumps, slopewash, etc.) were noted on some existing natural slopes/cliffs associated with the incised canyon drainage courses on site. In general, these surficial slumps will be completely removed by the proposed grading, and as such, should not pose a major constraint to development, providing our recommendations are properly implemented. This discussion does not include the existing slopes boundary at the residence that may remain as depicted in Cross-Section D-D'.

The potential for mass wasting, mudflow debris and rock fall, should be properly mitigated in site locations as indicated on plans (Plate 1). Additional walls or mitigation may be recommended elsewhere. It is recommended that debris impact walls or other comparable mitigative devices (GSI, 1995a) be incorporated into the project design, in accordance with the recommendations of the design civil engineer. Should other mass wasting features be encountered in natural or cut slopes above the proposed residential development, and not be removed by the proposed grading, then appropriate mitigation should be considered by the design engineer, where these features intercept the proposed development and/or cut slopes.

6. Loose rock debris and fines remaining on the face of the cut slopes should be removed during grading. This can be accomplished by high pressure water washing or by hand scaling, as warranted.

7. Where loose materials are exposed on the cut slopes, the project's engineering geologist would require that the slope be cleaned as described above prior to making their final inspection. Final approval of the cut slope can only be made subsequent to the slope being fully cut and cleaned.

Transition and Overexcavation Areas

GEO-24 To reduce the potential for differential settlements between cut and fill materials, and/or materials of differing expansion potentials, the entire cut portion of cut/fill transitions should be overexcavated to a minimum depth of 3 feet below finish grade, or to a maximum ratio of fill thickness of 3:1 (maximum to minimum), and replaced with compacted fill. A maximum/minimum fill thickness ratio should be

constructed such that 25 feet maximum fill differential is maintained within a lot, in order to keep differential settlements within tolerance. Overexcavation may also be necessary in deep cuts for heave mitigation. In these deep cut areas (more than 50 feet of Silverado Formation is removed), a 10-foot overexcavation and replacement with compacted fill is recommended.

GEO-25 Based on our rock hardness evaluation, trenching for foundations and underground utility improvements will likely encounter difficulty and/or refusal at depths generally greater than ±25 feet below the existing grade. Therefore, overexcavation, during grading, of cut lots to provide a 3-foot compacted fill blanket and street right-of-ways to 1 foot below the lowest utility invert elevation in areas where finish grade/finish surface is generally greater than ±25 feet below the existing grade may be considered to better facilitate trenching. A minimum of 2 feet of fill is recommended below all shallow foundation elements. Drilled pier supported improvements may penetrate cut fill transitions with adequate design/capacity.

Additionally, due to the high expansion potential of portions of the Tertiary Silverado Formation, lots where these sediments are observed to be less than 7 feet below finish grade (after removals), should be overexcavated to provide a 7-foot low or medium expansive compacted fill cap. The purpose of overexcavating this highly expansive formation is to minimize its shrinking/swelling effects on the proposed foundations.

Temporary Construction Slopes

GEO-26 "Slot cuts" will need to be excavated for Cross-Section A-A' buttress backcut as previously discussed. The possible instability of temporary cut slopes during stabilization and shear key excavation, or canyon clean-out, cannot be precluded, and should be emphasized to the grading contractor. The temporary stability depends on many factors, including the slope angle, structural features in the bedrock, shearing strength along planes of weakness, height of the slope, groundwater conditions, and the length of time the cut remains unsupported and exposed to equipment vibrations and rainfall. The possibility of temporary cut slopes failing during canyon clean-outs, stabilization key excavations, etc., may be reduced by:

1. Minimizing the operations extent, in both duration and physical dimensions.

2. Limiting the length of a cut exposed to destabilizing forces at any one time.

3. Cutting no steeper than those backcut inclinations specified by the geotechnical consultant.

4. Avoiding operation of heavy equipment or stockpiling materials on or near the top of the backcut or trench. All OSHA requirements with regard to excavation safety should be implemented by the grading contractor and subcontractors, especially concrete pump trucks.

5. Provide temporary drainage and diversion retarders for the grading work to reduce the potential for ponding and erosion.

Shrinkage and Bulking Factors

GEO-27 The volume change of excavated on-site materials upon recompaction is expected to vary with materials, density, insitu moisture content, location, and compaction effort. The in-place and compacted densities of soil materials vary and accurate overall determination of shrinkage and bulking cannot be made. Therefore, we recommend site grading include, if possible, a balance area or ability to adjust grades, slightly to accommodate some variation. Based on our experience with similar materials, the following values are provided as guidelines:

Earthwork Shrinkage and Bulking Estimates	
Geologic Unit	*Estimated Shrinkage/Bulking*
Colluvium/Slopewash/Topsoil/ Younger Alluvium/Landslide Deposits	10 to 25 percent shrinkage
Silverado Formation	-5 percent shrinkage to 15 percent bulking

These values should be considered estimates only and will be dependent upon the average relative compaction obtained during grading, which id determined by the grading contractor. If possible, we suggest that provisions be made to allow for final adjustment of grades to balance the earthwork operations. Contractors should review available insitu densities, relative compaction curves, and evaluate shrinkage and bulking based on local experience. If deemed necessary, contractors may wish to provide independent boring programs to evaluate shrinkage and bulking. Subsidence in bedrock areas is estimated to be nil.

Settlement

GEO-28 Dynamic densification may increase the post-construction settlement effects and was estimated as 0.25 percent within artificial fills. The differential settlement of 0.75 to 1.5 inches over 40 lateral feet on site is possible given fill thickness of up to approximately 100 feet. GSI should re-evaluate these estimates of dynamic

densification at the 40-scale plan review. The estimated of dynamic densification do not include the effects of lateral slope deformation on foundations. Mitigation of grading settlements may include a combination of:

1. Decreasing the slope of the cut/fill transition under building areas;

2. Using either post-tensioned slabs, or mat foundations; and/or,

3. Monitoring of engineered fill settlements.

Preliminary Settlement Evaluation

GEO-29 Any settlement-sensitive structures should be evaluated and designed for the combination of site-specific soil parameters and the estimated settlements and angular distortion values provided below. The 1997 UBC setbacks should be adhered to when planning improvements on the deeper fill lots. Time estimates of settlements as well as settlement magnitudes should be revisited during grading when fill materials are being placed. Where not already specified in fill (fill slopes) the use of drains within the upper 50 feet of fills may be considered to reduce wait times for settlements.

Depth of Fill (feet)	Ultimate Differential Settlement (in)	Ultimate Angular Distortion (Build at Completion of Grading)	Suggested building Wait Period Until 50% Primary Consolidation (months)	Estimated Angular Distortion after Waiting Period**
0-25	<1	1/480	0 to 3	1/480
25-50	1½	1/400*	1 to 4	1/480
50-110	3	1/275*	3 to 15	1/480

* Non-buildable immediately after grading.
** After the waiting period differential settlement is approximately 1/480, or 1 inch in 40 feet. Does not include the effects of seismic deformation or lateral slope deformation.

Preliminary Foundation Design

General

GEO-30 The proposed foundation systems should be designed and constructed in accordance with the guidelines contained in the UBC (ICBO, 1997) and the differential settlement and angular distortion discussed previously and herein. Conventional foundations may be utilized for soils with an E.I. of less than 90 (i.e., very low to medium classification) and fill depths under 25 feet in thickness.

Where expansive soils are exposed at finish grade and/or compacted fills in excess of 25 feet in thickness exist, post-tensioned slabs will likely be required.

Conventional Foundation Design

GEO-31 Mitigation of foundation design includes:

1. Conventional spread and continuous footings may be used to support the proposed residential structures provided they are founded entirely in properly compacted fill or other suitable bearing material (excluding the highly expansive Tertiary Silverado Formation).

2. Analyses indicate that an allowable bearing value of 1,500 pounds per square foot (psf) may be used for design of footings which maintain a minimum width of 12 inches (continuous) and 24 inches square (isolated), and a minimum depth of at least 12 inches into the properly compacted fill or competent fan deposits, or the Tertiary Silverado Formation bedrock unit. The bearing value may be increased by one-third for seismic or other temporary loads. This value may be increased by 200 psf for each additional 12 inches in depth, to a maximum of 2,500 psf.

3. For lateral sliding resistance, a 0.35 coefficient of friction may be utilized for a concrete to soil contact when multiplied by the dead load.

4. Passive earth pressure may be computed as an equivalent fluid having a density of 250 pcf with a maximum earth pressure of 2,500 psf.

5. When combining passive pressure and frictional resistance, the passive pressure component should be reduced by one-third.

6. All footings should maintain a minimum 7-foot horizontal distance between the base of the footing and any adjacent descending slope, and minimally comply with the guidelines depicted on Figure No. 18-I-1 of the UBC (ICBO, 1997).

Lateral Pressure

GEO-32 Mitigation of lateral pressure includes:

1. For lateral sliding resistance, a 0.35 coefficient of friction may be utilized for a concrete to soil contact when multiplied by the dead load.

2. Passive earth pressure may be computed as an equivalent fluid having a density of 225 pcf with a maximum earth pressure of 2,500 psf.

3. When combining passive pressure and frictional resistance, the passive pressure component should be reduced by one-third.

Foundation Construction

GEO-33 The following preliminary conventional foundation construction recommendations are for soils in the top 7 feet of finish grade, which will have a very low to medium expansion potential, for planning and design considerations.

1. Conventional continuous footings should be founded at a minimum depth of 12 inches below the lowest adjacent ground surface for one-story floor loads and 18 inches below the lowest adjacent ground surface for two-story floor loads. Interior footings may be founded at a depth of 12 inches below the lowest adjacent ground surface.

Footings for one-story floor loads should have a minimum width of 12 inches, and footings for two-story floor loads should have a minimum width of 15 inches. All footings should have one No. 4 reinforcing bar placed at the top and one No. 4 reinforcing bar placed at the bottom of the footing. Isolated interior or exterior footings should be founded at a minimum depth of 24 inches below the lowest adjacent ground surface.

2. A grade beam, reinforced as above, and at least 12 inches square, should be provided across the garage entrances. The base of the reinforced grade beam should be at the same elevation as the adjoining footings.

3. Concrete slabs in residential and garage areas should be a minimum of 5 inches thick, and underlain with a vapor retarder consisting of a minimum of 10-mil, polyvinyl-chloride membrane with all laps sealed. This membrane should be covered, above and below with a minimum of 2 inches of sand (total of 4 inches) to aid in uniform curing of the concrete and to prevent puncture of the vapor retarder.

4. Concrete slabs, including garage slabs, should be reinforced with No. 3 reinforcement bars placed on 18-inch centers, in two horizontally perpendicular directions (i.e., long axis and short axis). All slab reinforcement should be supported to ensure proper mid-slab height positioning during placement of the concrete. "Hooking" of reinforcement is not an acceptable method of positioning.

5. Garage slabs should be poured separately from the residence footings and be quartered with expansion joints or saw cuts. A positive separation from the footings should be maintained with expansion joint material to permit relative movement.

6. The residential and garage slabs should have a minimum thickness of 5 inches, and the slab subgrade should be free of loose and uncompacted material prior to placing concrete.

7. Presaturation is not necessary for these soil conditions; however, the moisture content of the subgrade soils should be equal to or greater than optimum moisture to a depth of 12 inches below the adjacent ground grade in the slab areas, and verified by this office within 72 hours of the vapor retarder placement.

8. Soils generated from footing excavations to be used on site should be compacted to a minimum relative compaction 90 percent of the laboratory standard, whether it is to be placed inside the foundation perimeter or in the yard/right-of-way areas. This material must not alter positive drainage patterns that direct drainage away from the structural areas and toward the street.

9. Foundations near the top of slope should be deepened to conform to the latest edition of the UBC (ICBO, 1997) and provide a minimum 7-foot horizontal distance from the slope face. Rigid block wall designs located along the top of slope should be reviewed by a soils engineer.

10. Based on post-construction settlement analyses, areas where compacted fill materials in excess of 25 feet exist, an engineered post-tension foundation system will likely be required.

11. Post-tension foundations will likely be required if medium to highly expansive soils are exposed at finish grade, minimum to maximum fill thickness variation does not comply with recommendations herein, or if fills exceed about 25 feet in thickness.

12. As an alternative to conventional foundation systems, an engineered post-tension foundation system may be used. Recommendations for post-tensioned slab design are provided in following sections.

Preliminary Post-Tensioned Slab Design

GEO-34 From a soil expansion/shrinkage standpoint, a fairly common contributing factor to distress of structures using post-tensioned slabs is a significant fluctuation in

the moisture content of soils underlying the perimeter of the slab, compared to the center, causing a “dishing” or “arching” of the slabs. To mitigate this possible phenomenon, a combination of soil presaturation and construction of a perimeter “cut-off” wall grade beam should be employed.

Perimeter foundations should be a minimum of 12, 18, and 24 inches deep for very low to low, medium, and highly expansive soils, respectively. Slab thickness should be a minimum of 5 inches and may need to be creased by the slab design based on steel reinforcement/cable requirements. The walls should be a minimum of 12 inches in thickness. In moisture sensitive slab areas, a vapor retarder should be utilized and be of sufficient thickness to provide a durable separation of foundation from soils (10-mils thick). The vapor retarder should be sealed to provide a continuous water-proof retarder under the entire slab. The vapor retarder should be sandwiched by two 2-inch thick layers of sand (SE>30). Specific soil presaturation is not required for very low to low expansive soils; however, the moisture content of the subgrade soils should be at or above the soils' optimum moisture content to a depth of 12 inches below grade. On a preliminary basis, specific soil presaturation is required for medium to highly expansive soils. For medium expansive soils, the slab subgrade moisture content should be at or slightly above 120 percent of the soil’s optimum moisture content to a depth of 18 inches below grade. For highly expansive soils, the slab subgrade moisture content should be at or slightly above 130 percent of the soil’s optimum moisture content to a depth of 24 inches below grade.

Post-tensioned slabs should be designed. Based on review of laboratory data for the on-site materials, the average soil modulus subgrade reaction K, to be used for design, is 100 pounds per cubic inch (pci). This is equivalent to a surface bearing value of 1,000 psf.

Post-tensioned slabs should be designed using sound engineering practice and be in accordance with the recommendations of the Post-Tensioning Institute Method, as well as local and/or national code requirements. Soil related parameters for post-tensioned slab design are presented below:

Allowable surface bearing value	1,000 psf
Modulus of subgrade reaction	75 psi per inch
Coefficient of friction	0.35
Passive pressure	250 pcf

Post-Tensioning Institute Method: Post-tensioned slabs should have sufficient stiffness to resist excessive bending due to non-uniform swell and shrinkage of subgrade soils. The differential movement can occur at the corner, edge, or center of slab. The potential for differential uplift can be evaluated using the 1997 UBC Section 1816, based on design specifications of the Post-Tensioning Institute. The following table presents suggested minimum coefficients to be used in the Post-Tensioning Institute design method.

Thornthwaite Moisture Index	-20 inches/year
Correction Factor for Irrigation	20 inches/year
Depth to Constant Soil Suction	7 feet
Constant soil Suction (pf)	3.6
Modulus of Subgrade Reaction (pci)	75
Moisture Velocity	0.7 inches/month

Deepened footings/edges around the slab perimeter must be used to minimize non-uniform surface moisture migration (from an outside source) beneath the slab. An edge depth of 12 inches should be considered a minimum. The bottom of the deepened footing/edge should be designed to resist tension, using cable or reinforcement ("passive" steel reinforcement bars) per the structural engineer.

Slope Setback Considerations for Footings

GEO-35 Footings should maintain a horizontal distance, X, between any adjacent descending slope face and the bottom outer edge of the footing. For top of slope, the horizontal distance, X, may be calculated by using X = h/3, where h is the height of the slope. X should not be less than 7 feet, nor need not be greater than 40 feet. X may be maintained by deepening the footings. For bottom (toes) of slopes, setbacks should be X/2, but need not exceed 15 feet (see UBC [ICBO, 1997], Figure 18-I-1).

Soil Moisture Considerations

It should be noted that the foundation construction recommendations provided in GSI (1995a) were not intended to preclude the transmission of water or vapor through the slab, as indicated in current code. Foundation systems and slabs shall not allow water or water vapor to enter into the structure so as to cause damage to another building component, or to limit the installation of the type of flooring materials typically used for the particular application (State of California, 2006). Therefore, the following should be considered by the structural engineer/foundation/slab designer to mitigate the transmission of water or water vapor through the slab.

GEO-36 Concrete slabs should be a minimum of 5 inches thick for very low expansive soil conditions, and be minimally reinforced as previously discussed. All slab reinforcement should be supported to provide proper mid-slab height positioning during placement of the concrete. "Hooking" of reinforcement is not an acceptable method of positioning. Increase of concrete slab thickness would tend to reduce moisture vapor transmission though slabs.

GEO-37 Concrete slab underlayment should consist of a 10-mil to 15-mil vapor retarder, or equivalent, with all laps sealed per the UBC/CBC (ICBO, 1997 and 2001) and the manufacturer's recommendation. The vapor retarder should comply with the ASTM E-1745 Class A or B criteria and be installed per the recommendations of the manufacturer, including all penetrations (i.e., pipe, ducting, rebar, etc.). The manufacturer shall provide instructions for lap sealing, including minimum width of lap, method of sealing, and either supply or specify suitable products for lap sealing (ASTM E-1745). In order to break the capillary rise of soil moisture, the vapor retarder should be underlain by 2 inches of fine or coarse, washed, clean gravel (80 to 100 percent greater than #4 sieve) and be overlain by at least 2 inches of clean, washed sand (SE >30) to aid in concrete curing.

GEO-38 Concrete should have a maximum water/cement ratio of 0.50.

GEO-39 Where slab concrete compressive strength is increased, add mixtures used, and water/cement ratios are adjusted herein, the structural consultant should also make changes to the concrete in the grade beams and footings in kind so that the concrete used in the foundation and slabs are designed and/or treated for more uniform moisture protection.

GEO-40 The use of a penetrating slab surface sealer may be considered in rooms where permeable floor tile or wood will be used. In all planned floorings, the waterproofing specialist should review the manufacturer's recommendations and adjust installation as needed. Homeowner(s) should be advised which areas are suitable for tile or wood floors.

Wall Design Parameters Considering Expansive Soils

Conventional Retaining Walls

GEO-41 The design parameters provided below assume that either very low expansive soils (Class 2 permeable filter material or Class 3 aggregate base) or native materials are used to backfill any retaining walls. The type of backfill (i.e., select or native), should be specified by the wall designer, and clearly shown on the

plans. Building walls, below grade, should be water-proofed. Footings should be embedded a minimum of 18 inches below adjacent grade (excluding landscape layer, 6 inches) and should be 24 inches in width. There should be no increase in bearing for footing width. Preliminary recommendations for specialty walls (i.e., crib, earthstone, geogrid, etc.) are provided below.

Restrained Walls

GEO-42 Any retaining walls that will be restrained prior to placing and compacting backfill material or that have re-entrant or male corners, should be designed for an at-rest equivalent fluid pressure (EFP) of 65 pcf, plus any applicable surcharge loading. For areas of male or re-entrant corners, the restrained wall design should extend a minimum distance of twice the height of the wall (2H) laterally from the corner.

Cantilevered Walls

GEO-43 The recommendations presented below are for cantilevered retaining walls up to 10 feet high. Design parameters for walls less than 3 feet in height may be superseded by City and/or County standard design. Active earth pressure (Equivalent Fluid Pressure or Weight, EFW) may be used for retaining wall design, provided the top of the wall is not restrained from minor deflections. An equivalent fluid pressure approach may be used to compute the horizontal pressure against the wall. Appropriate fluid unit weights are given below for specific slope gradients of the retained material. These do not include other superimposed loading conditions due to traffic, structures, seismic events or adverse geologic conditions. These EFWs do not include the effects of expansive soils. When wall configurations are finalized, the appropriate loading conditions for superimposed loads can be provided upon request. Considering the level of PHSA (10 percent probability of exceedance in 50 years), GSI recommends that, for walls over 6 feet in height and in close proximity to residences or main access roads, the designer consider using a seismic increment of 15H be used for a surcharge, to model seismic loadings. The pressure should be added as a uniform pressure where H is the height of the wall from footing bottom (excluding keys) to top of backfill.

Retaining Wall Backfill and Drainage

GEO-44 Positive drainage must be provided behind all retaining walls in the form of gravel wrapped in geofabric and outlets. A backdrain system is considered necessary for retaining walls that are 2 feet or greater in height. Backdrains should

consist of a 4-inch diameter perforated PVC or ABS pipe encased in either Class 2 permeable filter material or 0.5 inch to 0.75 inch gravel wrapped in approved filter fabric (Mirafi 140 or equivalent). For low expansive backfill, the filter material should extend a minimum of 1 horizontal foot behind the base of the walls and upward at least 1 foot. For native backfill that has up to medium expansion potential, continuous Class 2 permeable drain materials should be used behind the wall. This material should be continuous (i.e., full height) behind the wall, and it should be constructed in accordance with the enclosed Detail 1 (Typical Retaining Wall Backfill and Drainage Detail). For limited access and confined areas, (panel) drainage behind the wall may be constructed in accordance with Detail 2 (Retaining Wall Backfill and Subdrain Detail Geotextile Drain). Materials with an E.I. potential of greater than 90 should not be used as backfill for retaining walls. For more onerous expansive situations, backfill and drainage behind the retaining wall should conform with Detail 3 (Retaining Wall and Subdrain Detail Clean Sand Backfill).

Outlets should consist of a 4-inch diameter solid PVC or ABS pipe spaced no greater than ±100 feet apart, with a minimum of two outlets, one on each end. The use of weep holes in walls higher than 2 feet should not be considered. The surface of the backfill should be sealed by pavement or the top 18 inches compacted with native soil (E.I. □90). Proper surface drainage should also be provided. For additional mitigation, consideration should be given to applying a water-proof membrane to the back of all retaining structures. The use of a waterstop should be considered for all concrete and masonry joints.

Segmental Retaining Walls

GEO-45 The geotechnical design parameters provided below are for the proposed ±17-foot high segmental retaining wall to be located along approximately 870 feet of the eastern site boundary. These design parameters assume that either non-expansive soils (typically Class 2 permeable filter material or Class 3 aggregate base) or native on-site materials (up to and including an E.I. of 30, P.I. <10) are used to backfill any segmental retaining walls. The type of backfill (i.e., select or native), should be specified by the wall designer, and clearly shown on the plans. Building walls, below grade, should be water-proofed or damp-proofed, depending on the degree of moisture protection desired.

Foundation

GEO-46 The following mitigation measures are intended to mitigate any potential impacts resulting from slope design:

1. Prior to excavation for the wall base, the alignment and grade for the wall should be established in the field by the project civil engineer or project surveyor.

2. The contractor should have a qualified grade checker on site to continually verify the gradient (or batter) and alignment of the base excavation and wall during construction.

3. The project surveyor should spot-check wall gradient (face of wall slope) and alignment at least every 10 feet vertically and 50 feet horizontally.

4. When locating the base of the wall, structural setbacks established by the governing agency, and/or geotechnical engineer should be followed.

5. Walls should be founded on compacted fill, bedrock, or other suitable materials, as described in our referenced reports.

6. The recommended equivalent fluid pressure for design of the segmented walls should be 45 pcf for level backfill and 65 pcf for 2:1 backfill, assuming a select very low to low expansive granular backfill material (E.I. <30, P.I. <10, φ = 28 degrees, c = 200). These equivalent fluid pressures are based solely on static soil conditions and do not include seismic, footing surcharge, earthwork surcharge, or traffic loading which will need to be included, as necessary.

7. Utilize a seismic increment of 10 to 15H when evaluating internal gridwall stability in accordance with the Retaining Wall section of this report. For global stability of gridwalls, a seismic factor (pseudo-static) of 0.15 *i*, should be used.

8. A bearing value of 1,500 psf may be utilized for a 1 foot deep footing. A friction coefficient of 0.35 may be used for a concrete to soil contact. A friction angle of 25 degrees and a soil unit weight of 115 to 130 pcf may be utilized for the compacted fill, dense competent Silverado Formation, as verified by observation and/or testing. In addition, a cohesion value of 0 psf, for reinforced fill, 100 psf for retained fill, and 100 psf for foundation fill may be utilized.

9. Prior to placement of the segmented members, the base excavation should be observed by representatives of this firm.

10. A concrete/crushed stone leveling pad may be used to provide a uniform surface for the wall base. It is recommended that a concrete slab base be provided.

11. If it is necessary to locally deepen the wall base to obtain suitable bearing materials, the contractor should consult the project design engineer to determine if the wall location or design of the wall is affected.

12. Segmented wall height at the terminal ends of the wall should not exceed 4 feet unless lateral support is provided.

Backfill

GEO-47 1. Backfill within, behind, and in front of the segmented walls, which do not utilize geogrid fabric, should be compacted to a minimum of 90 percent relative compaction unless otherwise specified by the manufacturer. Backfill behind segmented walls, which utilize geogrid fabric, should be compacted to a minimum of 95 percent relative compaction. Any backfill other than the "unit core fill (0.75 inch crushed rock or stone)" should be placed in controlled lifts not to exceed 6 inches in thickness, and moisture-conditioned as necessary to achieve at least optimum moisture content. Backfill within and immediately behind the walls should also be as indicated on the (precise and rough) grading plans.

2. Backfill materials should be free draining, and free from organic materials, with a maximum of 15 percent fines passing the No. 200 sieve. Lifts should be placed horizontally and compaction equipment should not be allowed to damage the geogrid fabric, if utilized.

3. If gravel or other select granular material is used as backfill within or behind the segmented wall, it should be capped with a minimum 18 inches compacted fill composed of relatively impervious material.

4. During construction, the unfilled section of wall should not be stacked more than 2 feet above the fill behind the wall. If gravel is used to fill the wall, the wall may be stacked 3 feet above adjacent grades. The maximum gravel size should be less than 0.75 inches.

5. Adequate space should be provided both behind and in front of the wall so that sufficient compaction can be obtained for all backfill. The slope of the geogrid walls and beaching (in cross section and alignment) should be in accordance with the manufacturers recommendations and as approved by the geotechnical consultant.

Wall Backdrains

GEO-48 A drainage system should be installed behind segmented walls in excess of 3 feet. The design of the system will depend on specific conditions. For most cases, a schedule 40 perforated collector pipe, wrapped in Mirafi 140 or equivalent, may be placed at the heel of the wall with a full height gravel drain, separated from the native backfill materials by Mirafi 140 or equivalent. In areas where native bedrock and/or terrace deposits are retained, a secondary backdrain system, as indicated previously, should also be placed at the rear of the backcut. If necessary, outlets may pass below the base of the wall at a minimum 2 percent gradient. Outlets should be tight-lined to an approved outlet area. The trenches for the outlets may be filled with either compacted material or gravel. If gravel is used, a concrete cut-off wall should be provided at the soil/gravel interface. Seepage should be anticipated below all segmented walls, and this should be disclosed to all homeowners and any homeowners association, and all interested/affected parties.

Materials and Wall Construction

GEO-49 Only sound segmented wall members that meet all required specifications should be used for construction of walls. Members should be free of honeycombing, cracks, broken lugs, or slumped bearing surfaces. All geogrid fabric utilized should comply with the required technical specifications. Geogrid fabric should be placed horizontally to the required length/width behind the wall.

Footing Setbacks for Segmented Walls

GEO-50 It is recommended that settlement-sensitive structures be built behind a 1:1 (h:v) projection above the heel of the foundation for the segmented wall. In addition, all footings should be setback behind a 1:1 projection from the heel of the geogrid reinforced excavation. If structures are located between the two 1:1 projections, the segmented wall should be designed to accommodate the additional surcharge loading from the structure, and deepened building footings may be required depending on the height of the segmented wall. All appurtenant structures (i.e., A/C pads, screen walls, light standards, pools, spas, etc.) should be placed outside a 1:1 (h:v) projection upward from the heel of the wall. Alternately, footings may be constructed such that bearing surfaces are below the 1:1 projection. Appurtenant structures, including pools, utilities, and landscaping, should not disrupt the geogrid behind the walls. All structures proposed within the setback zone will be subject to both horizontal and vertical deflections. All construction

proposed within the setback area should be reviewed by the design civil engineer and GSI.

Debris Impact Walls

Containment of Mudflow Debris and Rock Fall

GEO-51 A potential for mudflow and possible rock fall exists for lots located below significant proposed cut slopes or below re-entrant canyons. Consequently, these lots should be protected with reinforced concrete-deflector walls designed to intercept and contain mudflow debris and rock fall. The deflector walls should be constructed along the tops of uphill-graded slopes bordering the lots located below these cut slopes. Locations of walls will vary depending on as-graded conditions upon completion of rough grading. GSI has depicted the proposed locations on Plate 1. Design parameters for walls should also be based on as-graded site conditions and on a determination of probable quantities of mudflow debris that may accumulate behind the walls, as evaluated by the design engineer.

In lieu of concrete-deflector walls, suitable alternates may possibly consist of debris basins, or raising pad grades, so that there is an ascending minimum ±5-foot slope at the toe of the descending proposed significant cut slopes. However, locations, capacities, and other design considerations should be based on as-graded site conditions. Figure 5 (Debris Device Control Methods) may be used for alternative methods to contain potential debris or mud.

For design purposes, the active earth pressures should utilize an EPF of 125 pcf. Impact and debris walls should be designed in a similar manner. The debris walls and impact walls should be supported by footings with a minimum embedment of 18 inches into competent bedrock. Consideration should be given to supporting debris and impact walls on 12-inch diameter drilled piers embedded a minimum 6 feet into engineered fill or competent bedrock. The actual design for the piers or footings should be performed by the structural consultant using the foundation parameters in this report.

Top-Of-Slope Walls/Fences/Improvements and Expansive Soils

Expansive Soils and Slope Creep

GEO-52 The developer shall provide information regarding the possibility for expansive soils to affect structures and property to any homeowners and homeowners association.

Top of Slope Walls/Fences

GEO-53 Due to the potential for slope creep for slopes higher than about 10 feet, some settlement and tilting of the walls/fence with the corresponding distresses, should be expected. To mitigate the tilting of top of slope walls/fences, we recommend that the walls/fences be constructed on a combination of grade beam and caisson foundations, for slopes comprised of expansive soils with an E.I. greater than 50. The grade beam should be at a minimum of 12 inches by 12 inches in cross section, supported by drilled caissons, 12 inches minimum in diameter, placed at a maximum spacing of 6 feet on center, and with a minimum embedment length of 7 feet below the bottom of the grade beam. The strength of the concrete and grout should be evaluated by the structural engineer of record. The proper ASTM tests for the concrete and mortar should be provided along with the slump quantities. The concrete used should be appropriate to mitigate sulfate corrosion, as warranted. The design of the grade beam and caissons should be in accordance with the recommendations of the project structural engineer, and include the utilization of the following geotechnical parameters:

Creep Zone: 5-foot vertical zone below the slope face and projected upward parallel to the slope face.

Creep Load: The creep load projected on the area of the grade beam should be taken as an equivalent fluid approach, having a density of 60 pcf. For the caisson, it should be taken as a uniform 900 pounds per linear foot of caisson's depth, located above the creep zone.

Point of Fixity: Located a distance of 1.5 times the caisson's diameter, below the creep zone.

Passive Resistance: Passive earth pressure of 300 psf per foot of depth per foot of caisson diameter, to a maximum value of 4,500 psf may be used to determine caisson depth and spacing, provided that they meet or exceed the minimum requirements stated above. To determine the total lateral resistance, the contribution of the creep prone zone above the point of fixity, to passive resistance, should be disregarded.

Allowable Axial Capacity: Shaft capacity: 350 psf applied below the point of fixity over the surface area of the shaft.

Tip capacity: 4,500 psf

Expansive Soils, Driveway, Flatwork, and Other Improvements

GEO-54 To reduce the likelihood of distress related to expansive soils, the following recommendations are presented for all exterior flatwork:

1. The subgrade area for concrete slabs should be compacted to achieve a minimum 90 percent relative compaction, and then be presoaked to 2 to 3 percentage points above (or 125 percent of) the soils' optimum moisture content, to a depth of 18 inches below subgrade elevation. The moisture content of the subgrade should be verified within 72 hours prior to pouring concrete.

2. Concrete slabs should be cast over a relatively non-yielding surface, consisting of a 4-inch layer of crushed rock, gravel, or clean sand, that should be compacted and level prior to pouring concrete. The layer should wet-down completely prior to pouring concrete, to minimize loss of concrete moisture to the surrounding earth materials.

3. Exterior slabs should be a minimum of 4 inches thick. Driveway slabs and approaches should additionally have a thickened edge (12 inches) adjacent to all landscape areas, to help impede infiltration of landscape water under the slab.

4. The use of transverse and longitudinal control joints are recommended to help control slab cracking due to concrete shrinkage or expansion. Two ways to mitigate such cracking are: a) add a sufficient amount of reinforcing steel, increasing tensile strength of the slab; and, b) provide an adequate amount of control and/or expansion joints to accommodate anticipated concrete shrinkage and expansion.

In order to reduce the potential for unsightly cracks, slabs should be reinforced at mid-height with a minimum of No. 3 bars placed at 18 inches on center, in each direction. The exterior slabs should be scored or saw cut, ½ to 3/8 inches deep, often enough so that no section is greater than 10 feet by 10 feet. For sidewalks or narrow slabs, control joints should be provided at intervals of every 6 feet. The slabs should be separated from the foundations and sidewalks with expansion joint filler material.

5. No traffic should be allowed upon the newly poured concrete slabs until they have been properly cured to within 75 percent of design strength. Concrete compression strength should be a minimum of 2,500 psi.

6. Driveways, sidewalks, and patio slabs adjacent to the house should be separated from the house with thick expansion joint filler material. In areas directly adjacent to a continuous source of moisture (i.e., irrigation, planters, etc.), all joints should be additionally sealed with flexible mastic.

7. Planters and walls should not be tied to the house.

8. Overhang structures should be supported on the slabs, or structurally designed with continuous footings tied in at least two directions.

Development Criteria

Slope Deformation

GEO-55 Suitable mitigative measures to reduce the potential of lateral deformation typically include: setback of improvements from the slope faces (per the 1997 UBC and/or adopted CBC), positive structural separations (i.e., joints) between improvements, and stiffening and deepening of foundations. Expansion joints in walls should be placed no greater than 20 feet on-center, and in accordance with the structural engineer's recommendations. All of these measures are recommended for design of structures and improvements. The ramifications of the above conditions, and recommendations for mitigation, should be provided to each homeowner and/or any homeowners association.

Slope Maintenance and Planting

GEO-56 Water has been shown to weaken the inherent strength of all earth materials. Slope stability is significantly reduced by overly wet conditions. Positive surface drainage away from slopes should be maintained and only the amount of irrigation necessary to sustain plant life should be provided for planted slopes. Over-watering should be avoided as it adversely affects site improvements, and causes perched groundwater conditions. Graded slopes constructed utilizing on site materials would be erosive. Eroded debris may be minimized and surficial slope stability enhanced by establishing and maintaining a suitable vegetation cover soon after construction. Compaction to the face of fill slopes would tend to minimize short-term erosion until vegetation is established. Plants selected for landscaping should be light weight, deep rooted types that require little water and are capable of surviving the prevailing climate. Jute-type matting or other fibrous covers may aid in allowing the establishment of a sparse plant cover. Utilizing plants other than those recommended above will increase the potential for perched water, staining, mold, etc., to develop. A rodent control program to prevent

burrowing should be implemented. Irrigation of natural (ungraded) slope areas is generally not recommended. These recommendations regarding plant type, irrigation practices, and rodent control should be provided to each homeowner. Over-steepening of slopes should be avoided during building construction activities and landscaping.

Lot Surface Drainage

GEO-57 Adequate lot surface drainage is a very important factor in reducing the likelihood of adverse performance of foundations, hardscape, and slopes. Surface drainage should be sufficient to prevent ponding of water anywhere on a lot, and especially near structures and tops of slopes. Lot surface drainage should be carefully taken into consideration during fine grading, landscaping, and building construction. Therefore, care should be taken that future landscaping or construction activities do not create adverse drainage conditions. Positive site drainage within lots and common areas should be provided and maintained at all times. Drainage should not flow uncontrolled down any descending slope. Water should be directed away from foundations and not allowed to pond and/or seep into the ground. In general, the area within 5 feet around a structure should slope away from the structure. We recommend that unpaved lawn and landscape areas have a minimum gradient of 1 percent sloping away from structures, and whenever possible, should be above adjacent paved areas. Consideration should be given to avoiding construction of planters adjacent to structures (buildings, pools, spas, etc.). Pad drainage should be directed toward the street or other approved area(s). Although not a geotechnical requirement, roof gutters, down spouts, or other appropriate means may be utilized to control roof drainage. Down spouts, or drainage devices should outlet a minimum of 5 feet from structures or into a subsurface drainage system. Areas of seepage may develop due to irrigation or heavy rainfall, and should be anticipated. Minimizing irrigation will lessen this potential. If areas of seepage develop, recommendations for minimizing this effect could be provided upon request.

Toe of Slope Drains/Toe Drains

GEO-58 Where significant slopes intersect pad areas, surface drainage down the slope allows for some seepage into the subsurface materials, sometimes creating conditions causing or contributing to perched and/or ponded water. Toe of slope/toe drains may be beneficial in the mitigation of this condition due to surface drainage.

Erosion Control

GEO-59 Cut and fill slopes will be subject to surficial erosion during and after grading. On site earth materials have a moderate to high erosion potential. Consideration should be given to providing hay bales and silt fences for the temporary control of surface water, from a geotechnical viewpoint.

Landscape Maintenance

GEO-60 Only the amount of irrigation necessary to sustain plant life should be provided. Over-watering the landscape areas will adversely affect proposed site improvements. We would recommend that any proposed open-bottom planters adjacent to proposed structures be eliminated for a minimum distance of 10 feet. As an alternative, closed-bottom type planters could be utilized. An outlet placed in the bottom of the planter, could be installed to direct drainage away from structures or any exterior concrete flatwork. If planters are constructed adjacent to structures, the sides and bottom of the planter should be provided with a moisture retarder to prevent penetration of irrigation water into the subgrade. Provisions should be made to drain the excess irrigation water from the planters without saturating the subgrade below or adjacent to the planters. Graded slope areas should be planted with drought resistant vegetation. Consideration should be given to the type of vegetation chosen and their potential effect upon surface improvements (i.e., some trees will have an effect on concrete flatwork with their extensive root systems). From a geotechnical standpoint leaching is not recommended for establishing landscaping. If the surface soils are processed for the purpose of adding amendments, they should be recompacted to 90 percent minimum relative compaction.

Utility Trench Backfill

GEO-61 1. All interior utility trench backfill should be brought to at least 2 percent above optimum moisture content and then compacted to obtain a minimum relative compaction of 90 percent of the laboratory standard. As an alternative for shallow (12-inch to 18-inch) under-slab trenches, sand having a sand equivalent value of 30 or greater may be utilized and jetted or flooded into place. Observation, probing and testing should be provided to evaluate the desired results.

2. Exterior trenches adjacent to, and within areas extending below a 1:1 plane projected from the outside bottom edge of the footing, and all trenches beneath hardscape features and in slopes, should be compacted to at least 90 percent of the laboratory standard. Sand backfill, unless excavated from the trench, should not

be used in these backfill areas. Compaction testing and observations, along with probing, should be accomplished to evaluate the desired results.

3. All trench excavations should conform to CAL-OSHA, state, and local safety codes.

4. Utilities crossing grade beams, perimeter beams, or footings should either pass below the footing or grade beam utilizing a hardened collar or foam spacer, or pass through the footing or grade beam in accordance with the recommendations of the structural engineer.

5.6.7 Level of Significance after Mitigation

The mitigation measures listed in Section 5.6.6 would reduce potential geotechnical-related hazards to a level that is less than significant. As noted in Mitigation Measure GEO-1, the project is required to follow the detailed recommendations contained in the *Updated Preliminary Geotechnical Investigation* (GSI 2006) and supplemental measures regarding all recommendations for testing, observations, monitoring and inspection. Furthermore, the design specifications and mitigation outlined in Mitigation Measures GEO-2 through GEO-61 shall be incorporated in order to ensure soil stability, structural stability, and other required measures that will ensure that any potential geotechnical hazards are reduced to less-than-significant levels. These measures have been designed pursuant to requirements of the California Building Code and will be implemented to the satisfaction of the City of Corona Engineer. Implementation of these mitigation measures would ensure that geotechnical hazards are reduced to a level below significance.

5.6.8 References

California Geological Survey. 2003. State of California Earthquake Fault Zones, Corona South Quadrangle, May 1.

California Geological Survey. 2009. Accessed at: http://www.conservation.ca.gov/cgs.

California Public Resources Code, Sections 2621 et seq. Alquist-Priolo Geologic Hazards Zones Act.

GSI (GeoSoils, Inc.). 2006. *Updated Preliminary Geotechnical Investigation, and Updated Fault Rupture Hazard Evaluation, Tentative Tract 34760, Corona, Riverside County, California 92882*. W.O. 5166-A-SC. Prepared by GSI for Manuel Valencia. Murrieta, California: GSI. October 9.

GSI. 2007. "Slope Stability and Value Engineering, Existing Slope - Non-Grading Option, Tentative Tract No. 34760, City of Corona, Riverside County, California." Memorandum from GSI to Manuel Valencia, November 20.

GSI. 2008a. "Tentative Tract Map Review, Tentative Tract No. 34760, Corona, Riverside County, California." Memorandum from GSI to Manuel Valencia, June 12.

GSI. 2008b. "Geotechnical Review of Fire Protection/Fuel Modification Plan, Tentative Tract No. 34760, Corona, Riverside County, California." Memorandum from GSI for Manuel Valencia, November 6.

5.7 HAZARDS AND HAZARDOUS MATERIALS

5.7.1 Introduction

The purpose of this section is to identify potential hazards associated with development of the project, and to identify project design features that will reduce potential hazards to a less-than-significant level.

5.7.2 Methodology

The analysis is based in part upon a Phase I Environmental Site Assessment for potential hazardous materials/waste contamination, prepared by GSI, in order to identify recognized environmental conditions of concern at the site. The scope of GSI's investigation included a review of current regulatory agency records, conducting interviews and a physical reconnaissance of the subject property. The findings of that investigation were incorporated into the *Phase I Environmental Site Assessment, Valencia Estates, South End of Malaga Street, Corona, Riverside County, California 92882* (GSI 2006a). Due to potential environmental conditions at the subject property identified in the Phase I Environmental Site Assessment, GSI also prepared the *Limited Agricultural Residue Survey, Valencia Estates, South End of Malaga Street, Corona, Riverside County, California 92882* (GSI 2006b). Finally, given the project site's proximity to open space areas within the Cleveland National Forest, and the potential risk for exposure of future residents to wildland fires, the *Fire Protection Plan, Corona Tract 34760, Corona Fire Department, Corona, CA* (FIREWISE 2000, Inc. 2008) report was also prepared. All of the above studies have been placed in Appendix G to this EIR, and form the basis for the existing conditions, impact analysis, and recommended mitigation measures in this section.

5.7.3 Existing Conditions

A Phase I Environmental Site Assessment was prepared to determine whether any "recognized environmental conditions," pursuant to the American Society of Testing Materials Standard E 1527-00, are located on or nearby the proposed project site. Based on the presence of historic agricultural use, a follow-up limited agricultural residue survey was conducted. The key existing condition components from each study are summarized below.

Aerial Photo and Topographic Map Review

Aerial photographs were reviewed for the years 1938, 1954, 1960, 1977, 1980, 1994, and 2002. A summary of findings of these photographs is as follows:

- **1938 Aerial**: Northern portion of the site contains an orchard. Remainder of site is vacant and undeveloped. Surrounding properties are orchard or vacant.

- **1954 Aerial**: The site and vicinity appears to be unchanged from the 1938 photo.
- **1960 Aerial**: The site and vicinity appears to be unchanged from the 1954 photo.
- **1977 Aerial**: The site and surrounding properties remain similar to 1960 aerial with more orchards to the north.
- **1980 Aerial**: The site and surrounding properties remain similar to 1977 aerial with one residence on a property north of the site.
- **1994 Aerial**: The site and surrounding properties remain similar to 1980 aerial with the exception of visible dirt roads in the southern portion of the property.
- **2002 Aerial**: The site and surrounding properties remain similar to 1994 aerial with the exception of more residential construction north of the project site.

The U.S. Geological Survey (USGS) Corona South Quadrangle topographic map, dated 1967 and revised in 1988, indicates a portion of the property was utilized as an orchard. The remainder of the property was identified as being undeveloped. The aerial photo and topographic map review did not reveal surficial evidence of site improvements that would represent a significant potential source of petroleum contamination and/or hazardous waste at the project site or surrounding properties.

Regulatory Agency Records Review

Various hazardous materials databases were searched using TrackInfo Services to indicate whether the site, or a nearby site, could be contaminated (refer to Appendix G for a list of databases searched). None of the databases listed hazardous materials sites that may be considered threats to the environmental quality of the site, within a 0.25-mile radius. The database report identified one mapped risk site that was approximately 0.50 mile away and one unmapped risk site. Both are reported as school sites with no further action required (GSI 2006a). Based on the locations, distances, and nature of these database sites, there is a low likelihood to adversely impact the project site.

Site Reconnaissance

On May 2, 2006, GSI conducted a physical survey of the subject property. The survey confirmed that a majority of the property is being used for avocado and citrus orchards. Other observations of the site included an irrigation system located in the southeast corner; black PVC aboveground piping scattered throughout the orchard areas; and corrugated metal, barbed wire, metal and PVC piping, concrete and gravel piles, and wooden pallets scattered throughout the site. During the site visit, GSI also noted a roll-off waste container, a portable toilet, and a pile of fertilizer. Soil failures in the steeper portions of the site have necessitated the use of pipe, corrugated metal, and berming of soils

to maintain the dirt access roads. There was no evidence of hazardous materials, waste, and/or petroleum contamination. No evidence of above or underground storage tanks were observed.

Agricultural Residue Soil Sampling

Per recommendations in the Phase I Environmental Site Assessment, soil sampling for analysis of pesticides and herbicides was conducted on May 2, 2006. Soil samples were collected from 12 locations on the project site at depths ranging from 0.5 foot to 1 foot. Samples were tested for Chlorinated Pesticides, Organophosphorous Pesticides and Chlorinated Herbicides. These soil samples did not result in detectable concentrations of restricted agricultural chemical residues; therefore, no further testing was conducted.

Existing Wildland Fire Hazards

Because of the project's proximity to undeveloped land associated with the Cleveland National Forest, wildland fire hazards are present on the project site. The proposed project is located entirely within a Very High Fire Hazard Severity Zone (VHFSZ) as designated and adopted by the City of Corona (FIREWISE 2000, Inc 2008). The greatest risk of wildland fire is along the southern border of the project site (FIREWISE 2000, Inc. 2008).

5.7.4 Thresholds of Significance

The following significance criteria, included in Appendix G of the CEQA Guidelines, will determine the significance of a hazard or hazardous material impact. Impacts related to hazards or hazardous materials would be significant if the proposed project would:

a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials

b. Create a significant hazard to the public or environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment

c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school

d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or environment

e. For a project within an airport land use plan, or where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area

f. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area

g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan

h. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

5.7.5 Impacts

Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Small quantities of household hazardous materials (e.g., oil, gasoline, paint, fertilizers, pesticides, cleaners) would be utilized during construction. The use, handling, transport, storage, and disposal of such hazardous materials shall occur in accordance with all federal, state, and local environmental health and safety regulations so as to prevent potential contamination hazards. Therefore, the temporary use of hazardous substances during construction would not result in a significant new routine transport, use, or disposal of hazardous materials that would significantly harm the environment.

Ongoing maintenance of the residences and common areas may necessitate the use of common household chemicals and substances (e.g., cleaning products, batteries, computer supplies, landscaping herbicides, and fertilizers). Similar to construction activity, it is assumed that the use of such materials and substances, on each property or within common areas, would occur in accordance with all federal, state, and local environmental health and safety regulations. Therefore, use of hazardous substances and materials during the normal course of maintenance and operation of the new residents and common areas would not represent a significant new land use that would entail the routine transport, use, or disposal of hazardous materials.

Would the project create a significant hazard to the public or environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Given the historic use of agriculture on the project site, previously unknown fuel storage tanks or septic tanks may be encountered during initial site grading. Exposure of these types of hazardous wastes may result in an upset or accident condition, which may release hazardous materials into the environment. In order to reduce the significance of this potential impact, mitigation is provided (see Section 5.7.6, *Mitigation Measures*, Mitigation Measure HAZ-1).

As discussed above, the proposed residential development would result in the introduction of small quantities of hazardous household substances into the newly developed community. Because it is appropriate to assume that common hazardous substances and materials such as landscaping fertilizers and herbicides, household cleaners, batteries, etc. would be handled in accordance with federal, state, and local environmental health and safety laws, it is not reasonable to assume that a significant hazardous material accident would occur. Therefore, a less-than-significant impact would occur.

Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

There are no existing schools within 0.25-mile of the site. Further, the project does not include any proposed land uses that would result in the routine release or handling of hazardous or acutely hazardous materials.

Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or environment?

Based on field reconnaissance conducted as part of the Phase I Environmental Site Assessment, no visible signs of hazardous materials were evident on the project site and no evidence of underground storage tanks or above ground storage tanks were observed. No adverse uses were observed on the properties surrounding the subject property that would contribute to significant contamination of the site by hazardous waste, materials, and/or petroleum products.

Based on review of agency database records, there are no listings of permitted aboveground or underground storage tanks on the project site or in the vicinity. There are no database listings regarding the handling, use, or disposals of hazardous materials or waste on the site or in the vicinity. Based on the above research as well as review of historic aerial photos, it was determined that there was no evidence of any recognized environmental conditions that would affect the project site.

However, as described above, there is a possibility that buried or concealed tanks or agricultural by-products not evident during the course of the Phase I Environmental Site Assessment could be encountered during initial site grading of the proposed project site. In order to reduce this potential impact to a level below significance, mitigation is provided (see Section 5.7.6, *Mitigation Measures*, Mitigation Measure HAZ-1).

For a project within an airport land use plan, or where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area? For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

There are no public or private airport runways located in the vicinity of the project site. The Corona Municipal Airport is located approximately 4.6 miles northwest of the project site. The *Riverside County Airport Land Use Compatibility Plan Policy Document* was adopted by the Riverside County Airport Land Use Commission in June 2005. This plan establishes policies applicable to land use compatibility planning in the vicinity of airports throughout the County. The project site is not within any compatibility zones for this airport (County of Riverside 2005, Map CO-1). Therefore, no features of the project would result in impacts to aircraft safety or expose future residents to aircraft hazards. Therefore, impacts would be less than significant.

Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

There is the potential for temporary traffic hazards to occur during construction activities, which could possibly interfere with local emergency response or evacuation plans. However, as part of a supplement to the May 30, 2008 *Updated Focused Site Traffic Impact Analysis* (LLG 2008; see Section 5.12), it was determined that traffic associated with project construction would be minimal. Therefore, potential conflicts with emergency response would be less than significant.

Would the project expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

According to the Fire Protection Plan prepared for the project (FIREWISE 2000, Inc. 2008), the primary wildland fire risk associated with the project site would be from the Cleveland National Forest to the west and south. Wildfire burning in the undeveloped lands south of the proposed development would result in a significant hazard to future residents largely due to fire-supporting down-slope winds, often called “Elsinore Effect” conditions. The Elsinore Effect conditions typically occur from May through November when high daytime temperatures are present within the Corona and greater western Riverside County area. The Elsinore Effect also occasionally occurs when there is a wildfire burning on the east or north side of the Santa Ana Mountains. As opposed to typical fire behavior, the down-slope Elsinore Effect winds push the fire down slope, and in this case, toward proposed residences. Given the proximity to undeveloped hillsides occupied by native vegetation, a potentially significant wildfire risk would be posed on the proposed residences. A Fire Protection Plan (FPP), which is in conformance with the California Fire Code, establishes both short-term and

long-term fuel modification actions. The fuel modification actions include establishing "firewise" landscaping zones consisting of fire resistant and maintained plantings. Additionally, the FPP establishes fire protection features for all structures included in the proposed project. Adoption of all measures included in the FPP, as outlined in Mitigation Measures HAZ-2 through HAZ-20 would reduce wildfire risk to less than significant (see Section 5.7.6, *Mitigation Measures*, Mitigation Measures HAZ-2 through HAZ-20).

5.7.6 Mitigation Measures

Implementation of the following measure would ensure that significant impacts related to hazardous materials are avoided:

HAZ-1 If during the course of grading or other construction activity, any previously undiscovered tanks or other potentially hazardous materials are detected (as indicated by odor, discolored soil, etc.), all work shall cease until the City is notified. The City will notify the appropriate state, federal, or local regulatory agency (Department of Environmental Health, Regional Water Quality Control Board, etc.) as appropriate to ensure that proper investigation plan is conducted. The applicant shall be responsible for conducting all contaminant remediation and removal activities in accordance with pertinent local, state, and federal regulatory guidelines. A remediation report shall be prepared documenting the contaminant discovered and remediation activity completed. This report shall be forwarded to the relevant federal, state, and/or local regulatory agency to ensure that remediation has occurred in accordance with all guidelines and to the satisfaction of said agency. Once the agency has determined that the remediation activity is completed in a satisfactory manner, project construction work can resume.

HAZ-2 Prior to issuance of a grading permit, the applicant shall submit a final tract map that depicts the natural slope Fuel Modification treatment recommended in the Fire Protection Plan (FIREWISE 2000, Inc. 2008).

HAZ-3 Prior to approval of the final tract map, the applicant shall submit a draft of the Rancho de Paseo Valencia Community Covenants, Conditions, and Restrictions (CC&Rs) for review by City staff. The CC&Rs shall require the Home Owner's Association (HOA) to keep the fuel modification treatment area cleared in accordance with its original design. All manufactured slopes shall be vegetated and irrigated as directed by the Fire Protection Plan (FIREWISE 2000, Inc. 2008). Further, for all lots that abut the fuel modification treatment area, the individual lot CC&Rs shall specifically state that all private land owners must engage in upkeep of the fuel modification zone consistent with all City and/or County directives.

Disturbances of native or fill soils in slope areas should be minimized or avoided during implementation of fuel modification zone activities. Loosened/disturbed soils would have an increased potential for erosion and/or instability. A representative of GSI should observe fuel modification activities (i.e., thinning and/or pruning) to evaluate and/or comment on the effects on site soils.

HAZ-4 Prior to approval of any single lot architectural plan, the City shall ensure that all structures will be designed to have a Class A roof. For roof coverings where the profile allows a space between the roof covering and roof decking, the space at the eave ends shall be "fire stopped" to preclude entry of flames or embers.

HAZ-5 Prior to approval of any single lot architectural plan, the City shall ensure that all structures that contain exterior walls facing the urban/wildland interface comply with the following requirements:

- The exterior wall surface materials shall be non-combustible or an approved alternate. In all construction, exterior walls are required to be protected with 2-inch nominal solid blocking between rafters at all roof overhangs. Wood shingle and shake wall covering shall be prohibited.
- Wood siding of 0.375-inch plywood or 0.75-inch drop siding is permitted but must have an underlayment of 0.5-inch fire rated gypsum sheathing that is tightly butted or taped and mudded.

HAZ-6 Prior to approval of any single lot architectural plan, the City shall ensure that all structures' attic ventilation openings or ventilation louvers shall not be permitted in soffits, rakes, in eave overhangs, between rafters at eaves, or in other similar exterior overhanging areas in the urban/wildland interface area. In the urban/wildland interface area, paper-faced insulation shall be prohibited in attics or ventilated spaces.

HAZ-7 Prior to approval of any single lot architectural plan, the City shall ensure that all roof vents, dormer vents, gable vents, foundation ventilation openings, ventilation openings in vertical walls, or other similar ventilation openings shall be louvered and covered with 0.25-inch, noncombustible, corrosion-resistant metal mesh or other approved material that offers equivalent protection. Turbine attic vents shall be equipped to allow one-way direction rotation only; they shall not spin freely in both directions.

HAZ-8 Prior to approval of any single lot architectural plan, the City shall ensure that all combustible eaves, fascias, and soffits shall be enclosed. Eaves of heavy timber

construction are not required to be enclosed as long as attic venting is not installed in the eaves. Heavy timber construction shall consist of a minimum of 4×6 rafter ties and 2× decking.

HAZ-9 Prior to approval of any single lot architectural plan, the City shall ensure that all homes with skylights shall be tempered glass except when the structure is protected with an automatic fire sprinkler system. No skylights are allowed on the roof assembly facing hazardous vegetation.

HAZ-10 Prior to approval of any single lot architectural plan, the City shall ensure that all glass or other transparent, translucent, or opaque glazing shall be tempered glass, multilayered glass panels, glass block, have a fire-protection rating of not less than 20 minutes, or other assemblies approved by the City Fire Department. Glazing frames made of vinyl materials shall have welded corners, metal reinforcement in the interlock area, and be certified to ANSI/AAMA/NWWDA 101/I.S.2-97 structural requirements.

HAZ-11 Prior to approval of any single lot architectural plan, the City shall ensure that all chimneys, flues, or stovepipes have an approved spark arrester. An approved spark arrester is defined as a device constructed of nonflammable materials, 12-gauge minimum thickness or other material found satisfactory by the City of Corona Fire Department. It must have 0.5-inch perforations for arresting burning carbon or sparks and be installed to be visible for the purposes of inspection and maintenance.

HAZ-12 Prior to approval of any single lot architectural plan, the City shall ensure that all rain gutters and downspouts shall be constructed of noncombustible material. Gutters shall be designed to reduce the accumulation of leaf litter and debris that contributes to roof edge ignition.

HAZ-13 Prior to approval of any single lot architectural plan, the City shall ensure that all exterior doors shall be constructed of approved non-combustible construction, solid core wood not less than 1.75 inches thick or have a fire protection rating of not less than 20 minutes. Windows within doors and glazed doors shall comply.

HAZ-14 Prior to approval of any single lot architectural plan, the City shall ensure that the first 5 feet of fences and other items attached to a structure shall be constructed of non-combustible material or meet the same fire-resistive standards as the exterior walls of the structure.

HAZ-15 Prior to approval of any single lot architectural plan, the City shall ensure that all enhanced homes are sprinklered. The interior sprinkler system shall meet National Fire Protection Standard 13D (Installation of Sprinkler Systems in Residential Occupancies).

HAZ-16 Prior to approval of any single-lot architectural plan, the City shall ensure that all side yard fence and gate assemblies (fences, gate, and gate posts) when attached to the home, shall be of non-combustible material. The first five feet of fences and other items attached to a structure shall be of non-combustible material.

HAZ-17 Prior to approval of any single-lot architectural plan, the City shall ensure that all windows shall be provided with 0.125-inch mesh metal or similar noncombustible screens to prevent embers from entering the structure during high wind conditions.

HAZ-18 Prior to approval of the final tract map, the City shall ensure that hydrants, mains, and water pressure systems have been designed to comply with all City Municipal Code requirements to maintain adequate fire flow.

HAZ-19 Prior to final tract map approval, the applicant shall provide the City with a draft of the CC&Rs. The CC&Rs must contain the following:

- The lot/home owner is personally responsible for all required fuel treatment measures within his or her lot.
- The HOA Board has the authority for enforcing required fuel treatment measures on all lots and restrictions on combustible structures on all restricted lots.
- The Fuel Treatment Zones must be shown on the CC&Rs and recorded against all lots. The HOA Board will be responsible for enforcing all required fuel modification treatments on all lots.
- All property owners are members of the HOA and will financially support the annual maintenance of all required designated open space areas.
- The HOA Board is responsible to the Fire Marshal for the completion of all required fuel modification treatments prior to the annual fire season.
- All individual lot landscaping plans, including construction of primary residence and additional structures, must be approved by the HOA Board and shall comply with the Fire Protection Plan (FIREWISE 2000, Inc. 2008).

- Any disputes relating to the HOA Board approval of individual lot landscaping with regard to interpretation of the Fire Protection Plan shall be decided by the Fire Marshal or his/her designee within the City of Corona Fire Department. The Fire Marshal's decision shall be final and binding on the lot owner.

HAZ-20 Prior to issuance of a grading permit, the City shall ensure that the Fuel Treatment Location Map, included in the Fire Protection Plan (FIREWISE 2000, Inc. 2008) prepared for the project, is accurately depicted on project plans.

5.7.7 Level of Significance After Mitigation

With implementation of the mitigation measures identified in Section 5.7.6 above, impacts would be mitigated to a less-than-significant level.

5.7.8 References

County of Riverside. 2005. *Riverside County Airport Land Use Compatibility Plan Policy Document*. Prepared by Mead & Hunt and Coffman Associates. Santa Rosa, California and Kansas City, Missouri: Mead & Hunt and Coffman Associates. June.

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5.8 HYDROLOGY AND WATER QUALITY

5.8.1 Introduction

This section consists of a summary of existing hydrology and water quality conditions, anticipated impacts, and mitigation measures required to reduce impacts to a less-than-significant level.

5.8.2 Methodology

Information presented in this section was obtained from the project's hydrology study (Armstrong & Brooks Consulting Engineers 2009a), as well as from the project's water quality management plan (Armstrong & Brooks Consulting Engineers 2009b). These technical reports have been provided as Appendix H.

5.8.3 Existing Conditions

Regulatory Setting

Several local, state, and federal regulations govern discharges associated with construction and post-construction stormwater runoff to protect the water quality of receiving waters. The following is a summary of the regulatory framework that has been established to protect water resources.

Federal

Federal Clean Water Act.

Increasing public awareness and concern for controlling water pollution led to enactment of the Federal Water Pollution Control Act Amendments of 1972. As amended in 1977, this law became commonly known as the Clean Water Act (33 U.S.C. 1251 et seq.). The Clean Water Act established basic guidelines for regulating discharges of pollutants into the waters of the United States. The Clean Water Act requires that states adopt water quality standards to protect public health, enhance the quality of water resources, and ensure implementation of the Clean Water Act.

Section 303(d)

Section 303(d) requires that states assess the quality of their waters every 2 years and publish a list of those waters not meeting the water quality standards established for them. Such waters are then identified as being an "impaired water body." Water quality standards are found in the Basin Plan and include beneficial uses, water quality objectives necessary to protect these uses, and the antidegradation policy. For water bodies placed on the 303(d) List of Water Quality

Limited Segments, states are required to develop Total Maximum Daily Loads (TMDLs) for the pollutant(s) that are causing impairment of the water quality standards. Once a water body is placed on the 303(d) List of Water Quality Limited Segments, it remains on the list until a TMDL is adopted and the water quality standards are attained or there is sufficient data to demonstrate that water quality standards have been met and delisting from the 303(d) list should take place.

Section 401

Section 401 of the Clean Water Act requires an applicant for a federal permit, such as the construction or operation of a facility that may result in the discharge of a pollutant, to obtain certification of those activities from the state in which the discharge originates. This process is known as the Water Quality Certification for the project. For projects in Corona, the Santa Ana Regional Water Quality Control Board issues "Section 401" permits.

Section 402 – National Pollution Discharge Elimination System (NPDES)

The NPDES permit program, as authorized by Section 402 of the Clean Water Act, was established to control water pollution by regulating point sources that discharge pollutants into waters of the United States. In the State of California, the Environmental Protection Agency (EPA) has authorized the State Water Resource Control Board permitting authority to implement the NPDES program. In general, the State Water Resources Control Board issues two baseline general permits: one for industrial discharges and one for construction activities. The Phase II Rule that became final on December 8, 1999, expanded the existing NPDES program to address stormwater dischargers from construction sites that disturb land equal to or greater than one acre. For projects disturbing one or more acres of land, the applicant must file a Notice of Intent (NOI) for coverage under the General Permit for Storm Water Discharges Associated with Construction Activity (General Permit) and prepare a Storm Water Pollution Prevention Plan (SWPPP) that specifies best management practices (BMPs) to prevent pollutants from contacting stormwater and procedures to control erosion and sedimentation.

The project site falls within the jurisdiction of California Region 8, which is administered by the Santa Ana Regional Water Quality Control Board. Each Regional Water Quality Control Board is responsible for water quality control planning within their region, often in the form of a basin plan. The Regional Water Quality Control Board is also responsible for implementing the provisions of the General Permit, including reviewing SWPPPs and monitoring reports, conducting compliance inspections, and taking enforcement actions.

Section 404

Section 404 of the Clean Water Act established a permitting program to regulate the discharge of dredged or filled material into waters of the United States. The definition of waters of the United States includes wetlands adjacent to national waters. This permitting program is administered by the U.S. Army Corps of Engineers and enforced by the EPA.

State

California Water Code

The California Water Code governs the use, discharge to, and management of water resources throughout the state.

Division 7 – Porter-Cologne Water Quality Control Act

This is the basic water quality control law for California. The goal of the Porter-Cologne Act (California Water Code, Section 13000 et seq.) was to create a regulatory program to protect water quality and beneficial uses of the state's waters. As such, the state and regional boards were established to implement and enforce the federal Clean Water Act and state-adopted water quality control plans.

Water Quality

Water quality refers to the effect of natural and human activities on the composition of water. Water quality is expressed in terms of measurable physical and chemical qualities that can be related to planned water use. Within the City, urban runoff is transmitted directly to the storm drain system (rather than the sewer system). In general, stormwater can potentially contain a host of pollutants, such as trash and debris, bacteria and viruses, oil and grease, sediments, nutrients, metals, and toxic chemicals. These contaminants can adversely affect receiving and coastal waters, flora and fauna, and public health. While water quality issues are especially prevalent during rainy periods—due to urban runoff (e.g., irrigation or car washing) that is transferred to the storm drain system—pollution can be a year-round problem.

Hydrology and Drainage

The proposed project site ranges in elevation between approximately 1,220 feet at the northwesterly corner of the site to 1,600 feet at the southeasterly corner of the site. A series of small, on-site ridges define the five watershed boundaries that traverse the site. Approximately 68% of the project site consists of slopes that are greater than 25% (Armstrong & Brooks, Inc. 2009a). The site drainage pattern is generally from the south toward the north.

As shown on Figure 5.8-1, the project site is divided into five watershed areas. As provided in the project's hydrology study (Armstrong & Brooks, Inc. 2009a), these five watersheds are described below in more detail.

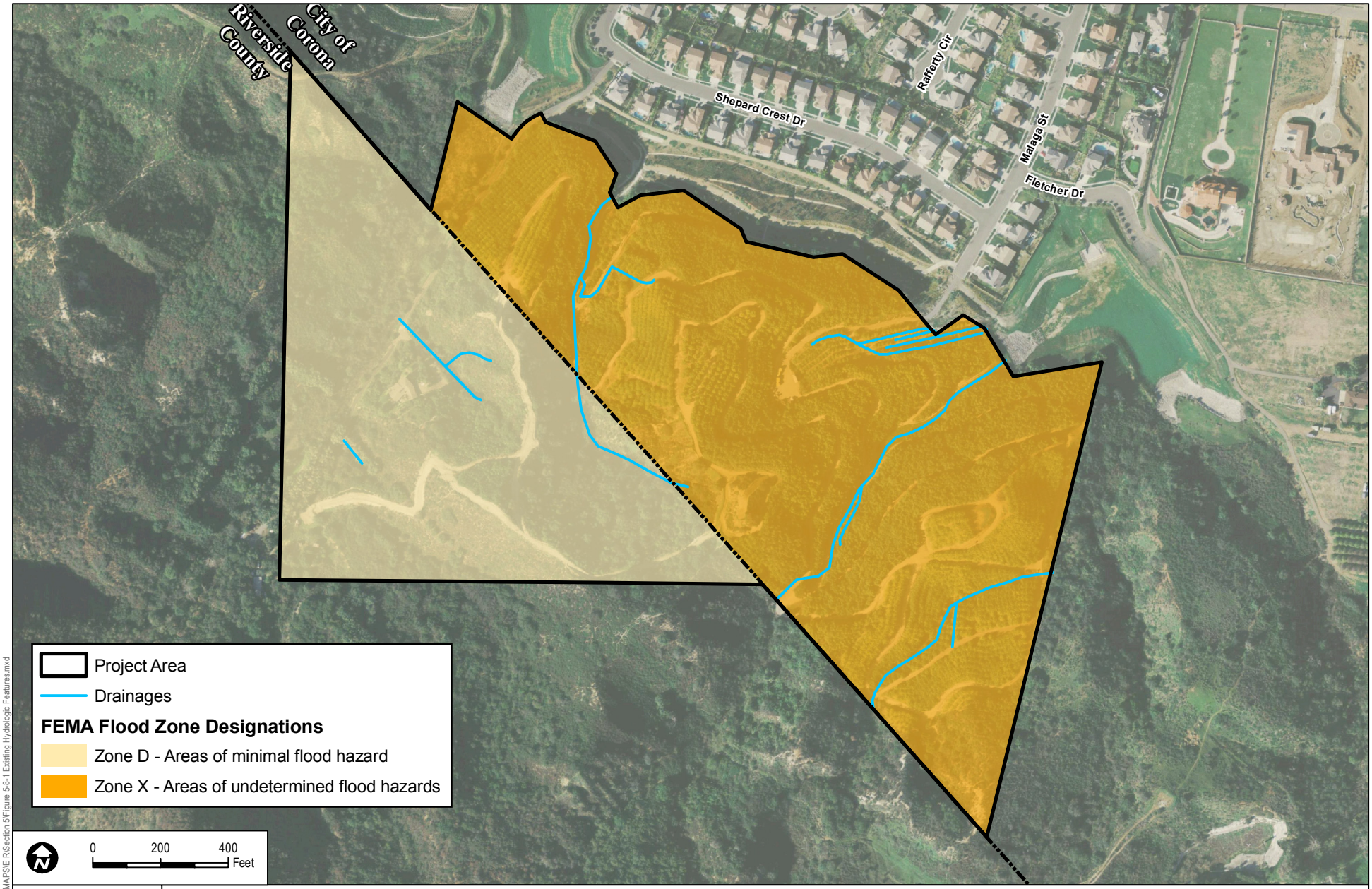
Watershed A

This portion of the site accepts and conveys off-site flow from three sub-basin watersheds towards the existing, City-maintained Debris Basin "3D." Two of the sub-basin watersheds confluence occurs on site near the southwesterly boundary prior to a final confluence with the third sub-basin watershed at the off-site entrance to Debris Basin 3D. The three off-site sub-basin watersheds consist of natural hillside/mountainous terrain covered in dense native vegetation.

The most westerly of the three sub-basin watersheds conveys flow from 22.1 acres, which generate 61.0 cubic feet per second (cfs) during a 100-year storm event. The site accepts off-site flow from 17.5 acres along the southwesterly portion of the site. While traversing a short reach across the project site, the drainage course accepts flow from 2.3 acres of on-site tributary area before exiting the site on its way to Debris Basin "3D." The remaining 2.3 acres of tributary area are located off site, northwesterly of the project limits.

The most easterly of the three sub-basin watersheds conveys flow from 15.3 acres, which generate 41.4 cfs during a 100-year storm event. Off-site flow from 11.4 acres is accepted along the site's southerly boundary. Flow generated from 3.9 acres of on-site area is added prior to reaching the on-site confluence with the flow from the center or primary sub-basin watershed. Runoff from the center or primary sub-basin watershed is conveyed to the site's southwesterly region via a natural valley channel. The site accepts off-site flow from 277.7 acres, which generate 701.7 cfs. The channel traverses a short reach into the project site while adding flow from 1.1 acres of off-site tributary area and 0.6 acre of on-site tributary area where it confluences with the flow from the most easterly sub-basin watershed. The confluenced flow of 742.1 cfs is generated by a tributary area of 294.7 acres.

The confluenced flow continues northerly toward Debris Basin "3D" via the unnamed wash that runs adjacent to the existing secondary access or easement road off Shepard Crest Drive. An additional 3.5 acres of off-site tributary area and 6.2 acres of on-site tributary area are added to the watershed prior to exiting the site. The 304.6 acres generates 763.5 cfs prior to leaving the site along its northwesterly boundary. The remaining 1.6 acres of the primary sub-basin is located within a portion of Debris Basin "3D," which lies off site, northwesterly of the project limits. The three sub-basin watersheds that traverse the southwesterly portion of the project site total 328.1 acres and generate 819.4 cfs during a 100-year storm event at the entrance to Debris Basin "3D."



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SOURCES: FEMA Flood Zones: FEMA 2006. Aerial Imagery: DigitalGlobe 2008.
Project Site Boundary: County of Riverside 2008.
City/County Boundary: County of Riverside 2005.
Drainages: Misenhelter 2009a.

Rancho de Paseo Valencia EIR

FIGURE 5.8-1

Existing Hydrologic Features

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Watershed B

The easterly portion of the project site consists of densely covered groves of citrus and avocado. This portion of the site accepts and conveys off-site flow from two sub-basin watersheds that are tributary to the existing, City-maintained Debris Basin "3." The two sub-basin watersheds are natural hillsides covered in dense native vegetation.

The most easterly of these two sub-basin watersheds accepts flow from 22.2 acres, which generate 62.4 cfs during a 100-year storm event. Flow from an additional 6.5 acres of on-site and off-site tributary area is added to this watershed prior to exiting the site along its easterly boundary. The 28.7 acres generate 78.7 cfs during a 100-year storm event.

An additional 2.2 acres of on-site area generates 5.5 cfs, which exits the site's easterly boundary prior to confluencing with the flow described in the previous paragraph. Additional confluencing takes place off site with flow generated by watersheds that do not pass through the site. The primary drainage course of Watershed "B" enters the easterly inlet of Debris Basin "3" at 299.4 cfs from 127.0 acres.

The existing second sub-basin watershed conveys flow from 41.7 acres, which generate 112.0 cfs during a 100-year storm event, to the site's southerly boundary via an existing natural channel. Flow from an additional 13.3 acres of on-site tributary area is added to this sub-basin watershed runoff prior to exiting the site through the northerly boundary. The 55.0 acres generate 142.8 cfs during a 100-year storm event and enter Debris Basin "3" via the southwesterly inlet. The total watershed tributary to Debris Basin "3" is 186.3 acres, which generate a confluenced flow of 438.2 cfs during a 100-year storm event.

Watershed C

The middle portion of the project site consists of a relatively equal distribution of dense groves of avocado together with natural hillside covered in dense native vegetation. The flows generated by this watershed are conveyed to an existing HOA-maintained detention basin located within Tract 28153. The basin outlets via an existing 36-inch corrugated metal pipe riser to an existing City-maintained 24-inch reinforced concrete pipe, which has been designed to carry 50.3 cfs during a 100-year storm event.

The flows generated by this watershed enter the existing basin via two distinct drainage courses. The primary drainage course conveys flow from a small subarea beginning along the project's southerly boundary, a .5-acre of which is located off site. The subarea drains northerly via a series of grove maintenance roads, interceptor drains, and down drains before entering the off-site basin. The subarea consists of 22.2 acres, which generate 57.3 cfs during a 100-year storm event.

Of the final 9.7 acres tributary to the primary drainage course, approximately 4.2 acres is located northerly of the project site. The 9.7 acres generate 25.4 cfs, or 2.6 cfs/acre. Therefore, it may be deduced that this watershed's primary drainage course conveys 46.4 cfs (57.3 cfs for total 22.3 acres (2.6 cfs per acre - 4.2 acres north of project site)) from 18.0 acres (22.2 total acreage of that subarea - 4.2 acres north of project site) before exiting the project site and entering the existing off-site basin.

The secondary drainage course within Watershed "C" conveys flow from a small subarea that begins on site. The flow traverses its way to the existing off-site basin via the easement road off of Shepard Crest Drive. The subarea consists of 9.5 acres, which generate 26.6 cfs during a 100-year storm event. Approximately 1.1 acres of this subarea is an existing single-family residential lot, which is contained within the project boundary but is not a part of the development application. The two drainage courses confluence in the existing basin for a total watershed area of 31.7 acres, which generate a peak flow of 81.7 cfs during a 100-year storm event.

Watershed D

This watershed is relatively small at 2.4 acres and consists of dense groves of avocado and unimproved maintenance roads. Flow from approximately 1.9 acres of on-site area exits the site at Malaga Street. This flow is conveyed via a combination of an unimproved roadway and roadside swale until it enters the existing curb and gutter at the terminus end of the improved portion of Malaga Street. Flow from an additional 0.5 acre of off-site area is added for a total of 7.4 cfs during a 100-year storm event. The 7.4 cfs will be transported northerly by Malaga Street with each side of the street conveying 3.7 cfs.

Watershed E

This watershed is contained entirely off site, within the boundary of Tract 28353, and consists of 1.1 acres of a HOA-maintained slope and detention basin. The basin outlets via an existing 36-inch corrugated metal pipe riser to an existing City maintained 18-inch reinforced concrete pipe within Malaga Street. The pipe has been designed to carry 17.5 cfs during a 100-year storm event.

Flood Hazards

The proposed project site is not located within a Federal Emergency Management Agency (FEMA) 100-year or 500-year flood zone, as shown on Figure 5.8-1.

Tsunami

A tsunami is a sea wave generated by submarine earthquakes, landslides, or volcanic activity, which displaces a relatively large volume of water in a very short period of time. In Southern

California, tsunamis are generally associated with the Pacific Ocean (California Geological Survey 2009).

Seiche

A seiche is defined as an oscillation in a semi-confined body of water due to seismic shaking. The proposed project site is located approximately 7 miles west of Lake Mathews, which is the nearest large body of confined water.

Mudflow

Mudflow conditions are generally associated with sloped areas that become water logged during severe weather events. The soils become saturated and slip downhill.

5.8.4 Thresholds of Significance

The following significance criteria, included in Appendix H of the CEQA guidelines, will determine the significance of a hydrology and/or water quality impact. Impacts to hydrology and water quality would be significant if the proposed project would:

a. Violate any water quality standards or waste discharge requirements.

b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or lowering of the local groundwater table level.

c. 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 which would result in substantial erosion or siltation on- or off-site.

d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.

e. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

f. Otherwise substantially degrade water quality.

g. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation maps

h. Place within a 100-year flood hazard area structures which would impede or redirect flood flows.

i. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.

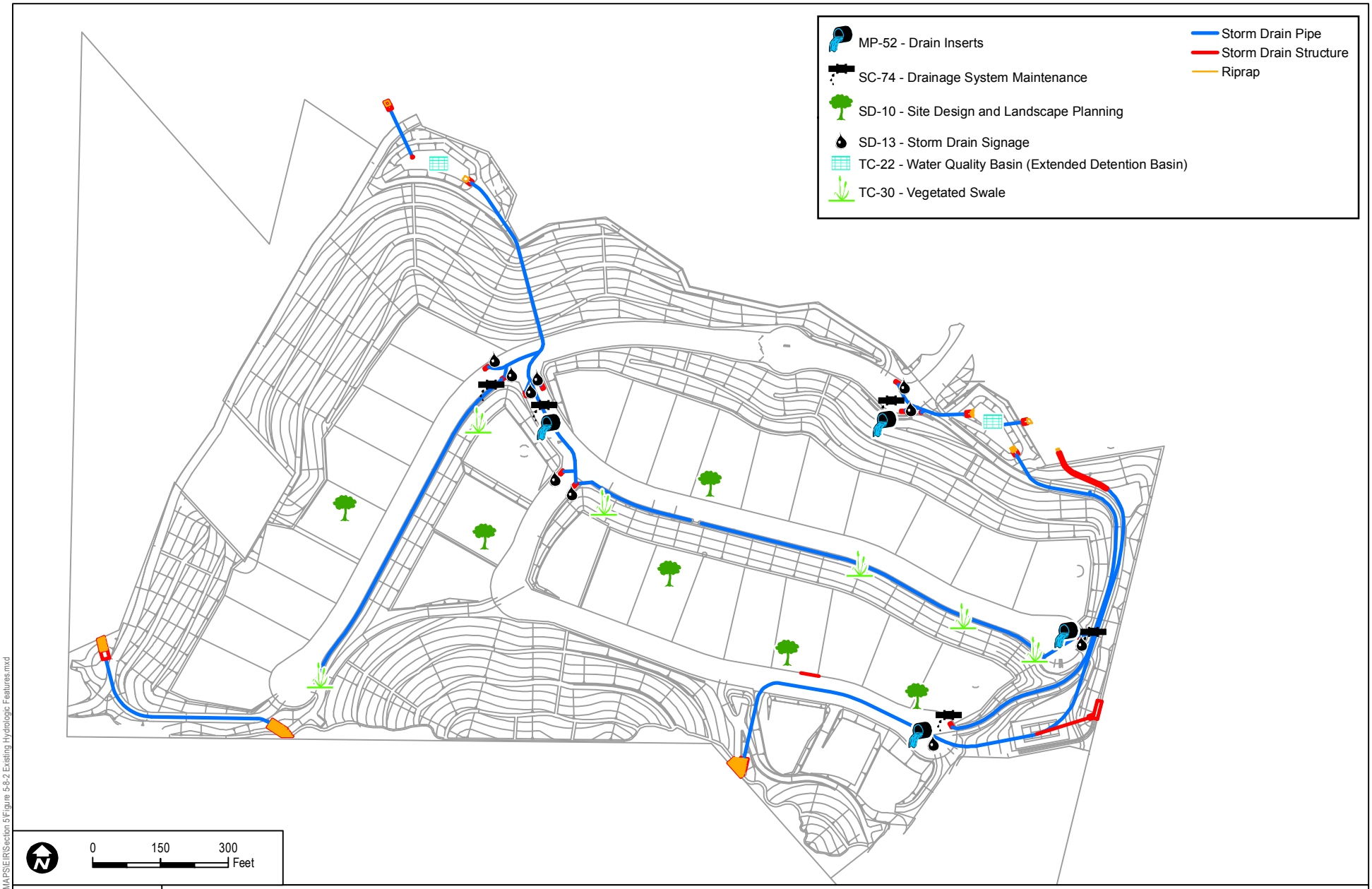
j. Result in inundation by seiche, tsunami, or mudflow.

5.8.5 Impacts

Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade water quality?

The proposed project could affect water quality during construction. During construction, gasoline, diesel fuel, lubricating soil, grease, and solvents may be used on the project site. Although small amounts necessary to maintain the construction equipment would be on site at any one time, accidental spills of these materials during construction could potentially result in water quality impacts. In addition, soil loosened during grading or miscellaneous construction materials or debris could also degrade water quality if mobilized and transported off site via stormwater runoff. As construction activities may occur during the rainy season or during a storm event, construction of the project could result in impacts to water quality. In order to mitigate for impacts to water quality during construction, mitigation is provided (see Section 5.8.6, *Mitigation Measures*, Mitigation Measures HYD-1 and HYD-2).

After construction is complete, the proposed project is not expected to generate significant water-borne pollutants. As depicted on Figure 5.8-2, the developed site would drain into two proposed water quality basins via street curb and gutter, a series of proposed catch basins with connecting storm drain pipes, and perforated pipes from proposed vegetated swales. The catch basins would be equipped with drain inserts to filter out trash and debris. The three vegetated swales would be constructed with an underlying gravel bed and perforated pipe and would collect and treat runoff. The pipe system would convey flows to a series of proposed catch basins. The swales are designed to treat sediment, nutrients, trash, metals, oil and grease, organics, and oxygen-demanding substances.



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SOURCE: Water Quality Features/Site Plan: Armstrong & Brooks Consulting Engineers 2009b

FIGURE 5.8-2

Proposed Water Quality Features

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Z:\Projects\6327001\MAPDOC\MAPS\EIR\Section 5\Figure 5.8-2 Existing Hydrologic Features.mxd

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The above not withstanding, several contaminants of concern could be generated once residences are constructed and the neighborhood established. As a residential land use, deleterious material could be produced and transported by stormwater runoff. As described in the *Project Specific Water Quality Management Plan* (Armstrong & Brooks Consulting Engineers, Inc. 2009b), typical substances associated with urbanized areas, particularly residential sites that could contribute to the degradation of local water quality include the following: heavy metals, an increase in nutrients from fertilizers and eroded soils, an increase in sediment discharge due to the concentration of flows on site, litter and debris, vehicle fluids and oils, organic substances, and pesticides used to control nuisance growth. Transport of these substances to the surface, coast, or groundwater would be considered a potentially significant impact. In order to mitigate for impacts to water quality once the residential neighborhood has been constructed and occupied, mitigation is provided (see Section 5.8.6, *Mitigation Measures*, Mitigation Measure HYD-3).

Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level?

The increase in impervious surfaces that would occur as a result of the proposed project would result in less exposed land that can serve as an avenue for groundwater percolation. However, the proposed project has been designed to maximize the permeable surface area. The site would remain approximately 70% pervious by maintaining large open space areas within the development to allow for increased natural infiltration and decreased urban runoff. Proposed streets have been designed to minimum widths per local development codes, and open undeveloped areas would remain and contribute to the amount of on-site permeable area. The developed site would also reduce any directly connected impervious areas to the existing debris basins and storm drain system by conveying on-site flows through vegetated swales, which would also allow for groundwater percolation. The proposed project would also make use of bio-swales for stormwater retention and groundwater recharge. As a result, the proposed project would not interfere with substantial groundwater recharge.

The proposed project's water would be supplied by the City of Corona Department of Water and Power, which serves an area of approximately 45 square miles and 148,000 customers. As of 2005, the City's total water demand was 44,055 AFY, with a projected ultimate build-out demand of 49,408 AFY in 2020 (Corona 2005). Local groundwater currently supplies more than 50% of the City's water demand (Corona 2005). The primary source of groundwater is pumped from the Temescal Basin and the Bedford and Coldwater sub basins. These basins are not adjudicated and the City plans to continue increasing the production of local water; the City plans to provide 65.87% of their total water supply from pumping local groundwater by 2020 (Corona 2005). According to the Preliminary Water Supply Study (Armstrong & Brooks Consulting Engineers 2009), the Department of Water and Power has sufficient capacity to

supply the proposed project with water. Therefore, the proposed project would not substantially deplete groundwater supplies. Impacts are considered less than significant.

Would the project 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 which would result in substantial erosion or siltation on- or off-site?

The proposed drainage plan is shown on Figure 5.8-2. The developed portion of the project would drain into two proposed water quality basins via vegetated swales, street curbs and gutters, and a series of proposed catch basins with connecting storm drain pipes. The ultimate size of each water quality basin will be dependent on the amount of runoff that can be treated by the vegetated swales.

The swales would be designed to treat the runoff from their respective tributary areas, which would decrease the area to be treated by the proposed water quality basins located at the northeast and northwest portions of the site. The water quality basins would be designed to detain and treat the calculated stormwater volume. The runoff captured by these two water quality basins would be released into the existing off-site debris basins via proposed storm drain pipes.

The proposed on-site storm drain system has been designed such that it can convey off-site and on-site flows in a safe and non-destructive manner so as not to add or create erosion or siltation on or off site. Detention basins would allow surface flows to percolate into the ground and confine runoff and ultimately maintain off-site, downstream surface flow characteristics. Impacts would therefore be less than significant.

Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

While the proposed project would result in an increase in impervious surfaces and thus a corresponding increase in runoff, the project has been designed to manage all of the stormwater flows. As described above, the developed portion of the project would drain into two proposed water quality basins via vegetated swales, street curbs and gutters, and a series of proposed catch basins with connecting storm drain pipes. Storm drains have been adequately sized to ensure the upstream 100-year flood surface at the pipe inlet does not exceed the elevation of the drainage course at the site boundary. Therefore, the 100-year water surface elevation would be contained on site. The proposed project is therefore not expected to increase the amount of surface runoff in a manner that would result in flooding on or off site. Impacts would be less than significant.

Would the project create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

The proposed drainage plan is shown on Figure 5.8-2. The proposed project has been designed to maintain the existing drainage pattern by creating a series of high points within the project that coincide with the existing ridgelines, which currently define the existing watersheds. The project proposes a system of HOA-maintained interceptor drains, down drains, and storm drains. Riprap and/or an energy dissipaters located at the storm drain outlet would be designed during the final engineering phase to generate non-erosive velocities.

As indicated earlier, the project has been designed to manage all of the stormwater flows. The developed portion of the project would drain into two proposed water quality basins via vegetated swales, street curbs and gutters, and a series of proposed catch basins with connecting storm drain pipes. Storm drains have been adequately sized to ensure the upstream 100-year flood flows at the pipe inlet do not exceed the elevation of the drainage course at the site boundary. Therefore, the 100-year water surface elevation would be contained on site. The proposed project is therefore not expected to contribute runoff water, which would exceed the capacity of existing or planned stormwater drainage systems. Impacts would be less than significant.

Would the project otherwise substantially degrade water quality?

The proposed project would not otherwise substantially degrade water quality given the proposed water quality features incorporated into the project design (see Figure 5.8-2). Impacts would be less than significant.

Would the project place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

The proposed project site is located on FEMA Flood Insurance Rate Map (FIRM) Number 06065C1354 G. According to this map, the site is not located within a 100-year floodplain (FEMA 2008). Therefore, the proposed project would not place housing within a 100-year flood hazard area. No impact would result.

Would the project place within a 100-year flood hazard area structures which would impede or redirect flood flows?

As previously indicated, the proposed project site is not located within a 100-year floodplain (FEMA 2008). Therefore, the proposed project would not place structures that would impede or redirect flood flows within a 100-year flood hazard area. No impact would result.

Would the project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

As indicated in the previous discussion, the proposed storm drain system would adequately convey a 100-year storm event within the internal drainage system without exposing people or structures to a significant risk. The primary inundation threat to the City of Corona is from Lake Mathews, approximately 7 miles southeast of the City. Two dams contain Lake Mathews, one on its north side and the other one on the south side. Failure of either dam would cause flooding along the Temescal Wash in the eastern and northeastern portions of the City. The Prado Basin and Dam are located north of the City. The flow pattern from this dam is westward away from the City, and as a result, Prado Dam does not pose as severe of a threat of inundation as do the Lake Matthews Dams to the project area. The above notwithstanding, due to the project site's distance and elevation, which is well above potential inundation areas that may be inundated in the case of dam failure, these dams do not pose a significant risk to the proposed project.

Would the project result in inundation by seiche, tsunami, or mudflow?

As indicated above, due to the project site's distance from existing dams and its relative elevation, which is well above potential inundation areas that may be impacted even by the failure of these dams, these dams do not pose a significant risk to the proposed project. As such, the project site is not located downstream from dams or reservoirs that would have a potential to fail and flood the project site or produce seismically induced inundation or seiche.

Due to the distance of the site from the Pacific Ocean (approximately 27 miles) and the minimum elevation of at least 1,200 feet above sea level, tsunami hazards are considered highly unlikely to cause flooding issues on the project site.

During the rainy season, potential mudflow could occur on site due to its hillside nature. However, once developed, erosion control measures as previously outlined in Section 5.6 would reduce impacts related to mudflow to a less-than-significant level. Additionally, slopes would be properly compacted, graded, and revegetated, thus reducing the risk of exposed soil erosion.

5.8.6 Mitigation Measures

HYD-1 Prior to issuance of a grading permit, the project applicant will demonstrate compliance with all applicable regulations established by the United States Environmental Protection Agency (EPA) as set forth in the National Pollutant Discharge Elimination System (NPDES) permit requirements for urban runoff and stormwater discharge, and any regulations adopted by the City of Corona pursuant to the NPDES regulations or requirements. Applicable guidelines and measures and the applicant's approach to meeting each shall be spelled out in the

Storm Water Pollution Prevention Plan. Further, the applicant shall file a Notice of Intent with the State Water Resources Control Board to obtain coverage under the NPDES General Permit for Storm Water Discharges Associated with Construction Activity and shall implement a Storm Water Pollution Prevention Plan concurrent with the commencement of grading activities. The Storm Water Pollution Prevention Plan shall include both construction and post-construction pollution prevention and pollution control measures. An example of a construction control measure would be that prior to any severe weather event the project applicant shall ensure that any exposed slopes are stabilized using a bonded fiber matrix coupled with placement of straw waddles spaced appropriately on the slope based on slope gradient and silt fences at the toe of the slope. An example of a post-construction control measure includes ensuring that sediment accumulation near culverts and channels does not exceed 3 inches at any spot or cover vegetation. This plan shall also identify funding mechanisms for post-construction control measures.

HYD-2 During construction, the project will incorporate all City of Corona construction best management practices (BMPs) in order to control the discharge of pollutants and to avoid the tracking of sediments into streets and storm water conveyance channels. This measure shall be implemented to the satisfaction of the City Community Development and Public Works Directors. These BMPs may include, but are not limited to, the following:

- Where necessary, temporary and/or permanent erosion control devices, as approved by the Public Works Department, shall be employed to control erosion and provide safety during the rainy season from October 15 to April 15. The erosion control devices shall include hillside stabilization structures (i.e., fiber matrix on slopes and construction access stabilization mechanisms, etc.) and runoff control devices (i.e., drainage swales, gravel bag barriers/chevrons, velocity check dams, etc.).
- All removable erosion protective devices shall be in place at the end of each working day when the 5-day rain probability forecast exceeds 40%.
- After a rainstorm, all silt and debris shall be removed from streets, check berms, and basins.
- Graded areas on the permitted area perimeter must drain away from the face of the slopes at the conclusion of each working day. Drainage is to be directed toward desilting facilities.
- Silt fences shall be installed along limits of work, the project construction

site, or both. Other sediment controls could include surface roughening, tree or natural vegetation preservation and protection, temporary gravel construction entrance/exit, temporary diversions, permanent diversions, outlet stabilization, inlet protection, temporary sediment basins, and gravel bay barriers

- All construction vehicles shall be adequately maintained and equipped to minimize/eliminate fuel spillage. All equipment maintenance work shall occur off site or within the designated construction staging area.
- Water shall be applied to the site as needed during grading operations to minimize dust and wind erosion.

Prior to issuance of a grading permit, the applicant shall submit a Storm Water Pollution Prevention Plan that describes the specific measures that will be employed during construction to ensure that applicable and appropriate City-approved BMPs are implemented.

HYD-3 The project applicant shall ensure that all Site Design, Source Control, and Treatment Control BMPs outlined in the proposed project's Water Quality Management Plan (May 27, 2009) be implemented in order to control potential discharge and runoff from the residential use of the site once constructed. These BMPs may include, but are not limited to, the following:

- Permanent seeding shall be applied to all exposed slopes to minimize erosion.
- Streets and driveways shall be swept to maintain cleanliness of the pavement. At a minimum, all impervious surfaces would be thoroughly swept four (4) times per year, or more often as necessary, with particular emphasis for thorough cleaning prior to the rainy season.
- Sediment traps, forebays, inlet/outlet structures, overflow spillways and trenches shall be cleaned out if necessary and the first layer of aggregate and filter fabric replaced if clogging appears on the surface.
- Visual inspections of the project site shall be performed annually to ensure that proper litter/debris controls are maintained and that proper landscaping, fertilizer, and pesticide practices are upheld.

The final Water Quality Management Plan will be subject to review and approval by the Directors of the City of Corona Community Development and Engineering Departments.

5.8.7 Level of Significance after Mitigation

The mitigation measures listed above in Section 5.8.6 would reduce potential hydrology and water quality impacts to less than significant by ensuring the implementation of BMPs, pollution prevention, and pollution control measures during construction, as well as ensuring the implementation of Site Design, Source Control, and Treatment Control BMPs during project operation.

5.8.8 References

33 U.S.C. 1251–1387. Federal Water Pollution Control Act, as amended (commonly referred to as the Clean Water Act).

Armstrong & Brooks Consulting Engineers. 2009a. *Hydrology Study for TTM 34760 in the City of Corona, County of Riverside, California*. Corona, California: Armstrong & Brooks Consulting Engineers. April 20.

Armstrong & Brooks Consulting Engineers. 2009b. *Project Specific Water Quality Management Plan (Preliminary)*. Prepared by Armstrong & Brooks Consulting Engineers for Rancho de Paseo Valencia. Corona, California: Armstrong & Brooks Consulting Engineers. May 27.

California Geological Survey. 2009. Accessed at: http://www.conservation.ca.gov/cgs/geologic_hazards/Tsunami/Inundation_Maps/Pages/Index.aspx.

California Water Code, Section 13000–16104. Porter-Cologne Water Quality Control Act, as amended.

City of Corona (2005) Urban water Management Plan. Prepared by AKM Consulting Engineers. November.

FEMA (Federal Emergency Management Agency). 2008. FEMA Map Service Center. FIRM 06065C1354 G. August 28. Accessed at: http://msc.fema.gov.

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5.9 AESTHETICS

5.9.1 Introduction

This section provides a summary of the existing visual setting, describes the anticipated visual changes that would result from the proposed project, and evaluates whether such changes would have a significant impact on the local aesthetic environment.

5.9.2 Methodology

The information and analysis in this section have been compiled based on site visits, photos of the project area, and review of applicable policies in the City of Corona and Riverside County General Plans (City of Corona 2004; County of Riverside 2003).

5.9.3 Existing Conditions

Existing Setting

The City of Corona is located on the Santa Ana River Plain. The greater river plain is bounded on three sides by the Santa Ana Mountains to the west, the Chino Hills to the north, and the San Bernardino Mountains to the north and east. These mountain ranges are all visible from parts of the City and dominate most views from within the City. While mountain views are prevalent to the north, northern views from the City are dominated by the heavily vegetated Prado Basin. Additionally, the Temescal Wash, a major tributary to the Santa Ana River, bisects the City in a north-south direction. This combination and intersection of mountains, valleys, and plains create a visually dynamic landscape.

Open space and agricultural areas also provide visual relief from urbanized areas and provide views for motorists, pedestrians, and residents. Larger contiguous areas of passive open space and agriculture are concentrated in the western and southeastern portions of the City. The Prado Basin, a large vegetated flood control area adjacent to the Prado Dam spillway, dominates northern views from the City. Parks are interspersed throughout generally residential areas in the other portions of the City, as well as adjacent to the Prado Basin area. Finally, the Santa Ana Mountains, which help visually define the western and southwestern edges of the City, also serve as a major visual feature.

Existing Visual Character of the Project Site

The property is located in the foothills of the Santa Ana Mountains. Given its foothill location, the topography of the site is hilly with drainages crossing the site generally in a southwest to northeast direction. Elevation on the property ranges from approximately 1,200 to 1,600 feet amsl. The property is bordered to the north by a narrow strip of planted trees and ornamental

vegetation separating the site from a tract of single-family residences. Properties to the south, east, and west are largely undeveloped hillsides dominated by woody chaparral vegetation.

Approximately 35 acres of the site is currently used as an active avocado and citrus orchard. The remainder of the site is surrounded by Cleveland National Forest land and consists primarily of undeveloped chaparral/coastal sage scrub vegetation, typically found on the eastern slopes of the Santa Ana Mountains. Figures 5.9-1 and 5.9-2 provide a visual depiction of the project site from surrounding vantage points.

The project site is also visible from scenic lookouts in the ridgeline areas of the Santa Ana Mountains. Specifically, the Beeks Place and Main Divide Truck Trail (also known as Black Star Canyon Road and Skyline Drive, depending on the location) are located at a high enough elevation above the project site that recreationalists utilizing these routes may be afforded views of the project site. Further, Skyline Drive affords motorists and pedestrians/hikers limited views of the project site.

Light and Glare

The site is currently either vacant or contains avocado and citrus orchards; therefore, there are no existing sources of light or glare.

Applicable Plans and Policies

The Visual Resources section of the Environmental Resources Element in the City's General Plan (2004) identifies a Scenic Highway Plan that is a composite of various networks and systems such as vistas, activity centers, corridors and pathways, edge areas, and entry and approach areas. It provides for the establishment, development, and protection of the City's highways and corridors for scenic purposes. The following are designated scenic highways in the Scenic Highway Plan:

- ***Grand Boulevard*** "provides views of the City's historic core, particularly the large estates established on the irregularly shaped parcels along the edge of the circle, as well as associated landscaping and mature street vegetation" (City of Corona 2004).
- ***Main Street***, "from Third Street to the southern terminus, which also provides views of the historic core of the City, as well as views of the Santa Ana Mountains to the west and south, and the low foothills of the San Bernardino Mountains to the east" (City of Corona 2004).

PHOTO 1

PHOTO 2

PHOTO 3

PHOTO 4

KEY MAP

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FIGURE 5.9-1

Existing Site Photos

Rancho de Paseo Valencia EIR

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PHOTO 5

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PHOTO 8

KEY MAP

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FIGURE 5.9-2

Existing Site Photos

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- ***Ontario Avenue***, "from Mangular Avenue to State Street, which provides views of the Santa Ana Mountains to the west and the low foothills of the San Bernardino Mountains to the east" (City of Corona 2004).
- ***Chase Drive,*** "from Mangular Avenue to State Street, which also provides views of the Santa Ana Mountains to the west and the low foothills of the San Bernardino Mountains to the east" (City of Corona 2004).
- ***Magnolia Avenue,*** "from Garretson and Ontario Avenues to Rimpau Avenue, which also provides views of the Santa Ana Mountains to the southwest, as well as views of the narrow pass between the San Bernardino Mountain foothills at the northwest end of the City, through which I-15 travels" (City of Corona 2004).

In addition to the designated scenic highways listed above, State Route (SR) 91, from the Interstate 15 (I-15) interchange to the SR-55 interchange near Santa Ana, is considered by the County to lie in a State-eligible scenic corridor. There is no officially designated State or County Scenic Highways in the City or near the project site (Caltrans 2009).

In addition to identifying scenic highways, the Environmental Resources Element also identifies wide-open vistas in the City of Corona associated with the natural features that dominate the City. Significant vistas identified in the General Plan include:

- The Prado Basin views from Sierrra del Oro, which encompass the basin on the south and canyon areas on the west.
- The view south to the Santa Ana Mountains from I-15/SR-91 (Riverside) Freeway interchange.
- The southern view of the foothills from major north-south streets south of Ontario Avenue.
- The views from the higher elevations south of Ontario Avenue, which encompass panoramic views to the North and the San Gabriel Mountains.
- Grand Boulevard, including the circle of palm trees visible from a variety of locations.

The Environmental Resources Element identifies the following goals and policies related to the protection of visual resources in the foothills of the City:

Goal 10.22: Develop and implement land use controls that preserve the significant visual resource from potential loss or disruption.

> Policy 10.22.1: Create unobstructed view corridors or viewsheds of the San Bernardino, Santa Ana and San Gabriel Mountains, the Chino and La Sierra Hills, and other significant natural features from public spaces such as parks, termination of streets and

community trails, community centers, and school properties, where feasible, as part of the design of development projects.

Policy 10.22.4: Require that projects be designed and sited to maintain the natural topographic, physiographic, and aesthetic viewshed characteristics of those features, utilizing the following conditions:

- Minimize the area and height of cuts and fills, to the extent technically achievable ensuring that slope tops and bottoms are rounded and facilitate a smooth and seamless transition where natural and built slopes intersect.
- Configure development sites to mimic pre-development and natural topography by clustering sites and individual units and avoiding extensive fragmentation of steep slopes, "stair stepping" and varying terraces of structures, and/or other design practices.
- Minimize the size of flat development pads in site grading to that necessary to accommodate the building footprint and a reasonable amount of useable outdoor space, as well as to assure structural and site stability.
- Encourage building architectural design styles, forms and shapes, materials, and building siting to complement, rather than visually dominate their landscape setting.
- Minimize the height of retaining walls and design with smooth flowing forms that follow topography and with material colors and textures that blend in with the surrounding landscape.
- Plant hillside and canyon slopes with drought-tolerant species to soften the visual impact of land grading retaining walls, structures, and roads.
- Restore disrupted areas of vegetation, wildlife habitat, natural watercourses and drainage swales, and other important viewshed features. Vegetation should be arranged in informal masses to create a textured slope that is characteristic to a natural chaparral mountain slope terrain.

City of Corona Municipal Code

Since the property is located in a hillside area, it is also governed by the provisions of the Corona Municipal Code's Chapter 17.59 Hillside Development Ordinance. This portion of the zoning code was established to provide regulations for the development of those areas in the city, which, due to their topography, require special consideration to assure that they are developed in a way

that will substantially maintain their natural character and environmental and aesthetic values. Specific policies outlined in this ordinance include:

- Encourage development clustering which contributes to the provision of view corridors;
- Encourage development design that reflects the distinct environmental and topographical characteristics of the land;
- Encourage the clustering of development on the most gently sloping portions of the site;
- Encourage innovative architectural, landscaping, circulation and site design;
- Discourage mass grading of large pads and excessive terracing except where soils stability dictates grading and compaction for public safety;
- Provide for safe circulation of vehicular and pedestrian traffic to and within hillside areas and to provide adequate access for emergency vehicles necessary to serve hillside areas; and
- Encourage design and building practices to assure maximum safety from wildfire hazard.

5.9.4 Thresholds of Significance

The following significance criteria, included in Appendix G of the CEQA guidelines, will determine the significance of an aesthetic impact. Impacts to aesthetics would be significant if the proposed project would:

a. Have a significant adverse effect on a scenic vista
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway
c. Substantially degrade the existing visual character or quality of the site and its surroundings
d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

5.9.5 Impacts

Three visual simulations of the proposed project have been prepared and are depicted on Figures 5.9-1 and 5.9-2. These visual simulations have been prepared to represent the general type, scale, and massing of the residences that would be constructed on the project site. The visual simulations and their associated existing views are depicted on Figure 5.9-3.

Would the project have a significant adverse effect on a scenic vista?

The Environmental Resources Element of the City's General Plan (2004) identifies significant vistas within the City. The proposed project would not interfere with any of the identified vistas. However, the General Plan (2004) also recognizes canyon and mountain views from residences along the urban/chaparral interface as important. The proposed project would be located within this urban/chaparral interface in the foothills of the City. Existing residences adjacent to the proposed project site to the north currently have views of the Santa Ana Mountains when looking southward. These views, and the impacts on these views, are represented by the visual simulation shown in Figure 5.9-3. While not considered scenic vistas, it should still be noted that the proposed project would be visible from these vantage points immediately north of the site. However, given the topography and upward viewing angle, the clustering of development, and the use of landscaping to blend the project with surrounding natural open space, impacts to representative surrounding vantage points would be limited.

The project site is also visible from scenic lookouts in the ridgeline areas of the Santa Ana Mountains. Specifically, the Beeks Place and Main Divide Truck Trail (also known as Black Star Canyon Road and Skyline Drive, depending on the location) are located at a high enough elevation above the project site that recreationalists utilizing these routes may be afforded views of the project site. Further, Skyline Drive affords motorists and pedestrians/hikers limited views of the project site. While recreationalists or motorists utilizing these roadways/trails would be afforded some limited views of the project site, given the distance of the project site from these routes, the project site would appear as an extension of the existing Mountain Gate residential community. Therefore, a less-than-significant impact to scenic vista users would result.

Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

Given the gentle slope of south Corona coupled by the existing residential development and distance between the City's scenic roadway corridors and the project site, the project site is not discernable against the larger landscape feature of the Santa Ana Mountains. Therefore, the proposed project site is not discernable from a designated scenic roadway.

The above not withstanding, after existing vegetation is removed as a result of grading activities, the project site may be visible from surrounding neighborhoods and possibly limited locations along designated scenic roadways due to the contrast between the vacant site and surrounding vegetated hillsides. Views present during construction would consist of heavy construction equipment and new homes in various stages of construction. Depending on the specific phase of construction, dust would also be present and may intercept views of the project site from surrounding vantage points. Temporary impacts to viewers located to the north, northwest and

northeast would be most pronounced. However, once the land development phase of the project has been completed and manufactured slopes revegetated, the project site would blend in with the surrounding Santa Ana Mountain foothills, and therefore, would not be discernable to travelers on a scenic roadway. Further, once the residences are constructed, their set-back location on the site coupled with the presence of existing similar residential land uses in the surrounding area would further help the project site blend in with the existing visual setting available to travelers. Therefore, once constructed, a substantial visual change would not affect travelers utilizing local scenic roadways and would not constitute a substantial impact to existing scenic resources visible from a designated scenic highway.

Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

The project site would be zoned for ER Cluster in the Mountain Gate Specific Plan, which would require a minimum lot size of 7,200 square feet/0.165 acres as compared to surrounding neighborhoods to the north and northwest which average 9,600 square feet in area. Lots to the northeast of the project site range from one to five acres in area.

During construction, and specifically during the mass grading phase of site development (estimated to last approximately 6 months), the project would transition from an existing orchard/hillside setting to that of a bare hillside under development. The removal of vegetation would result in a noticeable contrast between the existing residential neighborhoods to the north and east, as well as the foothills of the Santa Ana Mountains in the distance. Once the mass grading phase has been completed, newly manufactured hillsides would be replanted with a mixture of tree and shrub species in an effort to blend in with the surrounding foothill setting. Because the appearance of an unvegetated project under construction would be temporary in nature, impacts would not be substantial, and therefore, would be less than significant.

As evident in the visual simulations depicted on Figure 5.9.3, the proposed project would be located at a higher elevation than most surrounding development. The visual simulations show that the residences would be set back from the top of the proposed manufactured slopes. This set-back would help reduce the visual presence of the new homes. The project would be clustered in the center of the project site resulting in the development of approximately 50 acres of the 65 acre site which would help concentrate the development and reduce the appearance of a sprawling new residential subdivision. Further, the manufactured slopes would be revegetated with a mixture of plant species that would be similar to those present in surrounding developments, thereby reducing the visual presence of the new subdivision. The subdivision layout and revegetation/landscaping plan would all help the proposed project blend in with the existing surrounding neighborhoods in the long term.

The above not withstanding, the project would result in the long term modification of hillsides which are visible from adjacent and surrounding neighborhoods. The grading necessary to stabilize hillsides, provide fuel management for fire protection, control drainage and provide landscaping would result in a significant aesthetic change that would be discernable from both adjacent and surrounding neighborhoods. Further, the proposed project would represent a change from the existing rural character to that of a suburban community similar to the adjacent neighborhoods. This long term change would result in a substantial degradation of the existing visual character available to surrounding neighborhoods. Therefore a long term, significant visual impact would occur and mitigation is provided (see Section 5.9.6, *Mitigation Measures*, Mitigation Measure AES-1). Although mitigation has been provided, the full extent of the impact cannot be avoided; therefore a significant and unavoidable impact would remain despite the attempt to mitigate.

Would the project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

The proposed project would result in the introduction of approximately 34 homes to an area that is not currently a source of light or glare to the surrounding community. These new homes would increase the amount of lighting present within the immediate area. In order to reduce potential lighting impacts to surrounding neighbors, mitigation is provided (see Section 5.9.6, *Mitigation Measures*, Mitigation Measures AES-2 through AES-4). Further, given the set-back nature of the proposed homes, interior lighting would be largely shielded from surrounding residences (see Figure 5.9-3). This factor, coupled with Mitigation Measures AES-2 through AES-4, would help reduce the impact of new lighting sources and would therefore not constitute a substantial new source of light that may affect day or nighttime views in the surrounding area.

The project's existing orchard does not currently represent a source of glare to the surrounding environment. The introduction of homes, and therefore reflective surfaces such as windows, cars, and rooftop materials, may result in new sources of glare. However, given the set-back nature of the proposed residences and the presence of other, similar residential uses within the immediate project vicinity, these potential new sources of glare would not be substantial and would therefore be less than significant.

BEFORE (Existing Site Photo 3)

BEFORE (Existing Site Photo 4)

BEFORE (Existing Site Photo 6)

AFTER (Existing Site Photo 3)

AFTER (Existing Site Photo 4)

AFTER (Existing Site Photo 6)

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NOTE: Please see 'KEY MAP' used on Figures 5.1-1 and 5.1-2 for photo location. Simulations are representative of the scale and density of future residences and are not meant to be exact replicas of the proposed architecture or residential design.

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FIGURE 5.9-3

Visual Simulations

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5.9.6 Mitigation Measures

The following mitigation measures would reduce identified aesthetic impacts to less than significant.

AES-1 All graded slopes would be replanted with native and drought tolerant plant species. The landscape plan shall adhere to the City's landscape design guidelines as they pertain to water friendly plant materials (it should be noted that the City's landscape design guidelines are consistent with the University of California Cooperative Extension Service's Water Use Classification of Landscape Plants guidelines).

AES-2 All project streetlights shall be designed in accordance with the City's Municipal Code and shall be pointed downward. The Municipal Code provides for several streetlight specifications that help ensure that sufficient lighting is available as a public health and safety measure but at the same time avoid substantial new light sources that might be considered a nuisance to adjacent land uses or open space areas such as exist on adjacent hillsides.

AES-3 Prior to issuance of a grading permit, the applicant shall submit a lighting plan to City Community Development Staff for the tennis courts showing how proposed lights would not result in nuisance spill-over to adjacent properties or open space. Further, any lighting proposed for the tennis courts shall be pointed downward and be affixed to a timer, which will ensure that lights remain off when the courts are not in use.

AES-4 Prior to issuance of a grading permit, the applicant shall provide the specifications for any entryway or entryway monument lighting. These specifications shall be consistent with the City's Municipal Code, which mandates that all light sources be retained on site so as to avoid nuisance spill-over to adjacent properties.

5.9.7 Level of Significance after Mitigation

Even with implementation of the mitigation measures outlined in section 5.9.6, visual impacts of new homes located along the intermediate ridgelines, fuel modification activities and grading modifications to hillsides will result in significant and unavoidable aesthetic impacts.

5.9.8 References

Caltrans (California Department of Transportation). 2009. California Scenic Highway Mapping System. Accessed on October 9, 2009, at: http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm.

City of Corona. 2004. *City of Corona General Plan*. Resolution No. 2004-034. Prepared by EIP Associates for the City of Corona. Los Angeles, California: EIP Associates. March 17.

County of Riverside. 2003. *Riverside County General Plan*. October 7.

5.10 NOISE

5.10.1 Introduction

This section analyzes the potential noise impacts of the proposed project. The analysis also covers vibration issues associated with construction and operation of the project. Finally, this section discusses the project's relationship to airport and air strips and potential noise impacts that future residents could be subjected to as a result of these aircraft facilities.

5.10.2 Methodology

This section is based primarily on the November 16, 2009 revised *Construction Noise Assessment, TTM 34760, City of Corona CA* prepared by Brian F. Smith and Associates, Inc. (BFSA) as well as the May 22, 2008, *Acoustical Site Assessment, TTM 34760, Riverside CA*, prepared by Investigative Science and Engineering, Inc. (ISE). These documents are included as Appendix I to this EIR. Specific methods used to generate this technical report are contained therein.

Noise is defined as unwanted or undesirable sound. While noise levels can be easily measured, the variability is subjective and physical response to sound can complicate the identification of noise impacts. Sound (noise) levels are measured in decibels (dB). Community noise levels are measured in terms of the A-weighted sound level. The A-weighted scale adjusts the measured sound levels to generally correspond with the way the human ear responds to sound. A civil defense siren would have an A-weighted sound level of 130 and be above the threshold of pain if a receptor was standing less than 100 feet away. On the other hand, soft whispering would have an A-weighted sound level of 30 and barely be audible.

Additional units of measurement have been developed to evaluate the long-term characteristics of sound. The equivalent sound level of Leq, also referred to as the average sound level, is a single number representing the fluctuating sound level in dB over a specified period of time. It is a sound–energy average of the fluctuating level and is equal to a constant unchanging sound of that dB level.

People are generally more sensitive and annoyed by noise during the evening and nighttime. Therefore, another noise descriptor used in community noise assessments, termed the Community Noise Equivalent Level (CNEL), is used. The CNEL scale represents a time-weighted 24-hour sensitivity during the evening (7:00 p.m. to 10:00 p.m.) and nighttime hours (10:00 p.m. to 7:00 a.m.) by adding 5 and 10 dB, respectively, to the average sound levels occurring during these hours. A similar metric known as the day-night level (Ldn), is calculated in a way similar to CNEL, except there is no penalty applied to noises occurring between 7:00 p.m. and 10:00 p.m.

Regulatory Setting

City of Corona

Public Health and Safety Element, Policy 11.5.1, of the *City of Corona General Plan* (2004) states that exterior noise levels shall not exceed 65 dBA Leq within residential communities.

The City of Corona's Noise Ordinance indicates that construction must occur between the hours of 7:00 a.m. to 8:00 p.m., Monday through Saturday, and 10:00 a.m. to 6:00 p.m., Sundays and federal holidays.

County of Riverside

The Noise Element of the *Riverside County General Plan* (2003) outlines residential land use compatibility with other land uses. Based on the Noise Element guidelines, residential and other noise sensitive uses are considered compatible with exterior noise levels of up to 65 dBA CNEL. This noise threshold is consistent with the maximum exterior noise level used by the City.

The County of Riverside Noise Ordinance does not recognize a numerical significance threshold for construction noise, however the County does have geographical relationship thresholds. These thresholds note that construction activities within one-quarter mile of an occupied residence must cease between the hours of 6 p.m. and 6 a.m. during the months of June through September and between the hours of 6 p.m. and 6 a.m. during the months of October through May (BFSA, p.10, 2009).

State of California

California Code of Regulations Title 24, Noise Insulation Standards, states that noise sensitive land uses shall achieve a designed interior noise level of 45 dBA CNEL or less where the exterior noise level exceeds 60 dBA CNEL. The City and County have each adopted the Title 24 standards, which are therefore applied to all residential dwellings.

5.10.3 Existing Conditions

Ambient Noise Monitoring

Noise measurements were conducted on the site to determine the existing noise level associated with adjacent and distant roadways. The noise measurements were made on May 6, 2008 using a Quest Model 2900 American National Standards Institute (ANSI) standard for a Type 2 precision sound level meter. The sound level meter was positioned at a height of approximately 5 feet above the ground (ISE 2008).

The noise measurement locations were situated along the northern property line closest to roadways in the vicinity to represent the worst-case traffic sound levels across the site. The noise

measurement locations are depicted as Sites 1 and 2 on Figure 5.10-1. The measured hourly average noise levels were 43.8 dB at Site 1 and 42 dB at Site 2, as shown in Table 5.10-1. Maximum noise levels were 54.7 dB at Site 1 and 53.6 dB at Site 2.

Table 5.10-1
Measured Ambient Sound Levels

Site	Description	Start Time	Leq1	Lmax2	Lmin3
1	East side of site, approximately 350 feet south of Shepard Crest Drive	9:30 a.m.	43.8	54.7	40.7
2	West side of site, approximately 300 feet south of Shepard Crest Drive	10:30 a.m.	42.0	53.6	38.9

1 Equivalent Continuous Sound Level (Time-Average Sound Level)
2 Maximum sound levels
3 Minimum sound levels

5.10.4 Thresholds of Significance

For the purposes of assessing the significance of noise impacts, a noise impact would be considered significant if implementation of the proposed project has the potential to result in an exceedance of the adopted local standards and/or noise ordinance.

The following significance criteria, included in Appendix G of the CEQA guidelines, will determine the significance of a noise impact. Impacts to noise would be significant if the proposed project would:

a. Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies

b. Expose persons to or generate excessive groundborne vibration or groundborne noise levels

c. Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project

d. Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project

e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels

f. For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.

5.10.5 Impacts

Would the project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Short-Term Impacts

The City does not recognize a numerical significance threshold for construction noise; however, it does have geographical relationship thresholds. Goal 11.5 Policy 11.5.6 of City of Corona's Noise Element (City of Corona 2004) states that construction activities that occur in close proximity to existing "noise sensitive" uses, including schools, libraries, health care facilities, and residential must limit the hours and days of operation in accordance with City Noise Ordinance Section 17.84.040-D-2. The City of Corona's Noise Ordinance indicates that construction must occur between the hours of 7:00 a.m. to 8:00 p.m., Monday through Saturday, and 10:00 a.m. to 6:00 p.m., Sundays and federal holidays. As stated in Section 5.10.2, Regulatory Setting, standards established by both the County of Riverside and the City of Corona state that if construction activities occur within one-quarter mile of a nearby residential receptor, the proposed construction activity would result in a significant impact.

The noise levels generated by construction equipment vary greatly depending on factors such as the type and specific model of the equipment, the operation being performed, and the condition of the equipment. Maximum noise levels at 50 feet would range from approximately 65 to 90 dB for the type of equipment normally used for a residential construction project. The typical maximum noise levels for various pieces of construction equipment at a distance of 50 feet are listed in Figure 5.10-2. The equipment operates in alternating cycles of full power and low power, thus producing noise levels less than the maximum level. The average sound level of the construction activity also depends upon the amount of time that the equipment operates and the intensity of the construction during the time period. Construction noise is difficult to quantify and varies depending on the size of equipment and pieces of equipment used simultaneously. The primary construction equipment used for site preparation and construction would include a grader, dozer, and loader. Sound levels for the operation of this equipment is shown in Table 5.10-2 below.

Table 5.10-2
Proposed Equipment Sound Levels

Classification	Quantity	Lmax at 50 – feet	Duty Cycle (%)	Corrected Sound Level	Resultant Sound Level at 50 - feet
Grader	1	85	30	79.8	84.5
Dozer	1	85	30	79.8	84.5
Loader	1	85	30	79.8	84.5

[1] All sound levels given in dBA CNEL/Ldn
Source: BFSA, p.14, 2009

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SOURCES: Noise Measurements: ISE 2008
Aerial Imagery: DigitalGlobe 2008

FIGURE 5.10-1

Noise Measurement Locations

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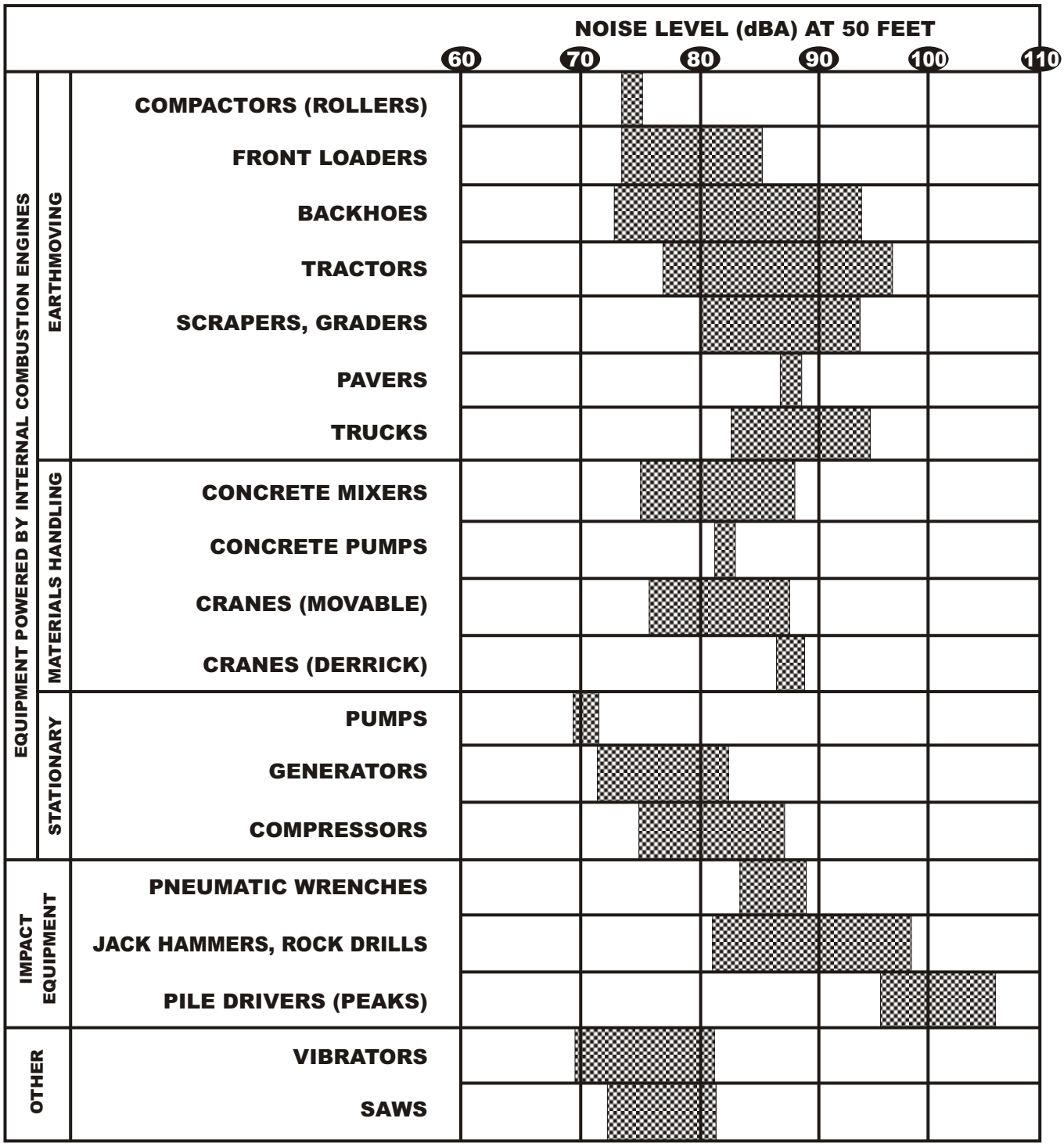

NOTE: Based on limited available data samples.

SOURCE: EPA PB 206717, Environmental Protection Agency, Dec. 31, 1971, "Noise from Construction Equipment & Operations"

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FIGURE 5.10-2

Typical Construction Equipment Noise Generation Levels

Rancho de Paseo Valencia EIR

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Given the dynamic nature of grading operations during construction, it was assumed that the source of the noise would be spread out over the project site throughout the day. The acoustic profile of the site could have equipment identified in Table 5.10-2 above in any given location and could be located up to three separate locations at any given time. The construction zones are not fixed and move throughout the day. Because of this dynamic nature, it is assumed that the equipment would operate at any one location for up to 30% of any given hour (BFSA, p. 14, 2009).

The closest residences are located approximately 250 to 300 feet from the project site. Therefore, noise levels would be somewhat lower than the levels highlighted in Figure 5.10-2. Hourly average noise levels associated with construction activities would vary. The greatest noise would occur during the grading and site preparation phase of the project. Construction noise would be less during the later phases such as foundation construction and framing. Further, construction activity that occurs in the southern portion of the project site would be less discernable to sensitive receptors located along the northern edge of the proposed project site. In summary, while levels may vary, construction noise may exceed allowable noise limits, thereby creating a potentially significant impact. In order to reduce potential noise impacts from occurring during construction, mitigation is provided (see Section 5.10.6, Mitigation Measures, Mitigation Measure NOI-1, NOI-2, and NOI-3). Although mitigation is provided, impacts could remain significant and unmitigable.

In addition to residential sensitive receptors, sensitive habitat species may exist in close proximity to the site and may be affected by short-term construction noise in excess of allowable noise limits. See Section 5.4, Biological Resources for potential noise impacts to avian species.

Long-Term Impacts

Operational noise would primarily result from residential traffic from the project site. Traffic noise impacts are generally analyzed both to ensure that the project does not adversely impact the acoustic environment of the surrounding community, as well as to insure that the project site, and future residents, are not exposed to an unacceptable level of noise resulting from the ambient noise environment.

As described in Section 5.10.1, the Public Health and Safety Element Policy 11.5.1 of the *City of Corona General Plan* (2004) states that exterior noise levels shall not exceed 65 dBA Ldn in residential neighborhoods. California Code of Regulations, Title 24, Noise Insulation Standards, states that noise-sensitive land uses shall achieve a designed interior noise level of 45 dBA CNEL or less where the exterior noise level exceeds 60 dBA CNEL. The City and County have each adopted the Title 24 standards for all residential dwellings.

A permanent increase in ambient noise levels would occur in the project vicinity due to the 325 ADT proposed by the project. This increase in noise would be most obvious to the residents

along Malaga Street and Shepard Crest Drive. However, due to the small amount of ADT, this increase would not constitute a substantial increase; therefore, a less-than-significant noise impact would occur to the surrounding community.

The *Traffic Noise Model* Version 2.5 was used to calculate future on-site noise levels from vehicular traffic in the project area. Modeled receptor locations were situated along the northern property line closest to all identified major roadways in order to represent the worst-case traffic sound levels at the project site. Receptor elevations were modeled at 5 feet to represent first floor noise levels and at 15 feet for second floor noise levels. As shown on Figure 5.10-3, noise modeling was completed at seven locations at the northern most row of proposed housing.

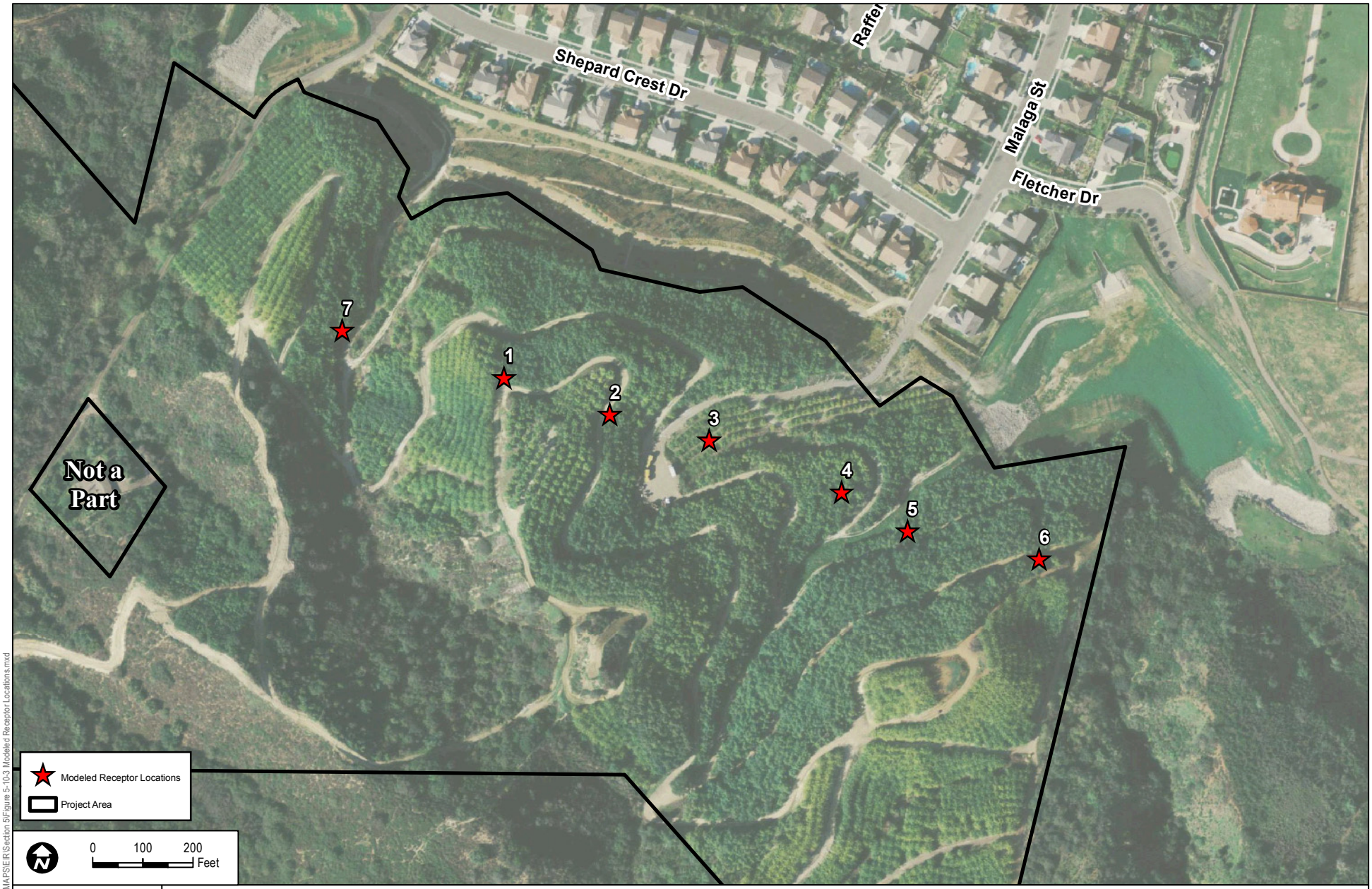
Primary sources of future traffic noise at the project site would be from the combined surface traffic on Shepard Crest Drive and Malaga Street. The noise analysis used a conservative ADT of 2,500 at 25 mph in accordance with a residential collector roadway. Table 5.10-3 shows the unmitigated sound levels for each selected lot shown on Figure 5.10-3, as well as the corresponding second floor sound levels.

Table 5.10-3
Predicted Traffic Sound Levels

Receptor	Lot Number	Unmitigated 1st floor sound level1	Unmitigated 2nd floor sound level
1	1	40.3	42.3
2	3	41.0	43.1
3	5	41.2	43.9
4	7	45.4	46.2
5	8	39.7	44.0
6	10	39.9	42.4
7	26	39.2	40.9

[1] All sound levels given in dBA CNEL/Ldn
Source: ISE 2008, Table 2

Based on the results of the noise modeling shown in Table 5.10-2, noise levels at the project site would be well below the established exterior noise threshold of 65 dBA Ldn. Therefore, the project would not result in exposure of future residents to noise levels in excess of standards established in the City's General Plan or Noise Ordinance.



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SOURCES: Noise Model Receptor Locations: ISE 2008
Aerial Imagery: DigitalGlobe 2008

FIGURE 5.10-3

Modeled Receptor Locations

Rancho de Paseo Valencia EIR

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Would the project result in the exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

Groundborne vibration is typically attenuated over short distances. The heavier pieces of construction equipment that may be used at this site include a dozer, scraper, paver, roller, water, and concrete trucks. It is not likely that a vibratory drill would be utilized for this land development project. These types of construction equipment would be located generally between 250 to 300 feet or more from the closest existing residences at the northern-most project site boundary. Based on the anticipated construction equipment, preparation of the site could generate perceptible vibration at the adjacent residences during the early segments of project development. However, any vibration or groundborne noise would be intermittent and temporary in nature; therefore, exposure of nearby residents to groundborne vibration or noise would not be excessive. Therefore, a less-than-significant impact would occur.

Would the project result in substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

A permanent increase in ambient noise levels would occur in the project vicinity due to the 325 ADT proposed by the project. This increase in noise would be most obvious to the residents along Malaga Street and Shepard Crest Drive. However, due to the small amount of ADT, this increase would not constitute a substantial increase; therefore, a less-than-significant impact would occur.

Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

A temporary increase in ambient noise levels would occur during project construction. This would result in a significant impact; therefore, mitigation is provided (see Section 5.10.6, *Mitigation Measures*, Mitigation Measure NOI-1, NOI-2, and NOI-3). Although mitigation is provided, impacts would remain significant after mitigation.

For a project located within an airport land use plan, or within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

There are no public or private airport runways located in the vicinity of the project site. The closest airport is the Corona Municipal Airport, which is located approximately 4.6 miles northwest of the project site. The *Riverside County Airport Land Use Compatibility Plan Policy Document* (2005) was adopted by the Riverside County Airport Land Use Commission in June 2005. This Plan establishes policies applicable to land use compatibility planning in the vicinity of airports throughout the County. As shown on Map CO-1 of *the Riverside County Airport Land Use Compatibility Plan Policy Document* (2005), the project site is not within the Corona Municipal Airport compatibility zone. The project would not result in exposure of people to excessive aircraft noise; therefore, impacts would be less than significant.

For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

The proposed project is not located within the vicinity of a private airstrip. The project would therefore not result in exposure of future residents to excessive noise generated from air traffic associated with a private airstrip or landing pad. Therefore, a less-than-significant impact would occur.

5.10.6 Mitigation Measures

The following mitigation measure would reduce identified noise impacts.

NOI-1 Equipment staging and material stockpiling areas shall be located at the furthest feasible distance from identified sensitive receptors to ensure construction-related noise sources are reduced to the greatest extent possible. Staging areas should be located at least 500 feet from the nearest occupied residential structure to the project site. Construction operations, including equipment maintenance, shall not occur outside permitted construction hours as delineated in the City and County noise ordinances.

NOI-2 Prior to grading permit issuance, the developer shall ensure that all construction equipment, fixed or mobile, is equipped with properly operating and maintained mufflers. Additionally, the use of electric air compressors and similar power tools, rather than diesel equipment, shall be used where feasible.

NOI-3 If traffic control and construction signs that require power for lighting or flashing are located near existing residents, the source of power should be batteries, solar cells or another quiet source. Gas or diesel fueled internal combustion engines shall not be allowed.

5.10.7 Level of Significance after Mitigation

There are no long-term significant impacts identified for the Proposed Project. Implementation of the mitigation measures as proposed would mostly reduce short-term potential impacts related to noise to a less-than-significant level. However, due to topographical changes as well as the proximity of residents, short-term impacts could remain significant and unmitigable to residents.

5.10.8 References

24 CCR. State of California Noise Standards.

Brian F. Smith and Associates, Inc. (BFSA). 2009. Construction Noise Assessment, TTM 34760, City of Corona, Ca. Prepared for Armstrong and Brooks Consulting Engineers, Corona, Ca: November 16.

City of Corona. 2004. *City of Corona General Plan*. Resolution No. 2004-034. Prepared by EIP Associates for the City of Corona. Los Angeles, California: EIP Associates. March 17.

County of Riverside. 2003. *Riverside County General Plan*. Prepared by County of Riverside Transportation and Land Management Agency Planning Department. October 7.

County of Riverside. 2005. *Riverside County Airport Land Use Compatibility Plan Policy Document*. Prepared by Mead & Hunt and Coffman Associates. Santa Rosa, California and Kansas City, Missouri: Mead & Hunt and Coffman Associates. June.

EPA (U.S. Environmental Protection Agency). 1971. "Noise from Construction Equipment and Operations." December 31.

ISE (Investigative Science and Engineering, Inc.). 2008. *Acoustical Site Assessment, TTM 34760, Riverside CA*. Prepared by ISE and submitted to Brian F. Smith and Associates. Ramona, California: ISE. March 22.

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5.11 PUBLIC SERVICES AND UTILITIES

5.11.1 Introduction

Potential project impacts associated with increased demand on public services and utilities including fire suppression, police services, schools, solid waste disposal, park and recreational facilities, and water/sewer demand are evaluated in this section.

5.11.2 Methodology

Impacts to public services and utilities were assessed by contacting the various service providers or City departments responsible for those services. Responses were received from the following agencies:

- Gabriel Garcia, City of Corona Parks and Community Services Department
- Jonathan Daly, City of Corona Department of Water and Power
- Steve Glynn, Waste Management
- James Dillon, Corona Police Department
- Nancy Baker, Corona-Norco Unified School District
- David Waltemeyer, City of Corona Fire Department.

The applicant commissioned two public infrastructure system studies that were also utilized during this analysis. These studies include the May 5, 2009, Preliminary Water Supply Study prepared by Armstrong & Brooks Consulting Engineers and the May 5, 2009, Sewer Study also prepared by Armstrong & Brooks Consulting Engineers. All of the above documents are contained in Appendix J.

5.11.3 Existing Conditions

Fire Protection

The City of Corona Fire Department provides fire protection and emergency medical services through seven fire stations located throughout the City. The closest station to the project site is Station 6 located at 110 West Upper Drive, less than 1 mile away. Station 6 includes one Type 1 fire engine and one water tender. According to the Fire Department (Waltemeyer 2010), response times in the project area range between 3–5 minutes for emergency medical response, structure fire response, and hazardous materials response for first arriving units (Waltemeyer 2010).

Chapter 15.12, Fire Code, of the City of Corona's Municipal Code outlines applicable provisions meant to reduce fire hazards and ensure emergency access. Section 503.2.1 regulates dimensions

of fire apparatus access roads, including width and vertical clearance and Section 503.2.4 regulates the turning radius of a fire apparatus access road. The maximum distance between hydrants on a road fronting single-family dwellings is 300 feet, and the maximum distance from any point on the street or Road Frontage or Fire Department Access to a hydrant is 150 feet.

Police Protection

The Corona Police Department provides police protection services in the City from its main facility located at 730 Corporation Yard Way approximately 4 miles north of the project site. According to correspondence from the Police Department (Dillon 2010), overall Police staffing has remained consistent for the past decade at approximately 1.2 officers per 1,000 city residents. Police staffing has kept up with population growth to maintain this average, which is consistent with other police staffing in Southern California (Dillon 2010).

The project site is within Police Zone 4, which has an average emergency response time of just over 5 minutes within the entire zone, which is a similar response in adjacent zones. No zone is left unmanned or below minimum staffing per policy agreements with the Police Officers Association in order to maintain officer and citizen safety (Dillon 2010).

Schools

The project site is located within the Corona-Norco Unified School District (CNUSD), which provides schools for grades K–12. CNUSD serves the cities of Norco, Corona, and portions of unincorporated Riverside County. CNUSD operates 31 elementary schools, 7 intermediate schools, 5 comprehensive high schools, and 3 alternative high schools. Currently, the CNUSD's schools exceed the standard of maximum capacity. Schools that would serve the project site include Eisenhower Elementary at 3355 Mountain Gate Drive, Corona; Citrus Hills Intermediate at 3211 South Main Street, Corona; and Santiago High at 1395 Foothill Parkway, Corona (Baker 2010).

Parks and Recreation

The City of Corona Department of Parks and Community Services is charged with providing community services and recreational opportunities. This Department is responsible for several divisions, including the Park Maintenance and Park Development Divisions, and is responsible for the planning, development, and maintenance of the City's parks and recreation facilities. The City maintains 7 community parks totaling 200 acres and 29 neighborhood parks totaling approximately 119 acres. Other recreational resources within the City include community centers, several multipurpose recreation centers, a senior center, several tennis courts, skate parks, a gymnasium facility, and an auditorium within the City Hall Civic Center. The City has a goal of 3.0 acres of parkland per 1,000 residents, while the existing ratio is approximately 2.1

acres per 1,000 residents. Acquisition and development of parkland is typically funded through collection of in-lieu fees for parks pursuant to the Quimby Act, donation of parkland, or development of sufficient parkland within individual development projects (Garcia 2010a).

Wastewater Treatment

Wastewater treatment for the City is provided by the Corona Department of Water and Power. Wastewater discharge for the project area is treated at the City's Water Reclamation Facility 1, located at 2205 Railroad Street in Corona. This facility is rated to treat 11.5 million gallons per day (gpd) and currently treats about 10 million gpd. There is an existing 8-inch sewer in Malaga Street (Daly 2010).

Domestic Water Supply

The City of Corona's Urban Water Management Plan (UWMP) (2005) is a long range planning tool used by the City's Department of Water and Power to ensure water service reliability for their customers into the future. The City's UWMP was last updated in 2005 and describes the available sources of water for the City, the City's water demand, reliability of supplies during drought and emergency conditions, implementation of Best Management Practices (BMPs), recycled water, and alternative water supply sources. The City obtains potable water from two sources. The primary source is groundwater pumped from the Temescal Basin and the Bedford and Coldwater Sub-Basins. The secondary source is imported water from MWD Colorado River and State Project Water on the Mills Pipeline from MWD's Henry J. Mills filtration plant. The City's current available total water supply is 79,056 acre feet per year (City of Corona 2005).

The City of Corona Department of Water and Power serves an area of approximately 45 square miles and 148,000 customers. The Department of Water and Power has supplied an average of 44,000 acre-feet of water per year to its customers over the last 4 years (Daly 2010). The City's Water Master Plan estimates the City's ultimate build-out demand at 49,408 AF/Y in the year 2020 (City of Corona 2005). The Department of Water and Power would be the responsible agency for supplying the proposed project with a domestic water supply (Daly 2010).

Solid Waste and Recycling

Solid waste collection in the project area is provided by Waste Management of the Inland Empire. El Sobrante is the solid waste facility currently serving the project area. The El Sobrante Landfill is a Class 3 regional disposal facility permitted to accept up to 10,000 tons per day, 7 days per week (Glynn 2010).

5.11.4 Thresholds of Significance

The following significance criteria, included in Appendix G of the CEQA guidelines, will determine the significance of impacts to public services and utilities. Note that this impact analysis covers both Public Services as well as Utilities and Service Systems, as outlined in Appendix G. Impacts to public services and utilities would be significant if the proposed project:

a. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities, a need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:

   i. Fire protection?

   ii. Police protection?

   iii. Schools?

   iv. Parks?

   v. Other public facilities?

b. Would the project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

c. Would the project require or result in the construction of new water or wastewater treatment facilities or improvements of existing facilities, the construction of which would cause significant environmental effects?

d. Would the project require or result in the construction of new storm water drainage facilities or improvements of existing facilities, the construction of which could cause significant environmental effects?

e. Would the project have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

f. Would the project result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

g. Would the project be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

h. Would the project comply with federal, state, and local statutes and regulations related to solid waste?

Note that in the following impact analysis, several of these thresholds of significance have been combined.

5.11.5 Impacts

Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities, a need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for fire protection?

The project would result in the introduction of additional residences adjacent to an undeveloped hillside area (Cleveland National Forest), which has a high susceptibility to wildland fire risk. Potential impacts related to wildland fire risk would be potentially significant; therefore, mitigation is provided (see Section 5.11.6, *Mitigation Measures*, Mitigation Measures HAZ-2 through HAZ-20). Further discussion of the project's wildland fire risk is provided in Section 5.7.

During construction, emergency access to the site may be difficult; therefore, a significant impact may occur and mitigation is provided (see Section 5.11.6, *Mitigation Measures*, Mitigation Measure PUB-1). Once constructed, the proposed project would conform to all requirements in the City's Fire Code. Fire service to the new homes may result in demands on the City's existing fire fighting equipment, specifically radio and other communication equipment, which would result in unacceptable levels of service to the project site. This would entail a potentially significant impact; therefore, mitigation is provided (see Section 5.11.6, *Mitigation Measures*, Mitigation Measure PUB-2).

Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for police protection?

The City of Corona Police Department has indicated that given the low impact on police services in the project area and since the project consists of single-family residential development, which has the lowest calls for police service, the project would not result in substantial adverse impacts on police services and would not require the need for new or physically altered governmental facilities (Dillon 2010).

Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for schools?

Table 5.11-1 indicates the number of students in each grade level that can be expected from the proposed project. These numbers are based on student generation rates provided by CNUSD.

Table 5.11-1
Student Generation

Grade	Generation Rate	Dwelling Units	Project Student Generation
Elementary (K–5)	0.669	34	23
Intermediate (6–8)	0.1832	34	6
High School (9–12)	0.3753	34	13
		Total	**42**

Based on the above generation factors for the proposed 34 homes, the project could generate up to 42 students. This would result in a potentially significant impact to local educational resources and may entail construction or expansion of said resources, which may impact the environment; therefore, mitigation is provided (see Section 5.11.6, *Mitigation Measures*, Mitigation Measure PUB-3).

Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for parks?

The City is not currently meeting its parkland goal of 3.0 acres per 1,000 residents. While the project includes approximately 14 acres of natural open space, approximately 26 acres of HOA-maintained slopes, and a tennis court facility, active or passive use parks or recreational facilities are not proposed. A significant impact to local park facilities would occur; therefore, mitigation is provided (see Section 5.11.6, *Mitigation Measures*, Mitigation Measure PUB-4).

Would the project (1) exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board; (2) result in the construction of new wastewater treatment facilities or expansion of existing facilities, the construction of which would cause significant environmental effects; or (3) result in a determination by the wastewater treatment provider, which serves or may serve the project, that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

The Department of Water and Power has estimated the proposed project would generate approximately 10,200 gallons of wastewater per day; this wastewater would be characterized as residential and is expected to be within the limits set by the Regional Water Quality Control Board for treatment by Corona's wastewater reclamation facilities. The Department of Water and Power has also indicated there is sufficient capacity at the existing treatment facility to accommodate the proposed project. Furthermore, the number of dwelling units associated with the proposed project is fewer than envisioned in the City's September 2005 Sewer Master Plan. The project would result in less wastewater generation than projected in the Master Plan and would not exceed wastewater treatment requirements or result in the need for new or expanded treatment facilities (Daly 2010). Therefore, a less-than-significant impact to local wastewater treatment facilities would occur.

Wastewater flows generated by future residents would be conveyed to the municipal collection system through an extension of the existing 8-inch line within Malaga Street. The existing line in Malaga Street is adequately sized to handle the proposed flows from the project (Daly 2010). Therefore, a less-than-significant impact to the local wastewater conveyance system would result.

Would the project require or result in the construction of new storm water drainage facilities or improvements of existing facilities, the construction of which could cause significant environmental effects?

The proposed drainage plan is shown on Figure 5.8-2. The proposed project has been designed to maintain the existing drainage pattern by creating a series of high points within the project that coincide with the existing ridgelines, which currently define the existing watersheds. The project proposes a system of HOA-maintained interceptor drains, down drains, and storm drains. Riprap and/or an energy dissipaters located at the storm drain outlet would be designed during the final engineering phase to generate non-erosive velocities.

Each storm drain line must be adequately sized to ensure the upstream 100-year water surface at the pipe inlet does not exceed the elevation of the drainage course at the site boundary. The 100-year water surface elevation shall be contained on site. The proposed on-site storm drain system has been designed such that it can convey off-site and on-site flows in a safe and nondestructive manner while protecting the primary access from the 100-year event. City Design Criteria

specifies that the 10-year event be contained from curb to curb while the 100-year event is contained within the right-of-way. Street capacity calculations show that all four proposed on-site streets can convey the 100-year event from curb-to-curb; therefore, the smaller 10-year event can be easily conveyed from curb to curb.

In summary, while the project would result in the construction of new stormwater drainage facilities, these facilities would not result in significant environmental effects. Impacts would be less than significant.

Would the project have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

Based on the *Preliminary Water Supply Study* (Armstrong & Brooks Consulting Engineers 2009), the Corona Department of Water and Power has indicated there is sufficient capacity to supply the proposed project with water. Adequate pressure and water supply during a maximum day domestic demand plus adequate fire flow demand can be provided to the project site. In order to comply with the November 2005 Water Master Plan requirements, the project will connect to the Zone 6 water system and extend pipelines to create a looped water system with connections at the southerly end of Main Street and at the intersection of Main Street and Orange Heights Lane (see Armstrong & Brooks Consulting Engineers 2009, Figure 1 and Daly 2010). Furthermore, the number of dwelling units associated with the proposed project is fewer than envisioned in the City's Water Master Plan (November 2005) and is within estimates of the City's ultimate build-out demand (UWMP 2005). In summary, a less-than-significant impact to water resources would occur given adequate supply is available, thereby eliminating the need to establish new or expanded water supplies.

Would the project be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs, and comply with federal, state, and local statutes and regulations related to solid waste?

Waste Management has indicated there is sufficient capacity at the El Sobrante Landfill to serve the proposed project with an estimated remaining capacity of 190 million tons and an estimated lifespan of 52 years. Waste Management has indicated that it can provide service to the proposed development including collection of construction waste, without any significant impacts on collection or disposal operations (Glynn 2010). Therefore, potential impacts associated with solid waste disposal services are considered less than significant.

5.11.6 Mitigation Measures

PUB-1 Prior to issuance of a grading permit, a cross-staffed brush engine will be required to be available at all times to assist with a fire during construction. If said equipment is not available from the Corona Fire Department, the applicant shall be required to secure such equipment/staffing.

PUB-2 Prior to the issuance of a grading permit, the applicant shall make a fair share contribution to fund any needed improvements to the City's communications equipment as identified by the City Fire Department. Any required improvements to the City's communications equipment shall be installed prior to project occupancy. This measure shall be implemented to the satisfaction of the City Fire Chief or his/her designee.

PUB-3 Prior to final tract map approval, in order to offset any potential impacts to the Corona-Norco Unified School District, the applicant would be required to pay state-mandated single family residential school facilities fees. The fee amount shall be determined based on the school fee schedule in place at the time of final tract map approval. These fees may be used to enhance, expand or develop new school facilities per the District's master facilities plan.

PUB-4 Prior to issuance of occupancy permits, the applicant shall pay an in-lieu fee for dedication of parkland as set by resolution of the City Council, or a combination of the respective amounts to be determined in the sole discretion of City, so long as the aggregate fair market value of the land and recreational facilities plus in-lieu fees does not exceed the limits established in Chapter 16.35 of the City's Municipal Code. The department of Parks and Community Services has determined that the payment of in lieu fees rather than parkland dedication will be adequate to mitigate any potential impacts. According to Chapter 16.35, Section 16.060 (E) of the Corona Municipal Code, a subdivision with fifty or less dwelling units shall pay fees because the amount of land dedicated would be less than 3 acres, which is the minimum the City would accept. Additionally, sufficient neighborhood and community parks exist within the immediate project area and funds would be more useful augmenting the Capital Improvement Program (C.I.P) Budget to be used for new park improvement costs (Garcia 2010b).

5.11.7 Level of Significance after Mitigation

The mitigation measures listed in Section 5.11.6 would reduce potential public services and utilities impacts to less than significant. Securing a cross staffed brush engine to assist with any

fires during construction shall ensure that a previously unidentified, impact to fire protection facilities or services does not occur. Payment of a fair-share fee to help offset the costs of City Fire Department communication systems shall adequately mitigate for any impacts to said facilities. Once this fee is paid, impacts to local fire services would be less than significant. Per California Government Code, Section 65996, payment of a school mitigation fee constitutes full and complete mitigation for impacts to school facilities. Therefore, impacts to school facilities are less than significant after mitigation. Similarly, payment of parkland fees constitutes adequate mitigation for impacts to park facilities. Therefore, impacts to parks would be less than significant after mitigation.

5.11.8 References

Armstrong & Brooks Consulting Engineers. 2009. *Preliminary Water Supply Study for TTM 34760 in the City of Corona, California*. Corona, California: Armstrong and Brooks Consulting Engineers. May 5.

Baker, N. 2010. "Will Serve Letter, Tract: 34760, 34 Lots Single Family Detached Homes, for the Development Located: Southerly of Malaga St., South of Upper Dr. and Foothill Parkway." Letter from N. Baker (Corona-Norco Unified School District) to J. Moquin (City of Corona, Community Development Department), January 14, with attachments.

California Government Code, Section 65996-65998. Payment of Fees, Charges, Dedications, or Other Requirements against a Development Project.

City of Corona. 2005. "*Urban Water Management Plan*." City of Corona.

Daly, J. 2010. "Water and Water Reclamation Information for the Rancho de Paseo Valencia Project in Corona, California." Letter from J. Daly (City of Corona, Department of Water and Power) to J. Moquin (City of Corona, Community Development Department), February 2, with attachments.

Dillon, J. 2010. "Requested Police Information on Rancho de Paseo Valencia Project." Memorandum from Consultant J. Dillon (City of Corona Police Department, Support Services Division) to Captain R. Cota (City of Corona Police Department, Investigations Services Division), January 22.

Garcia, G. 2010a. "Request for Parks/Recreation Information for the Rancho de Paseo Valencia Project in Corona, California." Letter response from G. Garcia (City of Corona, Parks and Community Services Department) to J. Moquin (City of Corona, Community Development Department), January 13.

Garcia, G. 2010b. "TTM 34760 Parkland Fee Explanation." E-mail response from G. Garcia (City of Corona, Parks and Community Services Department) to J. Moquin (City of Corona, Community Development Department), June 24.

Glynn, S. 2010. Response to letter of inquiry regarding the Rancho de Paseo Valencia Project in Corona, California. Letter from S. Glynn (Waste Management of the Inland Empire) to J. Moquin (City of Corona, Community Development Department), January 14.

Waltemeyer, D. 2010. Letter response from Chief D. Waltemeyer (City of Corona Fire Department) to J. Moquin (City of Corona, Community Development Department), January 13.

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5.12 TRANSPORTATION AND CIRCULATION

5.12.1 Introduction

This section consists of a summary of existing traffic and transportation facility conditions, anticipated traffic impacts, and applicable mitigation measures to reduce impacts to a level below significance.

5.12.2 Methodology

Preparation of this section involved summarizing information contained in the May 30, 2008 traffic study, *Updated Focused Site Traffic Impact Analysis TTM No. 34760 Residential Development, Corona, California*, prepared by LLG. The study analyzed existing and future weekday AM and PM peak hour conditions for near-term traffic (Year 2009) after project completion. The May 2007 traffic counts were projected to 2009 by adding an annual growth rate of 2%. According to Rafael Martinez, TE, of the City of Corona, PMK Associates (2006) studied growth over the past 20 years in Riverside and San Bernardino counties and found the average growth rate to be approximately 2%. There were no cumulative projects (i.e., approved or submitted development projects) in the project vicinity that would affect the study intersections at the time the traffic study was prepared. A supplemental letter report, "Supplemental General Plan Buildout and Construction Traffic Impact Analysis Assessment for the Rancho de Paseo Annex Project (TTM No. 34760)," was prepared by LLG and is dated June 8, 2009. The supplement addresses Year 2025 General Plan buildout traffic impacts and potential construction traffic impacts of the proposed project. For reference purposes, both of these reports are included in Appendix K to this EIR. Methods and references used in the preparation of these reports are contained therein.

Traffic Forecasting Methodology

The traffic impacts of the project are estimated using a multistep process. The first step consists of traffic generation, which estimates the total arriving and departing traffic on a peak hour and daily basis. This is forecast by applying the appropriate vehicle trip generation rates for the land appropriate land use type proposed by the project. The second step is traffic distribution, which identifies the origins and destinations of inbound and outbound project traffic. The third step is traffic assignment, which involves the allocation of project traffic to study area streets and intersections. Finally, with the forecasting process complete, the impact of the project is isolated by comparing LOS conditions at the study intersections using future traffic volumes with and without the forecasted project traffic.

5.12.3 Existing Conditions

Study Area

Three key intersections were designated for evaluation based on City of Corona focused site traffic impact analysis criteria and LLG's discussions with City staff. The study intersections include the following:

- Mountain Gate Drive at Lincoln Drive/Upper Drive
- Malaga Street at Upper Drive
- Main Street at Upper Drive.

Existing Street System

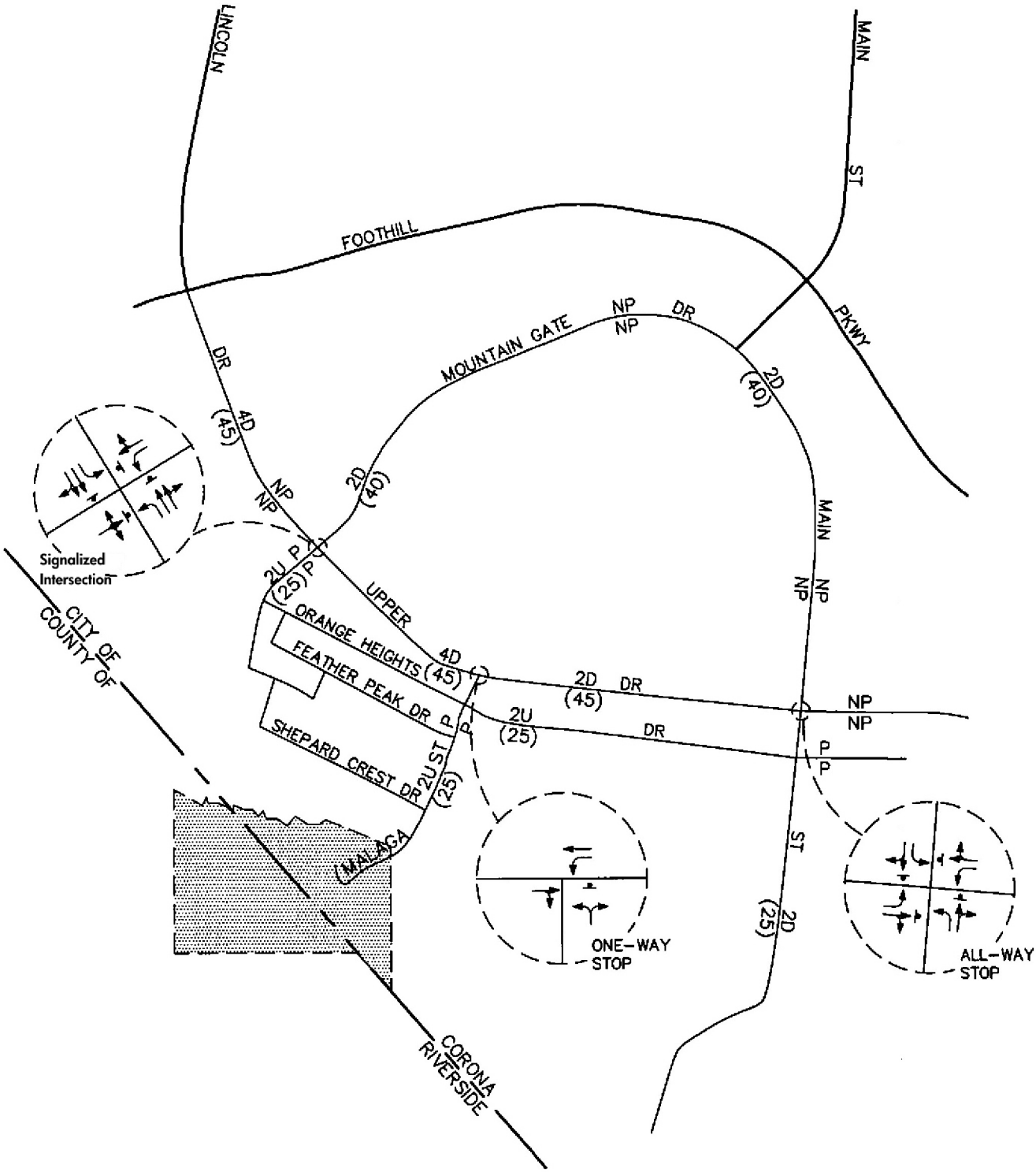
Figure 5.12-1 provides an inventory of the existing roadway network for the study intersections and includes number of travel lanes, turn lanes, speed limits, and intersection controls. Intersection peak hour traffic counts were collected at three study intersections for the LLG traffic study in May 2007. Existing AM and PM peak hour traffic volumes at the intersections and along street segments are provided on Figures 5.12-2 and 5.12-3.

Existing Intersection Conditions

Level of Service (LOS) is a professional industry standard by which the operating conditions of a given roadway segment or intersection are measured. LOS is defined on a scale of A to F, where LOS A represents the best operating conditions and LOS F represents the worst operating conditions. LOS A facilities are characterized as having free-flowing traffic conditions with no restrictions on maneuvering or operating speeds; traffic volumes are low and travel speeds are high. LOS F facilities are characterized as having forced flow with many stoppages and low operating speeds. The 2000 Highway Capacity Manual was utilized to translate the traffic counts at the study intersections to an LOS estimate (LLG 2008). Table 5.12-1 lists the characteristics of the six qualitative LOS categories.

Table 5.12-1
Level of Service Criteria

Level of Service	Unsignalized Intersections Delay (Seconds/Vehicle)[1]	Level of Service Description
A	Less than or equal to 10.0	Little or no delay
B	10.1 to 15.0	Short traffic delays
C	15.1 to 25.0	Average traffic delays
D	25.1 to 35.0	Long traffic delays
E	35.1 to 50.0	Very long traffic delays
F	Greater than or equal to 50.1	Severe congestion



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SOURCES: LLG 2008

FIGURE 5.12-1

Existing Roadway Conditions

Rancho de Paseo Valencia EIR

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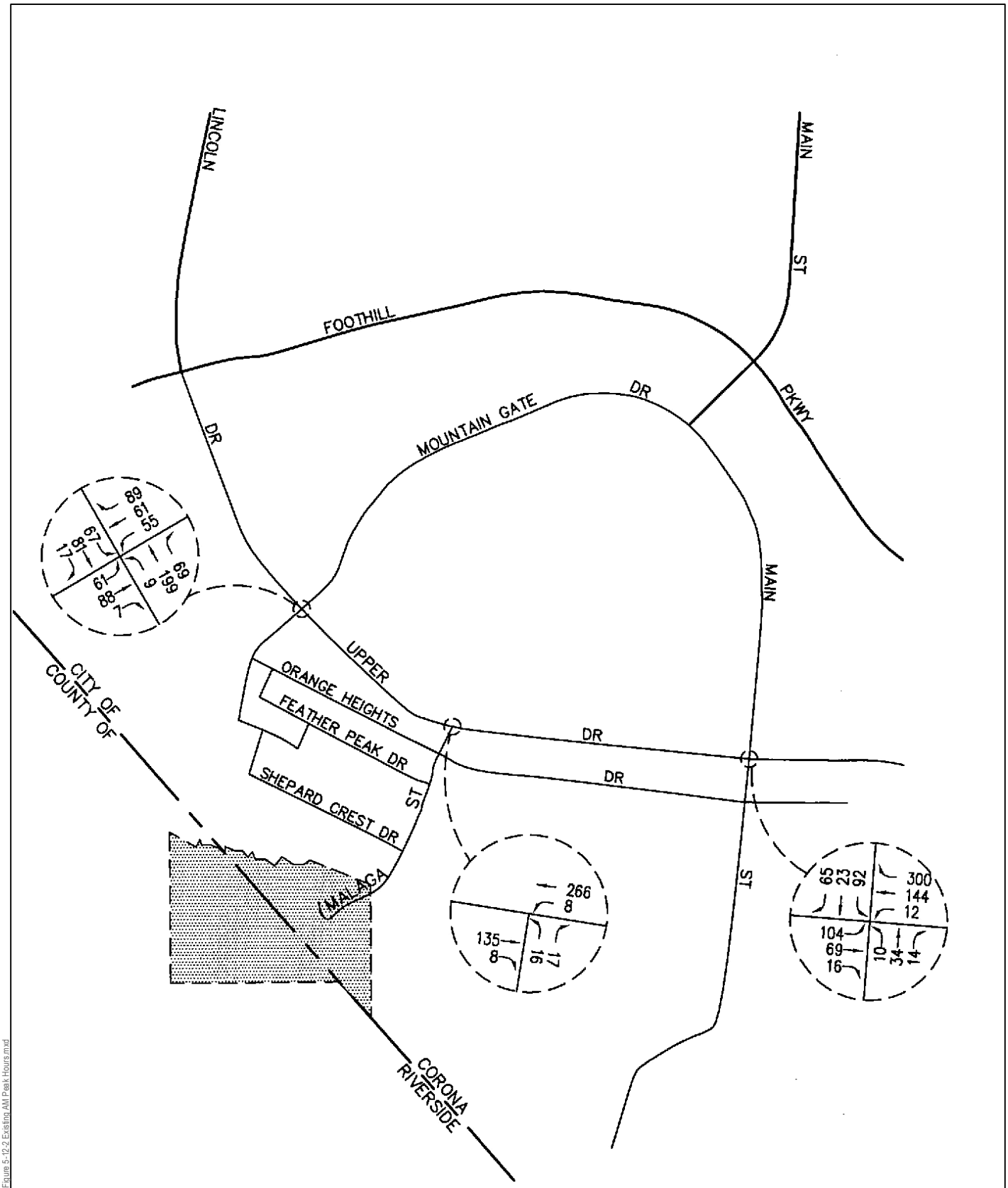

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SOURCE: LLG 2008

FIGURE 5.12-2

Existing AM Peak Hour Traffic Volumes

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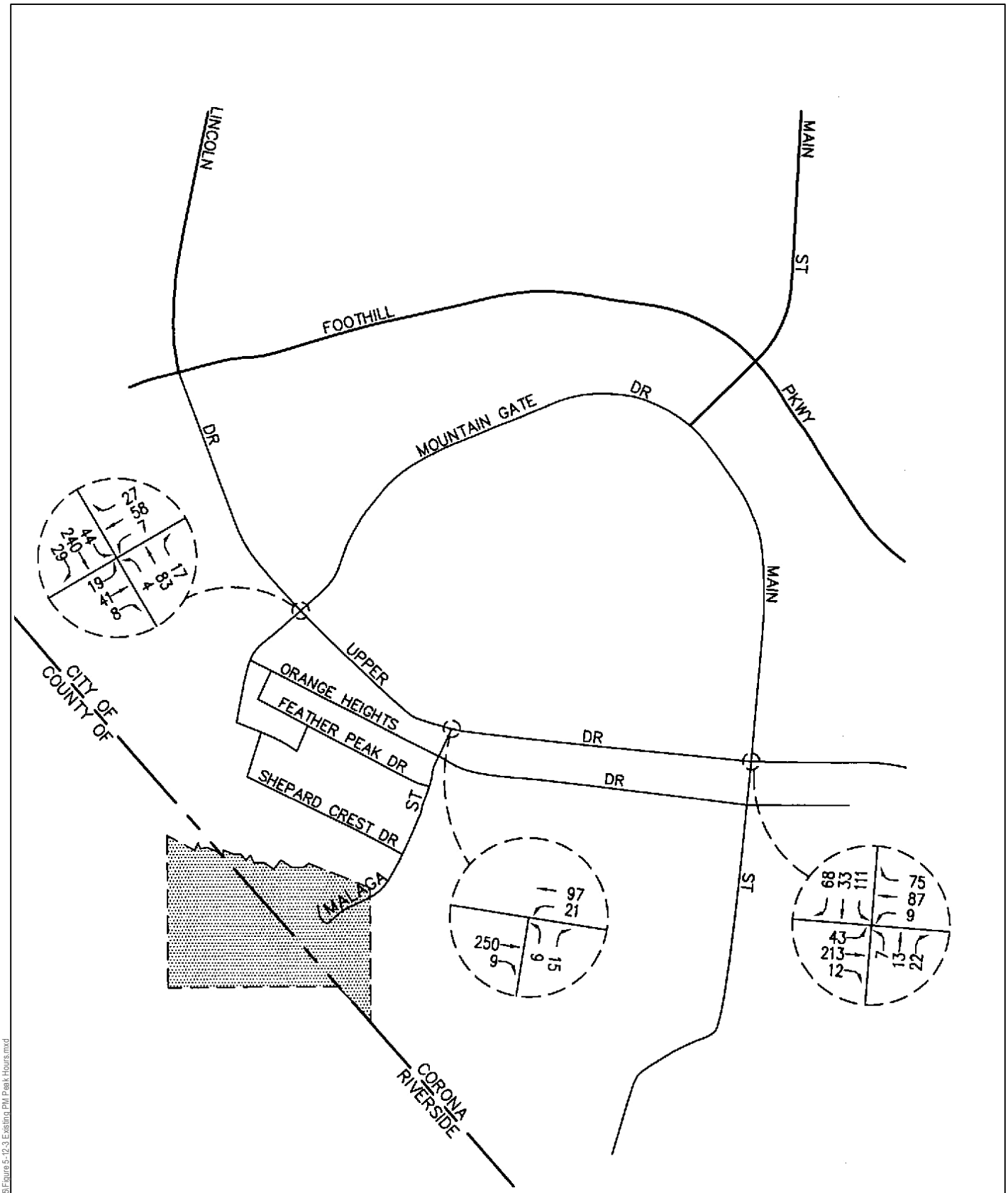

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SOURCE: LLG 2008

FIGURE 5.12-3

Existing PM Peak Hour Traffic Volumes

Rancho de Paseo Valencia EIR

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5.12.4 Thresholds of Significance

The following significance criteria, included in Appendix G of the CEQA guidelines, will determine the significance of a traffic/transportation impact. Impacts to traffic/transportation would be significant if the proposed project would:

a. Cause 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 volume to capacity ratio on roads, or congestion at intersections)

b. Exceed, either individually or cumulatively, a level of service standard established by the County Congestion Management Agency for designated roads or highways (the City of Corona has established LOS D as the minimal acceptable standard for City intersections)

c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks

d. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)

e. Result in inadequate emergency access

f. Result in inadequate parking capacity

g. Conflict with adopted policies, plans or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

5.12.5 Impacts

Would the project conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

Project Traffic Generation

The proposed project would not conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the transportation system, as construction and operational traffic would not put undue strain on the current circulation network. As shown in Table 5.12-2, the total project is calculated to generate approximately 325 ADT with 6 inbound / 19 outbound trips during the AM peak hour and 22 inbound / 13 outbound trips during the PM peak hour. The trip rate is based on the *Trip Generation, 7th Edition*, Institute of Transportation Engineers, 2003 (LLG 2008). Since the traffic analysis was completed, an 8th

Edition of the *Trip Generation* handbook has been released. However, rates are identical to those in the 7th Edition and, therefore, no changes are necessary to this analysis or the traffic report.

Table 5.12-2
Project Traffic Generation Rates

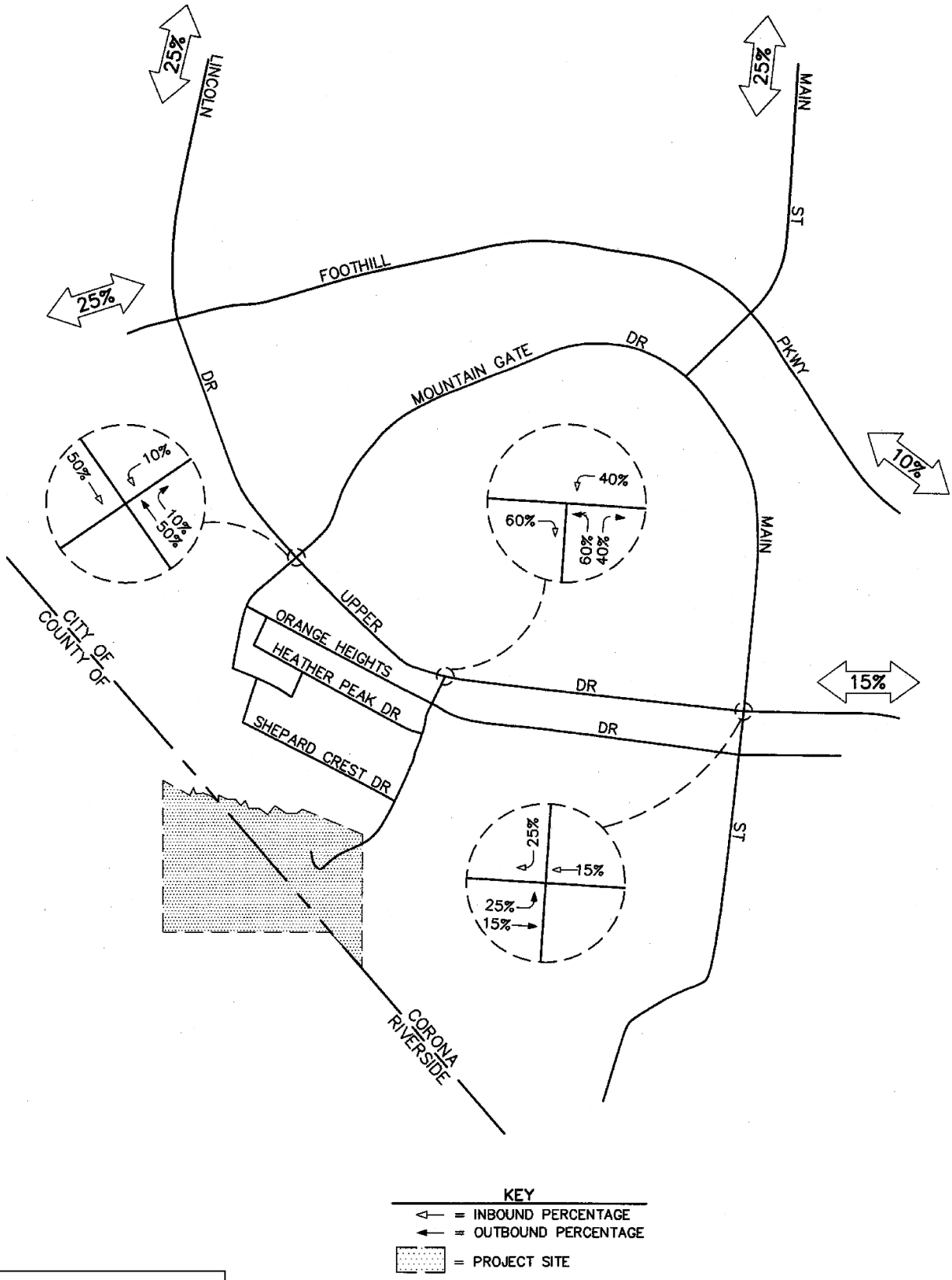
Land Use	Daily	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Generation Factors: 210 – Single-Family Detached Housing	9.57*	0.19	0.56	0.75	0.64	0.37	1.01
Generation Forecast: Residential – 34 dwelling units	325	6	19	25	22	13	35
Proposed Project Traffic Generation	325	6	19	25	22	13	35

* Trip ends per dwelling unit

The project traffic distribution pattern is presented in Figure 5.12-4. Project traffic volumes entering and exiting the site have been distributed and assigned to the adjacent street system based on expected localized traffic flow patterns; ingress/egress availability at the project site; traffic-carrying capacity and travel speed available on roadways serving the site; and review and approval of the trip distribution from City staff.

Construction Traffic Impacts

Construction traffic will access the site primarily via the southern extension of Malaga Street into the site, as well as an alternative access point via the proposed secondary fire access from Shepard Crest Drive at Concord Way. The project would utilize approximately 20 pieces of equipment during site grading operations including 6 graders, 6 dozers, 4 loaders, and 3 water trucks. This equipment will be stored on site for the duration of grading activities and will therefore result in one inbound and one outbound trip for each piece of equipment. Grading for the project would result in the movement of approximately 1.2 million cubic yards of soil. The soil needed for the project site would balance, meaning that there would not be excess soil required to be transported away from the site or the need to import additional soil in order to create the proposed building pads and associated infrastructure. Site grading operations are expected to last approximately six months and result in about 25 employees on the site during this phase. This expected to result in about 75 daily employee trips with 25 trips in the AM peak hour (all inbound) and 25 trips in the PM peak hour (all outbound).



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SOURCE: LLG 2008

FIGURE 5.12-4

Proposed Project Traffic Distribution

Rancho de Paseo Valencia EIR

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Site preparation including street improvements and utility installation is expected to take about 6 months and up 14 employees for these operations resulting in a total of about 42 ADT for both activities combined. Home construction is expected to last 1 year with a total of 10 employees on site at once. This would result in about 30 ADT for the duration of this activity. Construction related trips associated with employees traveling to and from the site, as well as the initial equipment transport and removal, may result in some minor traffic delays for vehicles using Malaga Street and Mountain Gate Drive in the early morning and late afternoon. However, such delays will be minimal and short term and would not result in level of service declines at area intersections. Therefore, project construction traffic would result in a less-than-significant impact.

Operational Traffic Impacts

As shown on Figure 3-2, access to the site would be provided via Malaga Street. This main project access is projected to operate at acceptable LOS during the AM and PM peak hours. Therefore, traffic entering and exiting the site would be able to do so in a safe and efficient manner without any undue congestion. See also discussion below regarding the project's relationship to level of service standards established by the City.

Alternative Transportation and Mass Transit

As the project proposes the subdivision of 34 single-family lots and is located adjacent to an existing single-family residential neighborhood in an area not currently served by mass transit, the proposed project would not alter or otherwise place an undue burden on the current circulation system. Additionally it is not anticipated that the project would create a high demand for transit service, nor would it interfere with the provision of those services in the City or surrounding areas. Moreover, the project would not conflict with an adopted City policy promoting public transportation in the area. Therefore, overall circulation patterns would not be substantially different from existing conditions. Impacts would be less than significant.

Would the project conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

Near-Term Traffic

Table 5.12-3 summarizes the AM and PM peak hour service levels for Year 2007 existing traffic conditions, Year 2009 background traffic conditions (includes a 2% annual growth rate from 2007 conditions), and Year 2009 background traffic conditions plus project traffic. The table indicates that study area intersections are calculated to continue to operate at LOS B or better in 2009 for both with and without the addition of project traffic. No significant impacts are calculated for study area intersections as project-related traffic would not exceed threshold levels.

Table 5.12-3
Existing and Year 2009 Intersection Operations

Key Intersections	Time Period	Existing Traffic Conditions		Year 2009 Background Traffic Conditions		Year 2009 Background Plus Project Traffic Conditions		Significant Impact?
		Delay	LOS	Delay	LOS	Delay	LOS	Yes/No
Mountain Gate Drive at Lincoln Drive/Upper Drive	AM	10.4 s/v	B	10.7 s/v	B	10.8 s/v	B	NO
	PM	9.1 s/v	A	9.2 s/v	A	9.3 s/v	A	NO
Malaga Street at Upper Drive	AM	10.4 s/v	B	10.5 s/v	B	10.8 s/v	B	NO
	PM	10.4 s/v	B	10.5 s/v	B	10.9 s/v	B	NO
Main Street at Upper Drive	AM	13.3 s/v	B	14.1 s/v	B	14.2 s/v	B	NO
	PM	10.0 s/v	B	10.2 s/v	B	10.3 s/v	B	NO

Note: Average delay expressed in seconds per vehicle (s/v).

General Plan Buildout Traffic

The Year 2025 General Plan Buildout traffic volume forecasts were obtained through utilization of the travel demand model developed for the City's Circulation Element update. The model is based upon the regional model of the Southern California Association of Governments (SCAG), and it includes regional growth outside the City. Inside the City, the buildout of the proposed land use plan has been modeled to determine the future increase in trip making on city streets.

Using the City's transportation model with selected SCAG Regional Transportation Plan projects, along with the County of Riverside to County of Orange connection project, projected traffic volumes were obtained for each study intersection. The model volumes were then reviewed and adjusted to convert roadway segment volumes to intersection peak hour turning movement volumes. Details of that conversion process and the worksheets used to obtain traffic volumes can be found in the "Supplemental General Plan Buildout and Construction Traffic Impact Analysis Assessment for the Rancho de Paseo Annex Project (TTM No. 34760)," which is contained in Appendix K of this document.

Year 2025 General Plan Buildout and Project Traffic Volumes

The anticipated AM and PM General Plan Buildout traffic volumes at the key study intersections are presented in Figures 5.12-5 and 5.12-6. The estimates of the project-generated traffic volumes were added to the General Plan buildout conditions to develop traffic projections for the General Plan plus project traffic conditions. Figures 5.12-7 and 5.12-8 present the AM and PM peak hour volumes, respectively, at the key intersections for General Plan buildout, plus project traffic conditions.

Year 2025 General Plan Buildout Plus Project Intersection Analysis

Table 5.12-4 summarizes the AM and PM peak hour service levels of the study intersections for the Year 2025 General Plan buildout plus project scenario. The table indicates that study area

intersections are calculated to continue to operate at LOS B or better in 2025 for both with and without the addition of project traffic which is well below the City of Corona goal of LOS D or better. These intersection conditions are depicted in Figures 5.12-9 and 5.12-10. Therefore a less-than-significant impact would result in the long term (General Plan Buildout) scenario.

Table 5.12-4
General Plan Buildout Plus Project Intersection Operations

Key Intersections	Time Period	General Plan Buildout Traffic Conditions		General Plan Buildout Plus Project Traffic Conditions		Significant Impact?
		Delay	LOS	Delay	LOS	
Mountain Gate Drive at Lincoln Drive/Upper Drive	AM	11.1 s/v	B	11.2 s/v	B	NO
	PM	9.6 s/v	A	9.7 s/v	A	NO
Malaga Street at Upper Drive	AM	11.0 s/v	B	11.4 s/v	B	NO
	PM	11.0 s/v	B	11.5 s/v	B	NO
Main Street at Upper Drive	AM	16.9 s/v	B	17.0 s/v	B	NO
	PM	11.2 s/v	B	11.3 s/v	B	NO

Notes: Average delay expressed in seconds per vehicle (s/v).

Would the project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks?

As discussed in Section 5.7, the Corona Municipal Airport is approximately 4.6 miles northwest of the project site. The project site is not within any compatibility zones for this airport. No features of the residential project would result in a change in air traffic patterns at this airport. Therefore, impacts would be less than significant.

Would the project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Potential hazards associated with internal circulation were evaluated in terms of vehicle–pedestrian conflicts. Based on a review of the site plan by LLG, the site layout does not create any unsafe vehicle–-pedestrian conflict points. The internal circulation throughout the residential area is adequate with sufficient site distances at the one internal intersection. A further sight distance evaluation was performed by LLG at the request of City staff for the proposed “A” Circle south of Malaga Street, based on the current Caltrans Highway Design Manual and City Standards. As the proposed project roadways will be private streets, the recommended corner site distance requirement is 150 feet. Corner sight distance is measured from the driver’s eyes (3.5 feet above pavement) to an object 0.5 foot high on the roadway. Based on those calculations, “A” Circle has adequate sight distance as only a minimal portion of the future landscaped area would be affected (see LLG 2008, Figure 9-1). Active agricultural operations will cease upon

preparation of the project site, and there are no incompatible uses adjacent to the project site that would cause circulation hazards.

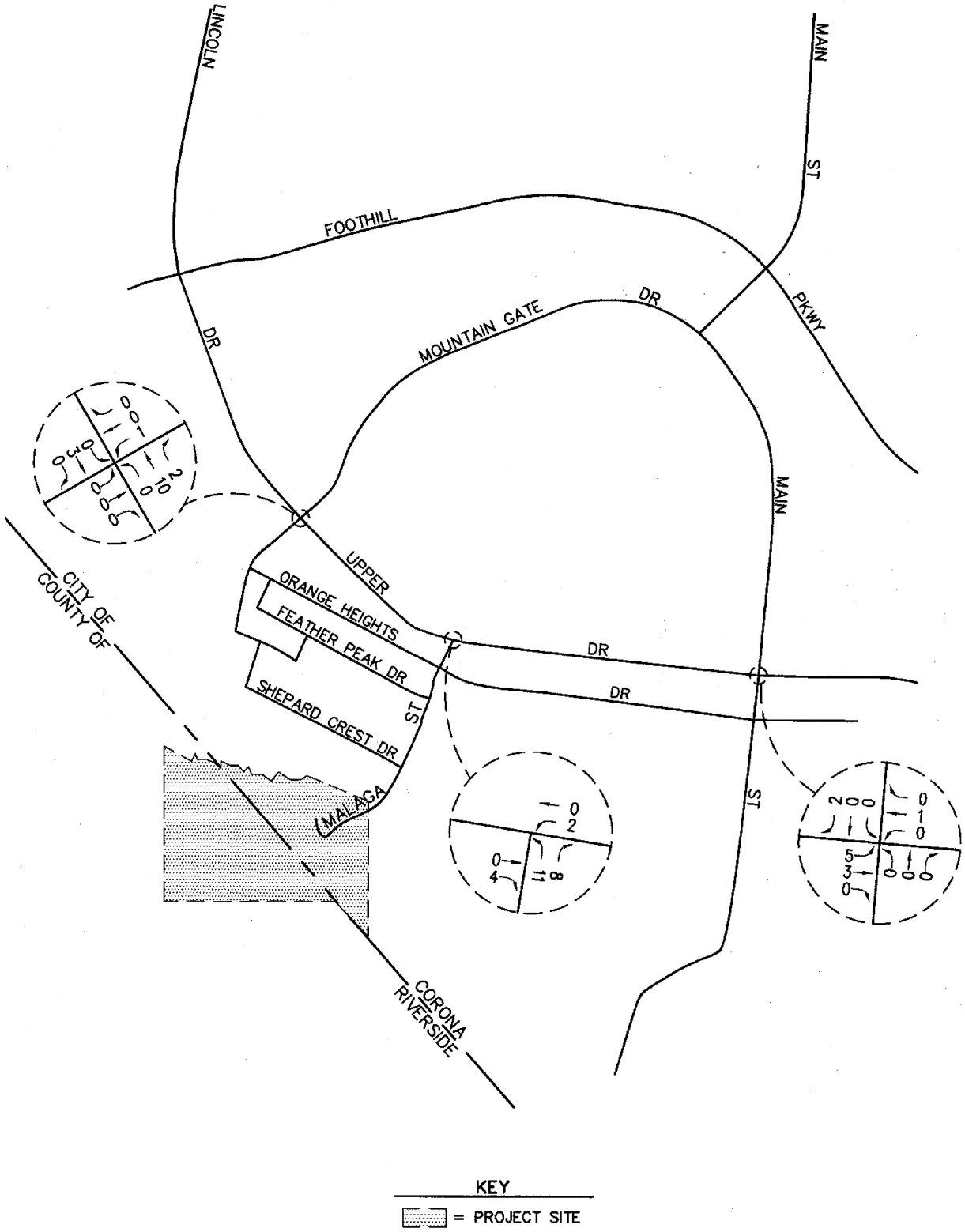
During early project planning, residents in the Mountain Gate community immediately north of the proposed project site expressed concern with likely speeds of vehicles exiting the proposed project site given the steep nature of the proposed project's entrance street. The potential pitch of this street may result in a hazard to the nearby community; therefore, mitigation is provided (see Section 5.12.6, *Mitigation Measures*, Mitigation Measure TRF-1). Implementation of this mitigation measure would ensure that hazards associated with project design are mitigated to a level below significance.

Would the project result in inadequate emergency access?

As noted above in the "Site Access Evaluation," site access will be provided via Malaga Street. Traffic entering and exiting the site, including emergency vehicles, will be able to do so in a safe and efficient manner without any undue congestion or delays. Further, the project would be equipped with two emergency access routes that would be accessible to emergency vehicles. As shown on Figure 3-4, an emergency access route would be available at the confluence of Shepard Crest Drive and Goddard Way. This access way would provide for access to the proposed lots along the western edge of the development. Further, an emergency access road would be constructed at the junction of the existing project driveway and Malaga Street and would wind southward providing access to the homes along the southern and eastern edges of the proposed development. These access routes have been reviewed and approved as adequate by the Corona Fire Department. Therefore, inadequate emergency access would not occur, and mitigation is not required.

Would the project conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

The project would not conflict with adopted policies, plans, or programs supporting alternative transportation including bicycle or pedestrian facilities. The Riverside Transit Agency provides bus service that serves the City, as well as 2,500 square miles in western Riverside County. The routes connect to the cities of Riverside, Norco, and Orange, as well as access the Corona Park-N-Ride Lot and the West Corona Station on the Metrolink Commuter Rail system. The nearest Riverside Transit Agency route provides a stop near the intersection of Main Street and Ontario Avenue approximately 2 miles north of the project site. As previously discussed, as a single-family residential project with a total of 34 new homes, it is not anticipated that the project would create high demand for transit service, nor would it interfere with provision of those services in the City or surrounding areas. Therefore, a less-than-significant impact to alternative transportation plans and policies would occur.



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MARCH 2010

SOURCE: LLG 2008

FIGURE 5.12-5

Proposed AM Peak Hour Traffic Volumes

Rancho de Paseo Valencia EIR

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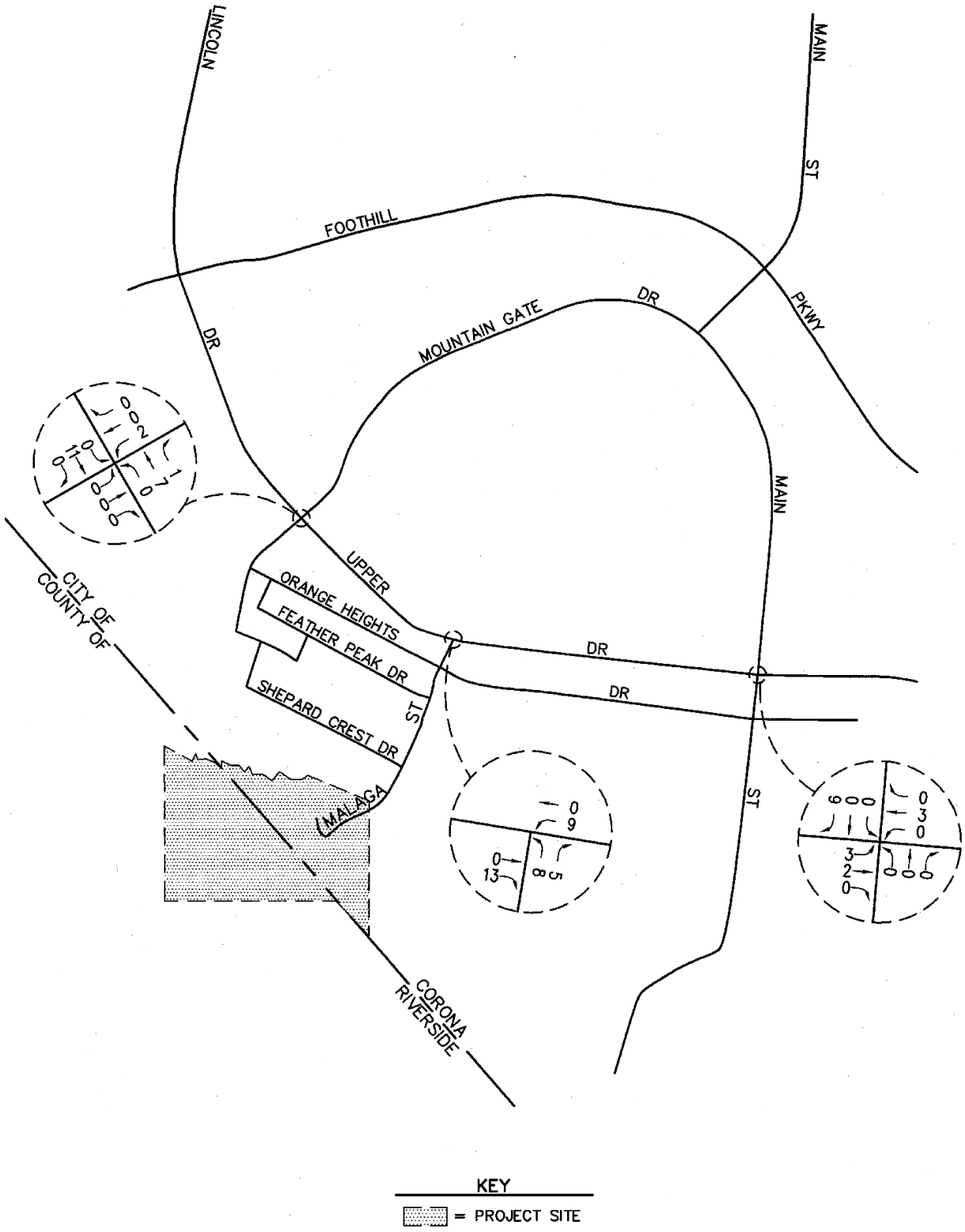

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SOURCE: LLG 2008

FIGURE 5.12-6

Proposed PM Peak Hour Traffic Volumes

Rancho de Paseo Valencia EIR

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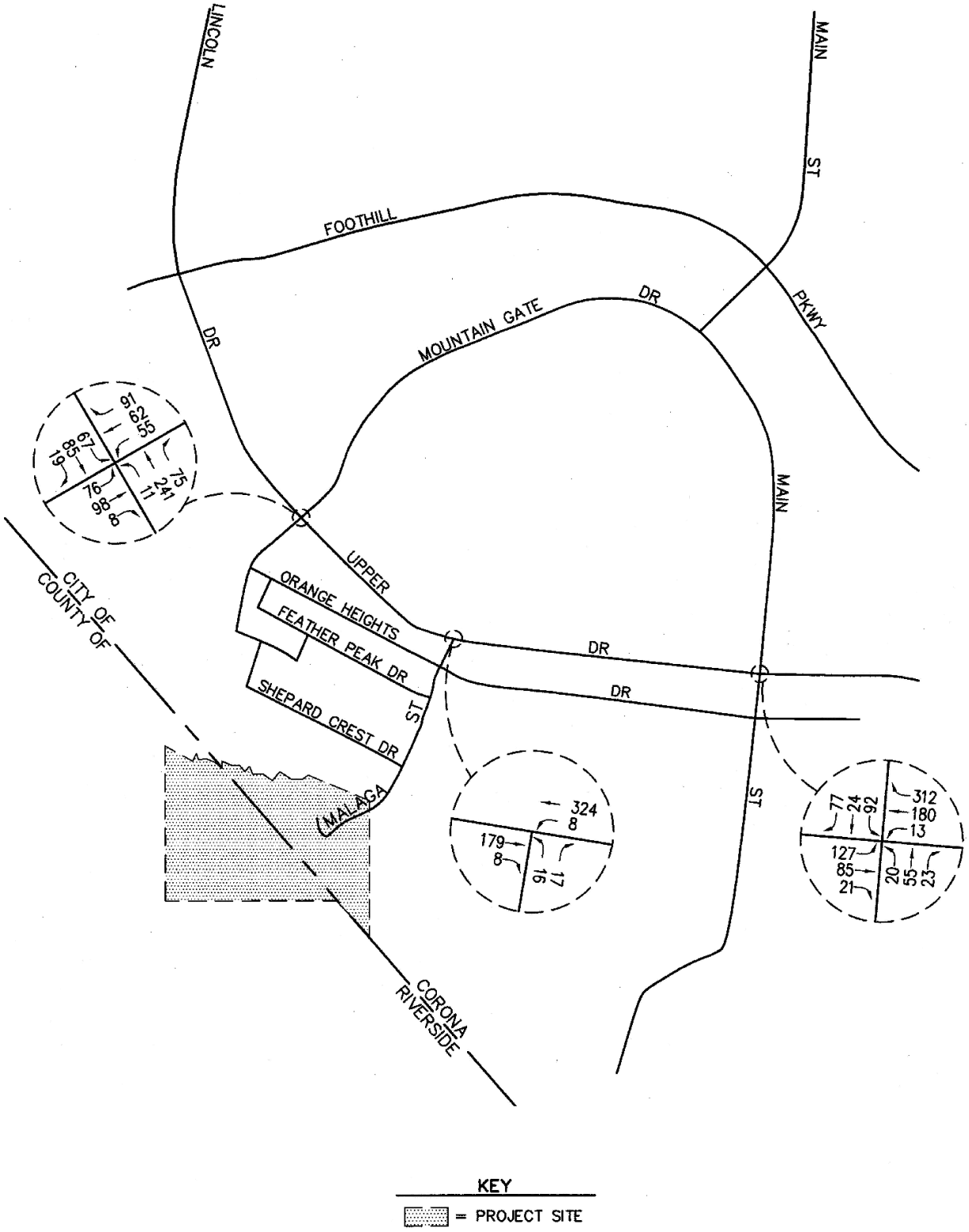

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SOURCE: LLG 2008

FIGURE 5.12-7

Proposed AM Peak Hour Traffic Volumes Long Term

Rancho de Paseo Valencia EIR

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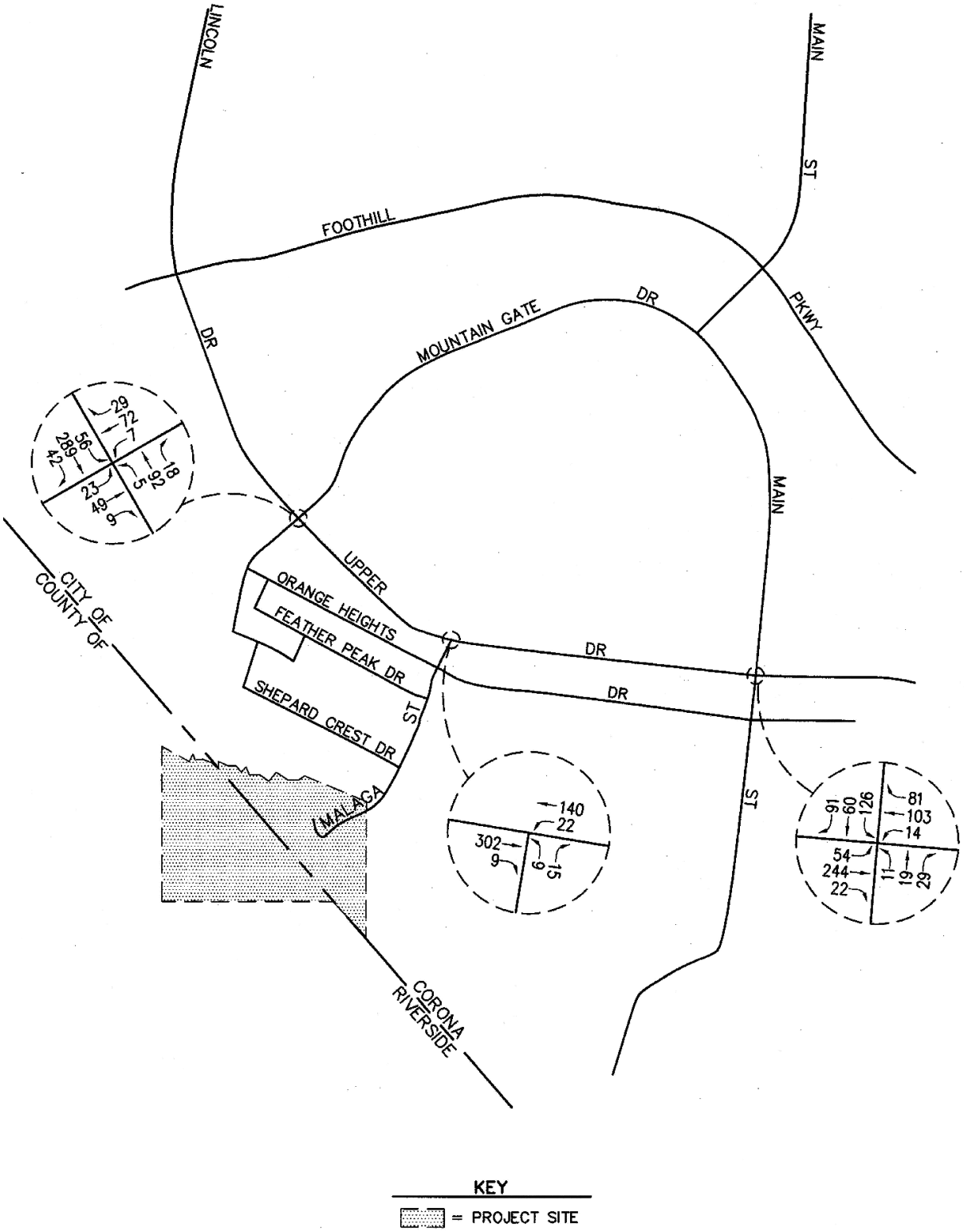

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MARCH 2010

SOURCE: LLG 2008

FIGURE 5.12-8

Proposed PM Peak Hour Traffic Volumes Long Term

Rancho de Paseo Valencia EIR

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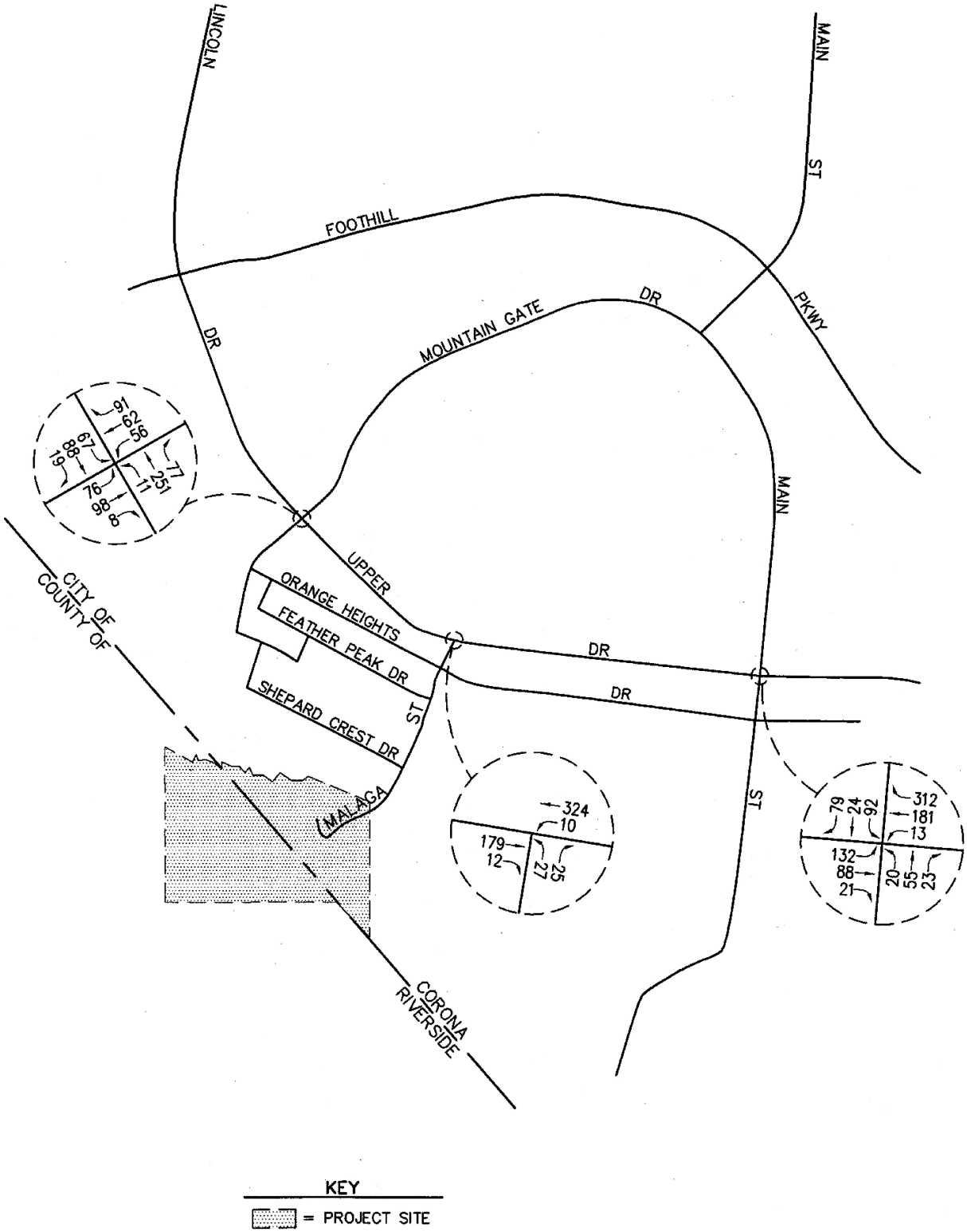

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SOURCE: LLG 2008

FIGURE 5.12-9

Proposed AM Peak Hour Traffic Volumes Long Term plus Project

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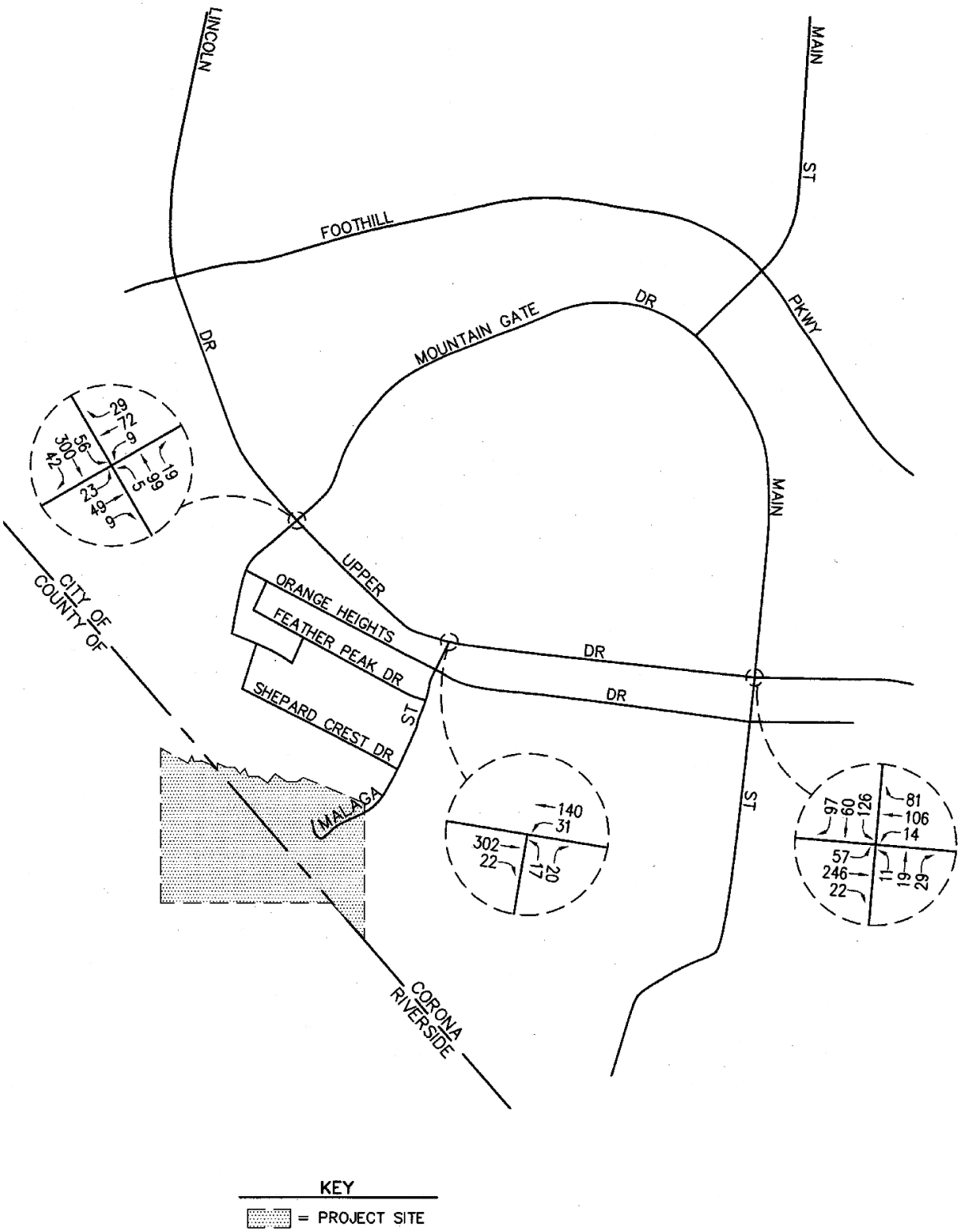

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SOURCE: LLG 2008

FIGURE 5.12-10

Proposed PM Peak Hour Traffic Volumes Long Term plus Project

Rancho de Paseo Valencia EIR

Z:\Projects\632700\MAPDOC\MAPS\EIR\Section 5\Figure 5-12-10 Proposed PM Peak Hours Long Term Project.mxd

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5.12.6 Mitigation Measures

The following mitigation measures would reduce traffic and circulation impacts to less than significant.

TRF-1 Prior to final tract approval, the applicant shall install an all-way stop at the intersection of Malaga Street and Shepard Crest Drive to facilitate circulation. Further, this traffic stop will slow northbound traffic coming off the proposed project's entrance incline.

5.12.7 Level of Significance after Mitigation

The mitigation listed in Section 5.12.6 would reduce potential traffic and circulation impacts to a level below significant.

5.12.8 References

LLG (Linscott, Law & Greenspan). 2008. *Updated Focused Site Traffic Impact Analysis TTM No. 34760 Residential Development, Corona, California*. Prepared by LLG for Adobe Oaks, LLC. Costa Mesa, California: LLG. May 30.

LLG. 2009. "Supplemental General Plan Buildout and Construction Traffic Impact Analysis Assessment for the Rancho de Paseo Annex Project (TTM No. 34760)." Letter report from LLG to Manuel Valencia (Adobe Oaks, LLC), June 8.

Lyon Communities, Inc. 1989. *Mountain Gate Specific Plan*. SP-89-01. Prepared for Lyon Communities, Inc. by EDAW, Inc. Irvine, California: EDAW, Inc. June 7, 2009.

Martinez, Rafael. 2010. "Traffic information request for TTM 34760, Rancho de Paseo Valencia project." E-mail correspondence from R. Martinez (City of Corona Traffic Engineer) to J. Moquin (City of Corona, Community Development Department), June 30.

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5.13 GREENHOUSE GAS EMISSIONS

5.13.1 Introduction

The analysis includes a discussion of existing conditions, identification of significance thresholds, and a determination of whether greenhouse gas (GHG) emissions are considered significant from a CEQA perspective.

5.13.2 Methodology

The impact analysis evaluates project-related GHG emissions. Preparation of this section is based primarily on information contained in the *Air Quality Greenhouse Gas Analysis* prepared by Brian F. Smith and Associates, Inc., on March 14, 2010, and revised on November 9, 2010. This report is contained in Appendix B.

5.13.3 Existing Conditions

The California Global Warming Solutions Act of 2006 (AB 32) was signed into law by Governor Schwarzenegger on September 27, 2006. AB 32 establishes a GHG emissions limit that is equivalent to the 1990 levels and which is to be achieved by 2020. The 1990 emissions levels are approximately 25% below "business as usual." Business as usual conditions represent what would occur in the absence of any GHG reduction actions.

The California Air Resources Board has been assigned to carry out and develop the programs and requirements necessary to achieve the goals of AB 32. Under AB 32, the California Air Resources Board must adopt regulations requiring the reporting and verification of statewide GHG emissions. This program will be used to monitor and enforce compliance with the established standards. The California Air Resources Board is also required to adopt rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emission reductions. AB 32 allows the California Air Resources Board to adopt market-based compliance mechanisms to meet the specified requirements. Finally, the California Air Resources Board is ultimately responsible for monitoring compliance and enforcing any rule, regulation, order, emission limitation, emission reduction measure, or market-based compliance mechanism adopted.

The first actions under AB 32 resulted in the adoption of nine early action GHG emission reduction measures in the year 2007. Additionally, as required under AB 32, on December 6, 2007, the California Air Resources Board approved the 1990 GHG emissions inventory, thereby establishing the emissions limit for 2020. The 2020 emissions limit was set at 427 million metric tons of carbon dioxide equivalent ($MMTCO_2e$). In addition to the 1990 emissions inventory, the California Air Resources Board also adopted regulations requiring mandatory reporting of GHGs

for large facilities that account for 94% of GHG emissions from industrial and commercial stationary sources in California. The proposed project does not fall under these new reporting rules.

On December 11, 2008, the California Air Resources Board approved the required Climate Change Scoping Plan (the "Scoping Plan") to achieve the goals of AB 32. The Scoping Plan establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions. The Scoping Plan evaluates opportunities for sector-specific reductions, integrates all California Air Resources Board and Climate Action Team early actions and additional GHG reduction measures by both entities, identifies additional measures to be pursued as regulations, and outlines the role of a cap-and-trade program. The Scoping Plan anticipates that 33% of California's electricity will be provided by renewable resources by 2020, as called for in the Renewables Portfolio Standard.

The strategies identified by the Scoping Plan that are most relevant to the project are those related to energy efficiency programs and increasing the renewable energy component of the statewide electricity production portfolio. A green building strategy offers a comprehensive approach to reducing direct and indirect GHG emissions that cross-cuts multiple sectors, including electricity/natural gas, water, recycling/waste, and transportation. Such a strategy would produce GHG savings through buildings that exceed minimum energy efficiency standards, decrease consumption of potable water, reduce solid waste during construction and operation, and incorporate sustainable materials.

5.13.4 Thresholds of Significance

The following significance criteria, included in Appendix G of the CEQA guidelines, will determine the significance of an impact resulting from greenhouse gas emissions. Impacts would be significant if the proposed project would:

a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment

b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases

The South Coast Air Quality Management District (SCAQMD) has not established emission-based significance thresholds for GHG emissions recommended for use by other lead agencies (e.g., the City of Corona). However, the City of Corona has recommended using a maximum threshold of 3,000 metric tons of GHGs, and requires that all projects producing more than 3,000 metric tons be required to provide reduction measures to reduce GHGs by at least 25%. Furthermore, consistency with AB 32 is demonstrated by the implementation of reasonable reduction measures necessary to reduce GHGs by 25% from business as usual. It should be noted that the City of Corona

significance thresholds for GHGs are in draft form, however, the 3,000 metric ton screening thresholds and a 25% reduction from business as usual can be utilized under CEQA.

5.13.5 Impacts

Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

GHGs contributed from the proposed project consist of carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). For purposes of this analysis, both CH_4 and N_2O can be converted to an equivalent amount of CO_2 ($CO2_e$) by multiplying the calculated levels of CH_4 and N_2O by a Global Warming Potential. The U.S. Environmental Protection Agency (EPA) publishes Global Warming Potentials for various GHGs and reports that the Global Warming Potential for CH_4 and N_2O is 21 and 310 respectively. Calculations of amounts of CO_2, CH_4, and N_2O are made based on methodologies found in the California Climate Action Registry General Reporting Protocol Version 3.1-January 2009 (CCARGROV3.1).

CO_2e emissions generated from the project include vehicular off-site contributions, as well as on-site area emissions from combustion activities utilizing natural gas and indirect electricity use. However, the largest source of CO_2e is produced from the projects vehicular trip generation.

Offsite Project Related Vehicular Usage

The current average for fleet-wide gas mileage in California is 25 mpg. Calculations for project generated GHGs are based on the assumption of 340 daily trips at 20 miles per trip. This assumption yields a project prediction of 99,280 gallons of fuel used each year or 2,482,000 vehicle miles traveled/25 mpg.

A conservative estimate for the average vehicle fleet age for the proposed project could be estimated as the average between the year 2000 and present and could assume to have a 50/50 mix between passenger vehicles and light duty trucks. The proposed project is estimated to generate 897.64 Metric Tons of CO_2e from mobile vehicular traffic (Brian F. Smith and Associates 2010).

Indirect Electricity Usage

CO_2 generated from off-site sources in the production of electricity is much more difficult to mitigate; however, taking steps to become more energy efficient and utilizing renewable non-carbon based energy sources can reduce a projects CO_2e footprint. The proposed project would generate 63.1 Metric Tons of CO_2e as a result of electricity usage (Brian F. Smith and Associates 2010).

Project Related Natural Gas Usage

The proposed project would generate 144.66 metric tons of CO_2e as a result of natural gas usage (Brian F. Smith and Associates 2010).

Summary

According to the analysis of daily operation activities for the proposed development performed by Brian F. Smith and Associates (2010), the proposed project is expected to produce 1105.4 metric tons of CO2e. This amount is within the significance threshold of 3,000 metric tons of CO2e as established by the City of Corona; therefore, impacts are less than significant. However, consistent with the City's goal of implementing AB 32, in order to ensure that the project's CO2e emission are 25% below business as usual, mitigation has been provided (see Mitigation Measures 5.13.6, Mitigation Measure GHG-1). Compliance with Mitigation Measure GHG-1 is expected to reduce CO2e from the project by 295.29 metric tons and would reduce the overall project emissions from business as usual by 26.7%, thus meeting the requirements of the significance threshold (Brian F. Smith and Associates 2010).

Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Reduction measures are provided to ensure consistency with AB 32 goals to reduce GHGs by 25% from business as usual (see Section 5.13.6, Mitigation Measures, Mitigation Measure GHG-1). Incorporation of mitigation measure GHG-1 would reduce GHG emissions to 810.1 metric tons of CO_2e and would result in a 26.7% reduction from business as usual. As a result, the project would be consistent with the goals of AB 32, and impacts would be less than significant.

5.13.6 Mitigation Measures

GHG-1 In the year 2020, emission factors will be less than or equal to requirements such as that which will require automakers to boost fleet wide gas mileage averages to 35 mpg. This increase in average gas mileage will reduce energy needs for project vehicles by up to 40% (Brain F. Smith and Associates 2010). This reduction would be expected to reduce project related CO_2e by 264.14 tons or 29.4% per year.

The EPA and the US Department of Energy recommend building homes and habitable areas to achieve energy star compliance, as they are at least 15% more efficient than homes built to the 2004 International Residential Code, and include additional energy-saving features that typically make them 20%–30% more efficient than standard homes (Brian F. Smith and Associates 2010). Each residential unit shall achieve energy star compliance, as they would consume only

85% of the business as usual energy requirements. Once building permits are requested, the City of Corona shall verify that design will meet the EPA's energy star compliance guidelines. Achievement of energy star compliance is expected to reduce CO_2e for both natural gas and electricity levels by 31.16 tons.

5.13.7 Level of Significance after Mitigation

CO_2e emissions would be less than the 3,000 metric tons of CO_2e significance thresholds established by the City of Corona. Additionally, increases in average gas mileage and adherence to energy star requirements would reduce project CO_2e emissions by 26.7%, ensuring compliance with AB 32 goals. Therefore, impacts related to GHG emissions would be less than significant once mitigated. The mitigation measures listed above in Section 5.13.6 would reduce potential greenhouse gas impacts to a level that is less than significant.

5.13.8 References

Brian F. Smith and Associates. 2010. *Air Quality Greenhouse Gas Analysis*. TTM No. 34760. Prepared by Ryan S. Taylor for Brian F. Smith and Associates, Inc. Poway, California: Brian F. Smith and Associates. November 9.

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SECTION 6.0
CUMULATIVE IMPACTS

6.1 INTRODUCTION/PURPOSE

In many cases, the impact of a single project may not be significant, but when combined with other projects, the "cumulative" impact may be significant. Section 15355 of the State CEQA Guidelines (14 CCR 15000 et seq.) defines "cumulative impacts" as two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. State CEQA Guidelines Section 15130(b) states that "the discussion [of cumulative impacts] need not provide as great of detail as is provided of the effects attributable to the project alone." Section 15130(b) further states that a cumulative impact discussion should be guided by the standards of practicality and reasonableness and that the same level of detail should correspond to the severity of the impacts and their likelihood of occurrence.

Cumulative impacts can occur from the interactive effects of a single project. For example, the combination of noise and dust generated during construction activities can be additive and can have a greater impact than either noise or dust alone. However, substantial cumulative impacts more often result from the combined effects of past, present, and future projects that are located in proximity to the project under review. For example, the wastewater treatment demand generated by a project may not be significant when analyzed alone; however, when analyzed in combination with the wastewater demands of approved or proposed projects, the wastewater demands may exceed the resource capabilities of the service agency, resulting in a significant cumulative impact. Therefore, it is important for a cumulative impact analysis to be viewed over time and in conjunction with other related past, present, and reasonably foreseeable future developments that may have impacts that might compound or interrelate with those of the project under review.

6.2 CUMULATIVE FORECASTING METHODOLOGY

Section 15130 (b)(1)(A) of the State CEQA Guidelines allows for the preparation of a list of past, present, and reasonably anticipated future projects as a viable method of determining cumulative impacts. This discussion utilizes that approach: an initial list and description of related projects followed by a discussion of the effects that the proposed project may have on each environmental category of concern, such as traffic, noise, biology, etc. Consistent with CEQA, this discussion is guided by the standards of practicality and reasonableness.

6.3 LIST OF RELATED PROJECTS

This section of the analysis provides a list of past, present, and reasonably foreseeable future projects. Several development proposals have been approved in proximity to the proposed

project but not yet developed. These projects together with the proposed project could result in an increase in construction-related or long-term environmental impacts.

The geographic scope of the project and the level of the potential cumulative projects are greatly limited due to the unique characteristics of the project site. The site is part of an existing specific plan that has already evaluated and anticipated the full development and buildout of the specific plan and the proposed project. At this time, the bulk of the specific plan and the surrounding residential area have already been developed for such uses. Additionally, the project site is bordered by steep hillsides and forested land from the Santa Ana Mountains, greatly curtailing options for further project development in the area that may provide potential cumulative impacts. Given the site's constraints from the mountains and existing residential development in the general project area, coupled with the project's limited size and environmental impacts, the project's scope relative to potential cumulative projects is very limited.

Based upon the characteristics of the project site and the unique features of the surrounding environment, the City of Corona staff has determined that there are two other reasonably foreseeable projects that could contribute to cumulative impacts in the project area. These reasonably foreseeable projects are described below. The location of each project described below is depicted on Figure 6-1.

Tentative Tract Map 32386

The Tentative Tract Map 32386 project involves annexing 75 acres into the Mountain Gate Specific Plan and establishing residential zoning. The site is located at the southerly terminus of Main Street south of Fletcher Drive. The project would create 52 single-family residential lots under the Single Family Dwelling 14.4 zoning designation of the Specific Plan.

Tentative Tract Map 32241

The Tentative Tract Map 32241 project is a proposal to subdivide 13.8 acres into 14 single-family residential lots located east of the southerly terminus of Fletcher Drive and south of Orange Heights Lane.

No additional cumulative projects were identified by the City for inclusion.

DUDEK

6327-01

MARCH 2010

SOURCES: Aerial Imagery: DIGITALGLOBE 2008.
Project Site Boundary: County of Riverside 2008.
City/County Boundary: County of Riverside 2005.

Rancho de Paseo Valencia EIR

FIGURE 6-1

Cumulative Projects

Z:\Projects\6327001\MAPDOC\MAPS\EIR\Section 6\Figure 6-1 Cumulative Projects.mxd

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6.4 IMPACTS TO ENVIRONMENTAL FACTORS

The following discussion analyzes the potential cumulative effects associated with the development of the proposed project and other surrounding cumulative projects.

Land Use and Planning

As described in Section 5.1, the project would be consistent and compatible with the existing and proposed surrounding mixture of residential uses. As is typically the case for land use considerations, land use issues associated with the project are site and project specific. A cumulative impact could be anticipated if there were an anticipated potential conflict with existing land uses that could, in combination with other potential conflicts, result in a larger cumulative land use conflict. In addition, if there were a current or planned physical division of a community that would be exacerbated by the proposed project, a potential cumulative impact might occur. The proposed project is consistent with the land use policies of the General Plan, including the density restrictions due to hillside development and grading. As such, the project would not contribute to a significant cumulative land use impact.

Agricultural Resources

Development of the project site and the other proposed projects in the area would result in a loss of land historically used for agricultural purposes. However, the conversion of land from historical agricultural production to other uses should not be considered a significant impact based solely on this historical use. Rather, the conversion is consistent with the City's General Plan, and this new use of the land has previously been considered, debated, and evaluated by City decision makers. The project site and the related project sites are all designated for residential uses in the General Plan (City of Corona 2004). Furthermore, the project site is not zoned for agriculture and the related projects, while previously in the agriculture zone, are now zoned for residential use. The conversion of agricultural lands in the City to other uses was considered in both the General Plan EIR and South Corona Agricultural Area EIR and the development of the General Plan was determined to result in a significant, cumulative impact. However, the Project's contribution to this impact is less than cumulatively considerable and thus would have a less than significant cumulative impact on agricultural resources.

Air Quality

As discussed in Section 5.3 of this document, estimates of operational emissions associated with the project indicate emissions of all criteria pollutants would be well below the screening-level thresholds for significant pollutant emissions once the project is completed. Given the minor level of increases of such emissions, coupled with the nature of these two other small residential projects with similar low emission increases, the project would not contribute to a cumulatively

considerable increase in any criteria pollutant. Furthermore, the two approved projects considered here for the cumulative analysis were found to be individually and cumulatively less than significant.

With regard to past and present projects, the background ambient air quality, as measured at the monitoring stations maintained and operated by the South Coast Air Quality Management District, measures the concentrations of pollutants from existing sources. Past and present project impacts are therefore included in the background ambient air quality data from which the original baseline and potential air quality impacts are derived.

Regarding cumulative impacts during construction, pollutant emissions were not found to be significant. Further, the proposed project is not anticipated to be developed at the same time as the other two projects, given their respective status in the development process. Regardless, given the low emissions levels analyzed as part of the air quality evaluation that evaluated the construction of the project on a worst-case scenario, even if all three of the projects were developed simultaneously, the construction emissions for the proposed project would not represent a cumulatively significant impact.

The project, when combined with other projects proposed in the City and surrounding area, would contribute to an increase in GHG emissions due to additional vehicle trips, additional energy use by new homes or buildings, and the need for additional energy-dependent resources such as water. However, based on the analysis provided in Section 5.3.5, the proposed project would reduce its contribution to GHG emissions and global climate change due to its reduction of CO_2e from the project by 295.29 metric tons and would reduce overall project emissions from business as usual by 26.7%, thus meeting the requirements of the identified significance threshold. In light of the project's mitigation measures to attain energy star compliance and increase vehicle efficiency and its substantial reduction from business as usual, it is concluded that the proposed project would not impede or conflict with the emissions reduction targets and strategies prescribed in or developed to implement AB 32. Therefore, the proposed project would not result in a cumulatively considerable contribution to global climate change, and this cumulative impact would be less than significant.

Biological Resources

The project site is located within the Western Riverside County MSHCP, which is a regional conservation plan aimed at evaluating and providing a region-wide program for conservation of sensitive species and their habitats. This plan by nature is aimed at mitigating the cumulative effects of urban development throughout the western Riverside region. Because the project is consistent with the MSHCP, cumulative impacts related to sensitive species and their habitats

would not occur. The project does not entail impacts to federally regulated wetlands; therefore, cumulative impacts to these resources would not occur.

Cultural Resources

As described in Section 5.5, no significant historic, archaeological, or paleontological resources were recorded on the project site. However, it was recommended that monitoring for paleontological and archaeological resources take place during all ground-disturbing activities. Any significant finds would be collected and preserved, reducing any potential cultural resource impacts to a less-than-significant level. Incorporation of on-site construction monitoring would ensure that any resources are evaluated and if significant, preserved in some capacity. These measures would ensure that the project doesn't contribute to the cumulative loss of culturally significant resources. Therefore, cumulative impacts related to cultural resources can be mitigated to a less-than-significant level.

Geology and Soils

The project and related projects may expose people and structures to geologic hazards. Geology and soil hazards associated with development of surrounding projects would be site specific and can be mitigated on a project-by-project basis through best management practices and appropriate building techniques and processes. The project site, as well as the other potential cumulative projects in the area, would be subject to similar potential impacts and the same building requirements suitable to such a risk. The project would have a significant cumulative impact with regard to geology and soils.

Hazards and Hazardous Materials

The project, in combination with other cumulative projects, is not expected to significantly increase hazardous materials use or generation of hazardous waste. None of the projects evaluated in this cumulative impact analysis would include industrial processes that would generate large quantities of hazardous waste. Any hazardous conditions are required to be mitigated on a project-by-project basis. Therefore, no significant cumulative hazardous material impacts would occur.

Hydrology and Water Quality

Future cumulative development within the study area would increase the total surface area covered by impervious surfaces, thereby reducing groundwater recharge and increasing the potential for flooding in the area. Future development would also increase impacts to water quality due to the runoff of pollutants associated with urban development. Each residential project is required to demonstrate that stormwater leaving the project site meets regulatory

standards for water quality. Use of best management practices during construction of the project, as required by the City and Regional Water Quality Control Board, would further reduce cumulative water quality impacts. Suitable infrastructure to handle any potential increases in runoff already exists for the proposed project. Given the small size and similar nature of the projects, no major increases in volume of runoff or downstream pollutants are anticipated. Therefore, no significant cumulative water quality or hydrology impacts would occur.

Aesthetics

The proposed project along with the two related projects represent a continuation of the residential uses in this area of south Corona and would contribute to a gradual change in visual character with the conversion of vacant or agricultural property to residential uses. Additionally, the proposed project is inconsistent with policies of the Hillside Development Ordinance related to the maintenance of the natural character and environmental and aesthetic values of hillside areas. Cumulative development would represent a substantial cumulative degradation in visual quality.

Noise

Traffic increases in the project area have the potential to result in increased cumulative noise levels in the study area. Each project is required to evaluate traffic noise impacts on local receptors and mitigate those project-specific impacts to a level below significance. Adherence to project-specific noise mitigation measures ensures that cumulative increases to noise would not occur. Because the project would have a less-than-significant noise impact, cumulative impacts would not occur.

Public Services and Utilities

The project would involve an incremental increase in demand for public facilities. As described in Section 5.12, consistency and contribution with City and other public facility fee structures would eliminate adverse cumulative impacts on local sewer, water, police, and fire services. The proposed project includes development standards that would apply to all future buildout of the planning area, which specifically includes development elements and/or policies and measures to ensure that adequate public facilities and services are provided in conjunction with buildout of the development. Additionally, the Mountain Gate Specific Plan, which has served as the master development vision for the project area, envisioned the impact to such services in the original environmental document. Thus, there are no significant cumulative impacts anticipated to either public services or utilities.

Transportation and Circulation

The project's traffic study utilizes a 2025 General Plan buildout scenario as the basis for a cumulative traffic impact analysis. Based on that analysis, the study area intersections have been calculated to continue to operate at LOS B or better in 2025 both with and without the addition of project traffic. Operation at LOS B or greater is well below the City's goal of LOS D or better. Therefore, because circulation levels would remain acceptable in the long term, cumulative condition, both with and without the project, significant cumulative impacts to traffic would not occur. As a condition of project approval, the project would be required to pay applicable regional transportation fees to help offset the incremental, cumulative impact on regional transportation and transit systems caused by regional population growth.

6.5 REFERENCES

14 CCR 15000–15387 and Appendix A–L. Guidelines for Implementation of the California Environmental Quality Act, as amended.

City of Corona. 2004. *City of Corona General Plan*. Resolution No. 2004-034. Prepared by EIP Associates for the City of Corona. Los Angeles, California: EIP Associates. March 17.

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SECTION 7.0
OTHER CALIFORNIA ENVIRONMENTAL QUALITY ACT REQUIREMENTS

7.1 SIGNIFICANT EFFECTS WHICH CANNOT BE AVOIDED

Section 15126.2(b) of the CEQA Guidelines (14 CCR 15000 et seq.) requires an EIR to identify significant environmental effects that cannot be avoided if the proposed project is implemented. As discussed in this EIR, implementation of the proposed project could result in significant impacts related to aesthetics, air quality, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, noise, public services and utilities, and traffic. However, all of these impacts would be mitigated to below a level of significance with implementation of mitigation measures identified in this EIR. There are no feasible mitigation measures to reduce impacts for loss of agricultural lands associated with the proposed project. A Statement of Overriding Considerations for Citywide loss of agriculture was adopted in association with the City of Corona General Plan EIR (2004).

7.2 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES WHICH WOULD BE CAUSED BY THE PROPOSED PROJECT SHOULD IT BE IMPLEMENTED

Section 15126(c) of the CEQA Guidelines (14 CCR 15000 et seq.) requires an EIR to address any significant irreversible environmental changes that may occur as a result of project implementation. Approval of the project would cause irreversible environmental changes consisting of the following:

- Commitment of approximately 65.4 acres of land, which will be physically altered to create residential uses. The relatively small commitment of land to this use is considered less than significant when compared to residential development in a local and regional context.
- Alteration of the human environment as a consequence of the development process. The project, which represents a commitment of land to residential use, intensifies land use on the project site. However, the use of the site for residential purposes is consistent with planned uses for the site.
- Increased requirements of public services and utilities by the project representing a permanent commitment of these resources. Service providers have indicated adequate supply of energy resources to supply the project (refer to Section 5.11).
- Use of various new raw materials, such as lumber, sand, and gravel for construction. The energy consumed in developing and maintaining the site may be considered a permanent investment. The proposed project is a relatively minor consumer of these supplies when compared to other local and regional users.

7.3 GROWTH-INDUCING IMPACTS

Section 15126.2(d) of the CEQA Guidelines (14 CCR 15000 et seq.) requires a discussion of how the potential growth-inducing impacts of the proposed project could foster economic or population growth or the construction of additional housing, either directly or indirectly, in the surrounding environment. Induced growth is distinguished from the direct employment, population, or housing growth of a project. If a project has characteristics that "may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively," then these aspects of the project must be discussed as well. Induced growth is any growth that exceeds planned growth and results from new development that would not have taken place in the absence of the proposed project. For example, a project could induce growth by lowering or removing barriers to growth or by creating or allowing a use such as an industrial facility that attracts new population or economic activity. The CEQA Guidelines also indicate that the topic of growth should not be assumed to be either beneficial or detrimental (Section 15126.2(d)).

The proposed project would involve the construction of detached residential units. The increase in population and housing on site would encourage growth through development of the site. As discussed in Section 3.4, and elsewhere throughout the document, the site is designated in the City and County General Plans for residential uses, and the project's resultant population has therefore been considered in the local planning documents.

The increased population associated with the 34 proposed residences would be relatively minor when compared to the City's current population of approximately 148,597 (California Department of Finance 2009). The growth is not expected to be above the population that has already been planned for the area. This project is an extension of a previously approved project rather than a completely new development in an undeveloped area. As such, it will require only a minor continuance of all major public services and utilities that exist just north of the site; therefore, substantial growth inducement as a result of the extension of these facilities into an area not currently served would not occur. Finally, given that the project's western, southern, and eastern sides are largely bordered by the Cleveland National Forest or other designated open space, future residential development adjacent to the project site would be highly unlikely. In conclusion, approval of the proposed project would not result in significant growth-inducing impacts.

7.4 REFERENCES

14 CCR 15000–15387 and Appendix A–L. Guidelines for Implementation of the California Environmental Quality Act, as amended.

California Department of Finance. 2009. *E-4 Population Estimates for Cities, Counties and State, 2001–2009 with 2000 Benchmark*. California Department of Finance. May. Accessed at: http://www.dof.ca.gov/research/demographic/reports/estimates/e-4_2001-07/

City of Corona. 2004. *City of Corona General Plan, Final Environmental Impact Report*. Prepared for by EIP Associates for the City of Corona. Los Angeles, California: EIP Associates. March.

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SECTION 8.0
EFFECTS NOT FOUND TO BE SIGNIFICANT

The State CEQA Guidelines (14 CCR 15000 et seq.) require that the environmental document include a brief discussion of various environmental issues that were determined not to be significant. This EIR addresses all probable or foreseeable possible effects of the proposed project. Based on the analysis presented in Section 5.0, with mitigation incorporated, effects were found to be not significant for the following issue areas: Aesthetics, Agriculture Resources, Air Quality, Biological Resources, Cultural Resources, Geology /Soils, Hazards and Hazardous Materials, Hydrology/Water Quality, Land Use/Planning, Noise, Public Services and Utilities, and Transportation/Traffic.

An evaluation of those issues contained in the CEQA Environmental Checklist that were not addressed in Section 5.0 of this document follows. These issues were determined to have a less-than-significant impact during the Initial Study/Notice of Preparation process prior to producing this Draft EIR.

8.1 MINERAL RESOURCES

Appendix G of the CEQA Guidelines includes the following questions regarding mineral resources:

Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

The *City of Corona General Plan Technical Background Report* (2004a) has mapped important mineral resources throughout the City according to Mineral Resource Zones (MRZs) established by the California Surface Mining and Reclamation Act of 1975. The City is only required to respond to those areas that have been designated by the state as MRZ-2, which are “areas where adequate information indicates that significant mineral deposits are present or where it is judged that a high likelihood for their presence exists” (City of Corona 2004a). Portions of the City, along with portions of its Sphere of Influence, are designated by the California Department of Conservation as a “Construction Aggregate Resource Area” and are classified as MRZ-2 areas. The MRZ-2 land located within the City begins approximately northwest of the I-15 and State Route 91 (SR-91) intersection, and extends in a northwest to southeast direction through the intersection before running south along the I-15 through the eastern portion of the City. The mineral resources found in these areas generally consist of clay and construction aggregates: crushed rock, sand, and gravel. These areas are distinguished by the Mineral Resource Overlay Zone on the City's Zoning Map as identified by the “MR” designation. The project site is not

located within or near any parcels recognized by the MR designation. Therefore, since the project would not result in the loss of a known mineral resource, no further analysis is warranted.

8.2 POPULATION AND HOUSING

Appendix G of the CEQA Guidelines includes the following questions regarding population and housing:

Would the project displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

Would the project displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

The project would result in the creation of 34 additional single-family homes within the City, which would not be expected to induce substantial population growth. Furthermore, the proposed project is consistent with existing and proposed land use designations and would not exceed regional or local population projections. The site is designated in the *City of Corona General Plan* (2004b) for residential uses, and the project's resultant population has therefore been considered in the local planning documents. Also, the development would not displace any existing housing or people. Therefore, no significant impacts related to population and housing is anticipated, and no further analysis is warranted.

It should be noted that Appendix G of the CEQA Guidelines also asks the following question, which is outlined in Section 6.3 of this EIR:

Would the project induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

8.3 RECREATION

Appendix G of the CEQA Guidelines includes the following questions regarding recreational resources:

Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Does the project include recreational facilities or require the construction or exemption of recreational facilities which might have an adverse physical effect on the environment?

As described in the *City of Corona General Plan Technical Background Report* (2004a), there are a variety of parks and other open space areas used for recreational purposes within the City that now include approximately 368 acres of community, neighborhood, and special-use public parks. The Parks and Recreation Element in the *City of Corona General Plan* (2004b) has established a goal of 3.5 acres of parkland per 1,000 residents. Based on latest California Department of Finance population estimates for the City of Corona, the current parkland ratio of the City is approximately 2.5 acres per 1,000 residents.

Although the project would provide substantial open space within the project boundaries, it does not propose any active use parks as part of the project. Therefore, the project would be subject to park dedication and/or the payment of park "in-lieu" fees in accordance with Quimby Act requirements. Based on the per household population estimate of approximately 3.3 persons, the project would need to dedicate approximately 0.40 acre of parkland or pay the equivalent fee for purchase of such parkland. Payment of this fee as required by law constitutes adequate provision of parkland to the City, and no further study of this issue is necessary. See also Section 5.11 of this EIR for an additional discussion of payment of in-lieu park mitigation fees.

8.4 REFERENCES

14 CCR 15000–15387 and Appendix A–L. Guidelines for Implementation of the California Environmental Quality Act, as amended.

City of Corona. 2004a. *City of Corona General Plan Technical Background Report*. Prepared by EIP Associates for the City of Corona. Los Angeles, California: EIP Associates. March.

City of Corona. 2004b. *City of Corona General Plan*. Resolution No. 2004-034. Prepared by EIP Associates for the City of Corona. Los Angeles, California: EIP Associates. March 17.

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SECTION 9.0
PROJECT ALTERNATIVES

9.1 INTRODUCTION

In order to fully evaluate proposed projects, CEQA requires that alternatives be discussed. Section 15126.6 of the State CEQA Guidelines (14 CCR 15000 et seq.) requires the discussion of "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." The alternatives discussion is intended to focus on alternatives to the project or its location that are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives as listed in Section 3.3 of this EIR.

Pursuant to the guidelines stated above, a range of alternatives to the proposed project are considered in this EIR. These alternatives were developed in the course of project planning, environmental review, and the public scoping process. The discussion in this section provides the following:

1. A description of alternatives considered.
2. An analysis of whether the alternatives meet most of the objectives of the proposed project (described in Section 3.3 of this EIR).
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 below a level of significance. As identified in the various sections of Section 5.0 of this EIR, the following issues resulted in potentially significant impacts prior to mitigation: aesthetics, air quality, biological resources, cultural resources, hazards and hazardous materials, hydrology and water quality, noise, and transportation and circulation. However, there are no significant project impacts that cannot be reduced to below a level of significance with incorporation of mitigation measures, as analyzed in Section 5.0.

9.2 ALTERNATIVES CONSIDERED AND ELIMINATED FROM DETAILED ENVIRONMENTAL REVIEW

The alternatives described in Sections 9.2.1 and 9.2.2 were initially considered but eliminated from further detailed environmental review for those reasons specified below.

9.2.1 Off-Site Locations

In accordance with CEQA Guidelines Section 15126.6(f)(2), the applicant and City attempted to identify feasible alternative off-site locations within the City that could be available for a single-family home development, such as the proposed project. Per CEQA Guidelines Section 15126.6(f)(2)(A), the key question and first step in analysis of the off-site location is whether any of the significant effects of the project would be avoided or substantially lessened by putting the project in another location. However, the applicant does not have immediate ownership of any similarly sized land in the community. Furthermore, the project consists of one of the final phases of completion of the Mountain Gate Specific Plan and is, therefore, limited to the geographic area that has been previously approved or contiguous with the Specific Plan area. Therefore, off-site locations are considered infeasible and no off-site location alternatives were carried forward in this analysis. Regardless, the availability of an alternate site does not in and of itself reduce impact potential. It is expected that developing a similar project at another location would result in a similar array of project impacts and would simply transfer this impact potential to areas surrounding the alternate site location. For these reasons, an alternate site location would not necessarily be preferred over the proposed project site.

9.2.2 Alternative Construction Access

During project scoping, neighbors requested that the City evaluate an alternative to utilization of Malaga Street as the prime construction access route to/from the project site. The neighbors cited concerns with the exclusive use of Malaga Street for construction equipment/traffic ingress and egress given the presence of a residential neighborhood, children at play, and steep sloping nature of Malaga Street at the project entrance.

Given the widths and street capacities that are required to adequately handle construction equipment, access to the site at either the corner of Shepard Crest Drive and Goddard Way or southeast of the terminus of the existing site's driveway with Malaga Street would necessitate construction of new access roads and potential modifications to the existing Shepard Crest Drive/Goddard Way and/or Malaga Street geometry, respectively. Further, expansion of a roadway along the western edge of the project site would necessitate impacting an existing designated open space area, which was determined to be infeasible given the goal and function of that land. It was determined that these potential access routes would be financially and likely logistically infeasible given the need to modify adjacent City streets and/or open space areas. Further, access to the project site from undeveloped lands to the west, south, and east was determined to be infeasible given these areas' remote location and lack of existing roadway infrastructure.

9.3 ALTERNATIVES UNDER CONSIDERATION

An analysis of alternatives has been provided in this document to provide decision makers with a reasonable range of possible alternatives to be considered. Each of the alternatives is described below. For each alternative, only those issues that resulted in significant impacts under the proposed project are compared pursuant to CEQA Guidelines 15126.6(a). As described in the various sections of Section 5.0 of this EIR, there are no significant project impacts that cannot be reduced to below a level of significance.

9.3.1 No Project Alternative

Under the No Project alternative, the applicant would not construct the proposed 34-unit residential development project. The existing orchard operations would remain and continue operation for the foreseeable future. The property would remain under private ownership and would maintain the City's General Plan designation of ER with a maximum allowed density of 3 dwelling units per acre for the 39.9 acres of the site currently within City limits (City of Corona 2004). Therefore, the No Project alternative avoids all of the significant and unavoidable impacts that would result from implementation of the proposed project. The following analysis presents a summary of the impacts that would be avoided should the project as proposed not be implemented.

Environmental Analysis

The No Project alternative would result in agriculture preservation and would avoid significant and unavoidable impacts that would result from implementation of the proposed project. Therefore, this alternative is considered superior to the proposed project.

Land Use and Planning

Under the No Project alternative, existing land use designations (ER Cluster in the City, RM in the unincorporated County) would remain. The No Project alternative would result in the continuation of the existing land use and the site would continue to be occupied by the orchard. However, while the No Project alternative would result in the continuation of a less intensive land use scenario, it is not viewed as environmentally superior to the project.

Agricultural and Forestry Resources

The removal of 37 acres of Unique Farmland would not occur under the No Project alternative; however, based on the LESA analysis this removal of farmland would not result in a significant impact. Therefore, the No Project alternative would be slightly superior the proposed project.

Air Quality

There would be no short-term construction related air quality impacts associated with the No Project alternative. However, Section 5.3 determined that maximum daily emissions and annual emissions of criteria pollutants during construction would be below the screening-level thresholds for air quality for all pollutants. Therefore, the absence of construction related emissions is viewed as superior to the proposed project.

Further, the continued presence of the orchard would result in similar air quality emissions as exist today under the agricultural operation. Since the impacts resulting from the proposed project would be mitigated to a level less than significant, the No Project alternative would not be significantly superior to the proposed project.

Biological Resources

The surveys/habitat assessments were all negative for the presence of sensitive MSHCP species. The project would not have substantial adverse impacts on any sensitive or special-status plant or wildlife species. Additionally, no significant impacts to riparian or other sensitive habitat would occur. Finally, the project is consistent with the MSHCP. Impact measures designed to avoid potential impacts to nesting birds and reduce potential urban–wildland interface inconsistencies would not be required under this alternative. Because there would be no site disturbance or vegetation removal, this alternative is considered superior as compared to the proposed project.

Cultural Resources

No significant archaeological resources, including Native American resources, were identified within the project boundaries by either a records search or field survey. Therefore, the project is not anticipated to have an impact on archaeological resources. However, an archaeological monitor is required to be present for all ground disturbing activities under the project alternative. Therefore, any potential impacts to undiscovered prehistoric or historic resources would be mitigated. Similarly, a paleontological monitor is required to be present for all earth-moving activities on site. Implementation of the No Project alternative would not disturb soils on site that could support potentially undiscovered cultural resources and is, therefore, superior to the proposed project.

Geology and Soils

Under the No Project alternative, no additional people or structures would be exposed to ground rupture or strong seismic shaking. However, the geotechnical analysis found that potential landslide and liquefaction susceptible hazards exist on site and under the No Project alternative would not be mitigated through the standard Uniform Building Code/California Building Code

requirements proposed by the project. Other recommendations include removal and recompaction of unstable soils. Since potential project impacts can be mitigated, this alternative does not provide a substantial reduction in impacts and may actually result in a greater impact given existing, unmitigated geotechnical hazards that would remain on site.

Hazards and Hazardous Materials

Based on a field reconnaissance conducted as part of the Phase I Environmental Site Assessment for the project, no visible signs of hazardous materials were evident on the project site, and no evidence of underground or aboveground storage tanks were observed. However, it was recommended that a limited agricultural residue survey be conducted to determine whether detectable levels of pesticides associated with such use are located on the project site. Based on the results of the that survey, detectable concentrations of restricted agricultural chemical residues are not likely to exist on the project site and further testing for such residues is not necessary. However, implementation of the No Project alternative would assume that the existing orchard would persist, which would result in a lack of disturbance of on-site soils, which could result in a release of unknown contaminants, and is therefore viewed as superior to the project.

The No Project alternative would not result in introduction of new structures into an area that is surrounded by undeveloped hillsides. Therefore, less wildfire risks would be associated with the No Project alternative.

Hydrology and Water Quality

Potential impacts associated with increased urban runoff, such as the introduction of petroleum products from paved surfaces, would be avoided under the No Project alternative. However, the project would be required to prepare an SWPPP, which is intended to prevent degradation of surface and ground waters during the grading and construction process. The project would also be required to prepare a site-specific Water Quality Management Plan that will identify the methods and means of treating potential runoff pollutants generated by the proposed development. Although the project can be mitigated by the procedures noted above, implementation of the No Project alternative would not result in additional impacts to water quality and is, therefore, viewed as slightly superior to the project. Finally, under the proposed project, hydrological modifications would be necessary. On-site hydrology would not be altered under the No Project alternative and would, therefore, be superior to the proposed project.

Aesthetics

Under this alternative, the project site would remain as an orchard. Potential impacts related to new sources of light would be avoided with this alternative as would impacts resulting from

excessive grading in hillside areas. Therefore, the No Project alternative would result in preservation of the orchard and is considered superior to the proposed project.

Noise

Although the project would be required to adhere to the hours set forth in the City of Corona Noise Ordinance, the No Project alternative would not result in an increase of short-term construction and is, therefore, viewed as slightly superior to the project in that regard. The noise analysis determined that traffic associated with the project would not result in a substantial increase in noise on the surrounding roadways. Nonetheless, the No Project alternative would be superior to the project in that no contribution of additional short-term and long-term noise sources would occur.

Public Services and Utilities

The proposed project would not result in significant impacts to public services and utilities due to its location in the Mountain Gate Specific Plan, which has resulted in overall public utility facility planning and management efforts to assume that the project site would eventually be developed. Nonetheless, the No Project alternative would be superior to the project in that additional demands on the City's public infrastructure systems would not occur.

Transportation and Circulation

The project traffic analysis determined that construction delays would be minimal and short term and would not result in level of service declines at area intersections. However, under the No Project alternative, no new construction traffic would occur at the project site; therefore, this alternative is considered superior to the proposed project in the short term. Similarly, the ongoing orchard operations would not produce the level of traffic that would occur under the proposed project scenario. While traffic impacts were not deemed to be significant, the No Project alternative would be superior to the proposed project.

Greenhouse Gas Emissions

The No Project alternative would result in the continued presence of the orchard and would result in similar air quality emissions as exist today. The No Project alternative would not result in the use of construction equipment or the addition of residences which would utilize automobiles, energy and water resources and, therefore, would not result in an increased output of greenhouse gasses as would the proposed project. Therefore, this alternative would be superior to the proposed project.

Project Objectives

Overall, the No Project alternative is considered environmentally superior to the proposed project, as none of the potential environmental impacts associated with future development as identified in this EIR would occur; however, the No Project alternative does not meet any of the objectives set forth in Section 3.3 of this EIR.

9.3.2 Reduced Density Alternative

A Reduced Density alternative would meet most of the project objectives as set forth in Section 3.3 of this EIR. This alternative reduces the total number of dwelling units to 21, which is a 12.5% decrease from the proposed project dwelling unit count. The three residential units that would be removed are the lots closest to the project boundary with the Cleveland National Forest (i.e., Lots 20, 21, and 22) near the southeast corner of the site. These lots would be converted to open space similar to that provided by Lot B. The primary purpose of this alternative would be to eliminate potential conflicts of urban uses and the conserved lands in the National Forest. The following analysis presents a summary of the impacts that may be avoided with implementation of this alternative.

Environmental Analysis

Overall, the Reduced Density alternative is considered slightly environmentally superior to the proposed project, as it would likely result in a smaller development footprint, smaller demand on local infrastructure, and result in less air quality emissions, noise, and traffic both during and after construction. The Reduced Density alternative would also substantially achieve the objectives set forth in Section 3.3 of this EIR. However, the proposed project is already well below the allowed number of units under the current and anticipated land use designations for the site and this alternative reduces the economic feasibility for development of the site.

Land Use and Planning

As the proposed project and Reduced Density alternative are consistent with the planned land uses for the site, and no other significant land use impacts have been identified, the Reduced Density alternative does not provide a substantial reduction in impacts and is not viewed as environmentally superior to the project.

Agricultural and Forestry Resources

The removal of 37 acres of Unique Farmland would still occur under the Reduced Density alternative as those lots not developed would be converted to open space. Therefore, the contribution of this project to the conversion of agricultural lands that would occur on a Citywide

basis would still occur under this scenario. Therefore, it is not considered substantially superior to the proposed project.

Air Quality

Since the analysis in Section 5.3 determined that maximum project-level emissions of criteria pollutants during construction would be below the screening-level thresholds for air quality, no substantial reduction in construction-level pollutants would be achieved under this alternative. Similarly, estimates of operational emissions associated with the project indicate emissions of all criteria pollutants would be below the screening-level thresholds. Therefore, no substantial reduction in long-term air quality impacts would be achieved under this alternative.

Biological Resources

The surveys/habitat assessments were all negative for the presence of sensitive MSHCP species. The project would not have substantial adverse impacts on any sensitive or special status plant or wildlife species. Additionally, no significant impacts to riparian or other sensitive habitat would occur. Finally, the project is consistent with the MSHCP. Impact measures designed to avoid potential impacts to nesting birds and reduce potential urban–wildland interface inconsistencies would not be required under this alternative. Because there may be less site disturbance and vegetation removal, this alternative is considered slightly superior as compared to the proposed project.

Cultural Resources

This alternative is not anticipated to have an impact on archaeological resources. However, an archaeological monitor would still be required to be present for all ground-disturbing activities under this alternative. Similarly, a paleontological monitor would be required to be present for all earth-moving activities on site. Since both the proposed project and the Reduced Density alternative would necessitate cultural resource mitigation, this alternative does not provide a substantial reduction in impacts.

Geology and Soils

Mitigation similar to the proposed project would be implemented. Structures would be designed and engineered in accordance with the California Building Code and unstable soils would be removed and recompacted. This alternative does not provide a substantial reduction in impacts.

Hazards and Hazardous Materials

Based on field reconnaissance conducted as part of the Phase I Environmental Site Assessment, no visible signs of hazardous materials were evident on the project site, and no evidence of underground or aboveground storage tanks were observed. However, similar to the project,

implementation of the Reduced Density alternative would require mitigation in the event that undiscovered hazardous materials or underground tanks are discovered during construction. Therefore, this alternative is not considered substantially superior to the proposed project. Similar to the proposed project, introduction of new structures to an area surrounded by undeveloped hillsides would result in similar wildland fire hazards as under the proposed project.

Hydrology and Water Quality

Similar to the project, the Reduced Density alternative would be required to prepare an SWPPP, which is intended to prevent degradation of surface and ground waters during the grading and construction process. This alternative would also be required to prepare a site-specific Water Quality Management Plan to identify the methods and means of treating potential runoff pollutants generated by the proposed development. Since both the project and Reduced Density alternative can be mitigated, it is not considered substantially superior to the proposed project in this regard.

Aesthetics

This alternative would consist of a smaller development project, which would slightly reduce impacts to the visual character of the site and improve the project's conformance with the Hillside Development Ordinance policies. However, the project would likely still be visible from the surrounding community and/or areas in the Cleveland National Forest, and would contain new sources of lighting which would require similar mitigation measures as the proposed project. Therefore, this alternative would be slightly superior to the proposed project.

Noise

The Reduced Density alternative would be required to adhere to the hours set forth in the City of Corona Noise Ordinance, similar to the project. However, similar to the proposed project, a temporary increase in ambient noise levels would occur during project construction. The noise analysis determined that traffic associated with the project would not result in a substantial increase in noise on the surrounding roadways. Assuming a reduced density alternative may be set-back further from existing residential or open space land uses, this alternative can be viewed as slightly superior to the project in that it would provide a greater distance between urban and natural uses and may result in a slight reduction of potential noise generated at residences.

Public Services and Utilities

Any impacts to infrastructure from the proposed project would be less than significant or could be mitigated through payment of a fair share fee. While less demand on the City's public infrastructure would occur under this alternative, similar impacts would likely occur, and similar

mitigation measures could reduce potential impacts. This alternative would, therefore, not provide a substantial reduction or elimination of impacts compared to the proposed project.

Transportation and Circulation

The project traffic analysis determined that construction delays would be minimal, short term, and would not result in level of service declines at area intersections. Therefore, the Reduced Density alternative does not provide a substantial reduction in construction impacts and is not viewed as substantially superior to the project. Regarding long-term traffic, no significant impacts are calculated for study area intersections as project related traffic would not exceed threshold levels. As no substantial reduction in traffic impacts would be achieved under the Reduced Density scenario, it is not viewed as environmentally superior to the project.

Greenhouse Gas Emissions

It is likely that construction-related less greenhouse gas emissions would be reduced under the Reduced Density alternative. However, this would be dependent on the ultimate site layout of a reduced density alternative. Fewer residences would result in fewer automobile trips and fewer homes that require water, energy resources, etc. Therefore, the Reduced Density alternative would be slightly superior to the proposed project.

Project Objectives

The Reduced Density alternative would substantially achieve the objectives set forth in Section 3.3 of this EIR. However, the proposed project is already well below the allowable number of units under the current land use designations. This alternative would supply less housing to meet the high demand.

9.3.3 Cluster Alternative

The Cluster Alternative would result in a smaller project footprint, and, therefore, less area disturbed, from the development of the proposed 34 dwelling units by clustering the homes on smaller lots. This alternative would include lot sizes ranging from 7,200 square feet to 10,000 square feet. This would create a total lot area of 5.62 acres to 7.81 acres, which would reduce the disturbance of the project by approximately 53% to 66%, depending on the configuration of lot sizes. The primary purpose of this alternative would be to reduce visual impacts resulting from the mass grading on the project site. The following analysis presents a summary of the impacts that may be avoided with implementation of this alternative.

Environmental Analysis

Overall, the Cluster alternative is considered slightly environmentally superior to the proposed project as it would likely result in a smaller development footprint, reduced grading, less visibility of the project from surrounding areas, and greater consistency with the City's Hillside Development Ordinance. However, the Cluster alternative is not considered substantially superior to the proposed project because it fails to meet project objectives.

Land Use and Planning

The City's General Plan designates the 39.9 acres of the site currently within City limits as ER with a maximum allowed density of 3 du/ac. The *Riverside County General Plan* (2003) designates the portion within the County as RM with 1 dwelling unit per 10 acres. Once all project entitlements are approved, the portion of the project within the County would have a new designation: RR1, which would increase density to 0.5 du/acre.

Based on the maximum allowed density designated in the City's General Plan (2004), a total of 66 units (56 units when corrected for consistency with hillside development policies-see Section 5.1) are allowed on the 64.3 acre project site. The Cluster alternative would propose the same number of dwelling units as the project, and therefore, would similarly propose fewer dwelling units than allowed by the General Plan (City of Corona 2004). However, unlike the proposed project, this alternative would cluster dwelling units on smaller lots, and thus would conform to the Hillside Development Ordinance's policies that require clustering to minimize the amount of grading required. Additionally, the density limitations placed on the project site due to grading of slopes greater than 25% would be reduced because less project site area would be graded under the Cluster Alternative. The 34 proposed dwelling units would be well within the allowed density allowance.

The portion of the project site within the City is zoned for ER Cluster zone with a lot size minimum of 7,200 square feet. The Riverside County Zoning Code designates the portion of the project within the unincorporated County area as RR. The 25.5 acres (including the 1.1 acres not included in the subdivision proposal) within the County would be annexed into the City as a condition of approval and as such the entire property would have a City zoning designation of ER Cluster under the Mountain Gate Specific Plan, which would require a minimum 7,200-square-foot lot. The Cluster alternative would result in the homes being sited on lots ranging from 7,200 square feet to 10,000 square feet and, therefore, would be consistent with zoning designation for this site. This alternative would improve land use consistency with the Hillside Development Ordinance, but is only slightly superior to the proposed project.

Agricultural and Forestry Resources

The removal of 37 acres of Unique Farmland would still occur under the Cluster alternative since the area not developed as a result of consolidating development on less area would be converted to open space. Therefore, this scenario would contribute similarly to the city-wide conversion of agricultural lands as planned for by the General Plan. Therefore, the Cluster alternative would result in similar impacts to the proposed project.

Air Quality

Since the analysis in Section 5.3 determined that maximum project-level emissions of criteria pollutants during construction would be below the screening-level thresholds for air quality, no substantial reduction in construction-level pollutants would be achieved under this alternative. Similarly, estimates of operational emissions associated with the project indicate emissions of all criteria pollutants would be below the screening-level thresholds. Therefore, no substantial reduction in long-term air quality impacts would be achieved under this alternative.

Biological Resources

The surveys/habitat assessments were all negative for the presence of sensitive MSHCP species. The project would not have substantial adverse impacts on any sensitive or special status plant or wildlife species. Additionally, no significant impacts to riparian or other sensitive habitat would occur. Finally, the project is consistent with the MSHCP. Impact measures designed to avoid potential impacts to nesting birds and reduce potential urban–wildland interface inconsistencies would potentially not be required under this alternative since the clustering of the homes could eliminate development closest to the project boundary with the Cleveland National Forest. Additionally, because there may be less site disturbance and vegetation removal, this alternative is considered slightly superior as compared to the proposed project.

Cultural Resources

This alternative is not anticipated to have an impact on archaeological resources. However, an archaeological monitor would still be required to be present for all ground-disturbing activities under this alternative. Similarly, a paleontological monitor would be required to be present for all earth-moving activities on site. Since both the proposed project and the Cluster alternative would necessitate cultural resource mitigation, this alternative does not provide a substantial reduction in impacts.

Geology and Soils

Mitigation similar to the proposed project would be implemented. Structures would be designed and engineered in accordance with the California Building Code and unstable soils would be removed and recompacted. This alternative does not provide a substantial reduction in impacts.

Hazards and Hazardous Materials

Based on field reconnaissance conducted as part of the Phase I Environmental Site Assessment, no visible signs of hazardous materials were evident on the project site, and no evidence of underground or aboveground storage tanks were observed. However, similar to the project, implementation of the Cluster alternative would require mitigation in the event that undiscovered hazardous materials or underground tanks are discovered during construction. Therefore, this alternative is not considered substantially superior to the proposed project. Similar to the proposed project, introduction of new structures to an area surrounded by undeveloped hillsides would result in similar wildland fire hazards as under the proposed project.

Hydrology and Water Quality

Similar to the project, the "Cluster" alternative would be required to prepare an SWPPP, which is intended to prevent degradation of surface and ground waters during the grading and construction process. This alternative would also be required to prepare a site-specific Water Quality Management Plan to identify the methods and means of treating potential runoff pollutants generated by the proposed development. The "Cluster" alternative would result in less open space area being covered by impervious surface; however, since both the project and Cluster alternative can be mitigated, it is not considered substantially superior to the proposed project in this regard.

Aesthetics

This alternative would consist of the same number of dwelling units as the proposed project, however the units would be consolidated on less area and visibility from the surrounding area would be significantly reduced. While this alternative would reduce aesthetic impacts, it must be noted that a considerable amount of grading would still be necessary and that portions of the project would likely still be visible from surrounding areas. This alternative would be considered moderately superior to the proposed project in terms of aesthetic impacts.

Noise

The Cluster alternative would be required to adhere to the hours set forth in the City of Corona Noise Ordinance, similar to the project. However, similar to the proposed project, a temporary

increase in ambient noise levels would occur during project construction. Assuming a "Cluster" alternative may be set-back further from existing residential or open space land uses, this alternative can be viewed as slightly superior to the project in that it would provide a greater distance between urban and natural uses and may result in a slight reduction of potential noise generated at residences.

Public Services and Utilities

Any impacts to infrastructure from the proposed project would be less than significant or could be mitigated through payment of a fair share fee. Similar demand on the City's public infrastructure would occur under this alternative, similar impacts would likely occur, and similar mitigation measures could reduce potential impacts. This alternative would, therefore, not provide a substantial reduction or elimination of impacts compared to the proposed project.

Transportation and Circulation

The project traffic analysis determined that construction delays would be minimal, short term, and would not result in level of service declines at area intersections. Therefore, the Cluster alternative does not provide a substantial reduction in construction impacts and is not viewed as substantially superior to the project. Regarding long-term traffic, this alternative would result in the same number of residences as the proposed project, and, therefore, would result in the same number of automobile trips. As no substantial reduction in traffic impacts would be achieved under the Cluster scenario, it is not viewed as environmentally superior to the project.

Greenhouse Gas Emissions

It is likely that construction-related greenhouse gas emissions would be minimally reduced under the Cluster alternative due to less grading activity required. However, this would be dependent on the ultimate site layout of the Cluster alternative. The Cluster alternative would result in the same number of residences as the proposed project, and, therefore, would result in the same number of automobile trips and the same number of homes that would require water, energy resources, etc. Therefore, the Cluster alternative is not considered substantially superior to the proposed project.

Project Objectives

The Cluster alternative would not achieve all of the objectives set forth in Section 3.3 of this EIR. The Cluster alternative would not create a large lot development that would provide an appropriate transition between the City and the adjacent Cleveland National Forest. Therefore, this alternative is rejected for not achieving all project objectives.

9.3.4 County Land Development Alternative

The "County Land Development" Alternative would entail siting proposed dwelling units on the land within the County and would avoid development of the orchard areas within the City. This alternative would minimize agricultural impacts resulting from the conversion of Unique Farmland to a housing development. Because the County land consists of 38% of the total project site, the total number of proposed dwelling units would be reduced by about 60% to 13. Similar to the Reduced Density Alternative, this alternative would eliminate the three residential lots closest to the project boundary with the Cleveland National Forest (i.e., Lots 20, 21, and 22) near the southeast corner of the site. However, to maximize use of the land within the County, additional lots would be proposed adjacent to the Cleveland National Forest. While the majority of development would be located on County land, access to the site would be across City land and would result in the disturbance of orchard areas to construct a road. The following analysis presents a summary of the impacts that may be avoided with implementation of this alternative.

Environmental Analysis

The County Land Development alternative would include fewer dwelling units, and, therefore, would have a smaller project footprint and would create less demand on local infrastructure. Additionally, this alternative would enable the preservation of some of the agricultural land that currently exists on the project site. However, some of the agricultural land would be disturbed in order to provide access to the proposed development, which might reduce the viability of the other agricultural lands. Additionally, this alternative would contain substantially fewer dwellings than what is allowed on the project site. Finally, this alternative would result in areas planned for open space to provide a buffer between the development and natural areas to be developed, which could impact adjacent natural areas. Therefore, the County Land Development alternative is not considered substantially superior to the proposed project.

Land Use and Planning

The proposed project and County Land Development alternative are both consistent with the planned land uses for the site, and no other significant land use impacts have been identified. Hillside Development policies encourage that development be clustered on the most gently sloping portion of the project site and that grading be minimized to the maximum extent possible to maintain the natural topographic characteristics of a site. The County Land Development alternative is not consistent with these policies as clustering would not be designed to only site lots on the least sloping areas and mass grading would likely be required. This alternative does not provide a substantial reduction in impacts and is not viewed as environmentally superior to the project.

Agricultural and Forestry Resources

The County Land Development alternative would site all development on the County land which is not currently developed for agricultural purposes. The fruit orchards on the City land would be left intact, however, access would still need to be provided to the project site. Therefore, some disturbance to the orchard in the form of grading and clearing would still be required in this alternative. Therefore, the County Land Development alternative would be superior to the proposed project in terms of agricultural impacts.

Air Quality

Since the analysis in Section 5.3 determined that maximum project-level emissions of criteria pollutants during construction would be below the screening-level thresholds for air quality, no substantial reduction in construction-level pollutants would be achieved under this alternative. Similarly, estimates of operational emissions associated with the project indicate emissions of all criteria pollutants would be below the screening-level thresholds. Therefore, no substantial reduction in long-term air quality impacts would be achieved under this alternative.

Biological Resources

The surveys/habitat assessments were all negative for the presence of sensitive MSHCP species. The project would not have substantial adverse impacts on any sensitive or special status plant or wildlife species. Additionally, no significant impacts to riparian or other sensitive habitat would occur. Finally, the project is consistent with the MSHCP. Impact measures designed to avoid potential impacts to nesting birds and reduce potential urban–wildland interface inconsistencies would not be required under this alternative. Because additional lots would be sited on the County land project site, area currently planned for open space would be developed and more land disturbed. The City land which would not be developed is already currently disturbed and in use as agricultural land. Therefore, this alternative does not provide any substantial reduction in biological impacts and may potentially create more impacts.

Cultural Resources

This alternative is not anticipated to have an impact on archaeological resources. However an archaeological monitor would still be required to be present for all ground-disturbing activities under this alternative. Similarly, a paleontological monitor would be required to be present for all earth-moving activities on site. Since both the proposed project and the County Land Development alternative would necessitate cultural resource mitigation, this alternative does not provide a substantial reduction in impacts.

Geology and Soils

Mitigation similar to the proposed project would be implemented. Structures would be designed and engineered in accordance with the California Building Code and unstable soils would be removed and recompacted. Additionally, this alternative would most likely require that land which had been eliminated from development in the proposed project due to geotechnical constraints be developed in order to maximize the number of dwelling units. This alternative does not provide a substantial reduction in impacts and would be potentially inferior to the proposed project.

Hazards and Hazardous Materials

Based on field reconnaissance conducted as part of the Phase I Environmental Site Assessment, no visible signs of hazardous materials were evident on the project site, and no evidence of underground or aboveground storage tanks were observed. However, similar to the project, implementation of the County Land Development alternative would require mitigation in the event that undiscovered hazardous materials or underground tanks are discovered during construction. Therefore, this alternative is not considered substantially superior to the proposed project. Similar to the proposed project, introduction of new structures to an area surrounded by undeveloped hillsides would result in similar wildland fire hazards as under the proposed project.

Hydrology and Water Quality

Similar to the project, the County Land Development alternative would be required to prepare a SWPPP, which is intended to prevent degradation of surface and ground waters during the grading and construction process. This alternative would also be required to prepare a site-specific Water Quality Management Plan to identify the methods and means of treating potential runoff pollutants generated by the proposed development. However, under this alternative, area designed to be left as open space under the proposed project would be developed and covered by impervious surfaces. Therefore, this alternative is slightly inferior to the proposed project.

Aesthetics

This alternative would consist of a smaller development project, which would still be visible from the surrounding community and contain new sources of lighting. It is assumed that while the visual change may be reduced, a visual change would still occur and possibly be visible from the surrounding community and/or areas in the Cleveland National Forest. Further, additional light sources would be introduced to the project area and likely require similar mitigation measures as the proposed project. Areas planned to be left as open space under the proposed project would undergo mass grading under this alternative. This alternative is not considered substantially superior to the proposed project.

Noise

The County Land Development alternative would be required to adhere to the hours set forth in the City of Corona Noise Ordinance, similar to the project. However, similar to the proposed project, a temporary increase in ambient noise levels would occur during project construction. The noise analysis determined that traffic associated with the project would not result in a substantial increase in noise on the surrounding roadways. The County Land Development alternative would potentially be set-back further from existing residential uses, however, it would be sited closer to open space and would provide less of a buffer between urban and natural uses. This alternative is not considered substantially superior to the proposed project.

Public Services and Utilities

Any impacts to infrastructure from the proposed project would be less than significant or could be mitigated through payment of a fair share fee. While less demand on the City's public infrastructure would occur under this alternative because the alternative includes fewer residences, similar impacts would likely occur, and similar mitigation measures could reduce potential impacts. This alternative would, therefore, not provide a substantial reduction or elimination of impacts compared to the proposed project.

Transportation and Circulation

The project traffic analysis determined that construction delays would be minimal, short term, and would not result in level of service declines at area intersections. Therefore, the County Land Development alternative does not provide a substantial reduction in construction impacts and is not viewed as substantially superior to the project. Regarding long-term traffic, no significant impacts are calculated for study area intersections as project related traffic would not exceed threshold levels. As no substantial reduction in traffic impacts would be achieved under the County Land Development scenario, it is not viewed as environmentally superior to the project.

Greenhouse Gas Emissions

It is likely that construction-related less greenhouse gas emissions would be reduced under the County Land Development alternative. However, this would be dependent on the ultimate site layout of a County Land Development alternative. Fewer residences would result in fewer automobile trips and fewer homes that require water, energy resources, etc. Therefore, the County Land Development alternative would be slightly superior to the proposed project.

Project Objectives

Overall, the County Land Development would substantially meet the project objectives. However, the proposed project is already well below the allowable number of units under the current and anticipated land use designations and this alternative would reduce the number of units even more. Additionally, this alternative does not provide an acceptable buffer between developed areas and natural open space because development would occur on land planned for open space under the proposed project in order to maximize the number of possible dwelling units

9.4 REFERENCES

14 CCR 15000–15387 and Appendix A–L. Guidelines for Implementation of the California Environmental Quality Act, as amended.

City of Corona. 2004. *City of Corona General Plan*. Resolution No. 2004-034. Prepared by EIP Associates for the City of Corona. Los Angeles, California: EIP Associates. March 17.

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SECTION 10.0
LIST OF PREPARERS

10.1 LEAD AGENCY – CITY OF CORONA

City of Corona Community Development Department

Joanne Coletta, Director

Jason Moquin, Senior Planner

City of Corona Public Works Department

Kip Field, Public Works Director

10.2 ENVIRONMENTAL CONSULTANTS/ ENVIRONMENTAL IMPACT REPORT PREPARATION

Dudek

Joe Monaco, Principal in Charge

Sarah Lozano/Aaron Gettis, Project Managers

Jon Berg, Environmental Analyst

David Merriman, Environmental Analyst

Brian Grover, Environmental Analyst

Megan Stone, Environmental Analyst

Steve Taffolla, Technical Editor

Andrew Greis, GIS Analyst

Hannah Westwood, Word Processor

10.3 TECHNICAL REPORT PREPARATION

Air Quality Technical Reports

Investigative Science and Engineering, Inc.

Brian F. Smith and Associates, Inc.

Biological Resources Technical Reports

Michael Misenhelter

Natural Resources Assessment, Inc.

Cultural Resources Reports

Brian F. Smith and Associates, Inc.

Geotechnical Report

GeoSoils, Inc.

Hazardous Materials Reports

GeoSoils, Inc.

FIREWISE 2000, Inc.

Hydrology and Water Quality Reports

Armstrong & Brooks Consulting Engineers

Noise Technical Reports

Investigative Science and Engineering, Inc.

Brian F. Smith and Associates

Traffic Reports

Linscott, Law & Greenspan

Public Services and Utilities Reports and Will Serve Letters

Armstrong & Brooks Consulting Engineers

City of Corona Parks and Community Services Department

City of Corona Department of Water and Power

Waste Management

Corona Police Department

Corona-Norco Unified School District

City of Corona Fire Department.

APPENDICES A–K

Included on Separate CD